

CSC VIRTUAL DESKTOP SERVICES: DELIVERING DESKTOPS



CSC

**50 YEARS
STRONG**

IT'S TIME TO THINK DIFFERENTLY

In this whitepaper we'll explain why we believe that now is the right time to take a fresh look at how your organization manages its desktops, and why virtual desktop services offer a whole new level of control and flexibility. We discuss where, and why, desktop virtualization will add value to your organization, and how to make your implementation a success.

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IN A NUTSHELL

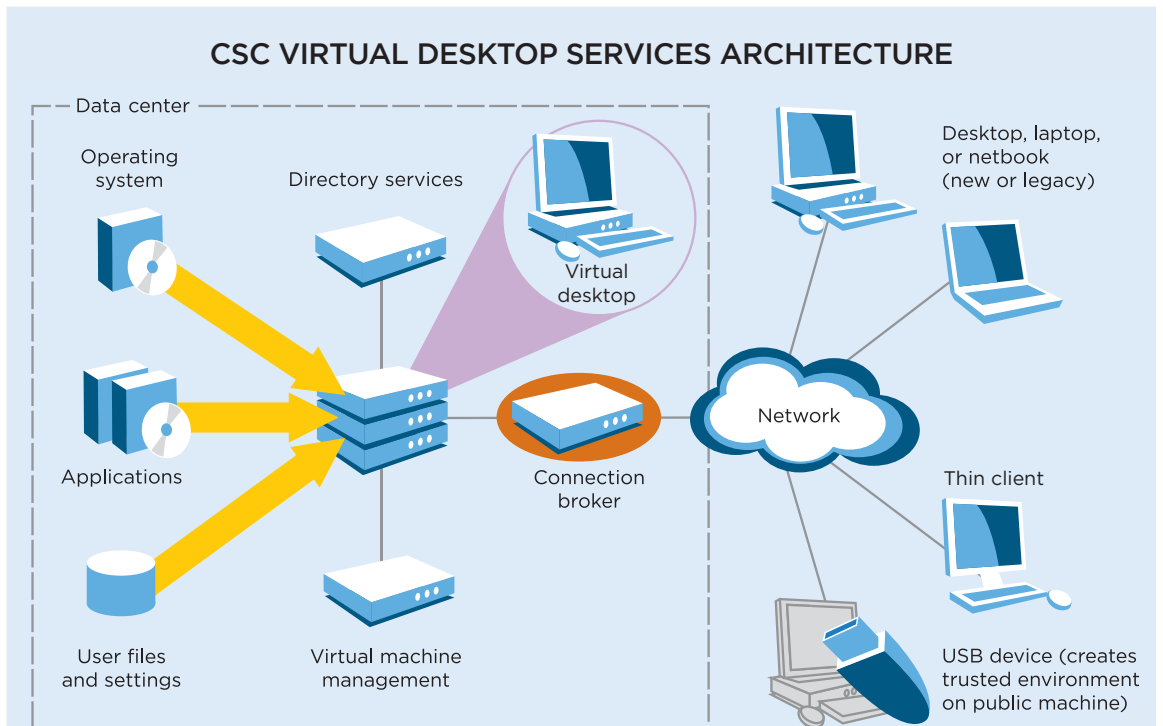
“New Yankee Group survey results show that 64% of enterprises currently have some form of a production deployment of desktop virtualization. This is a dramatic shift from 2008 when Yankee Group surveys revealed only 10% had the technology deployed.”

Yankee Group
 Press release, “Yankee Group’s 2009 Predictions for the Anywhere Economy: Reloaded”,
 28 July 2009

The problems of traditional desktop management have become progressively worse. Despite the continual decline in PC acquisition costs, and the development of desktop imaging, remote diagnostics and other desktop management tools, desktop management is still largely manual and time-consuming — accounting for 25-40% of today’s IT budgets. Large enterprises in particular have urgent business reasons to find a simpler solution.

Desktop virtualization enables you to virtualize operating systems, applications and personal settings in the data center, and deliver them to users ubiquitously and efficiently. Users get the rich, customizable environment that they want, and IT gets more control than they could ever have at the desk or in the field — including control over security.

If you’re interested in the architecture of this solution, it’s explained in the box below. In the next section we’ll discuss the business benefits in more detail.



