

 tricerat®

THE
Ultimate Guide to
WINDOWS
Virtual Desktop



INTRO

Microsoft Windows Virtual Desktop is an **automated Desktop-as-a-Service (DaaS) cloud** control plane hosted in Azure. It's an intersection between the evolution of remote desktop technologies, combined with the added capabilities and service approach of cloud computing. All components are distributed and provided as a service in Azure and leverage the benefits of the cloud platform. Customers will not pay for the WVD infrastructure, but rather the virtual machines, network, and storage.

WVD is the first solution that allows multi-session with Windows 10. It has the potential to usher a new level of convenience and flexibility for cloud-delivered applications, in situations that can leverage the advantages of the combined technologies and DaaS simplicity.

However, as simple as it is to get up and running, integrating into existing workflows and computing environments it can be a challenge when users need to use a mix of devices, resources, and locations.

THE WVD DIFFERENCE

There are key differences between WVD and anything else on the market. Those differences are highlighted in the Windows Operating System running the desktop, the Control Plane, Licensing, and Profile Management.

Until now, the only way to do multi-user was to deploy Windows Server with RDSH installed and enable Desktop Experience to make it look like Windows client OS.

And, if you're looking for Windows 7 support for more than 3 years after 2020, Windows Virtual Desktop is the only way to get that.

Comments about WVD similarities and differences with RDS:

	WVD	RDS
Desktop Operating System	Windows 10 Enterprise multi-session	Windows Server 2016 with RDS
Licensing options	a. Microsoft 365 (E3, E5, A3, A5, Business) b. Windows (E3, E5, A3, A5, Business) c. Windows 10 Enterprise VDA	a. Windows Server via Azure, CSP Software Subscriptions or SA b. SPLA RDS SAL c. CSP Software subscription 1- and 3-year RDS SAL d. RDS CALS with Software Assurance (SA)
Control plane (Connection infrastructure)	Hosted in Azure, managed by Microsoft	Hosted in Azure, managed by MSP/customer
Cost - licenses (approximate)	\$12 per user per month	\$5 to \$8 per user per month
Cost - control plane (approximate)	\$0 (included in OS license)	\$2.50 per user for 100s of users, higher for small deployments
Desktop types	a. Personal - dedicated VM b. Pooled - shared VM	a. VDI - dedicated VM b. RDS - shared VM
Profile management	FSLogix (encapsulated) profiles	a. RDS Collections: User Profile Disks (encapsulated) b. VDI & RDS: Native
OneDrive installed client support	Yes, supported	a. RDS Collections: No b. VDI & RDS: Yes
Windows search indexing	Yes, supported	a. RDS Collections: No b. VDI & RDS: Yes
Skype & Teams	No, but expected at GA	a. RDS Collections: No b. VDI & RDS: Yes

Dalvi, Amol. (2019 June 30). WVD vs. RDS - a head-to-head comparison [Technical article]. <https://help.nerdio.net/hc/en-us/articles/360026477091-WVD-vs-RDS-a-head-to-head-comparison-when-running-in-Azure->

Printing Pit-falls in
Windows Virtual Desktop

PRINTING PROBLEMS

Windows Virtual Desktop deploys a Windows 10 virtual machine that contains the same remote desktop technologies present in the latest versions of the server operating systems. Windows Remote Desktop Protocol (RDP) comes with Easy Print technology that maps client printers to the remote desktop, without having to deploy drivers on that server. In addition to Easy Print, traditional methods for printer management apply to the Windows 10 desktop.

WVD presents new challenges to printer management since the desktops are running in the Azure cloud and not in the local environment. By default, there is no way to connect network printers to the virtual desktop, outside of first managing the printers on the local clients, and then letting Easy Print auto-create the printers in the cloud. Even then, this only applies to modern Windows clients, since macOS or mobile devices will not have the same client mapping possibilities.

Ultimately, the management options for printing in cloud desktops is rudimentary and limited. Easy Print works well for basic scenarios, but more complex use cases for client printer mapping require a product purpose-built for remote printer redirection.

