The Workspace-as-a-Service Opportunity: Why Now Is the Time for Desktop as a Service

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September 2014

IDC OPINION

The rapid adoption of smart mobile devices, including tablets and phones, in the workplace is placing an ever-mounting management challenge on and creating a business opportunity for today's IT leaders. The entry of diverse employee-owned and company-liable devices, multiple operating systems, and consumer-oriented applications into what used to be a controlled IT environment creates a constant barrage of potential security holes and governance nightmares.

IDC believes that corporate-liable smartphone shipments will reach 111.4 million units in 2014, up 13.6% from 98.1 million units in 2013. By comparison, employee-liable smartphone shipments will reach 221.0 million units in 2014, up 36.2% from 162.3 million units in 2013.

While consumerization and mobile workforce trends are adding significant complexity to IT operations, the increased employee productivity, collaboration, and satisfaction that mobile technologies offer are not lost on business leaders. Business leaders are looking to IT to deliver a mobile workspace that allows employees to access corporate data, applications, and communication resources on their devices of choice. But making the most of the opportunity while minimizing the risks can be complex and overwhelming for many IT teams. That's why it makes more sense than ever for IT leaders to consider a cloud-based client virtualization offering.

IDC forecasts the virtual client computing (VCC) market will grow from $2.8 billion in 2013 to $4.7 billion in 2018. However, up-front costs and complexity will drive organizations to look for an outsourced delivery model, driving the hosted virtual client computing market to $1.7 billion by 2018.

Delivering all the applications and services that employees need on mobile devices often requires IT to take a multipronged application-delivery approach that addresses security, time to market, user experience, and cost considerations, to name a few.

Likewise, today, many enterprises are faced with the daunting task of selecting the best options for distributing applications from a host of delivery models (e.g., native, virtual, HTML5, hybrid [native and HTML5], and SaaS). Native applications tend to offer optimal performance; however, they can be less secure than hosted apps and often require higher investment in development and support. And while virtual, HTML5, and SaaS offerings can lend themselves to faster deployment time frames and tighter security than native applications, there is the potential for trade-offs with each of these models as well.

For instance, varying levels of user experience optimizations and the ease of integration with on-premise resources are common concerns with nonnative applications.

Therefore, it is essential that IT organizations clearly understand the pros and cons of each of these application delivery models as they relate to implementing appropriate solutions to support the organizations' unique use cases.

As a result, businesses are increasingly looking to client virtualization solutions for relief because they provide:

- Centralized management

- "Any device" access

- Reduced operational costs
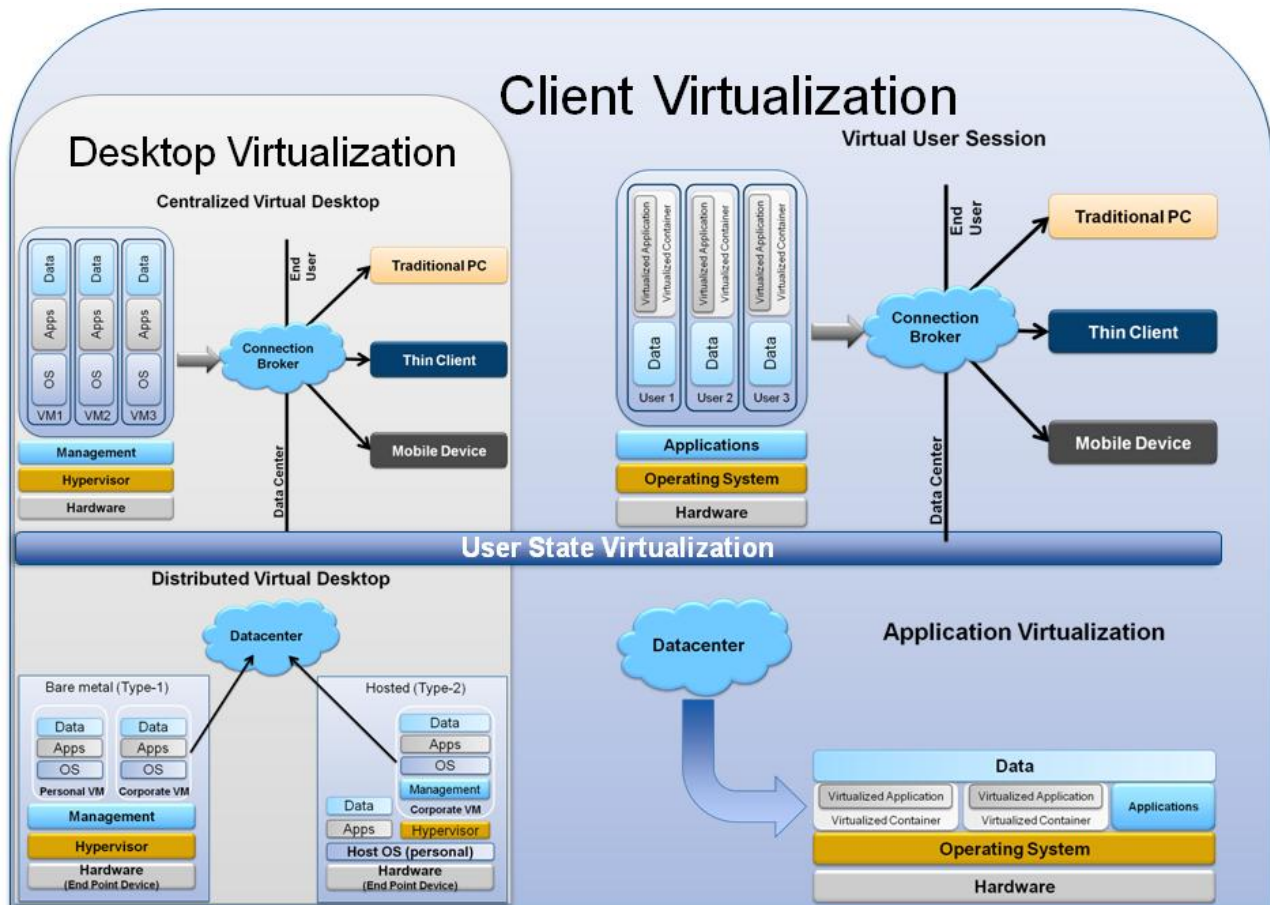
- Ability to protect corporate intellectual property

However, many of these projects get sidetracked because deploying client virtualization infrastructure can be complex and requires high up-front capital expenditures. Further, many organizations do not have the in-house expertise to deploy, manage, and scale a client virtualization implementation efficiently and effectively.

Luckily, in the past few years, more and more vendors have started to provide hosted client virtualization offerings consisting of desktop-as-a-service (DaaS) and desktop-applications-as-a-service (DAaaS) offerings. What's more, many DaaS providers today offer free trials, so businesses can see the benefits of DaaS in their environment before making a full investment.

Desktop as a service is the (private or public) cloud delivery of a virtual desktop to an end user. This can be achieved by remotely accessing a centralized virtual desktop (aka virtual desktop infrastructure or VDI) or a virtual user session (VUS). Desktop applications as a service is the (private or public) cloud delivery of a desktop application, usually a native Windows application. This can be achieved using either virtual user session technology or application virtualization technology. It is recommended that user state virtualization technology, while not required, be implemented to maintain consistency for end users across devices and technologies (see Figure 1).

