A guide for PaperCut Resellers - Print Management in the Private Cloud

This guide is intended for PaperCut Resellers looking to expand their solution skills. It provides an overview of the PaperCut approach to Private Cloud solutions and some discussion of best practices.

Overview

Cloud deployment has become one of the biggest growth areas in IT, primarily because when implemented in the right way, it can reduce overheads and increase flexibility. The term "cloud" itself just means software deployment to servers that are connected via the internet, and could be located almost anywhere. "Private Cloud" generally refers to a cloud-based solution that isolates each cloud tenant's applications and data from other tenants, whereas "Public Cloud" servers and services may share infrastructure between multiple tenants.

The increasing numbers of PaperCut customers opting for cloud deployment highlight both PaperCut's cloud readiness and a growing market trend. In this paper we will explore some of the key technical issues and explain some best practices for solution design in a cloud environment.

Benefits of Cloud Hosting

1. Reduced Hosting Costs
Customers don't need their own server infrastructure, or a maintenance workforce with domain knowledge. This means that Customers new to Print Management can avoid purchasing and maintaining new hardware. Existing Customers can reduce their rackspace footprint and/or infrastructure overhead by moving Print Management into the Cloud.

2. Flexibility
Infrastructure capacity can be more easily scaled to meet changing customer needs.

3. Disaster Recovery
Site duplication, data syncing and recovery planning can be delegated to the host provider. Due to economies of scale this can be achieved at a significant saving to the customer when compared to the cost of managing these functions themselves.

4. Payment gateway isolation (PCI compliance)
For customers where payment card data security is essential to their day-to-day business, a cloud based managed service has the advantage of isolating payment gateway integration at the cloud data centre, which may help to reduce PCI DSS compliance costs.

Challenges and Constraints of Cloud Hosting

There are also some challenges and constraints that should be taken into account when considering a cloud hosted solution:

1. Bandwidth
It is essential that the customer site(s) have sufficient bandwidth to support the Print Management solution traffic. If the print server itself remains local, traffic will be modest. If the print server is also deployed to the cloud, it is important to allow for the transmission of large documents to the cloud server<need some ballpark figures>

2. Latency
Latency is not a major issue unless the Customer requires Secure Release and/or deploys their Print Server to the cloud. With Secure Release it is important for a good user experience that MFD response times are short, which in turn requires the WAN connection to have low latency - say, no more than 100ms, which will equate to a roughly 1 second response time for authentication and job display.

3. WAN Reliability
The link to a cloud-based PaperCut server may be a single point of failure or fallback in some circumstances, so the WAN link needs to be reliable.

4. Security
A basic cloud deployment with minimal security is fairly straightforward, but implementing a secure system that integrates properly with enterprise network infrastructure can be more complicated. It is important to understand the levels of security and privacy required for a given solution, and design the deployment accordingly. A key component is the Virtual Private Network (VPN). Customers with existing Cloud infrastructure (e.g. for document management) may already have suitable VPN infrastructure, but customers contemplating their first Cloud deployment may need assistance in understanding why they need a VPN, and how to specify it.

Why Private Cloud?

Cloud Deployment Scenarios

Since a Cloud deployment connects important internal infrastructure (MFDs, user desktops) to a cloud hosted PaperCut server, it is ideal practice to isolate those connections from the public internet. This is done by implementing a secure encrypted link between the customer site and the host. This encrypted link, or VPN tunnel, ensures secure and restricted access to the hosted applications and data, and allows end users to treat the hosted data and applications as if they were hosted locally.

Such a deployment is referred to as a Private Cloud deployment, with none of the cloud hosted components visible or accessible via the public internet

This requires the host site to be set up either as a Private Cloud, or more likely as a Virtual Private Cloud (with servers hosted on VMs) and for a VPN tunnel to be configured between the customer site and the host site. In many cases the cloud hosting provider will take care of this, but for those who are interested, PaperCut have documented a complete example VPC/VPN deployment using Microsoft Azure <insert link here>.

As can be seen from the table shown above, using a Virtual Private Cloud requires either single tenancy, or “virtualised” single tenancy, where each customer is allocated their own VMs on shared hardware. Multi-tenancy, where many customers may be sharing not just the hardware but the operating server instance, is suited only to low/no security applications, where privacy and data integrity are not important and where it is feasible for hosted servers to be visible to the internet, or at least to all customers of the host.

