

Secure Printing Using ThinPrint, Citrix and IGEL: Solution Guide



Print data is generally unencrypted and almost always contains personal, proprietary or sensitive information. Even a simple print request sent from an employee may potentially pose a high security risk for an organization if not adequately monitored and managed. To put it bluntly, the printing processes that are repeated countless times every day at many organizations are great ways for proprietary data to end up in the wrong hands.

Mitigating this risk, however, should not impact the workforce flexibility and productivity print-anywhere capabilities deliver. Organizations seek to adopt print solutions that satisfy government-mandated regulations for protecting end users and that protect proprietary organizational data — all while providing a first-class desktop and application experience for users.

This solution guide outlines some of the regulatory issues any business faces when it prints sensitive material. It discusses how a Citrix-IGEL-ThinPrint bundled solution meets regulation criteria such as HIPAA standards and the EU's soon-to-be-enacted General Data Protection Regulations without diminishing user convenience and productivity.

Finally, this guide provides high-level directions and recommendations for the deployment of the bundled solution.

Business Challenge and Need for Bundled Solution

Organizations seeking to balance security, usability, cost and convenience within the printing process face a number of challenges. These include:

- **Data Delivery Security.** With regulations like HIPAA and the EU General Data Protection Regulation (GDPR) keeping organizations focused on security, the endpoint and the printer both play key roles in solving this business challenge.
- **General Data Protection Regulation.** Starting May 2018, the GDPR becomes mandatory. Its intention is to harmonize the rules for processing personal data by private companies and public authorities throughout the EU. This regulation will impact how European businesses of all sizes, as well as those not based in Europe but doing business, handle their print jobs — and yet more than half of all companies are not prepared to meet these challenges.¹
- **Lack of Encryption.** A single hacked medical record can be worth as much as \$60.² Given the goldmine that health records offer to criminals, it is no surprise that one in three Americans' records have been compromised.

- **Mobile Users Need to Print Anywhere.** C-level executives, financial analysts, road warriors and healthcare professionals often need to print wherever they are — and it's almost never the location where they first booted their computer. Print jobs should be accurately and automatically routed to the right printer every time, no matter the location from which the print job is initiated.
- **Endpoint Security.** Print data “in-transit” and “at-rest” should be secure at all times.

What This Bundle Addresses

This Citrix, IGEL, ThinPrint bundled solution seeks to provide a unified, secure and contextual print experience for all enterprise users. It fills those needs in the following ways:

- **Unified:** The solution unifies across apps, services, and cloud networks.
 - **Load balancing.** Users' print jobs are evenly distributed among a group's print servers. Server load balancing ensures high performance printing and optimal use of the available resources. In addition, there is no need for manual administration tasks when assigning printers and users to specific print servers.
 - **Failover and load balancing for branch offices.** This solution offers the benefits of a small hardware box — the ThinPrint Hub replaces local print servers in individual branch offices. Two or more ThinPrint Hubs can also be grouped together for failover and load balancing, ensuring uninterrupted workflows and printing across all branch offices.
- **Secure:** The solution helps prevent print-related violations of government regulations and security mandates.
 - **Print security.** Though print data is generally unencrypted, it almost always contains personal, proprietary or sensitive information that is regulated by government and/or organizational security guidelines. Print data must be protected accordingly. This is especially true for the thousands of companies that must comply with HIPAA, PCI or GDPR regulations.

- **Contextual:** The solution automatically reduces management overhead while enhancing user convenience and productivity.
 - **Reduction of IT administration overhead.** With just a single mouse click, administrators can place print servers in maintenance mode during ongoing operations. New print jobs are immediately forwarded to other servers in the group, and only the existing print jobs on the initial server are processed. As a result, IT staff can perform maintenance during normal working hours without causing downtime and impacting printing.
 - **High availability.** With ThinPrint, two or more Windows print servers can be grouped together. ThinPrint constantly checks the availability of the servers, and thanks to an early-warning system, responds promptly to print-specific problems or instabilities – when mapping printers, for example. In the event of a fault, another running server is automatically selected (failover) and all printer mappings are redirected to it. High availability results in significantly less downtime than with any other solution.