Print Management
Solutions for WVD



WVD PRINT SOLUTIONS

Tricerat ScrewDrivers has been developed over 20 years and is the premiere remote desktop printing technology. Using Tricerat's proprietary TMF protocol, **ScrewDrivers is able to achieve the best possible print output for any printer type**, in a highly-compressed and secure method.

Additionally, Tricerat's management of print servers can easily extend the local network environment to the cloud with a print server proxy.

Using Tricerat's ScrewDrivers software solution, administrators can map network printer resources to users and devices that are connecting to the cloud with the same ease as on-premises printers. This applies to all client endpoints, Windows, mobile, or otherwise.

CLOUD PRINTING

Cloud computing is easiest when all data and processing is in the cloud. But by default, printing requires a hybrid setup since printing has to be local to the users' current location. Managing networking through a hybrid environment can be tricky. Tricerat print proxy makes this simple, requiring only a single port to be opened on the cloud environment and no changes to the local, on-prem firewall. When using the print proxy, all data is encrypted and compressed, so that traffic from the cloud desktops to the local network will be

as fast and small as possible. All of these methods result in a simple setup for the administrator, flexible configuration options, and the best performance from the end user.

The end user experience matters for cloud desktops as well, sometimes facing slower resources for cost saving purposes. Tricerat ScrewDrivers can optimize the login process on cloud desktops by having everything necessary for printing embedded in the image, even when new printers are added to the local environment. Logins are enhanced by using a SQL query during logon and not blocking the logon process while the desktop and applications load, **giving the user a faster perceived performance for the cloud applications.**

HYBRID PRINTING

Printing from the cloud is inherently a hybrid operation, bridging local, physical resources with virtual desktops running in the cloud. Most often, the desired access is to network printers in the local area, usually connected to print servers. **The ideal approach is to connect cloud desktops to the local print server.**

The component that connected the cloud servers to the on-prem environment and physical printers is the Tricerat Print Server Proxy. This manages connections between an on-premises print server and the cloud server, connecting through an open port in the cloud vNet. No modifications are necessary in the local firewall. Security is in place to ensure the identity of the print server and encrypt all traffic between the cloud and on-prem network.



WVD SETUP

It's best to always refer to Microsoft documentation on creating a Windows Virtual Desktop instance. The latest release version of that documentation can currently [be found here](#).

The configuration of Windows Virtual Desktops requires a connection to a full Active Directory. This can be done through Active Directory Federation Services or Azure Active Directory Domain Services. Regardless of AD configuration, the end result is a WVD instance that is added to the domain using a full Active Directory interface.

Other servers added through this document rely on a virtual network that has access to this domain service account.

INSTALLATION OF TRICERAT SOFTWARE IN WVD

The general process of installing Simplify Printing into a WVD environment is similar to that of a standard VDI environment.

There are multiple install methods for a Windows Virtual Machine as documented by Microsoft. The general approach is to download the image, provision a Hyper-V VM, and customize it. [Refer here](#) for more information on different customization options within Windows Virtual Desktop.

REQUIREMENTS FOR INSTALLATION

In addition to the install of Simplify Printing, Tricerat requires a database, a license server, and a print server proxy.

