

The Challenges of Mobile Printing

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“If I can’t print, I can’t do my job” - H. Kushins, Attorney

Introduction

Mobile devices have become an increasingly important part of the workplace. More companies are adopting “bring-your-own-device” policies and other mobile-friendly guidelines to take advantage of the productivity gains of these new tools. While mobile technology puts content at user’s fingertips, smartphone and tablet users still want to read some content from a printed document rather than a small screen. And numerous studies have concluded that information read on paper is retained at greater rates than the same information read on screen.

Allowing users to print from mobile devices makes them be more productive and creates a flexible work environment. But as organizations incorporate mobile devices on their networks, implementing a mobile printing solution that scales intelligently has proven challenging.

Despite its relative maturity, mobile printing has presented an ongoing problem for users and system administrators. Administering mobile printing solutions historically has involved juggling a mix of

software and hardware choices that are not optimized for evolving client-side technology and do not function cohesively.

Presto by Collobos is a complete software solution providing easy, large-scale mobile printing. Presto solves, with a single integrated product, the networking and technology hurdles that administrators have faced until now. Presto's ease of use, flexibility, and security bring mobile printing up to date for the today's system administrator.

Importance of Mobile Printing

In a 2015 survey of enterprise mobile printing, IDC determined that three out of every four employees surveyed considered mobile printing as important as printing from their desktop or laptop computers. An additional 15 percent of respondents considered mobile printing even more important than desktop printing. Over a third of these individuals have stated that they want to print from their phones or tablets, but they can't. Technavio predicts that between 2014 and 2019, global mobile printing will grow by 32.5 percent. Unfortunately, without new tools that printing will be done using solutions with serious drawbacks.

Understanding the Mobile Printing Problem

Mobile printing is challenging for three main reasons:

- There is no industry standard for discovering printers on a mobile device.
- Mobile devices do not have print drivers.
- Systems administrators no longer have control over the configuration of mobile devices.

With the pace at which users acquire new mobile devices, it's impossible to innovate fast enough to offer up-to-date mobile printing solutions. This means that while mobile printing continues to gain importance, technical support continues to fall behind. The available solutions are either proprietary to specific hardware, limited to one-app ecosystems, or a haphazard mix of non-integrated solutions that don't solve the problem as a whole.

Understanding the Client Device Technology

iOS (iPhone, iPad, iPod touch) and OS X

iOS 4.2 included AirPrint and the ability to print natively from an Apple mobile device. Those users can seamlessly discover and print to AirPrint-enabled local printers. Apple's AirPrint discovery protocol uses a technology called DNS Service Discovery, trademarked as Bonjour. Bonjour can use both unicast and multicast DNS. While multicast DNS is a powerful small-scale solution, unlike unicast DNS, it does not scale to larger, sophisticated networks that use multiple subnets. On the other hand, unicast DNS is an elegant, scalable solution that allows devices to discover services anywhere on a corporate or campus network but entails some amount of DNS configuration.

Strengths:

- Ease of use.
- Can work well in both small and large environments.
- Built-in support for authenticated printing

Weaknesses:

- Reliance on Bonjour can impose an administrative burden.
- Only works with Apple products.

Android and Chrome OS

Google Cloud Print was created to allow Cloud Print–aware devices and applications to work with any Cloud Print–enabled printer. Google Cloud Print is tied to a user’s Google account, and the print job is passed to Google servers and then on to the printer.

Strengths:

- Integrates into Google Apps environment.

Weaknesses:

- Historically unstable.
- Few options for third-party developers.
- Privacy and security issues due to cloud-based architecture.
- Designed only for the Google ecosystem.
- Limited authentication options.

“You can’t just write a ton of code for a problem that you don’t really understand and call it innovation” —Scott Herscher, CTO, Collobos Software

Mobile Printing Pain Points: Myriad Approaches

Many companies have tried to solve the mobile printing problem. Products brought to market in the last eight years to facilitate printing from a mobile device have included:

- Cloud-based SAAS.
- Hardware with pre-loaded drivers.
- Software with local network discovery but requiring software or hardware running on each subnet.
- Email-to-print.
- Web-to-print.
- Apps with companion software.
- Apps with companion hardware.

The staggering number of attempts has ultimately created a confused and frustrated marketplace that is still looking for a single, integrated solution.

Incomplete Solutions

Despite the growing importance of mobile printing in the workplace, IDC’s research indicates that half of smartphone users don’t know how to print from their devices. Mobile printing options are limited, and the options that exist are needlessly complex. Printing technologies lock administrators into one mobile operating system, and each operating system has its own set of problems and requirements.

For instance, Hewlett-Packard offers ePrint Enterprise as a mobile printing solution, but the program only works with HP-manufactured printers. Other companies provide similar solutions that, while promising for a subset of users, fail to deliver a simplified solution that bridges all mobile devices and printers.