Products Included in This Bundle

This bundled solution teams products from Citrix, IGEL and ThinPrint. These products work in perfect symbiosis to eliminate security hazards and productivity stumbling blocks commonly associated with enterprise printing:

- **IGEL:** Any IGEL OS-powered device (UD pocket, Universal Desktop, IGEL Zero, UDC3 converted endpoints) version 10.03.100 or higher. IGEL revolutionizes both endpoint management and endpoint security with simple policy configuration, smart click-and-drag profile updates and secure firmware updates (four times yearly). IGEL OS combined with IGEL's Universal Management Suite (UMS) provides a single endpoint management solution that offers automated backend control for IT, while delivering a trouble-free environment for users.
- **Citrix XenDesktop, XenApp and/or XenServer:** Citrix VDI provides a complete virtual application and desktop solution that meets all user and administrator needs from a single, easy-to-deploy platform. It provides employees the freedom to work from anywhere while cutting IT costs. Citrix VDI can deliver Windows, web, and SaaS applications or full virtual desktops to workers on any device, anywhere.

- **ThinPrint Engine version 11:** ThinPrint is the fastest and most secure print management solution available. It provides a significant increase in the efficiency, security and flexibility in all environments including those based on Citrix technology. ThinPrint was the first provider chosen as a Citrix Ready print solution, and has been selected as the printing partner in more than 12,000 Citrix customer projects.

Technical Overview

Deployment of this bundled solution is simple to implement for virtually all business organizations. Key deployment considerations for each component of this bundle include the following:

Citrix: The Citrix Receiver is preinstalled on IGEL OS firmware. Deploying XenDesktop begins with installing the following components. This process prepares for delivery of applications and desktops to users inside your firewall.

- One or more Delivery Controllers
- Citrix Studio
- Citrix Director
- Citrix StoreFront
- Citrix License Server
- One or more Citrix Virtual Delivery Agents (VDAs)
- Optional components and technologies such as the Universal Print Server, the Federated Authentication Service, and Self-Service Password Reset

System requirements for XenDesktop Install can be found [here](#).

IGEL: IGEL OS powered endpoints come with both the ThinPrint agent and Citrix Receiver preinstalled, providing plug-and-play, out-of-the-box convenience for customers deploying this bundled solution.

IGEL's Universal Management Suite (UMS) has revolutionized the endpoint management. UMS provides a single endpoint management solution that offers automated backend control for IT, while delivering a trouble-free environment for users. This makes it easy to customize any IGEL OS-powered endpoint, and deployment of this provides the following top of the line security benefits and management perks:

- Core repository of data is secure in Citrix VDI
- IGEL endpoints have a minimized attack surface that cannot be compromised; protection is provided against the full range of current cybersecurity threats
- IGEL endpoints include:
 - A highly controlled OS
 - A read-only file system
 - Validation with checksum (during every update and boot-up) layer by layer
- IGEL's inherent, built-in enterprise security includes two-factor authentication, smart card readers, trusted execution, certificate-based and SSL encryption
- Centralized management with secure, easy to use benefits:
 - Easy rollout
 - Standardization of endpoints
 - Secure updates
 - Easy deployment of application updates, ensuring up-to-date Citrix receiver and Thin Print clients
 - Centrally enforced policies on thousands of devices
 - Zero Touch deployment, creating a cost savings on rollout
 - ICG management anytime, anywhere
 - Consolidated Endpoints- choose from IGEL HW, Laptops/PCs or UD Pocket
 - No scripting necessary
 - Easy to customize: simple drag-and-drop configuration with hundreds of templates
 - Increased security: easy and secure deployment of security patches

IGEL licensing provides product updates for the entire lifecycle, including three years after End-of-life of the product version.

ThinPrint: ThinPrint delivers jobs conveniently and quickly to the best available printer within a Citrix environment. ThinPrint handles the proliferation of print drivers common within VDI environments, including the single touchpoint required by IGEL. ThinPrint uses its server to run printer drivers so the IGEL OS powered endpoints don't have to while the users still receive the highest quality print outs.

Licensing is offered on a per-user basis, making ThinPrint easily adaptable to changing enterprise needs. Refer to the [ThinPrint licensing manual](#) for more details.

Solution Description

Deployment of this bundled solution is a relatively simple, straightforward process. ThinPrint is installed on Windows Servers: 2008 R2 to 2016 (any server within the enterprise domain).

ThinPrint supports multiple protocols for managing printing in virtualized environments. Print jobs can be delivered to the IGEL endpoint via TCP/IP or inside the ICA/HDX session. The latter methodology is particularly helpful when attempting to reach a branch/remote or home office location connected through a Citrix NetScaler Gateway.

The ThinPrint Engine supports the secure printing needs of modern enterprises. The chart below sums the differences between ThinPrint-supported secure printing vs. unmonitored printing.