FIGURE 1

Virtual Client Computing

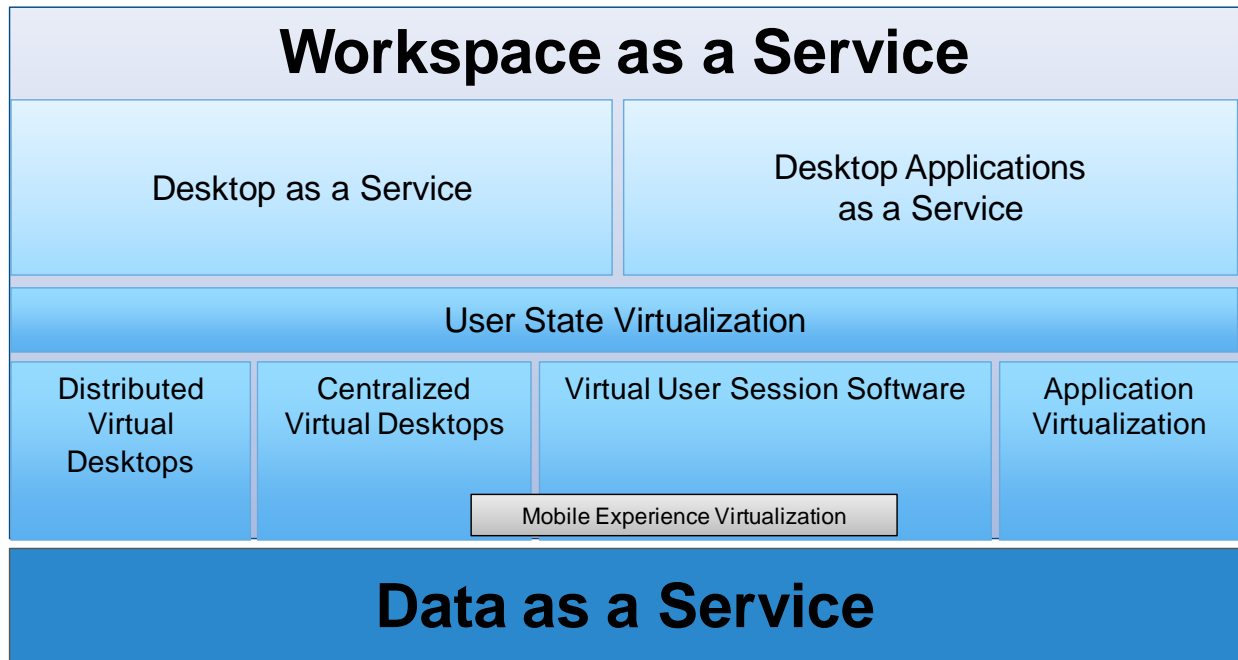The benefits of going with a cloud service provider for client virtualization or DaaS include:

- On-demand workspace — full desktops or just applications
- Ability to try before you buy
- No large up-front infrastructure investment
- Scale by user or by group
- Fast time to value

While today many organizations are looking to outsource virtual desktops, the rise in mobility is increasingly driving the demand toward applications and data. Likewise, it is this full workspace experience that business users want to be able to access anywhere, anytime, on any device.

In this white paper, we focus on the benefits of using cloud-delivered virtualization technology to deliver desktops, applications, and services as part of a comprehensive workspace strategy. Figure 2 illustrates how a workspace can be delivered via a hosted model.

FIGURE 2

Delivering the Ultimate Workspace

Source: IDC, 2014

SITUATION OVERVIEW

The consumerization of IT is creating more demanding business users, increasing security issues, and reducing the ability of IT to govern users to ensure compliance with corporate policy. As the lines continue to blur between corporate-owned devices and personally owned devices and between work offices and home offices, a mobile and global workforce now expects to have access to corporate data on multiple devices anywhere at any time. This shift and the persistent consumerization drive the need for IT executives to continually address their organizations' changing technology needs. Failure to do so often results in employees circumventing the IT department's procurement policies and procedures, commonly referred to as "shadow IT," which is undoubtedly a growing trend. However, the long-term effects of shadow IT can be detrimental to both the business and the IT organization, often resulting in higher technology costs, increased risk of data compromises, and less information continuity across the organization.

As a result, more and more, IT executives are often caught between a rock and a hard place when attempting to empower users with modern technologies while still maintaining proper governance and control over their organizations' increasingly diverse and burgeoning IT assets.

