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How to Build a Business Case for VDI

The entrance of Microsoft into the Virtual Desktop Infrastructure (VDI) market and the maturity of native Windows Server technologies have finally made virtual desktops cheaper than physical PCs. Factor in the savings offered by new application layering innovation, and the business case for VDI is now easy to make. This Ebook adds it all up for you.

Executive Summary

Server virtualization has been wildly successful because of the clear CapEx savings. The smaller number of servers, improved utilization, and reduced rack space, power and cooling make it easy for enterprises of all sizes to leave the world of physical servers behind.

Desktop virtualization has been harder to cost justify. The security, compliance, user mobility, and business agility advantages over PCs are inarguable. But paying third party license fees to host Windows desktops and applications on data center servers and enable access through any device – as well as the higher cost of data center storage compared to traditional desktop hard drives – have made it difficult for IT organizations to show a compelling ROI.

Toss in the increased implementation and management complexity – when virtual desktops were supposed to be easier to manage than physical desktops – and it's no wonder that VDI hasn't grown as fast as anyone first thought.

Like with most technologies, however, it was only a matter of time. Microsoft's entrance into the market, innovations from ISV partner Unidesk that enable Microsoft VDI to scale, and falling prices have finally combined to bring the capital cost of VDI well below the cost of PC refresh. Factor in the operational savings in IT efficiency made possible by application layering software, and it is now easy to build the business case for desktop virtualization.

500 Desktop Example	Physical PCs	Traditional VDI with VMware	Microsoft VDI + Unidesk
Hardware CapEx	$400,000	$200,000	$200,000
Software CapEx	$15,000	$218,750	$120,000
Total Capex	$415,000	$418,750	$320,000
Year 1 OpEx	$26,400	$39,600	$2,760
Total Cost	$441,400	$458,350	$322,760

This Ebook explains how to arrive at the numbers in the table above, so you can get started on the road to Windows application mobility and more efficient desktop management today.

#1: Hardware CapEx Comparison

First, let's look at the relative costs of hardware for our 500-desktop example.

Physical Desktop Hardware Cost

A fixed PC ranges from $750-$1,000 depending on the configuration. Laptops will be slightly more. We'll use $800 per desktop for the sake of comparison. That brings the total for 500 new PCs to $400,000.

Virtual Desktop Hardware Cost

VDI has traditionally required separate server and SAN infrastructures for compute and I/O. However, new hyperconverged appliances from vendors such as Gridstore and Nutanix eliminate the need for these silos, while reducing costs. Additionally, application layering software from vendors such as Unidesk reduces space needs so that only 5-15 GB of storage is needed per desktop instead of the usual 40-50 GB. By using these solutions together, a single 2U appliance with 5 nodes and 8TB of all-flash storage is enough to host all 500 desktops. This configuration now costs less than $170,000.

Many enterprises repurpose their existing PCs as thin clients using software such as Microsoft ThinPC to keep VDI costs down and get more useful life out of existing PC assets. Let's assume that for Year 1, we replace 25% of the existing PCs with thin clients. Using $300 for the cost of the new thin client, purchasing 100 new thin clients would cost $30,000.

The total for VDI server, storage, and thin clients is $200,000.

Hardware CapEx Subtotal

Using the above costs, the total for hardware is as follows. Note that maintenance and support is not included in the hardware costs to keep the calculations simple.

500 Desktop Example	Physical PCs	Traditional VDI with VMware	Microsoft VDI + Unidesk
Hardware CapEx	$400,000	$200,000	$200,000

#2: Software CapEx Comparison

Now let's compare software licensing costs.

PC Management Software Cost

Managing physical PCs traditionally requires agent-based PC management software or cloning/ghosting software. At an approximate cost of $30 per desktop, including first year maintenance and support, we'll assume the total is $15,000.