Centralized, Secure Printing

- ThinPrint Engine fully complements the many advantages of centralized print management with powerful features that eliminate the weak points associated with a print server concept.
- **Lower costs through server consolidation:** Only one central print server is necessary. Local print servers and IT expertise are not required in branch offices.
- **Unburdened networks:** ThinPrint optimizes the transmission of print data through compression, streaming and SpeedCache for all print paths, and, of course, from branch offices to the central print server.
- **Driver Free Printing:** Thanks to Driver Free Printing, printer drivers are only stored on the central print server, while users' PCs remain driver free. With just a few clicks, printer drivers can be updated throughout the company.
- **Maximum print security:** Through SSL/TLS encryption up to the printer and optional secure pull printing.
- **High availability:** Server- and printer-side failover and load balancing ensure zero outage printing.

Unmonitored Printing

- Personal data are transferred unencrypted via the network when printing
- Personal data are stored unencrypted on servers or printer hard drives during the printing process
- Sensitive data is printed to the wrong printer
- Documents containing personal data end up in the wrong hands at the printer's output tray
- Costly branch print servers that must be monitored, maintained, updated, replaced etc.
- Large volume of printer drivers with possible incompatibles that lead to instabilities and unreliability of the print system

Step-by-Step Setup Overview

Configure native printer objects on the ThinPrint server using standardized names, optional comments, locations, specific defaults and settings, and Windows Security Permissions, according to organizational specifications

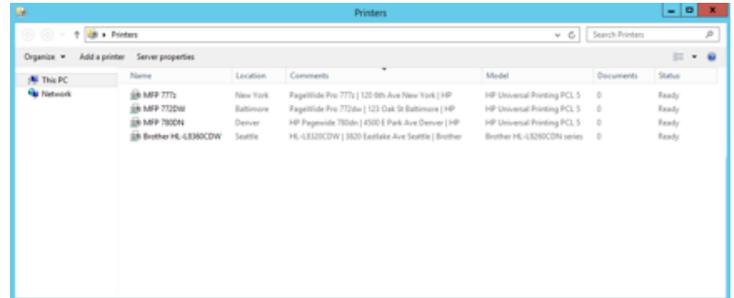


Figure 1

Install ThinPrint Engine software as dictated by the appropriate Quick Setup or Full Installation guide.

Configure the ThinPrint AutoConnect Dynamic Printer Matrix rule table. Reference figure 2 as an example.

- “PrintServer” hosts the printer queues, connecting clients matching the naming convention “Thin-*” to network shares.
- The “%LCPRN%” matches the entry name from the client to the queue name on the ThinPrint server.
- Substitute “PrintServer” for your ThinPrint Engine hostname.
- Substitute “Thin-*” for your clients’ naming convention (use wildcard ‘*’ if not applicable).
- This process enables the substitution of any locally configured printer entry on the IGEL client (which is not a functional printer queue) for a real (or virtual) printer queue on the ThinPrint Engine(s).

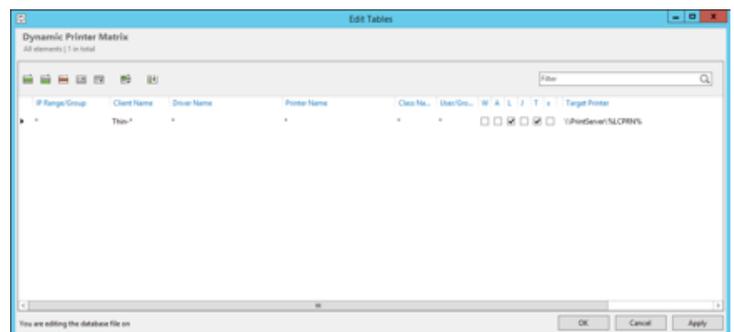


Figure 2

Install the ThinPrint Engine (Server OS) or Agent (Desktop OS) onto the remote session and configure it to use the AutoConnect table rule(s) created above. Once a user logs onto the session, any printer list entries they have will be represented by ThinPrint virtual printer queues, ultimately backed by appropriate native printer drivers (see figure 3).

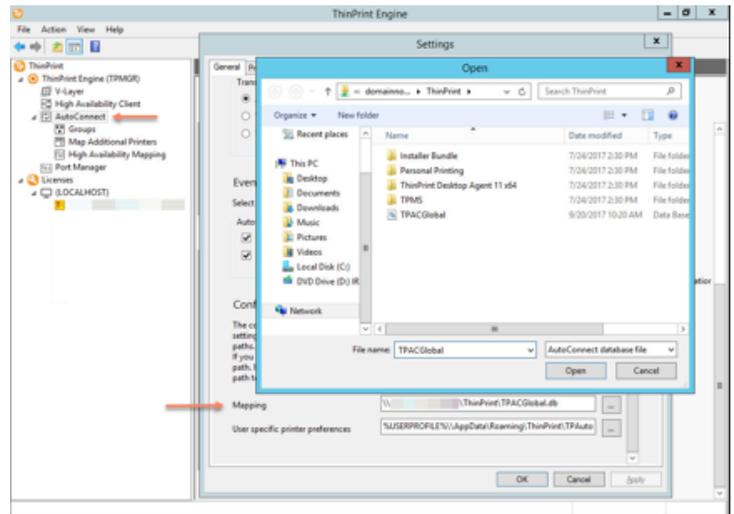


Figure 3

Now simply provide your IGEL OS powered endpoint clients with a printer entry (or entries).

