How to Build a Successful Business Case for Desktop Virtualization

Organizations rarely see significant savings when virtualizing desktops. Infrastructure and operations leaders should build business cases based on reducing risk, providing better end-user computing services and enabling device choice. BC will also play a major role.

Overview

Key Challenges

- Most of the benefits of desktop virtualization affect costs indirectly and are, therefore, challenging to quantify; this makes it difficult for I&O leaders to build a business case focused on cost savings.

- Desktop virtualization is not appropriate for all workers, challenging I&O leaders’ preference for solutions they can give to everyone.

- A successful business case for desktop virtualization must emphasize benefits that business leaders value, requiring a long, iterative process in which I&O leaders identify the optimal mix of benefits to highlight for line-of-business leaders.

Recommendations

I&O leaders responsible for digital workplace infrastructures should:

- Build the business case for desktop virtualization by rating the likelihood of both quantifiable and qualifiable benefits to achieve business goals.

- Deliver the appropriate solution to all end-user groups by classifying the population of workers and specific use cases that are candidates for desktop virtualization. Evaluate multiple forms of desktop (and application) virtualization to align with each worker group and use case, and plan to deploy more than one solution.

- Secure LOB leaders’ buy-in by identifying specific, existing business needs as a basis for a transparent business case and keeping the business case current with business needs. If it doesn’t stand up at any point in the process, halt the project and evaluate alternatives.
Strategic Planning Assumptions

Through 2023, more than 80% of desktop virtualization projects deployed primarily to save cost, rather than to improve security or business continuity (BC), will fail to meet their objectives.

Through 2023, 70% of new desktop virtualization business cases will be based on BC demands highlighted during the COVID-19 crisis.

Introduction

A prelude to a successful desktop virtualization deployment is a business case that provides a cohesive structure and starting point to objectively assess the value of desktop virtualization for an organization. However, the business case must be created before the project starts, at a time when all the information needed to prove the business case, such as a successful proof of concept, is not yet known.

As a result, making the business case to move desktop virtualization projects to production is often difficult. Infrastructure and operations (I&O) leaders can use many benefits to cost-justify their desktop virtualization investment, but reduced cost is not a reliable outcome. To make a decision regarding whether to proceed, I&O leaders must reassess and update the business case as the project progresses.

How can I&O leaders develop a solid business case for desktop virtualization? This research explains how to build a business case that describes the challenges desktop virtualization will address and the benefits and cost savings it will deliver.

Analysis

Rate the Likelihood of Quantifiable and Qualifiable Benefits to Achieve Business Goals

There are four basic types of desktop virtualization and several variations within them (see Table 1 and Note 1).

<table>
<thead>
<tr>
<th>Publish Applications or Desktops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a Dedicated Desktop Environment for Use</td>
</tr>
<tr>
<td>Based on Windows Server: Server-based computing (SBC) or remote desktop session host (RDSH)</td>
</tr>
<tr>
<td>Client OS-Based: Virtual desktop infrastructure (VDI)</td>
</tr>
</tbody>
</table>

Table 1: Types of Desktop Virtualization and Terminology
Desktop virtualization is a relatively mature technology category, but it has not achieved the level of adoption that many expected. Gartner believes that the two main reasons for this are:

- **Cost (especially virtual desktop infrastructure [VDI] and desktop as a service [DaaS]):** Both the cost of implementing virtual desktops and the expected total cost of ownership (TCO) are relatively high. There is a significant cost to build out the infrastructure, and Gartner research shows that desktop virtualization does not typically save organizations money, compared with physical desktop PCs (see Figure 1). Putting the infrastructure in the cloud (DaaS) moves the cost from capital expenditures (capex) to operational expenditures (opex). However, at least for now, this usually further increases the cost.

