



On-Premises Desktop as a Service (On-Premises DaaS):

Solving the VDI Dilemma for Government Agencies

Executive Summary

With its “Cloud-First” policy, the US Government is starving for cloud-based solutions that can help it lower overall costs and meet the Office of Management and Budget’s (OMB) policies and mandates. The hosted desktop or Virtual Desktop Infrastructure (VDI) represents a compelling opportunity because it merges multiple programs requirements and funding sources: Windows migration, Cloud-First, teleworking, mobility, and bring your own device (BYOD). Two major obstacles, however, stand in the way: the lack of budget (CAPEX) and the lack of the requisite knowledge and skillsets.

Desktop virtualization is complicated, capital intensive, and requires specialized skills – in other words, it’s hard. Many IT organizations struggle internally to deliver a pilot project only to discover they do not have the capital budget or the resources to scale it across the enterprise. On-premises Desktop as a Service (DaaS) is an emerging solution that delivers to the worksite both the virtual desktop infrastructure and the ongoing management and maintenance of the system, all backed by a service level agreement on a per-desktop per-month fee. This package makes desktop virtualization easy and solves the VDI dilemma that government agencies face.

The Virtual Desktop Infrastructure (VDI) Dilemma

Today, desktop virtualization has emerged as an essential technology strategy to address the challenges associated with teleworking, mobility, and bring-your-own-device (BYOD). This trend towards “*workshifting*” – the practice of moving work to the most optimal location, time, and resource – increases organizational productivity, reduces costs, and allows organizations to recruit and retain the best talent.

The appeal of VDI, to government agencies concerned with manageability and data security, is that desktop applications do not need to be re-engineered for centralized execution. For teleworking, the avoidance of lost data stored at the edge on traditional PCs running on public networks is seen as a primary benefit of VDI. The improved manageability of centralized desktop computing allows agency IT organizations to more readily meet the stringent FISMA (Federal Information Security and Management Act) standards required of all Government IT systems.

While VDI is an obvious solution for Government agencies with remote desktop computing requirements, there are significant barriers preventing the rapid adoption of this technology:

COMPLEXITY

The shift to centralized desktop computing is complex and has inherent risks. Specific parts of the user population have differing requirements making it difficult to deliver the performance required. This is compounded by the fact that the VDI technology requirements are not widely understood.

INTERNAL KNOWLEDGE

Most agency IT departments are comprised of contractors aligned by specific technology categories or “stove pipes” – desktop PCs, network, servers, storage, and virtual servers and storage, etc. VDI requires the blending of these skill sets, in other words, the merging of stove piped organizations.

COST

With traditional agency IT architectures, VDI has a high cost of deployment (CAPEX). The VDI proposition moves desktop computing from low cost PC's with inexpensive storage to high cost datacenter servers with SAN based storage. Since in theory, moving to a centralized environment puts all of the eggs in one basket, high availability options are required, further increasing the cost of VDI. Gartner estimates that IT infrastructure costs for VDI can be 1.4 to 1.6 times higher than the cost of traditional PCs.

VDI vs. Desktop as a Service (DaaS)

The attraction of DaaS for many government agencies is that it provides a consumption-based cost model that eliminates much of the upfront capital requirements for deploying virtual desktops.

Traditional DaaS offerings from Cloud Service Providers (CSP) are comprised of shared multi-tenant environments delivered through a public cloud. While this may work well for small commercial businesses, it proposes many challenges for large government enterprises that require a separate and securable cloud:

SECURITY AND COMPLIANCE

Traditional DaaS solutions require that you adapt your organization's security policies to fit around their solution. While the Government is attempting to accelerate the accreditation process through FedRAMP, the process is long and costly and there are currently very few accredited CSPs.

USER EXPERIENCE

The user desktop experience is largely determined by CPU allocation, storage bandwidth, and network latency. It is common with DaaS multi-tenant platforms to see CPU allocations and storage bandwidth that are a fraction of what a physical PC provides. Furthermore, in a traditional DaaS environment, user data sits across the public network from the virtual desktop infrastructure creating long delays in accessing user documents and files.