There are a variety of flavors of ‘desktop virtualization’, but in this paper we’re going to discuss the evolution of thin-client computing to the ‘server-hosted virtual desktop’ model: desktops delivered from the data center with the interface streamed to client devices. Processing is done on virtual machines in the data center where it’s faster and more cost-effective.

You could move desktops to the data center ‘untouched’, but this would not be much more scalable or manageable than keeping desktops on end-user devices. Our recommended model (illustrated above) is to extract user preferences and settings from operating systems and applications, and have them automatically applied to a standard desktop image each time the user initiates a new session.

In this model, you can automatically apply company-defined settings such as drive mappings and default printers, or special profiles based on an automatic analysis of the device from which the user is connecting — for example if it’s an unknown device, you may only grant them access to a limited number of applications.

The advantage of this model is that, while IT can manage operating systems and applications as standardized elements, and control access and security more easily, users get a familiar desktop experience. And they get the added benefit of being able to access their desktop from anywhere and on any device.

WHY YOU SHOULD CARE

STRATEGIC NEEDS

Make IT an enabler, not an obstacle

Managing desktops can't be that hard, right? You probably do it at home. But keeping computers up to date with all the necessary patches and upgrades gets a lot harder when you have dozens, even hundreds of configurations to deal with.

Failure to manage desktop services effectively leads to staff not having the tools they need to do their jobs. Their productivity and your competitiveness suffer. You won't be able to respond to opportunities and problems quickly enough. Products will take longer to get to market, giving competitors an advantage. You won't realize the anticipated benefits of mergers or acquisitions.

Desktop virtualization helps you to leverage IT to be more agile.

Protect your reputation

Cybercrime is becoming more organized and presenting a growing threat. And as the newspaper headlines show, staff leaving laptops in taxis and on trains, or losing memory sticks or CDs packed with data, is just as big a threat.

Whatever the cause, losing sensitive data can incur a heavy cost: penalties — both financial and criminal — for breaching regulatory obligations, damage to reputation and customer trust, and lost competitiveness if strategically valuable information falls into the wrong hands.

With desktop virtualization, all your data stays in the data center where it's much easier to audit and secure. Employees and partners can access the applications they need from anywhere without compromising security.

Work outside the box

Even if your business isn't dispersed itself, globalization, integrated supply chains, outsourcing, and the rise of contracting and project work mean that you have to think beyond your four walls.

You need to work with partners around the world without compromising security. And you need to be able to make and break those relationships quickly and efficiently.

With desktop virtualization it is significantly faster, easier, and more secure to roll out access to specific applications and data — and revoke that access when necessary.

TACTICAL CONCERNS

Simplify business continuity

We live in a world where everyone — office staff, shopfloor workers, field engineers, salespeople — relies upon access to applications and information. Providing that access 24x7 around the globe is a demanding task.

Many traditional desktop management models depend on being able to control every facet of the end-user device. Employees are prevented from accessing corporate resources from non-corporate assets (like their home PC), integrating staff and equipment from mergers is slow and expensive, and if a device fails or is stolen, the employee has a long wait until they are back to full productivity.

Imagine how much better your business continuity would be if you could provide desktop services even to devices over which you have no control — such as a home PC — without compromising security. With desktop virtualization you can.

Stop running just to stand still

Many existing methods of managing desktops can be frustrating. Just when you've got everything working right, along comes another security patch, application upgrade or new operating system.

Desktop virtualization radically simplifies the management of desktop images by centralizing and virtualizing processing power, operating systems, applications and user settings. Because desktops are effectively created anew from the master image with each session, performance doesn't degrade with time and developments can be rolled out much more easily. Also, critical legacy applications can be retained without worrying about hardware conflicts.

Make your IT greener

As desktop management moves to the data center, it becomes easier to deliver more cost-effective and sustainable IT services.

The life of end-user computers can be extended when they're just acting as access devices. When you need to increase the processing capabilities, you do it from the data center where it's more cost effective, less time consuming and greener.

And when the time comes that you want to refresh hardware, you have the option of energy-efficient thin clients.