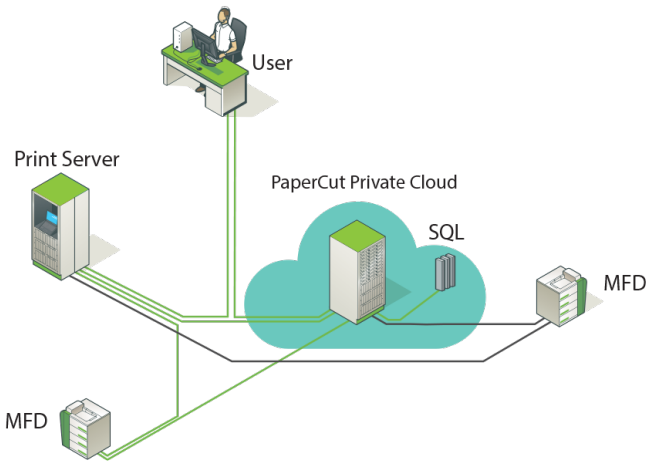
Cloud Deployment	Tenancy	Description	Network
Public Cloud	Multi tenancy	Cloud customers share server infrastructure.	Public network link(s) within cloud. Public internet link(s) to cloud.
Private Cloud	Single tenancy	Each cloud customer is allocated one or more dedicated servers for their applications and data.	Public network link(s) within cloud. Public network link(s) to cloud.
Private Cloud	Multi-tenancy (VM separation)	Each cloud customer is allocated dedicated virtual servers for their applications or data.	Public network link(s) within cloud. Public network link(s) to cloud.

Why PaperCut?

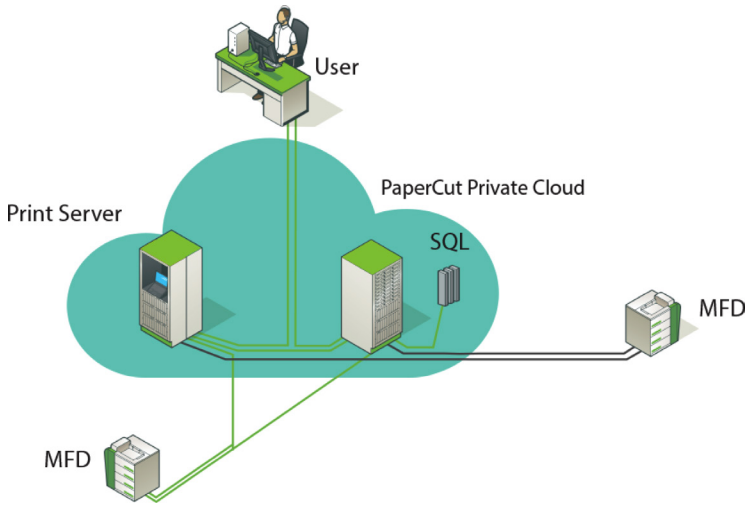
Web-based Admin
PaperCut is administered via a web-based UI, which is easy to secure and is tolerant of network latency.

VPN-friendly communications protocols
PaperCut uses secure and compact http-based communications protocols on defined ports. This makes security configuration of firewalls and VPNs relatively straight forward. The protocols also make communications between the PaperCut server, MFDs and user desktops latency tolerant, which can be important when communications extend outside the organization to an external hosting provider.

Deployment architecture (distributed server model)



Where the print server is located in the cloud, the PaperCut Print Provider can be co-deployed on the same cloud Print Server infrastructure.



Platform neutral

Cloud deployment may also open up opportunities for different platform choices. In an in-house deployment, PaperCut will usually be hosted on whatever server OS the customer IT team is equipped to support - often Windows. In the Cloud, there may be other options available, since OS level maintenance and support will be provided by the host provider. PaperCut runs very well on Linux, and virtual Linux servers are often more cost effective than an equivalent virtual Windows server.

Whichever level of hosting and platform is chosen, it is important to understand bandwidth and latency requirements and match its cloud provider capabilities to those requirements.

Where the Print Server is deployed in the cloud, we also recommend implementing Quality of Service (QoS) rules to control the bandwidth available for transmission of print documents and ensure that any spikes in printing traffic do not affect other bandwidth sensitive network activity.