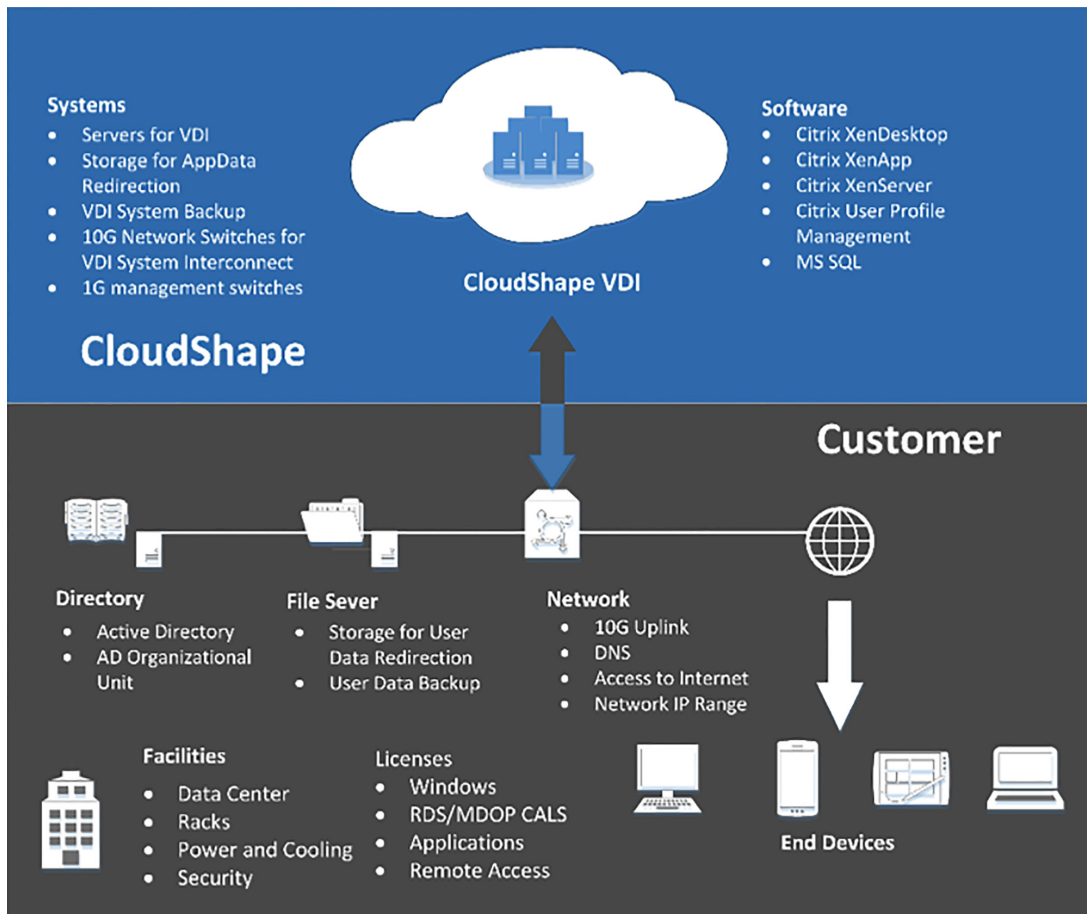
MANAGEABILITY

With a traditional DaaS solution, you will either be required to use the CSP's directory service or to set up a site-to-site VPN connection so that the CSP's DaaS system can access your directory service. Neither approach is optimal. By using their directory service, you will be forced to duplicate your directory information and continuously synchronize and maintain it, and linking your directory service to their DaaS system introduces WAN latency into the windows login process, increasing user login times.

The Best of Both Worlds: An On-Premises DaaS Solution

A new approach allows government agencies to employ VDI and enjoy all of its advantages while overcoming all of its associated hurdles. In this new approach, a virtual desktop service provider delivers on the customer's premises and on the customer's network with an SLA-driven consumption-based costing model – per desktop per month.

How an On-Premises DaaS Solution Works



An On-Premises DaaS solution provides the benefits of both traditional DaaS and in-house deployed VDI: low capital costs, predictable monthly operation costs, exceptional user experience, and no requirement for specialized skills:

DELIVERED AS A SERVICE

On-Premises DaaS is managed through an SLA and is priced on a per desktop basis. This eliminates large upfront capital investments required for standard in-house VDI deployments while also greatly reducing customer risk. Importantly, an On-Premises DaaS provider has a presence at the customer site both during installation and for ongoing operation. For a smaller sized user base (typically less than 1,000 desktops), operational tasks may be performed remotely.

