

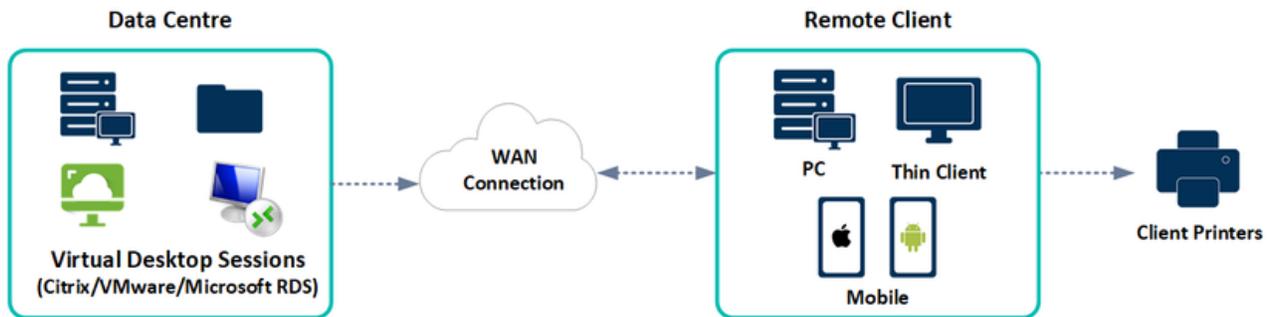


 Process Fusion 360

Printing from VDI Environments: Common Problems and Solutions

Workflow
Reimagined

Printing from the Workstation to the Printer



Virtual Desktop Infrastructure (VDI) generally involves establishing a connection between a given data centre and remote office locations, through a wide area network (WAN) connection. Remote clients usually run PCs, thin clients, mobile devices, or any other access clients. Data centers contain file servers which run virtual desktops, thereby creating Windows sessions. The client device at the remote location does not actually run the operating system in reality, rather it simply acts as a projecting device, with a keyboard and monitor, used to communicate with the desktop run on the file server in the data center. Hence, in VDI setups, all of the computing power is supplied by the data center, and not the remote client. The remote client simply projects the desktop provided by the VDI provider, whether it be through a mobile device, PC, or thin client.

The security offered by VDI environments is one of the primary reasons behind its rapid uptake in industries where confidentiality and data privacy is of paramount importance, as is the case with the healthcare industry. Healthcare organizations deploying VDI environments do not have significant security concerns pertaining to theft of actual hardware computing devices, as there is no data stored intrinsically within the hardware, rather all the data is securely stored in the data centers that provide the virtual desktops. Similarly, data redundancy provided by VDI environments is a significant advantage for enterprises, as compared to traditional computing. With classical computing environments, the failure of one desktop leads to the loss of information and computing capability for that specific desktop user, with data backup and recovery being the only option for restoring the previous environment.

In organizations deploying VDI environments, the redundancy is impeccable, enabling users who experience hardware crashes or failures to simply open up their virtual desktop environment from any other enterprise machine, allowing them to immediately get back to where they left off, in a matter of minutes, with no loss of time or information.

As outlined, the advantages of virtualizing enterprise computing through data centers are many, however, there is only so much that can be virtualized! Unfortunately, printing is one of the process that just can't be virtualized completely! Users require hardcopies as soon as they hit print from their computing devices. This whitepaper will explore the most common printing related issues experienced in VDI environments, and some of the solutions for these problems, that are available in today's market.

Printing Problems in VDI Environments

Driver Incompatibility

In classical computing environments, in order to enable successful printing, users simply install a print driver on their machine, and print documents right away to a locally connected printer, in a seamless fashion. In VDI environments, the windows session is being run in the data center, and therefore there is no direct connection from the desktop to local printers attached to remote client devices. Additionally, in VDI environments, the backend at the data center could be running on any version of Windows Server, whether it be the latest Windows Server 2018, Windows Server 2012, or any other server edition. This leads to incompatibility issues, with the native driver on the client machine not compatible with printing from the virtual desktop server.

Driver Misconfiguration in Multi-User Environments

By the same token, another key issue with print drivers in VDI environments involves the inability of many print drivers to support multiple PCs. Many print drivers, in essence, are only developed to support single session printing, and are not meant to run in an environment with multiple PCs. With VDI environments however, one of the primary benefits, is the ability to run multiple desktops from one data centre, or one virtual setup, at the backend.

Therefore, in such conditions, incompatible drivers consume an excessive amount of resources and do not function correctly when deployed for multiple client machines.

Excessive print drivers can also be a source of printing problems for virtual machines. For example, a virtual machine in the data center may have hundreds of different print drivers to support printing to thousands of printers running in the client's environment, this leads to collision of print drivers amongst each other, subsequently placing excessive strain and stress on the server running the virtual desktop environment.

Slow WAN Connection Speed

By default, network connection speeds are known to be slower in virtual desktop environments. When in a computing environment where users print directly to a USB attached-local printer, the print speed is quite fast. In terms of printer drivers, they are created by design to inherently assume that the connection to the printer is always a high-speed connection, therefore not compressing and compacting files before sending them off to the printer.