An important consideration, particularly for existing PaperCut customers, will be managing the transition into the cloud. Customers who wish to manage their own cloud deployment may still require assistance to:

- get their cloud environment set up;
- to migrate any existing data;
- to move into production.

Your ability to provide this service will be an important point of difference for Cloud aware resellers.

Some customers will be happy to take over management themselves once the system is up and running, but as indicated above, others will be interested in a complete managed solution. For the ASC or reseller, this means either hosting the infrastructure themselves or managing the relationship with the infrastructure provider and in either case managing the PaperCut (and possibly a Print Server) application itself.

PaperCut resellers should already have the requisite PaperCut management skills, and it would make sense to look at strategic partnerships to provide the Cloud infrastructure.

Cloud Infrastructure Best Practices

There are various options for cloud infrastructure, ranging from generic infrastructure component suppliers such as Amazon or Microsoft Azure through to dedicated print industry suppliers who will configure and maintain all of the Print Server and PaperCut infrastructure for their customers.

A key decision for customers will be whether or not they wish their PaperCut cloud deployment to be a fully managed service, managed transitional or customer managed.

Our experience indicates that there are customers taking each of those paths, and the PaperCut model accordingly supports all of them. It is important for PaperCut Authorized Solution Centers (ASCs) and resellers to be open to each approach and to work with the customer to select the appropriate choice.

For customers without dedicated IT support staff and/or little experience of Print Management it will make sense to use a dedicated provider who will look after the Print Server and PaperCut infrastructure. A dedicated provider will also be able to assist in setting up the VPN tunnel to the customer site. We are aware of several cloud providers with PaperCut experience.

If however the customer has the requisite expertise in-house, and wishes to set up and manage a cloud deployment themselves, Microsoft Azure is probably the most common choice for hosting. PaperCut have tested various cloud deployments on Azure infrastructure, and have produced a guide for Azure setup. <link again here>.

Between those extremes lie at least two other approaches. An ASC or reseller may wish to act as intermediary, developing their own relationship with a hosting provider and managing the details of deployment and maintenance for their PaperCut customers. Or a reseller may either help a customer find the right host, or work with the customer's existing host to set up PaperCut.

In all these cases the ASC or reseller will need to be comfortable with all aspects of cloud deployment. PaperCut have developed a Private Cloud Certification Program for ASCs and resellers which will help customers to identify the right partner for their Private Cloud deployment.

Certification also assists to mitigate risk in the eyes of your customers. Being a PaperCut Private Cloud Certified Partner signifies that you have the required skills and expertise to design, install and manage Private Cloud architecture.

3 Best Practices in moving applications to cloud hosting

1. Identify which management structure you will offer your customers.
2. Work with cloud infrastructure providers to design the best platform
3. Attain PaperCut Private Cloud certification
4. Create standard templates that cover the various aspects of your offering e.g. testing SLAs, project planning and scoping

Pre-deployment Checklist

☑ Work with customer to define best services model
☑ Architecture design for cloud and on premises services
☑ Understand network reliability, latency and bandwidth requirements
☑ Select an infrastructure hosting provider
☑ Understand networking and VPN integration points, identify relevant Customer SMEs
☑ Agile deployment plan with customer

Deployment Checklist

☑ Consult VM Sizing Guide
☑ Consider QoS Rules
☑ Go through VPN security checks/tests
☑ Work with Customer to develop Backup Plan and check backups
☑ For a Managed-Transitional deployment, develop plan for hand over of infrastructure to the customer
☑ Test and manage go-live

Conclusion

Cloud infrastructure has become cheaper and more easily available, offering significant savings over in-house deployment.

Many customer organisations have already begun to move their printing infrastructure into the Cloud, and have found PaperCut to be the ideal Print Management solution for a cloud deployment.

Many others are switching their other infrastructure to Cloud hosted solutions, but are unaware that they can do this with Print Management. This is the ideal time for PaperCut ASCs and resellers to add Cloud deployment options to their portfolios, and to do so they will need to be conversant with all of the issues and options discussed above.

Resource Links

PaperCut Private Cloud Web Site

Private Cloud Impementation Guide with MS Azure

Private Cloud Knowledge Base & Customer FAQs

Private Cloud Reseller FAQs

Private Cloud VM Sizing Guide

Private Cloud Certification

Private Cloud White Paper

Private Cloud Tender Response