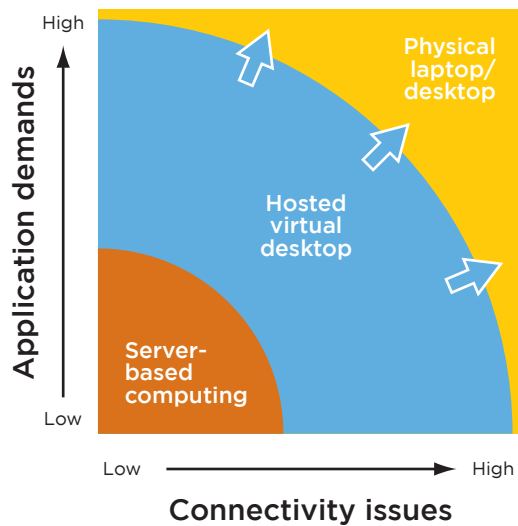


If you've decided that the time has come to consider desktop virtualization, you may be wondering where to start.

In the following pages, we'll share our understanding of where desktop virtualization makes sense and where it doesn't, what your deployment options are, and the pitfalls to avoid.

SELECTING THE RIGHT USERS

We use two criteria to judge the suitability of groups of users: their application demands and the connectivity issues that they face.



Historically, thin-client computing only suited 'task-based' users working in fixed places, using a limited number of applications — the orange segment in the diagram. Virtual desktop services are still not a panacea, but they suit a much wider section of users, and this segment is growing — blue in the diagram.

While there are users for whom desktop virtualization is not yet suitable, there's a strong business case for a mixed environment. Hosted virtual desktops can easily be integrated with other desktop delivery methods. You can deploy desktop virtualization to some groups of users, leaving the rest unchanged; or limit the rollout to specific applications.

Application demands

In most large organizations, the majority of staff use three classes of applications:

- Common business productivity applications — those used for sending and receiving email, word processing, and creating presentations.
- Enterprise line-of-business applications — like SAP, Oracle and their legacy equivalents.
- Industry-specific applications.

These users are ideal candidates for desktop virtualization. The difference it can make to managing thousands of desktops makes the initial cost, effort and disruption more than worthwhile.

Although the type of desktop virtualization we're discussing in this paper has modest network connectivity demands — it only sends keystrokes and mouse actions one way, and screen images the other — graphically demanding applications can still overload all but the best connections. Staff who spend much of their time using graphics packages or video editing software, for example, are not good candidates for desktop virtualization unless they have a very reliable, fast connection to your data center.

But not all resource-intensive applications are unsuitable, in fact virtual desktops are very good at supporting modeling, scientific, and other number-crunching applications — you can allocate sufficient CPU and memory in the data-center to allow users to run them on devices which would not normally be able to support them.

Factors to consider:

- Do you want to take an application-led approach (virtualizing selected applications for all users) or a user-led approach (virtualizing most, or even all, applications for selected groups of users)?
- Do you already 'package' applications for rollout and management? If so, converting them for use in virtual desktop deployments can be automated relatively easily.
- How many 'power users' do you have and are they suitable candidates for desktop virtualization? Developers need access to multiple different operating environments and desktop virtualization can be a very effective way of delivering that. On the other hand, users that need to install applications themselves will be less suitable.



Connectivity issues

Many users can rely on a good connection always being available: the corporate LAN, a broadband connection at home, or guest access at a customer site or their hotel. Desktop virtualization is particularly suited to those who work from multiple fixed locations: whether they use a laptop, home computer or any other options, as they can work without exposing your corporate network or data.

But there are some staff who often need access to applications and data when they are offline. Think of the executive who frequently uses time on a train or in a plane to put the finishing touches to a vital sales presentation or to prepare replies to stored emails. Think of the field engineer who needs data where network access isn't available. For these very mobile workers desktop virtualization is not yet suitable.

Not all mobile workers will have such demanding connectivity needs. Your field engineers or community workers might always have good wi-fi or 3G access; your sales staff might get sufficient internet access at customer sites, internet cafes and airports to do their work online. These types of users will benefit most from the security and business continuity provided by desktop virtualization. And their productivity will benefit by being able to access the same personalized desktop experience wherever they are and whatever device they're using.

So, purely from an access point of view, the majority of your employees will be suitable candidates for virtual desktop services. As network coverage continues to develop, those not so suitable today will become more suitable. And as virtual desktop services themselves develop, even those with offline needs will be catered to, with client-hosted virtual desktops.

Factors to consider:

- How often does each group of users need to work in locations where there is no connectivity, or it is very expensive?
- What bandwidth do users have access to? This will dictate what applications you can run smoothly.
- What is the latency (network lag) between each location and the data center? Latency doesn't prevent desktop virtualization from working, but if it's high, it can make the user experience unpleasant.