In fact, even when IT organizations had the benefit of supporting relatively homogeneous environments, managing corporate-owned desktop PCs and laptops remained an uphill battle, with many IT administrators relying on manual processes and disparate endpoint management solutions for provisioning, configuring, securing, and maintaining client devices. Furthermore, traditional desktop management tools and processes often require business users to hand over their devices to IT for undetermined and often extended periods of time.

The inability of IT to truly manage devices effectively leads to increased end-user downtime.

For instance, regional offices with limited or no onsite IT staff must often have equipment shipped back and forth from the IT department's corporate home office in order for it to be properly maintained and/or refreshed. As a result, loss of productivity can multiply significantly in these types of remote workforce scenarios, and thus, a high-touch approach to device management is becoming increasingly inefficient, especially as globalization and mobility trends cause organizations to become ever more dispersed.

A distinct advantage of DaaS is that it enables IT organizations to centralize business users' desktops in the corporate datacenter, where the IT staff usually is located. As a result, IT staff can more efficiently provision new client instances, centralize desktop management, and provide endpoint security – even for systems residing well outside of the corporate firewall. What's more, virtual desktops and applications can provide IT organizations with increased consistency across system settings and policies. This is largely due to the fact that, in a virtual desktop delivery model, system configuration attributes are far less reliant on the underlying hardware. As a result, DaaS can aid IT organizations in streamlining and reducing their image inventory to a few gold images or perhaps even a single image.

In addition, with DaaS, IT can provide a more consistent and seamless desktop experience to the rapidly expanding population of employees who seek to use multiple devices in order to conduct business transactions. For example, in most DaaS implementations, business users can access the same desktop instance in each new session, as well as securely access corporate data and applications anytime and anywhere, through one set of policies and log-ins. Best of all, this takes place regardless of the hardware or operating system being used to access the instance.

However, the changing nature of personal devices is causing other complications. With the rapid adoption of mobile devices that work only with a touch user interface (UI), delivering a great user experience can be difficult. Many client virtualization solutions today include what IDC refers to as mobile experience virtualization (MXV), which tackles the user-experience problem of accessing applications that were built for the keyboard/mouse paradigm using touch-first devices. MXV virtualizes the UI so that desktop applications interact like they are native mobile applications.

Another property of MXV is optimizing the stream for low-bandwidth usage, as many mobile devices are still on 3G networks or may need to be accessed globally from locations that may not have a high-bandwidth network. MXV can be applied to either DaaS or VUS environments and can be achieved through several different means, such as using a mobile-friendly protocol or using an SDK to

transform the experience to appear native to the end device. One of the benefits of MXV in addition to a better user experience is the ability to transform an existing desktop application into a mobile application without a major rewrite.

The Benefits of Hosted Client Virtualization

Hosted client virtualization offerings can help eliminate the painful discussion with the CFO to get approval for large capital outlays. It changes the conversation from up-front capital expenditure and implementation costs to operational expenditure that is recognized on an ongoing basis. Yes, budget conversations still need to occur and internal ROI models should be created, but that is true of any new technology initiative. Going with a cost that is recognized operationally essentially eliminates capital investment risk.

The general cloud computing environment can be delivered in layers (SaaS, PaaS, or IaaS) that give businesses varying degrees of control over the different layers while offering abstraction of the underlying layers. Hosted client virtualization can be delivered in a similar manner, with hardware, virtualization software, operating systems, and applications each outsourced to one or more service providers.

However, for organizations that are looking to avoid a large capital outlay and the complexity of deploying a full DaaS implementation — but still want to maintain control over the management of the desktops and/or applications – this option will still be available in a hosted scenario. In addition, because client virtualization service providers are experts dedicated to optimizing user experience, IT organizations can mitigate concerns on the implementation, management, and performance of their virtualized environment. And since it is a cloud service, it is possible for a subscriber to scale up or down by user or even by group as needs change.