VMware Software Cost

Until recently, many organizations that had successfully virtualized their servers using VMware vSphere defaulted to using VMware Horizon for desktop virtualization. However, as VMware has acquired different tools to fill out its management portfolio, the cost of VMware Horizon has steadily increased. According to the VMware online store, the cost of VMware Horizon Enterprise Edition for 500 users is now $206,500, including first year maintenance and support. Adding in the cost of vCenter for management brings the total to $218,750.

Microsoft VDI + Unidesk Software Cost

The emergence of Microsoft VDI as a viable competitor to Citrix and VMware has changed the economics of virtual desktop software licensing. Hyper-V and Microsoft Remote Desktop Services (RDS) have advanced to the point where they are now as good, if not better, for virtual desktop workloads. Organizations are leveraging these native Windows Server technologies, together with Microsoft VDI partner Unidesk for simple, scalable management as follows:

1. Microsoft Hyper-V in place of VMware vSphere.

2. Microsoft RD Connection Broker (part of RDS) for desktop connectivity in place of VMware Horizon View.

3. Microsoft's partner Unidesk for image management, application delivery, and personalization in place of VMware's tool portfolio of Linked Clones, View Composer, Mirage, App Volumes, ThinApp, View Persona, and UEM.

Many organizations already own Hyper-V as part of their Windows Server 2012 licensing agreements, so it is effectively free.

Microsoft RDS requires a Client Access License (CAL). Even though many customers may already own RDS licenses for Citrix XenApp or other existing remote app solutions, we'll assume that a $100 RDS CAL is needed for each desktop.

Unidesk for 500 users is also $100 per desktop.

This brings the total for 500 desktops, including first year maintenance and support, to $120,000.

Software CapEx Subtotal

Using the above costs, the total for software is as follows.

500 Desktop Example	Physical PCs	Traditional VDI with VMware	Microsoft VDI + Unidesk
Software CapEx	$15,000	$218,750	$120,000

#3: Year 1 OpEx Comparison

In theory, VDI should be easier to manage than physical PCs. Instead of desktops scattered on the edge, IT administrators should find that managing centralized pools of virtual desktops is much more efficient than physically visiting individual PCs or using agent-based PC configuration tools that don't always work.

In practice, however, VDI has not been easier to manage than physical PCs. The many complex tools in the Citrix and VMware VDI suites often require more experienced Tier 2 and 3 IT administrators, compared to the Tier 1 IT admins and help desk staff that manage physical PCs.

That's why operational costs should also be considered when comparing desktop alternatives. In this section, we'll compare the IT staff hours needed for **Windows image management** and **application delivery** over the course of one year, and how the staff hours translate into costs.

PC Management OpEx

Windows Image Management

[Patch Tuesday is a major cost for most IT organizations](#) due to the number of Windows images that must be updated. While every enterprise aspires to have only 1 golden image, image sprawl is almost always the reality. In physical PC environments, image sprawl is often caused by differences in PC hardware configurations. Another reason is lack of a standardized image engineering methodology.

Regardless of the reason, if it takes 3 hours to deploy and test Windows updates on each image, if there are 10 different images for the 500 desktops, and if patches are applied once a month on Patch Tuesday for a total of 12 times a year, then 360 hours are spent on patching per year. Using a PC administrator's hourly IT staff rate of $40 per hour, this translates into $14,400 per year.

Application Delivery

App delivery is the other major end user computing challenge for any IT organization. The most common way to deliver software on physical PCs is through PC configuration management or electronic software distribution software. Anyone who has used these tools knows the drill:

- Install the application first on a test machine.

- Identify prerequisite updates for deployment.

- Create a software distribution package identifying source files, paths, icons, and distribution settings.

- Create a program to include in the package that will define the command line parameters

to use when running Setup on each target desktop

- Distribute the package to the desktops and schedule when it will run

- Check the logs to determine how many installations completed.

- Diagnose and repair the desktops where installations failed.