A better experience for users

Remember thin-client computing? Back in the mid-90s, as enterprise use of PCs proliferated and the complexity of desktop management started to get out of hand, it promised the relative simplicity and cost-effectiveness of the mainframe, without sacrificing the features and convenience of the PC. But because it only offered limited, locked-down desktops, it wasn't much liked by users.

Thin-client computing was a great concept and it worked well for certain users (and still does); but the promise of a new era in desktop management was never fully realized. The time simply was not right. Network connections weren't reliable enough, bandwidth was relatively scarce and expensive, and data centers weren't ready for the extra load. In practice, the technology was limited to well-defined task-based environments where personalization was less important.

A decade on, everything's changed. The development of networking, virtualization and secure access technologies means that a far wider range of applications and environments can be supported. And large parts of desktop creation, deployment and support can be automated and, mostly, done remotely.

For users, the experience is identical to that of a standard PC, but without being tied to a particular machine or location. Full desktops, including personalized settings, are streamed to them wherever they are, and whatever device they're using.



Why is this possible now when it wasn't ten years ago?

Developments in 'intelligent' connection technology and ultra-fast thin-client communication protocols make it possible to support user sessions with far less bandwidth and processing overhead than before.

Bandwidth has become more readily available and less expensive, so you can push more complex environments to users more quickly.

Developments in the data center — in particular virtualization — have made it feasible to create, store, and support desktop environments efficiently.

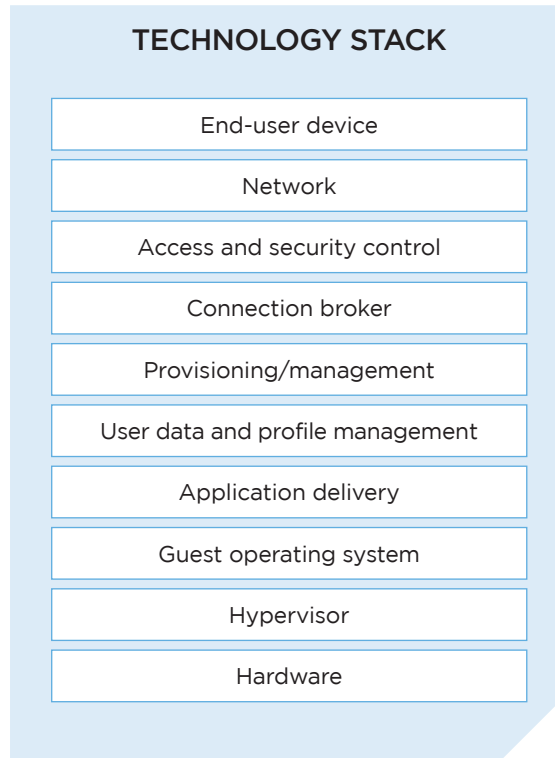
AVOIDING THE PITFALLS

“The worldwide hosted virtual desktop (HVD) market will accelerate through 2013 to reach 49M units, up from more than 0.5M units in 2009... Worldwide HVD revenue will grow from about \$1.3-1.5B in 2009, which is less than 1% of the worldwide professional PC market, to \$65.7B in 2013, which will be equal to more than 40%.”

Gartner, Inc.

Press release, “Gartner says Worldwide Hosted Virtual Desktop Market to Surpass \$65bn in 2013”, 26 March 2009

A desktop virtualization solution brings together a number of different elements that have to work together in a ‘technology stack’. There are many pitfalls to avoid, and you’ll have to do several things differently for it to be successful.



Before you start

- Ensure that you have a thorough understanding of your existing desktop environment, any problems that will inhibit the new environment, and the needs of the users you’ll be rolling virtual desktops out to. The most reliable way to do this is through an independent virtual desktop services assessment. Spending wisely up front can save you a great deal of pain and cost further down the line.
- Rationalize applications and desktop images to eliminate unused or unnecessary items.
- Make sure that your central infrastructure — Active Directory, storage, networking — is ready to cope; network capacity planning is crucial.
- List all licensing needs for the environment and work with Microsoft and your other software vendors to obtain licenses for both the applications and operating systems that you will require for your virtual desktops.
- Decide how you’re going to provide access to printers and file servers.