- Navigate to “Devices > Printer > ThinPrint”
- Under the section “...ThinPrint >Printer” enter the IP address and name of each printer object the workstation client should be connected to (see figure 4).
- Configure “Printer Name” exactly as listed in your ThinPrint Engine, so that the DPM rule in figure 2 can substitute that entry name for the printer queue of the same.

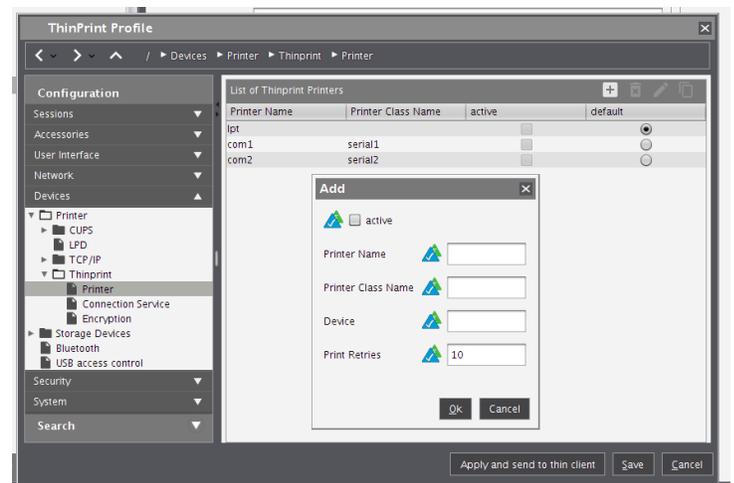


Figure 4

Use the IGEL Universal Management Suite (UMS) for easy rollout with a newly created profile:

- Open “Profile > New Profile”
- Enter a profile Name
- Enter a Profile description
- Choose the IGEL OS Version you want to base this profile on (if you use different)
- Click OK

Optional: If using ThinPrint for SSL encryption of print data, add the desired root & client certificate and password under “...ThinPrint >Encryption” (see figure 5). Note: Encryption is only enabled if also configured and enabled on the ThinPrint Server.

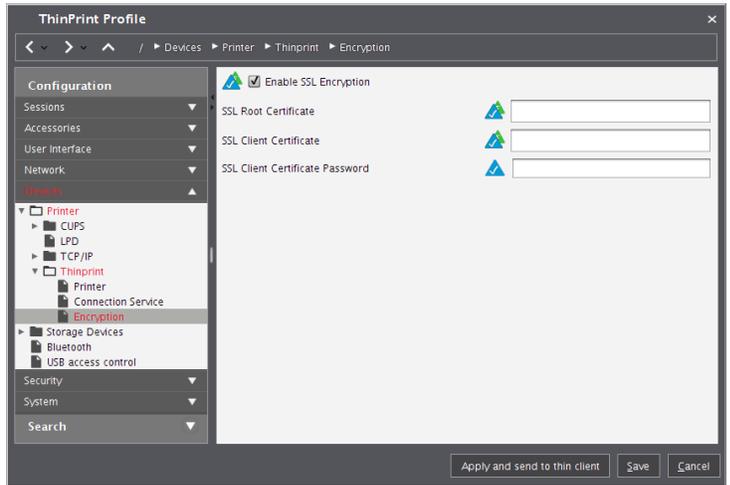


Figure 5

Optional: If using the ThinPrint Connection Service, install and configure the ThinPrint Connection Service according to the ThinPrint Secure Tunnel Installation Guide. Then configure each IGEL client with the addressable IP of your Connection Service, along with their own unique ID and Authentication Key, under “...ThinPrint > Connection Service” (see figure 6).