This process typically requires an average of 3 hours per app. If there are 50 Windows desktops apps in total and they are updated, on average, twice per year, that equates to 300 hours of junior IT staff time per year, or an annual cost of $12,000.

VMware Management OpEx

Windows Image Management

Ideally, VDI would eliminate the image sprawl common with physical PCs. However, image sprawl is still common in traditional VDI environments with VMware Horizon. One reason is that a new image is required for every pool. Another reason is that VMware ThinApp and VMware App Volumes – VMware's application delivery tools – have limited app compatibility. Apps with Windows dependencies, system services, kernel mode drivers, and apps that need to stay running while users are logged out cannot be packaged with these tools, and must be embedded in the gold image. Different gold images are then created to avoid licensing every app to every user and to simplify patching when one app needs to be updated.

This added complexity often requires more experienced outside consultants or senior IT administrators. Using the same 10 images and 360 hours of IT staff time per year as the PC scenario but increasing the hourly rate to $60 per hour yields an annual cost of $21,600.

Application Delivery

As discussed above, VMware ThinApp and VMware App Volumes do little to reduce application delivery costs. Both require analysis to determine whether applications can be delivered by these solutions or bundled into a Windows image. Additional time and IT expertise is needed to understand app interoperability requirements, since apps that needed to cross-communicate must be bundled in the same ThinApp package or App Volumes AppStack.

Using the same 300 hours of IT staff time per year as the PC scenario but increasing the hourly rate to $60 per hour yields an annual cost of $18,000.

Microsoft VDI + Unidesk Management OpEx

Windows Image Management

With Unidesk layering technology, image sprawl is finally eliminated. A single Windows OS layer (virtual disk container) can be used for all desktops regardless of how many pools or collections are needed.

Unidesk's 99.5% app compatibility means that no apps have to be embedded in the OS layer, so extra images are not needed to reduce app licensing costs.

Therefore, if it takes 3 hours to deploy and test Windows updates on the 1 OS layer, and if patches are applied once a month on Patch Tuesday for a total of 12 times a year, then patching time is reduced from 720 hours to just 36 hours. Unidesk's simplicity also means that junior IT staff can take on day-to-day management of VDI. Using an hourly IT staff rate of $40 per hour, this translates into $1,440 per year.

Application Delivery

Unidesk application layering also sets a new bar in app delivery efficiency. All apps can be layered, so there is no need for analysis. Unidesk's advanced file system and registry virtualization technology enables app in separate layers to interoperate, so there is no need to package apps that need to cross-communicate in the same layer. The total time needed to layer an app is, on average, only 20 minutes.

If there are 50 Windows desktops apps in total and they are updated, on average, twice per year, only 33 hours of junior IT staff time are needed per year, for an annual cost of $1,320.

OpEx Subtotal

Using the above costs, the total first year OpEx is as follows.

500 Desktop Example	Physical PCs	Traditional VDI with VMware	Microsoft VDI + Unidesk
Software CapEx	$26,400	$39,600	$2,760

Summary

The benefits of VDI are clear. But until recently, the soft ROI and lengthy payback period made it difficult for forward-thinking IT managers to justify the investment. As this Ebook shows, Microsoft VDI and Unidesk are enabling organizations like Clackamas Community College and Leith Automotive to implement virtual desktops that are significantly less expensive than new physical PCs or traditional VDI with VMware. Windows desktops that offer greater security and mobility at lower cost are compelling. Factor in the IT management simplicity and OpEx savings offered by Microsoft VDI and Unidesk layering innovation, and VDI becomes a "no-brainer."

About Unidesk

Unidesk brings groundbreaking efficiency to the management of Windows applications and images in any cloud, creating a new open standard for administering VDI with Citrix XenDesktop, Microsoft VDI, and VMware Horizon; Windows session hosts with Citrix XenApp and Microsoft RDSH; and externally hosted remote desktops and applications with Microsoft Azure. Visit www.unidesk.com to learn more.