During the design phase

- Think big from the start: even if only a few departments or applications are in the initial scope, chances are it will grow — often very quickly — so make sure your processes are industrialized and ready to bear the load.
- Keep 15-20% capacity in hand to allow for unplanned expansion.
- Don’t confuse ‘big’ with ‘complex’: avoid unnecessary complexity. So, for example, use enterprise-class equipment — this is a mission-critical system — but don’t over-engineer.
- Build a scalable, modular, leveraged architecture: create virtual desktop modules that contain everything required to deliver say 100 desktops. Then when you need to expand, you can easily add another module.
- Isolate your virtual desktops from your core network.
- Leverage the set of technologies from the virtual desktop service to provide the benefits of application virtualization and user-setting virtualization to both your virtual and physical desktops.

After it’s deployed

- Be prepared to change organizational and access rights, giving support staff visibility of the entire technology stack so that they can be effective.
- You’ll find that software distribution and patching become easier and faster, as long as your virtual desktop service is designed to enable you to deliver updates centrally to a single master SOE or application.
- But be prepared to start thinking differently about some routine tasks. For example, it will be vital to closely monitor blade servers serving the desktop environment, as the disk use of each blade is shared among several users. A simple fault, such as a broken fan, could affect many users at once.
- Troubleshooting can be complex in a virtualized environment that has many vendor components. If you don’t have a centralized set of tools to manage the environment and minimize support requirements, you may not realize the full benefits of desktop virtualization.

WHY CSC?

GETTING THE RIGHT HELP

For all the experience you might have of server or storage virtualization in the data center, desktop virtualization adds new levels of complexity and requires real differences in management techniques. We don't recommend a do-it-yourself solution. The business case is usually more powerful for a managed or hosted model that takes full advantage of ongoing management of the new solution, especially when it will probably be part of a changing, mixed strategy of traditional and virtual desktop management.

At CSC we offer a managed service priced on a utility basis. With your solution hosted in one of our data centers you can take maximum advantage of the economies of scale and resilience that a fully hosted solution offers, as well as drawing on our experience of designing, implementing and managing desktop virtualization solutions. Alternatively, we can manage the solution in your own data center.

In creating CSC Virtual Desktop Services, we've done all the development work to accelerate your implementation: we've integrated the best virtualization, thin-client, and secure access technologies; we've optimized operating systems and applications; and we've created an easily scalable managed service that is as close as you can get to a 'plug-and-play' desktop virtualization solution. To help you get started, we also offer a virtual desktop assessment that will give you a clear financial analysis of your organization's suitability for desktop virtualization and identify the users you should start with.



Right products

There are two core service offerings in our Virtual Desktop Services portfolio:

- CSC Dynamic Desktop — powered by Citrix — is based on advanced Citrix virtual desktop software, especially its communication protocol and connection broker technology. Users access their desktop from a web page.
- CSC Anywhere Desktop — powered by Sun — uses Sun servers, software, and Sun Ray desktop appliances. Users plug in a 'smart card' to access their desktop from any Sun Ray station.

With each we offer end-to-end support, from strategy development and solution design to implementation and ongoing management and support. Both solutions are engineered using the best capabilities of our strategic partners — providing superior performance and scalability.

Right approach

- Our strategy takes into account existing infrastructure, IT strategy and overall business goals.
- We offer a managed service solution for large enterprise deployments.
- Our architecture is modular and flexible because we understand that one size doesn't fit all.
- We take a role-based approach, centered on end-user needs and experiences.

Right experience

- Seven years implementing desktop virtualization environments.
- The largest UK implementation of Citrix XenApp (Presentation Server): 26,000 concurrent seats for part of the UK's National Health Service.
- 1.2 million traditional desktops under management.
- Implemented CSC Virtual Desktop Services internally, and extended to offshore sites around the world.

"49% of [US federal] agencies have implemented client virtualization, a method of running multiple desktops and/or applications centrally in the data center."

CDW-G

The 2009 Federal Virtualization Report, 15 June 2009

TO FIND OUT MORE ABOUT
CSC VIRTUAL DESKTOP SERVICES, VISIT:

csc.com/vds



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About CSC

The mission of CSC is to be a global leader in providing technology-enabled business solutions and services.

With the broadest range of capabilities, CSC offers clients the solutions they need to manage complexity, focus on core businesses, collaborate with partners and clients and improve operations.

CSC makes a special point of understanding its clients and provides experts with real-world experience to work with them. CSC is vendor independent, delivering solutions that best meet each client's unique requirements.

For 50 years, clients in industries and governments worldwide have trusted CSC with their business process and information systems outsourcing, systems integration and consulting needs.

The company trades on the New York Stock Exchange under the symbol "CSC."