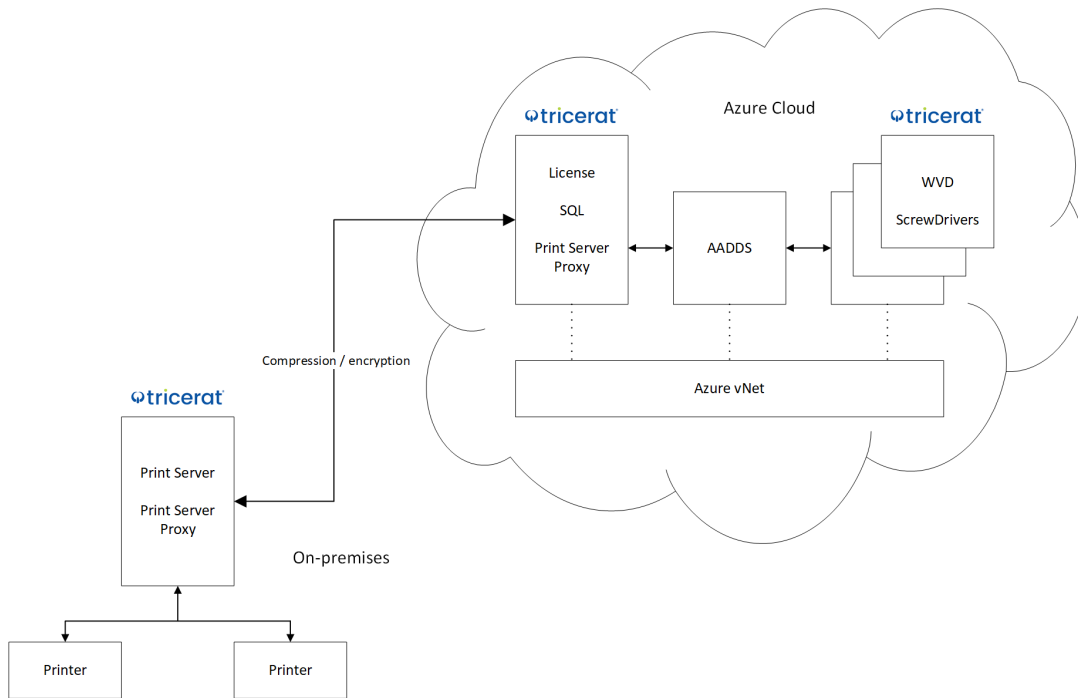


Figure 1 - Cloud printing architecture

SQL SERVER

In Microsoft Azure, create a new resource within the previously created resource group to add a SQL Server. Select a new “SQL Database” to have the Azure service create a VM with SQL Server already installed and configured.

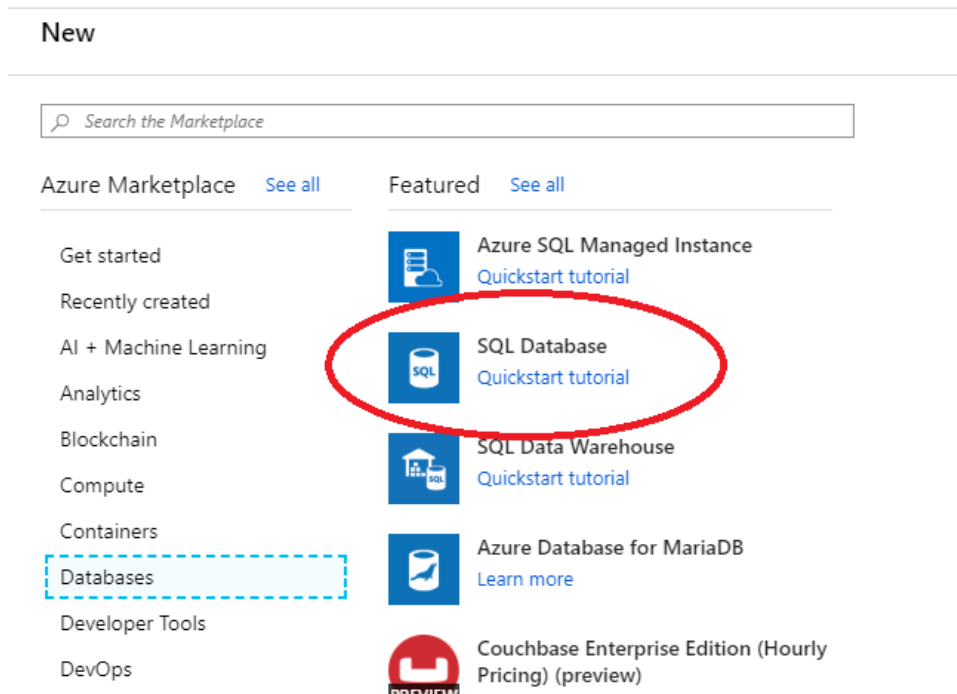


Figure 2 - Add new SQL resource

Add the new resource to an existing resource group to include it within the same virtual network and accessible from the WVD instantiations.