The following factors are key drivers for businesses to use a hosted client virtualization solution:

- Lack of up-front capital

- No or minimal internal expertise available on staff

- Need to support geographic expansion

- Ability to support seasonal workers

- Need to ease integration after mergers and acquisitions

Cisco Desktop as a Service

The Cisco Desktop as a Service Solution, which encompasses both DaaS and DAaaS capabilities, enables cloud service providers to offer their customers a secure, seamless, Cisco cloud-based, virtual desktop and application subscription service.

The Cisco DaaS Solution enables cloud service providers to deliver the mission-critical enterprise benefits of desktop virtualization such as scalability, security, performance, and efficiency. These benefits are delivered via the cloud "as a service" along with operational capabilities such as management and licensing components uniquely architected to help cloud service providers achieve time to market and economically scale their business.

The Cisco DaaS Solution architecture and the Cisco Validated Design for DaaS provide the security, scalability, and flexibility needed for provisioning multitenant desktop as a service via a cloud-based delivery infrastructure. Cisco DaaS is based on the Cisco Unified Computing System (Cisco UCS), Cisco Virtualized Multiservice Data Center (VMDC) architecture, and client virtualization technologies from Cisco's ecosystem partners, Citrix and VMware. The Cisco Unified Computing System with Intel Xeon processors provides advanced security features at the processor level, the network level, and the operating system level, protecting applications from the ground up.

The building blocks of the Cisco DaaS Solution are:

- Cisco Unified Data Center and Cisco UCS

- Cisco UCS Director for datacenter infrastructure management, provisioning, and orchestration

- Cisco ACI as a building block

- Cisco WAN

- Cisco Security

- Citrix or VMware infrastructure software to deliver the desktop environment

Cisco Unified Data Center is the platform used for Cisco DaaS Solutions. This platform is targeted at service providers, is designed for cloud-delivered applications and desktops, and provides an infrastructure on which any x86-based service can be delivered. The modular architecture is scalable and adapts easily to the changing business needs of the cloud service provider. The design has been validated by end-to-end system-level testing and offered as part of the Cisco Validated Design program.

Cisco DaaS Services provide simple, scalable, flexible, and secure solutions that are optimized for cloud delivery. Some of the key features are:

- The Cisco UCS Virtual Machine Fabric Extender (VM-FEX) guarantees minimum committed bandwidth to critical VDI services, which facilitates great user experiences and the ability to meet service-level agreements (SLAs) associated with the virtual desktop.

- Network containers configured for multitenancy provide per-tenant segmentation of traffic on physical and virtual infrastructure and have the ability to provide value-added application services on a per-tenant basis.

- UCS Central for Virtual Desktops unifies management of multiple UCS domains and tens of thousands of services and also simplifies global operations with centralized inventory, faults, logs, and server consoles with remote management capabilities, even to on-premise infrastructure.

By working with cloud providers that deliver Cisco Powered services, customers will get validated architectures, the security and reliability of an enterprise-class solution, and continuous innovation and assured performance.

In addition, customers benefit from solutions built on Cisco's validated architectures, which meet strict guidelines for delivering services. These offerings are reviewed by a third-party auditor to ensure the service provider has met the validated design guidelines.

Likewise, since the high availability of virtual desktops and applications often directly impacts business user productivity, it is essential that organizations look toward service providers that can clearly demonstrate an ability to provide a secure and reliable enterprise-class DaaS solution.

FUTURE OUTLOOK

IDC forecasts the virtual client computing market will grow from $3.1 billion in 2014 to $4.7 billion in 2018, representing a five-year CAGR of 10.7%. The hosted portion of the market, or what IDC refers to as the workspace-as-a-service (WaaS) market, is projected to grow from $466 million in 2014 to $1.7 billion in 2018, representing a five-year CAGR of 42.5%. By comparison, the on-premise virtual client computing market is projected to grow only from $2.6 billion in 2014 to $3 billion in 2018, representing a five-year CAGR of 3.7%.