Thus, when these same print drivers are deployed in virtual printing environments, they do not take into account the inherently slower connection speed of virtual environments. This leads to print drivers sending out print jobs in abundance and creating an influx of outbound print traffic, slowing down the connection speed, and ultimately leading to slower printing speeds. As a result, it is quite common for VDI users to complain of excessive bandwidth consumption and slower connection speeds when printing from their virtual environments.

Location-Based Printing Errors

One of the primary benefits of deploying virtual desktops for today's workforce is the added advantage it provides of allowing workers to become more mobile. Virtual environments provide users with the freedom of being able to move around without worrying about losing their work, as the virtual desktop infrastructure is built for enhanced worker mobility.

When deploying virtual desktops, users may be working from their workstations at the office, and when they decide to go home, they can carry on the same session, and vice-versa, so long as they are able to obtain an internet connection. This degree of flexibility allows users to work on the go, from anywhere, as long as they are able to obtain a network connection.

The problems arise when it comes to printing from virtual desktop environments while on the go. When users change locations while using virtual desktops, the application is unable to tell where the user is located, where they are printing from, and which printer they'd like to send their print jobs to!

Consider the example of an employee working from home, who happens to travel to the office for a day to work on-site. When printing at the office from the same virtual desktop, the print job will by default, be sent to the employee's home printer. This causes a great deal of inconvenience to remote workers, as they are unable to obtain their print jobs where they want, when they want. Users would ideally prefer to be able to print to the printer closest to them, and not just the original printer associated with their desktop.

Another problematic aspect can be illustrated using the example of hospital environments. Physicians in today's healthcare world often deploy virtual desktop environments, and printing can cause them serious issues. A doctor may login to their virtual desktop from the ninth floor, where they begin their morning rounds. After reaching the emergency department a few hours later and attempting to print a patient requisition, the doctor is unable to print to the printers in the emergency department, as the virtual desktop application lacks the ability to tell that the location of the session has changed, thus leading to the forms being printed out on the ninth floor. As is evident, this would lead to a great deal of end-user frustration, loss of valuable time, and a possible risk of confidentiality breaches, as documents are being printed in entirely separate locations relative to the authorized user's location.

Third Party Solutions for VDI Printing Issues

Problems caused by printing in virtual environments are quite similar across the board for the various virtual desktop environments in today's computing market. When it comes to solutions for solving the above mentioned VDI printing problems, major VDI providers such as Citrix, VMware, and Microsoft do offer some help.

Citrix has been exposed to virtual printing problems for over a decade, and is therefore seen as being more mature in this regard, as they have been able to develop their own universal print driver solution for dealing with printing issues occurring in Citrix-specific environments. VMware on the other hand, does not have their own native solution, but rather deploys third party software to tackle printing issues experienced in VMware virtual environments. Microsoft deploys their own solution, Easy Print, for solving virtual printing problems that their clients experience while using Microsoft Remote Desktop Services (RDS).

Easy Print deploys the use of a file type known as the XPS file, which is quite similar to the PDF file format. Easy Print generates an XPS file once users hit print in Microsoft RDS environments, the XPS file is then sent to the client, where printing occurs. This offers streamlining and simplification of the printing process within the virtual desktop environment, thus avoiding many of the problems outlined earlier in this whitepaper. Citrix also has a very similar process for their virtual printing solution, converting all print jobs to XPS files as well, but is known as the Citrix Universal Print Driver, or Citrix UPD.

VMware's solution involves a third-party software that uses the EMF file format to solve virtual printing issues. The EMF file format is a spool format used for printing under a Windows environment. When users hit print in a VMware virtual machine environment, an EMF file is generated, the EMF file is then sent to the client PC, and the client finally prints the file.

UniPrint's Solution for VDI Printing Problems

UniPrint offers the most comprehensive and advanced solution for VDI printing environment problems. With a single universal print driver installed in the data center, UniPrint's solution eliminates all print driver related problems in virtual desktop contexts. The consolidation of multiple print drivers to one, standard universal print driver, provides a great deal of stability in virtual printing environments.

UniPrint Infinity solves the issues surrounding slow printing speeds through the deployment of highly compressed PDF formatted-print jobs, resulting in significantly less consumption of bandwidth. Additionally, UniPrint offers an innovative software that enables detection of the client session location when using virtual desktop infrastructure, providing UniPrint the ability to know exactly where clients are when they connect and disconnect to their virtual desktops. This software, known as PrintPAL, provides users with automatic, error-free print job routing to printers that are closest to their geographical locations.

With the addition of UniPrint's Secure Pull Printing feature, enterprises can configure their print infrastructure in a manner that forces users to authenticate at vPad devices (located at printer stations), prior to receiving their print output. This reinforces print document security in environments such as the healthcare and the financial sectors, where hardcopy documents obtained by unauthorized users can result in serious consequences.

As an extension to enterprise printing, UniPrint's mobile application, UniPrint Vault, enables Android and Apple users to also send their print jobs to public printing locations, as is the case for workers who are constantly on the go and away from their workplace printers. This is achieved through the use of cutting edge cloud technology, provided by ePRINTit™. ePRINTit™'s cloud technology, in collaboration with the UniPrint Vault app, provides enterprises with the flexibility to allow employees to securely print their documents both at work, and on the go, through one of thousands of ePRINTit™ enabled public print locations worldwide.



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