LICENSE SERVER

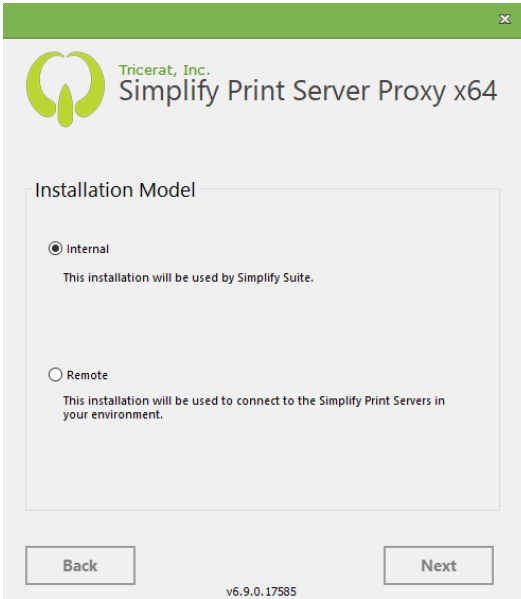
The Tricerat License Server controls license distribution to users connecting to WVD. Regardless of the number of WVD instances generated from a single image, an install of Simplify Printing connects to the license server and checks out a license for each user during the logon process.

The license server has minimal server requirements and can easily be installed on the SQL server, the Azure ADDS server, or any other existing server in the same virtual network as the WVD instances.

Please refer to the documentation in the download for step-by-step instructions for installing the license server and applying a trial or production license.

PRINT SERVER PROXY

The Print Server Proxy is the component that manages connections between the cloud desktops and the on-premises printing resources. The proxy server is installed twice; once on a server in the cloud and once on a server on-prem.



The cloud server can be an existing server in Azure on the same virtual network or a routable network from the WVD desktops.

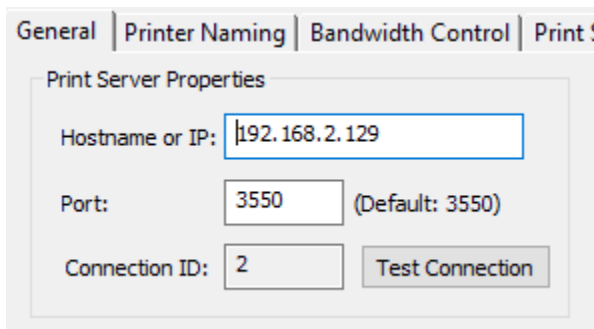
Figure 3 - Print Server Proxy Model Selection

The install media for the Print Server Proxy is the same on both ends. During the installation, the installation model is requested. For a cloud setup, **Internal** refers to the location of the desktops which in this case is the Azure server. The **Remote** install refers to printers that are remote to the desktops, or the on-prem server.

Administrators should first install the remote agent of the print server proxy. For security purposes, a group name is defined and a GUID is automatically generated. This guarantees that only authenticated clients are available in the console and print jobs arrive at the intended destination.

Once both servers are installed, the print server needs to be added to the Simplify Console. Add a print server as normal to the console, and under the **Print Server Proxy** tab activate the proxy. The **internal proxy address** refers to the IP or DNS name of the proxy server that is within the Azure vNet. The proxy group and proxy ID are added from the install of the remote server. To find this information, reference the registry key **HKLM\SOFTWARE\Tricerat\Simplify Printing\Simplify Print Server Proxy**. On the **General**

tab, the hostname or IP of the print server should be the IP address of the print server in the on-prem environment, even if this is a local and non-routable address. The proxy server



General | Printer Naming | Bandwidth Control | Print S

Print Server Properties

Hostname or IP:

Port: (Default: 3550)

Connection ID:

handles the connection to the cloud server and reports the local IP address as the primary address for the print server.