- **Complexity:** The hardware and software components of desktop virtualization are complex. Troubleshooting performance problems or failures is difficult and requires specialized tools and skills. Organizations have had problems building, finding and retaining skills among administrators and technicians to manage their desktop virtualization implementations. Although physical PCs dispersed around an organization or around the world may be difficult to manage, the skills to do so are generally plentiful.

**Figure 1: The Direct Costs of Virtual Desktops Versus Physical PCs**
Figure 2 contains a list of goals for desktop virtualization project benefit categories and ratings for how likely each benefit is to be significant. Our ratings are examples, and organizations should change the ratings based on their specific situations. The business goals we’ve included as examples are relatively generic and should be made more specific, based on your circumstances. It’s easy to qualify the value of most of these benefits, but more difficult to quantify some of the benefits.

**Figure 2: Business Goals for Desktop Virtualization**
### Business Goals for Desktop Virtualization

<table>
<thead>
<tr>
<th>Business Goal</th>
<th>Likelihood of Attaining Qualifiable Value</th>
<th>Likelihood of Attaining Quantifiable Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved security — centralize data, minimize exposure on notebook PCs</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>Improved compliance in regulated environments</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>Reduce direct costs, improve service to users in a highly distributed workforce in small/branch office locations with no IT presence</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>Reduce direct costs, improve service to users in a large or campus environments with local IT support</td>
<td>🟠</td>
<td>🟠</td>
</tr>
<tr>
<td>Mobility — enable shared devices and users to be able to log into any device and get their familiar workspace; enable contractor use</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>BC — ability for users to access their work environment from any device in the case of weather or other environmental problems</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>Reduce patch and update time for scenarios that require 24/7 access</td>
<td>🟢</td>
<td>🟠</td>
</tr>
<tr>
<td>Improve application performance or user productivity by moving desktops closer to applications or data</td>
<td>🟠</td>
<td>🟠</td>
</tr>
<tr>
<td>Enable device independence</td>
<td>🟢</td>
<td>🟠</td>
</tr>
</tbody>
</table>

Source: Gartner

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A recent change that will help quantify the benefits of desktop virtualization is the expanded interest in BC driven by the COVID-19 crisis. Most organizations did not have a BC strategy that was capable of keeping users working when they could no longer come into their office, because business-recovery locations were useless in this crisis. Many turned to desktop virtualization (often DaaS) to get users working quickly. Although few organizations planned for the global circumstances of COVID-19, many will now decide to have some desktop virtualization presence to expedite business resumption. Whether they will be willing to spend what’s needed to use desktop virtualization for daily use is another question. BC spending is still a softer, less quantifiable benefit of desktop virtualization.

Although items with hard dollar savings or increased revenue are likely to be more compelling in a business case, it is important to separate hard benefits or savings from soft benefits or savings. CFOs and CEOs simply presented with a benefits or savings number will want to know how headcount can be reduced. They will also want to know when, and how many, assets will be
jettisoned and when, and how, the change will show up on budgets and financial statements. Even if you forecast reducing headcount, people are often reassigned to tasks that were neglected, rather than being furloughed.

With desktop virtualization generally costing around the same or more as running distributed PCs, a business case would need to quantify the other benefits provided by desktop virtualization to ensure that they would exceed the costs and risks.

**Improved Security**

For the purpose of this business case, the cost of a security breach can be quantified, but the costs (benefits) are soft. They can be equated as the cost of downtime per hour times the number of hours to recover times the probability of an outage, where the cost is high and the probability is low. This assumes desktop virtualization would reduce or eliminate the exposure.

**Improved Compliance**

Cost of noncompliance (penalties, brand impact [e.g., on revenue, as well as executive liability]) times the probability of loss due to noncompliance.

**Highly Distributed Workforce (Reduced Direct Cost)**

This can be quantified as the number of remote technicians saved or money saved by not having contractors engaged to support remote sites versus the higher cost for fewer virtual desktop technicians, plus the cost of shipping thin endpoint devices between sites. However, this does not guarantee that money will be saved. Another benefit here may be faster replacement of endpoint devices, a better overall experience and less downtime.