The Mopria Alliance is a non-profit organization made up of global technology firms working to solve these mobile printing problems. Ironically, while its charter is to offer platform-independent mobile printing solutions, Mopria technology is designed only for Android devices and only works with Mopria-certified printers. This means Mopria compliance will render much of an organizations investment in printer hardware obsolete.

Security Concerns

Printing documents using the cloud has benefits. But cloud-based printing brings many significant security risks. Sharing media through the cloud means trusting a third-party vendor to keep important data secure. If a cloud-based provider has a breach, changes its policies, or goes out of business, its clients' media could be left unprotected. In an in-network setting, the administrator retains complete control and can manage media sharing as he or she sees fit.

Many cloud-based printing services keep all data in a single public cloud, regardless of how sensitive or private it is. This is especially dangerous for government institutions and enterprises in the healthcare, education, and financial industries, which require strict data security. Hackers who access data stored in public clouds can potentially access every document a company has printed. Many of these organizations prefer to maintain in-network mobile printing in order to protect their data.

Cross-Platform Functionality and Integration Issues

To date, it has proven difficult for system administrators to offer print support for the disparate mobile platforms. In other words, there has been no solution that allows you to administer printing for iOS, Android, and Chrome OS in the exactly same way.

Lack of Administrator Control

Amit Sharma of Technavio states, "One of the major issues associated with cloud-based mobile printing services is that IT administrators do not have any control over the number of BYOD devices connected to a printer." Enterprise mobile printing is a challenge because IT departments need to set "acceptable use" policies. These policies are complicated because it's hard to limit what users can do on their own personal devices.

Describing Ideal Technology

The ideal mobile print solution would have the following qualities:

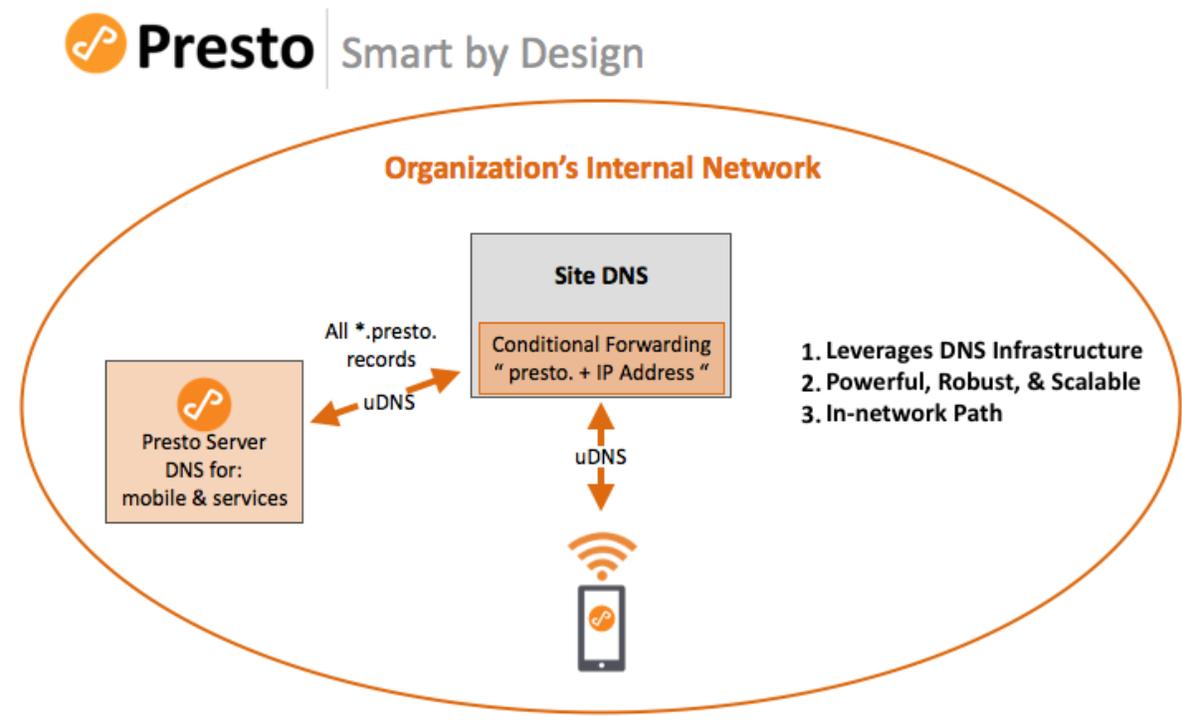
- Provide easy workflow, permitting native printing from all client device platforms.
- Have an in-network print path for security and compliance concerns.
- Be client device-agnostic, working essentially the same across all client devices.
- Be print hardware-agnostic.
- Integrate well into both heterogeneous and homogenous device environments.
- Hook into existing directory services.

- Deployment would scale from a few users to the largest enterprise.
- Be robust, intuitive, and easy to use.