In addition to its day-to-day operational management of the DaaS environment, a service provider is actively involved with customer's change management procedures, and provides engineering to enhance and optimize the customer's virtual desktop environment. The On-Premises DaaS provider offers level

2/3 support to the customer’s help desk, with escalation including on-site resources (1,000 desktops or greater), pager, email, and phone support. The On-Premises DaaS provider maintains and updates all DaaS hardware and software components, including new releases and updates, while the customer is responsible for maintaining its own applications.

EXCEPTIONAL USER EXPERIENCE

User experience is primarily driven by latency, CPU processing power, and storage performance. A low latency on-premises approach can be combined with a proprietary memory-based architecture optimized for VDI, providing for an exceptional user experience. For example, CloudShape allocates 1.8 GHz of CPU processor per virtual desktop – four to six times that of traditional VDI architectures. That unique memory-based architecture provides an average of 150 IOPS of storage performance per virtual desktop – five times that of traditional VDI architectures.

REDUCED COSTS

In addition to low capital start-up costs, an On-Premises DaaS solution can substantially reduce the current costs associated with PC stand-up and delivery, patch management, software upgrades, desktop hardware repair and replacement, end-user support, and hardware lifecycle replacement and management. In a recent government study, one On-Premises DaaS solution was proven to provide a 38% cost savings over five years when compared to maintaining physical PCs and laptops. Furthermore, cost savings occur in year one, thus allowing the government to use existing funding to deploy VDI.

SPEED TO BENEFIT

When a standardized architecture and a proven approach are employed, On-Premises DaaS can greatly reduce the time it takes to stand-up VDI. In a recent government project, one On-Premises DaaS solution was able to stand-up and put into production a 300-user VDI system within six weeks from project start.

CUSTOMIZATION

Traditional DaaS is a one-size-fits-all approach where all tenants share the same base image. An On-Premises DaaS solution provides the flexibility for custom base images with user specific applications and security settings.

	CloudShape On-Premises DaaS	Traditional DaaS	In-House Reference Architecture
User Experience Relative to Physical PC	Better	Less	Less
Processor Allocation Relative to Physical PC	Equivalent	Less	Less
Storage Bandwidth Relative to Physical PC	Higher	Lower	Lower
Network Latency	Low	High	Low
CAPEX Cost	Low	Low	High
Customization	High	Low	High
Specialized Skills Required	No	Yes	Yes

Government Experience with On-Premises DaaS

One Federal Agency sought to deliver 820 production desktops located in Latin America and Washington DC out of its data center in Miami. After contracting with the On-Premises DaaS provider CloudShape, the project started October 2013 with a 300 desktop pilot and by January 2014 was deemed a success.

Outcomes included:

- **Rapid Deployment** – meeting the CIO’s deadline of a go-live date six weeks from project start, in an out-of-the-country location;
- **Good User Experience** – users reported desktop performance to be better than their physical PCs and benefited greatly from desktop roaming and the ability to access their applications remotely;
- **Relatively Low Cost** – compared to both existing physical machines and previous pilots of other VDI approaches.

The On-Premises DaaS approach was shown to provide a 32% cost savings over five years when compared to maintaining physical PCs and laptops. Further financial analysis showed that the On-Premises DaaS approach provided a 28% cost savings as compared to directly purchasing the systems and software to install VDI and then manage internally. Finally, as those cost savings were incurred in year one, the Agency was able to fund its VDI deployment out of existing funds.

The On-Premises DaaS provider is not subject to FedRAMP but instead works with the Agency’s security to inherit their security controls, installing the customer’s standardized Anti-Virus, Syslog forwarder and configuration management agent to its infrastructure. As the On-Premises DaaS infrastructure and desktop VMs are joined to the customer’s domain, the customer’s security controls such as account management policy, login timeouts, application control, password policy, and network access are inherited by the On-Premises DaaS system, which receives all customer group policies and inherently adheres to the customer’s security policies.

Conclusion

As Federal Agencies seek ways to better support Government initiatives around teleworking, BYOD, mobility and Cloud-First while also lowering costs and reducing CAPEX, many are exploring the feasibility of VDI. Unfortunately, as Federal experience grows, it has been shown that high upfront acquisition costs, poor user experience due to WAN latency, and lack of specialized skills in ongoing management and support often ring the death knell for Government VDI feasibility projects. An On-Premises DaaS solution has been proven to address the issues experienced elsewhere, performing so impressively that one Federal Agency has plans to rapidly ramp up from nearly 1,000 desktops to more than 10,000 desktops within a two year period.