Enable device independence with desktop virtualization and unified endpoint management (UEM). Users want more control over the devices they run and IT wants to give it to them but need to balance freedom with security and compliance. Desktop virtualization enables critical Windows applications to be accessed from any device. However, Windows devices benefit from it, too, as organizations move from heavily managed Windows PCs to lightly managed ones deployed using technologies such as Autopilot and UEM (see “Prepare for Unified Endpoint Management to Displace MDM and CMT”). The combination of desktop virtualization and UEM enables broader choose-your-own-device (CYOD) initiatives, as well as bring-your-own-device (BYOD) operating models.

**Physical Space (Reduce Facilities Costs)**

Physical space is becoming increasingly problematic for organizations as the cost to increase it is often prohibitive, or the ability is impossible. Desktop virtualization solutions can enable flexible seating and consolidation of floors, reducing the need for PC moves; however, this must be balanced with the need for experiences to be delivered away from the desk (meeting rooms, collaboration spaces, etc.). Workers who want to use a device in different places where there are no devices (e.g., to take notes in a meeting or conference room) could still use desktop virtualization, but would need mobile thin devices at a higher cost.
Mobility

Many users prefer to travel without a large device. Desktop virtualization supports experiences in the physical space and mobile devices managed by UEM. It enables experiences between those spaces. Not all mobility is supported by desktop virtualization — truly mobile workers that need disconnected access are a poor use case for desktop virtualization.

BC and Disaster Recovery (DR)

If an organization rents a “cold site” where workers can go if their regular site is unavailable, the cost of the cold site could be saved. In some continuity situations, access to the recovery site could also be restricted. (Of course, the COVID-19 crisis showed everyone that working from home may be a reasonable option.) An organization that decides to give workers notebooks, instead of desktop PCs to ensure continuity during weather or other problems such as health pandemics can use the TCO differences between notebooks and desktops to quantify the benefits of desktop virtualization. Organizations could also include the cost of lost business if workers cannot work; however, those costs may already have been considered in BC business cases.

Recovery time is important in BC scenarios, and a redundant desktop virtualization solution can provide faster recovery times than a cold site or an external service provider’s (ESP’s) PC recovery capability. Desktop virtualization solutions that are used permanently by a subset of users also give confidence that when you scale up in a recovery scenario all the applications and data needed to run your business are accessible. The added risk with third parties is contention on recovery commitments for disaster scenarios that affect multiple local organizations (including pandemics, adverse weather conditions and civil unrest). Any BC solution needs to map to an organization’s recovery point objectives (RPOs) and recovery time objectives (RTOs). Desktop virtualization forms one component of the overall BC plan — specifically, the front office, user workspace recovery.

Patching and Update Benefits (for Nonpersistent Desktop Virtualization Only)

Span security and BC areas. Rather than patching and updating each device (or persistent image), which could make the device inaccessible for 5 minutes to 45 minutes, nonpersistent virtualization will allow a new, updated image to be implemented when workers log in. More importantly, if a problem is found, rather than rolling back local software, which could take 10 minutes to 40 minutes each, workers can be switched back to load the prior known-good image the next time they log in. Minimizing downtime and improving worker access and productivity during updates is generally regarded as a soft benefit, but it’s critical for scenarios that require 24/7 access.

Improve Application Performance

Moving the desktop closer to applications and data was one of the first uses of desktop virtualization. This can be difficult to quantify financially, but it has been a clear adoption justification where applications simply don’t work in a distributed model. High-performance graphics users, such as architecture, engineering and construction (AEC) CAD/CAM designers working on large data files worldwide can save time by not having to download and upload data files and the start and end of shifts. This explains why high-end CAD/CAM use cases have been
successful, despite high infrastructure costs. Designers’ time may be valuable, and saved
time/productivity can be quantified as the time lost to upload/download data per day times hourly
rate times number of users. However, for labor cost savings to be real, there would have to be a
decrease in headcount, which this benefit is unlikely to enable. Could the saved time, when added
together, result in shorter cycle times and the ability to deliver new products faster and reap more
revenue? Perhaps, but this would be difficult to quantify.