Name	Type	Data
ab (Default)	REG_SZ	(value not set)
ab Group	REG_SZ	TRICERAT
ab Id	REG_SZ	{953CD5C3-9E2B-4B10-95DA-36F9805D98F9}
ab InstallPath	REG_SZ	C:\Program Files\Tricerat\Simplify Printing\Simpli...
ab InternalAddress	REG_SZ	40.70.79.117
InternalPort	REG_DWORD	0x00000ddf (3551)
InternalProxy	REG_DWORD	0x00000000 (0)
RemotePort	REG_DWORD	0x00000000 (0)
ab Version	REG_SZ	6.9.0.17585

Use a proxy for print server

Internal Proxy Address:

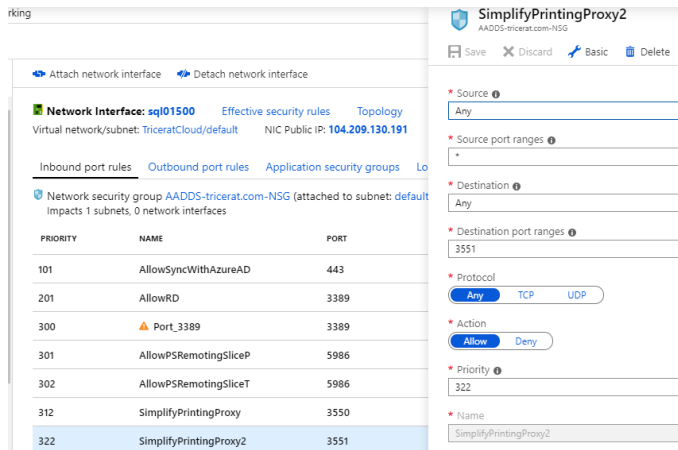
Internal Proxy Port: (Default: 3550)

Proxy Group:

Proxy ID:

Since the print server proxy on the remote (on-prem) environment needs to

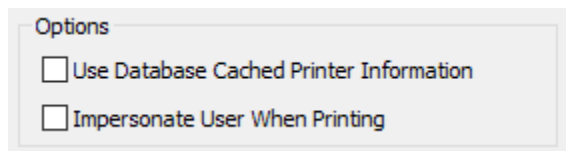
connect to the proxy server in the cloud, the cloud firewall has to be modified to allow traffic on 3551. No changes are necessary on the firewall for the on-premises network. In azure, select the virtual machine that is running the print server proxy, select **Networking** under **Settings**, and add port 3551 as a destination port in the firewall.



Finally, user impersonation should be off for remote print servers unless the hybrid environment uses the same domain configuration with an ADFS setup.

User impersonation only works within the same domain or a domain with a trust relationship.

With all settings in place, select **Test Connection** to verify connectivity to the proxy server and **Refresh All Printers** to connect to the on-prem print server and query all printers. Once this step is complete, assignments of printers to users and devices occur the same as a local environment, but any printers from this print server will use the proxy server to traverse the cloud network to the on-prem environment.



Windows Virtual Desktop **Installation**

INSTALLATION

Once the virtual machine is loaded into Hyper-V, the steps to install Simplify Printing are like that of any other Windows workload.

For a full set of instructions on installing Simplify Printing, refer to the Simplify Printing Administrators Guide that contains step-by-step instructions and screen shots.

INSTALL SIMPLIFY PRINTING

- Enter the SQL connection information that was used during the addition of the SQL server in Azure.
- Set the license server to the IP address or DNS name of the server that has the Tricerat License Server installed.

Once an image is created, upload the image back to the Azure account. The image can then be used for any additional WVD instances. During user logon, Simplify Printing will get a license from the license server, connect to the database for configuration information, and use the virtual driver to configure any print queues assigned to the user.

Conclusion

WVD ships with a basic method for connecting local printers to cloud desktops, but the approach is limited in capability and management flexibility. For true printer management on cloud desktops and the option to connect on-premises printers to the cloud, **Tricerat Simplify Printing delivers a best-in-class virtual print driver and an efficient workflow for administrators**. When adopting cloud desktops into existing hybrid scenarios, Simplify Printing can provide a seamless management console and user experience across platforms and application delivery approaches, maximizing investments in time and technologies.

The management of printing in Windows Virtual Desktops can be as straightforward as management of an on-premises environment, while offering the flexibility of different configuration options for cloud desktops. Simplify Printing combines all types of print technologies to offer the optimal solution for the virtual desktop, Windows print server, and client and mobile printing.