IDC expects that corporate-liable smartphone shipments will reach 149.7 million units in 2018, resulting in a CAGR of 8.8% for 2014–2018, while employee-liable smartphone shipments will reach 331.3 million units in 2018, resulting in a CAGR of 15.3% for 2014–2018.

These figures indicate that the overall growth of the virtual client computing market will be driven by the hosted segment – made possible by enterprise customers overcoming their initial fears of cloud-hosted desktops and applications in order to support an increasingly mobile and device-agnostic workplace.

IDC believes that as a result, organizations will continue to make substantial investments in their next-generation solutions through hosted service providers as opposed to deploying premises-based client virtualization solutions.

CHALLENGES/OPPORTUNITIES

Integration Challenges

The technology landscape remains fiercely competitive. As a result, Cisco consistently monitors the market, listens to customers, and dedicates considerable investment to research and development to ensure it is offering technology that the company believes will be highly valuable to its clients.

However, it's important to note that the licensing and delivery of software often still depend on the individual software licensing model used by application and infrastructure software ISVs. As a result, not all products have an option that integrates with the DaaS, DAaaS, or SaaS market models, and other products that do have such an option may be more costly to purchase using a virtualized deployment scenario. This challenge is expected to self-correct over the next few years as mobile and remote computing becomes an increasingly powerful factor in business software design and all software vendors see the need to aggressively compete for share in the hosted client virtualization market.

Implementation Challenges

With regard to connecting mobile computing devices to company resources, knowledge workers have become accustomed to doing what they want, whenever they want. This attitude frequently includes a willingness to defy company policy to get their jobs done and often without considering the risks to the company. Depending on any organization's corporate culture, it may be a training and education challenge to rein in knowledge workers, yet allow them to thrive within a more restrictive connection environment. In this scenario, productivity benefits for both IT and business users can be gained by leveraging cloud discovery tools in conjunction with hosted client virtualization solutions, enabling IT departments to start identifying business-critical applications and delivering them to employees from the cloud.

Hosted client virtualization relies on cloud-based connectivity with off-premise datacenters, which are highly secure but are potentially significantly distant from where workers are physically located. In particular, companies with remote workers or locations in developing geographies have the potential to experience data bottlenecks related to lower-quality or lower-bandwidth communications between where the work is being done and the service provider datacenters, even if located in the same country. As a result, cloud service providers must effectively communicate and educate customers on how their network and datacenter infrastructure can address these concerns. Likewise, customers can greatly benefit from proof-of-concept (POC) options, which allow customers to test and verify that the hosted offering will support their organizations' unique requirements in regard to performance and scalability.

Business Environment Opportunities

The demand for hosted client virtualization solutions will continue to rise in response to the demand for a flexible workspace, a demand that is currently undergoing an aggressive growth phase. Cisco's hardware and infrastructure software solutions are well tested and have proven themselves in demanding situations. Additionally, by leveraging client virtualization software from Citrix and VMware, both of which are leaders in IDC's workspace-as-a-service market, Cisco is able to provide its customers with mature and reliable products that are well suited for commercial deployments. The maturity of these products benefits all organizations adopting a Cisco-based DaaS solution.

The largest potential impediment is software licensing and delivery of hosted client virtualization solutions, as they have yet to mature into fully developed solutions. Companies that offer general business applications and specific line-of-business applications that have the potential to be deployed in a hosted environment are on notice to bring their products in line with customer use scenarios.

Implementation Opportunities

If the buzz about obtaining improved productivity from flexible, remote computing workspaces can be supported by solid performance experiences among early users, then early-mover organizations adopting hosted virtual client computing solutions are likely to gain competitive advantage from greater end-user productivity and smoother cost-recognition profiles. Organizations can become less constrained by geography and benefit from the global scale that their cloud service providers can deliver.