Recommendations:

- Create a list of benefits for which you are considering desktop virtualization. In most cases,
  lower direct costs should not be on the list.

- Look for scenarios in which improved security, compliance (especially if in an externally
  regulated industry), mobility and/or BC will have significant benefits to justify any additional
cost of using desktop virtualization.

Classify and Quantify Workers and Use Cases That Are Candidates for Desktop
Virtualization

Take the business goals in Figure 2, make them more specific and associate workers or groups to
them (see Table 2). Lines in Figure 2 may have more than one use case and worker group identified
in Table 2.

Table 2: Example of Specific Use Cases and User Groups for Desktop Virtualization, Quantified
(Sample Numbers)

<table>
<thead>
<tr>
<th>Business-Specific Benefit</th>
<th>User Group(s)</th>
<th>User Quantity</th>
<th>One-Time Versus Annual Value</th>
<th>Hard $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in data leakage</td>
<td>Desktop PC Users</td>
<td>2000</td>
<td>Annual</td>
<td>$1</td>
</tr>
<tr>
<td>incidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in lost or</td>
<td>Day Extender</td>
<td>1000</td>
<td>Annual</td>
<td>$40,000</td>
</tr>
<tr>
<td>stolen PCs</td>
<td>Notebook Users</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business-Specific Benefit</td>
<td>User Group(s)</td>
<td>User Quantity</td>
<td>One-Time Versus Annual Value</td>
<td>Hard $ Value</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------</td>
<td>---------------</td>
<td>-----------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Reduction in lost or stolen PCs</td>
<td>Contractors</td>
<td>50</td>
<td>Annual</td>
<td>$60,000</td>
</tr>
</tbody>
</table>

**Improved Compliance in Regulated Environments**

| HIPAA Compliance improvements | Doctors with BYOPC | 500           | Annual                      | $5          |

**Reduce Direct Costs/TCO, Improve Service to Users in a Highly Distributed Workforce in Small/Branch Office**

| Reduced downtime in call center — reduce average outage time from 60 minutes to 10 minutes | Call Center | 100           | Annual                      | 16          |
| Reduced downtime in call center — eliminate customers in queue leading to higher sales | Call Center | 100           | Annual                      | 1,500       |

**Reduce Direct Costs/TCO, Improve Service to Users in a Large or Campus Environments With Local IT Support**
<table>
<thead>
<tr>
<th>Business-Specific Benefit</th>
<th>User Group(s)</th>
<th>User Quantity</th>
<th>One-Time Versus Annual Value</th>
<th>Hard $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Dispatched Technicians by five FTEs</td>
<td>Remote Users</td>
<td>N/A</td>
<td>Annual</td>
<td>350,000</td>
</tr>
<tr>
<td>Enable Shared Devices and Users to Be Able to Log Into Any Device and Get Their Familiar Workspace</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce real estate expansion to add next 100 users by enabling hotelling</td>
<td>Specific Dep./.</td>
<td></td>
<td>Annual</td>
<td>100,000</td>
</tr>
<tr>
<td>Replace $1,200 notebooks with $700 portable thin clients and life cycle from four years to six</td>
<td>“Corridor Warriors” With Notebooks</td>
<td>400</td>
<td>One-Time</td>
<td>200,000</td>
</tr>
<tr>
<td>Business Continuity — Ability for Users to Access Their Work Environment From Any Device in the Case of Weat Environmental Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take orders even if there’s a snow storm</td>
<td>Call Center</td>
<td>100</td>
<td>Annual</td>
<td>1,000</td>
</tr>
<tr>
<td>Improve Application Performance or User Productivity by Moving Desktops Closer to Applications or Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve user experience and satisfaction</td>
<td>Remote Users</td>
<td>1000</td>
<td>Annual</td>
<td>10</td>
</tr>
</tbody>
</table>
Good potential use cases for desktop virtualization include:

- Contractors and other temporary workers for whom you would prefer to not provide devices; cloud services can be used to expand capability, even on a temporary basis
- Offshoring, to limit the infrastructure to which offshore workers have access and avoid having to deploy and manage devices
- Expanding device management and selection to non-Windows devices by managing devices with UEM products and using desktop virtualization to provision Windows applications
- Managing applications access for users working at home on their own equipment without having to manage a device
- Enabling graphics-intensive users to collaborate on large files without emailing, uploading or downloading (although desktop virtualization GPU function is expensive)
- Call center users, although some functions may be difficult to implement
- Critical endpoints that cannot withstand any downtime can be kept up to date by linking patched images on login, instead of taking time to install updates
Nonmobile or locally mobile (in the building or home) knowledge workers who do not need offline use can work without the risk of having a notebook lost or stolen.

Specific use cases in highly regulated industries where data security and compliance are paramount.

Test/development environments, which can use virtualization, instead of buying extra endpoint devices.

More-risky use cases for desktop virtualization include:

- Heavy video conferencing — Audio and video conferencing performance has improved, but the experience can still vary, depending on software, endpoint device and network conditions.
- Global centralization — Having workers access a single environment can be a big benefit. However, having workers worldwide means some will have high latency to a central implementation, which will result in a variable experience.
- Truly mobile workers — They will require offline function.
- Organizations that measure EUC costs strictly on the capex requirements.

**Recommendations:**

- Detail and prioritize use cases that fit your organization.
- Classify workers, and quantify the population of workers who are candidates for desktop virtualization.

Create a Transparent and Objective Business Case

The business case should explain the benefits, costs and risks, and include a financial model that looks at the numbers over at least a three- to five-year period (see Table 3).

**Table 3: Track Desktop Virtualization Costs for a Five-Year Period**

<table>
<thead>
<tr>
<th>Description</th>
<th>$X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration cost</td>
<td>$X</td>
</tr>
<tr>
<td>Direct-cost TCO increase (if applicable) over five years</td>
<td>$X</td>
</tr>
<tr>
<td>Five-year hard $ benefit</td>
<td>$X</td>
</tr>
<tr>
<td>ROI or payback period based on hard $ savings/benefits</td>
<td>$X</td>
</tr>
</tbody>
</table>
The benefits are discussed in Table 2, and the costs should include the migration (the cost to implement the desktop virtualization environment), and the annual TCO, or cost difference from the existing state.

Gartner has not published a migration cost model. Many organizations planning a complex migration hire a service provider to perform the migration assessment and plan, do the initial installation, and manage the migration, which would provide the cost data. Organizations using the Gartner TCO model to build the cost side of the business case should ensure they do not double-count costs. VDI hardware and software is included in the TCO model, and it should not be included in the migration cost estimate.

Gartner’s TCO model is a “running cost” model. It includes the server hardware costs annualized over four years, thin-client endpoint device cost annualized over six years and the annual software maintenance cost, as well as the labor for day-to-day management. The cost to do regular maintenance and upgrades is included, but the cost to train technicians, build the initial environment and migrate user data from a typical rich client environment to desktop virtualization is not included.

If the migration to desktop virtualization will be done when another migration would be done anyway (even for some workers), such as a Windows upgrade or PC replacement, the cost of the other migration may be subtracted from the desktop virtualization migration cost. This will isolate the cost of the desktop virtualization implementation. The decision on where the cost of one project ends and another begins is really up to the IT leaders, who must decide how politics and other environmental issues work in their organizations.

The specific use cases included in the analysis from Table 2 would be described in detail, as would the specific user groups.