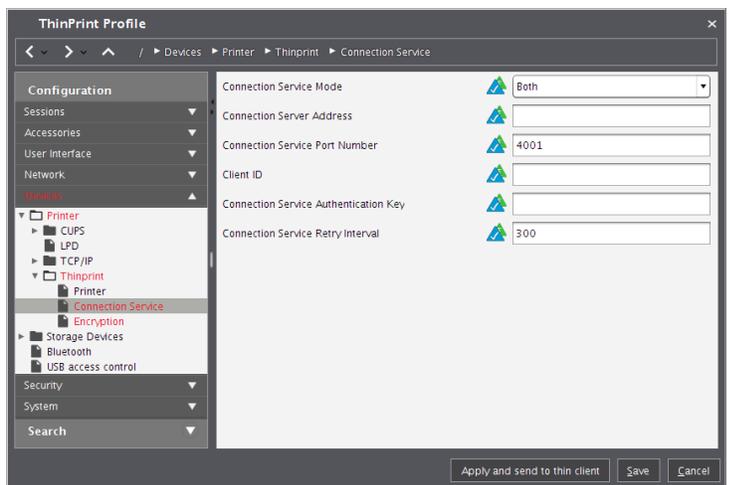


Figure 6

Now you are able to assign the profile to hundreds of endpoints – easy per drag & drop (see figure 7). You are so able to set different profiles, e.g. for different floors or branch offices.

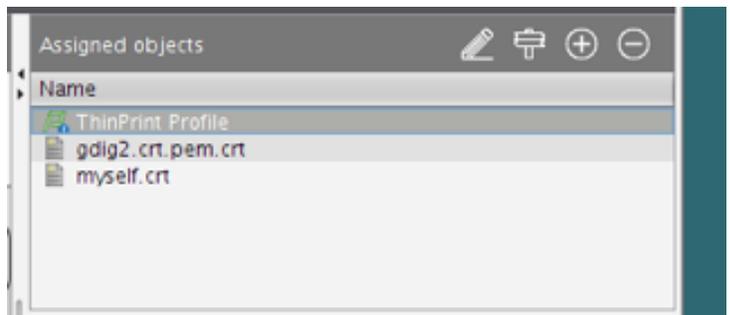


Figure 7

A Proven Bundled Solution That Enhances Printing in VDI Environments

Citrix VDI accessed from IGEL OS powered endpoints provide business organizations with unprecedented opportunities to boost user productivity and flexibility while slashing hardware and administrative costs. But for many organizations, one obstacle stands in the way of maximizing the potential of a VDI / IGEL OS powered endpoint environment: printing. Print management in virtual environments often falls short of conforming to the cost-cutting, productivity-enhancing goals of VDI adoption.

For a growing number of enterprises printer-related security vulnerabilities have also become a growing concern. Unfortunately, enforcing the restricted use of printers will also restrict productivity in many organizations. A better answer for organizations within all industries is the adoption of a Citrix-IGEL-ThinPrint bundled solution that will boost printer security to the highest possible level.

Along with enhancing security, many organizations are seeking ways to contain printing costs. This Citrix-IGEL-ThinPrint bundled solution offers the printing solution that so many organizations seek. While boosting printing-related security, testing has proven that the ThinPrint Engine can, simultaneously, substantially reduce printing-related costs by providing the following benefits:

- 80 percent fewer help desk calls
- 60 percent less administration time
- Up to 98 percent less data needed for printing
- 20 percent fewer peripheral resources needed

For enterprises seeking to reduce printing costs while simultaneously boosting printer-related security in virtualized environments, a Citrix-IGEL-ThinPrint bundle provides the solution.

For more information about Citrix Ready solutions and partners, contact [Citrix](#).

For more information about IGEL OS-powered endpoint solutions, contact [IGEL](#).

For more information about ThinPrint Engine, contact [ThinPrint](#).

Additional Links

Citrix Ready IGEL products: <https://citrixready.citrix.com/igel-technology.html>

Citrix Ready ThinPrint products: <https://citrixready.citrix.com/thinprint.html>

Information about printing encryption: https://download.cortado.com/docu/ThinPrint/WebHelp/en/ThinPrint_docu/Creating_certificates/General_information_about_encryption.htm

How to ensure that corporate printing processes conform to the EU General Data Protection Regulation (white paper): <https://www.thinprint.com/en/resource/data-protection-regulation-secure-network-printing/>

Printing with Citrix and ThinPrint (white paper): <https://www.thinprint.com/en/resource/printing-citrix-and-thinprint/>

IGEL / ThinPrint setup documentation: <http://edocs.igel.com/>

Request a free IGEL evaluation unit, or download three free IGEL licenses: <https://www.igel.com/free-hardware/>

¹<http://www.itpro.co.uk/it-legislation/27814/what-is-gdpr-everything-you-need-to-know-8>

²<http://www.nbcnews.com/news/us-news/hacking-health-care-records-skyrockets-n517686>