ESSENTIAL GUIDANCE

Disruptive trends such as the consumerization of IT, BYOD, and mobility are driving increasingly heterogeneous and hybrid IT environments that, in turn, are adding significant complexity to the distribution and management of desktops, applications, and services within the enterprise. In addition, business users are demanding fast and easy access to a wide range of applications in order to enhance productivity. Therefore, IT departments must increasingly streamline and optimize processes for delivering and managing enterprise applications and services to remain relevant and efficient and reduce unnecessary cost within their organizations.

IDC expects that factors such as the lack of up-front capital, limited or no client virtualization management expertise with internal staff, the need to support globalization and mobility expansions, and the need to simplify integration work after mergers and acquisitions will be key concerns for organizations seeking hosted client virtualization solutions.

However, to gain widespread adoption in the enterprise, cloud service providers must be able to clearly articulate and demonstrate how they can address concerns around performance, scalability, and data security/sovereignty that are commonly associated with cloud-based offerings.

When selecting a cloud provider, organizations should keep in mind the following considerations:

- **Security.** From identity management to VPNs to physical security, businesses need to be aware of how secure the service provider is and what steps it is taking to secure not only its infrastructure but also its customers' data. Cloud service providers need to be aware of regulatory compliance issues that apply to a given customer's industry and adhere to the appropriate regulations.

- **Reliability.** It is essential that the desktop workload have high availability. In fact, in most cases, high availability is even more important with virtual desktops and applications than with other workloads, as an unplanned outage or a network slowdown will directly lower business user productivity. Thus, leveraging a highly secure, scalable, and flexible infrastructure is paramount in implementing a successful client virtualization strategy.

- **Service-level agreements.** SLAs for cloud services can vary widely, and the penalty for missing an SLA must be clear. Therefore, customers should examine desktop workload, networking, and data SLAs, along with backup/recovery and disaster recovery plans that their service providers have in place. High-quality service providers will lead with their SLA terms and will not try to hide them in the small print of the contracts.

- **Flexible management of operating systems and applications.** Smaller organizations will want a fully outsourced model, where everything is managed, from the hardware to the applications. Larger organizations will want the ability to preserve and apply existing policies to the hosted environment. It is important for a service provider to be flexible to each customer's needs.

  In addition, application delivery portals allow IT organizations to leverage automated application approval, fulfillment, and chargeback workflows, allowing all software requests to be processed efficiently and consistently from request to deployment. Furthermore, this enables business users to request and/or self-provision applications from an intuitive and easily accessible catalog, adding productivity gains for IT and business users alike.

- **Other services (email, collaboration, Active Directory, MEAM, etc.).** A workspace starts with a desktop. But in today's demanding environment, having a suite of solutions from a single provider and its partners can greatly simplify the life of the IT team, allowing the team to focus on higher-level business strategies and spend less time managing wildfires on a day-to-day basis.

CONCLUSION

In conclusion, there has never been a better time for hosted desktop and application virtualization.

Client virtualization is enabling businesses to move from PC-centric IT to data-centric IT, and even cloud-centric IT. In the era of mobility and BYOD, IT needs to shift from the PC-centric world of managing and protecting individual PC components, such as hard drives, to a datacenter model where corporate data is centrally stored, managed, and secured.

Organizations can expect to experience significant value when implementing virtual client computing technologies appropriately. Because desktop virtualization leverages the benefits associated with a flexible foundation made possible through hypervisors, IT departments can begin to manage users and desktop use cases that typically were difficult to control before the advent of desktop virtualization.

Furthermore, consistent and secure access to virtualized corporate desktops stands to not only increase IT staff and business user productivity but also mitigate the data security risks often associated with mobile and BYOD initiatives.

Likewise, a key benefit of implementing an enterprise-grade DaaS environment is to gain an increased ability in unifying desktop, application, security, and BYOD management. As a result, organizations can more efficiently and effectively empower their employees via improved user experiences across disparate device types while simultaneously improving IT operations and security.

About IDC

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