A list of risks should also be included in the business case. These may include:

- Unexpected increases in networking costs
- Unexpected performance reductions that cause a loss of user support
- Single points of failure that may lead to downtime
- Difficulty attracting and retaining skilled desktop virtualization technicians
- Changing software requirements that are less suitable for desktop virtualization

Source: Gartner (June 2020)
Once the original business case is researched, created and accepted, the project can move forward to stages that will provide more information. That's when a proof of concept (POC), which will show whether some of the assumptions made in the business case will be true, will begin.

I&O leaders often ask whether to begin the POC with the easiest desktop virtualization cases or with the most difficult ones. The answer is that it depends on the cases on which the business case depends. If the easiest cases have enough benefits that the business case can stand on those workers alone, then the easiest cases should be tried first to prove those workers and scenarios can be satisfied. If a business case is unlikely to be accepted without proving more difficult cases, then those workers and scenarios should be done first. This is based on the theory that, if the most difficult cases can be successful, then the scenarios that are thought to be easier should have no issues. If the difficult scenarios work, then the easier ones must still be run through the POC.

If any of the workers or scenarios included in Table 2 initially fail, then they must be removed from the business case, and the business case should be reconsidered. Are the benefits still sufficient to outweigh the costs and risks of proceeding with the desktop virtualization project?

The purpose of a business case should not be to prove that a specific project or technology is right for an organization or purpose, but to find out if it's appropriate.

Recommendations:

- Create a balanced, transparent and objective business case.
- Use POC tests to confirm that a user group or scenario will be appropriate for desktop virtualization.
- Eliminate workers or scenarios that do not perform satisfactorily in a POC from the business case and reassess your findings.
- If removing workers or scenarios causes costs to exceed benefits, halt the project and evaluate alternative options. It's better to have a failed business case than a failed production deployment.

Note 1. Forms of Desktop Virtualization

There are many desktop virtualization technologies. We will use the term “desktop virtualization” to refer to any virtualization technology used to provision a desktop or desktop applications to workers.
VDI is a technology that provides a virtual desktop based on a Windows client OS such as Windows 7 or Windows 10, where each worker is the sole user of the desktop and application image. In some cases, however, a server OS can be used, but each worker still gets his or her own image.

In remote desktop session host (RDSH) server-based computing (SBC), multiple workers share a Windows Server instance to publish a desktop or applications. RDSH is the oldest, most proven and most economical to provide a range of desktop virtualization benefits to users. Microsoft’s Windows Virtual Desktops (WVD) offering extends RDSH by adding the ability to share the Windows 10 client OS and present the worker a published desktop.

The DaaS model is VDI run in the cloud (or a data center) by a provider. This allows the organization to have some flexibility over quantity and minimal capital investment. Some definitions may include RDSH provided as a service.

Persistent VDI or DaaS is where a worker’s virtual machine (VM) always exists and can be suspended and reconnected quickly, with workers resuming right where they left off.

Pooled VDI or DaaS is where workers get the latest version of Windows and update every time they connect to the system and their user profile. Assigned applications are dynamically attached to give them a personalized experience.

**Recommended by the Authors**

*Physical, Virtual and Cloud Desktops: Is a Hybrid Approach Inevitable?*

*Market Guide for Desktop as a Service*

*Microsoft’s WVD Will Accelerate Virtual Desktop Maturity but May Not Lower Total Cost of Ownership Enough*

*Cost Optimization Is Still Not a Reason to Implement VDI or DaaS*

**Recommended For You**

*Tool: Prepare I&O for the Everywhere Enterprise*

*Transform Frontline Worker Computing With a Product-Oriented Focus*

*Market Guide for Industrial Handheld Computers, Global*

*Microsoft’s WVD Will Accelerate Virtual Desktop Maturity but May Not Lower Total Cost of Ownership Enough*

*The Cost Argument for Supporting Android Enterprise Recommended Devices*