The Presto Solution—Different by Design

Leveraging the Enterprise Infrastructure

Presto is different than any other piece of mobile print software. Presto hooks into a site's existing DNS infrastructure for service discovery. DNS scales exceptionally well and is fantastically robust, as is Presto. A single conditional forwarding record in DNS is created for the name "presto." Any DNS query ending in "presto." is routed to Presto's authoritative DNS server to resolve. This elegant design choice creates the foundational layer for all supported functionality. As a result Presto is easy to set up, easy to manage, and secure.



This diagram is for conceptual purposes only

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Bridging Multiple Client Device Operating Systems

With the foundational networking layer in place, Presto has the ability to interact with each client operating system based on the technology available.

iOS and OS X

iOS and OS X have the ability to discover printers anywhere on the network the device is connected to. During the Presto set-up, an administrator adds subnets where he or she wants users to see printers; users are able to discover printers via the native print dialogue.

Android and Chrome

Android and Chrome allow Presto to hook into the print architecture of the device. With the Presto app for Android or Chrome installed, Presto will discover printers and make them available to users. Android and Chrome will populate not only Presto-populated printer but will also show other printers the user is authorized to use that are populated by other means.

The result of this approach is that Presto functions the same across all supported client device platforms, providing true continuity rather than a mere promise of it.

Presto—Superior Mobile Printing

Technically superior, Presto features set it apart from other solutions in the marketplace.

Native Printing

Integrating with the devices' capability to discover and advertise printers, Presto permits users to print via the native print dialogue on the device providing a superior user experience.

Print Hardware—Agnostic

Presto doesn't care who makes your printer hardware. As a software-based solution, it is not dependent on technology such as HP's ePrint, the Mopria Alliance standards, or solutions that require specific hardware on the network segment. For users, Presto works the same across iOS, OS X, Android, and Chrome, integrating into the native print architecture of the device. With Presto it is now as easy to print from a mobile device as it is from a desktop or laptop computer.

In-Network Print Path / Secure

Unlike most other mobile print solutions, Presto has a unified print path is that is completely in-network across all client device platforms. No content goes to the cloud, and all data transmitted is encrypted using industry-standard SSL. This feature is significant for medical, legal, and other vertical markets that require security compliance.

Client Device—Agnostic

Whether a heterogeneous or homogenous device environment, Presto works in a cross-platform way, so administrators and users alike have a simple set of instructions to get up and running. Presto works great in multiple environments:

- Exclusively Apple (iOS and OS X).
- BYOD (iOS, OS X, Android, Chrome).
- Google Apps for educational and enterprise environments (Android, Chrome).

Integrates with Active Directory

Presto integrates with Active Directory, giving administrators a simple mechanism to authenticate users.

Integrates with Print Management

Presto easily integrates with print management solutions by passing the owner of the print job to the print queue. No special set up is required on Presto's part for this integration.

Designed to Scale

As IT administrators know well, even when best practices are in place, networks have their own unique personalities, based on the choices of those who initially set up the network and those who have administered it over time. These network quirks can be a big problem for software that is heavily network-dependent, especially when you add a variety of client device platforms to the mix. The Presto development team understands this and created Presto so that it is designed to scale not only as your environment changes but also as mobile technologies evolve. The Presto software controls as many of the moving pieces as is technically possible, giving Collobos the ability to pass control to the administrator regardless of network size, configuration, or type. Our design goal is that Presto will simply go to work for you and keep working.

Robust, Intuitive, Easily Deployed, Easily Administered

Presto is hands-down the easiest technology to deploy, regardless of the size of your organization. It is almost as easy to deploy Presto across a multinational enterprise as it is in a single-subnet environment. Presto attempts to auto-configure the DNS record(s) for the administrator; if auto-configuration isn't possible, Presto will provide the records that are needed. Presto gives administrators more control than any other solution on the market. The Presto Rules Engine allows unprecedented configuration based on a wide array of factors, including geolocation, groups, tags, identity, metadata, services, and more.

Progressive Features

Geolocation

Especially valuable in larger campus environments, administrators can geolocate services and users can find and interact with these services in context to their location.

Magic Queue

The Magic Queue, a "pull printing" tool exclusive to Presto, allows a user to send a document to the print queue from outside the network. This job stays local to the device until the user is connected to a Presto-enabled network. At that time the user can release the document to the printer.

QR Code Release

Presto also offers QR code release functionality. This tool automatically generates a QR code for each service in the Presto server. Users can scan the code with their device to perform a number of functions, including opening a web share, starting an AirPlay session, or releasing a print job—features that only Presto offers.

Designed for the Future

Presto is positioned to take advantage of emerging technologies. The development team is constantly examining the horizon for the best technologies to implement and integrate.

Conclusion

Presto is the only mobile printing solution for the enterprise IT administrator. Presto bridges the gap between existing printer technology and the modern mobile environment.

Only Presto has the scalable cross-platform software technology that functions with iOS, OS X, Android, and Chrome operating systems. Users are no longer tied down to any one app ecosystem thanks to this cross-platform, in-network print architecture. Presto gives administrators end-to-end control with a cohesive technology to manage mobile in the enterprise.

Sources

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