

Assessing the Business Value of VDI in the Public Cloud

IDC Opinion

This IDC Solution Brief leverages IDC's ongoing research into the costs of running VDI workloads in the public cloud compared with traditional on-premises architectures. IDC's research shows that organisations that use public cloud-based VDI solutions — such as Citrix on Microsoft Azure — can realise significant value through cost and staff efficiencies, as well as user enablement. In particular, organisations avoid costs and delays associated with buying, deploying, and running on-premises infrastructure, while extending the reach and capabilities of their virtual desktop and application environments to better support employees. These benefits can have significant value both on a per user and organisational level. Based on assessments with organisations running VDI in the public cloud, IDC puts the overall value gained through cost savings, staff productivity gains, and user enablement at \$2,015 per user per year compared with taking an on-premises approach to deploying VDI.

As more enterprises begin digital transformation efforts, including mobility, cloud, and big data analytics, the way in which desktops and applications are delivered and accessed is changing. Pay-per-use options are becoming mainstream for infrastructure solutions that were once bought as expensive capex investments. Through more flexible consumption models, users can provision and consume services as needed rather than have to build and manage them, leaving the heavy lifting to cloud providers that take care of the architecture, maintenance and optimisation. VDI is one of the solutions that organisations are adopting to better take advantage of digital transformation and support the ongoing changes in working patterns.

SITUATION OVERVIEW

With digital transformation now a strategic imperative for almost all businesses, cloud has become an essential discussion point for organisations looking to reduce the complexity, cost and inflexibility of their IT infrastructure. According to IDC's Quarterly Cloud IT Tracker, the percentage spent on traditional infrastructure continues to decline in favour of both public and private cloud. In the UK, traditional on-premises infrastructure is projected to decline by 3.3% CAGR from 2018 to 2021. At the same time, off-premises public cloud is expected to grow at 1.0% CAGR over the same period, and off-premises hosted private cloud at 10.8% CAGR.

As a functional market subset of overall software, IDC sees relatively steady growth in the global VDI market. According to IDC's Semiannual Software Tracker, the VDI market grew by 4.0% CAGR to \$1.9 billion between 1H14 and 1H17, compared to

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3.2% CAGR for all software categories. At a vendor level, Citrix holds the top position in terms of revenues, with \$699.7 million in 1H17 globally. At second position is Microsoft, with \$378.8 million in the same year. Realising cost efficiencies while enabling employees to take advantage of new software solutions appeals to most businesses, so it is no surprise that the VDI market has experienced strong growth worldwide.

When looking at the market in the UK and Ireland, growth is slightly higher at 4.2% CAGR between 1H16 and 1H17, reaching \$87 million. Citrix retained the top spot in 1H17 with 52.6% of the revenue in the two countries. This is a significantly higher portion of its total than at a global level (36.9%), indicating that Citrix has demonstrated a particularly strong appeal to businesses in the UK.

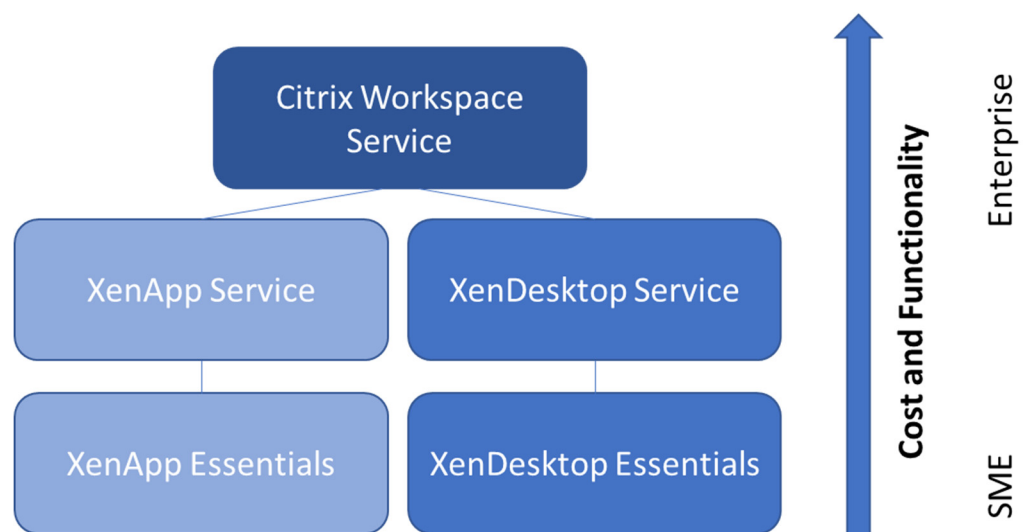
OVERVIEW OF CITRIX CLOUD ON MICROSOFT AZURE

Florida-based Citrix is focused on building integrated technology services for the delivery of applications and data to any device as a service through Citrix Cloud. Citrix traditionally operates in several key markets: Virtual Desktop Infrastructure (VDI), Enterprise Mobility Management (EMM), Application Delivery Controller (ADC), Software-Defined WAN (SD-WAN).

In 2016 Citrix and Microsoft unveiled an expansion of their strategic partnership program in the form of Citrix Cloud, with the ability for users to deploy and manage Windows 10 virtualized environments with full access to Office 365. The advanced nature of Azure's functionality, integration with Office environments, and industry-leading security features were reasons that Citrix chose Azure as a platform to expand its cloud offerings.

Citrix Cloud contains a number of tiers based on functionality and pricing level, as shown in Figure 1. Citrix Cloud hosted in Azure enables organisations to securely deploy virtual desktops and applications, as well as mobility and networking services, in a matter of hours instead of weeks. Users have a portal to access documents and applications at any location, including on-premises applications, public or private cloud functionalities, and hosted data. Internal IT teams have access to a unified control platform to manage and maintain data in hybrid cloud environments, with the ability to set permission access for unique devices, applications or data through a unified console. In a European context of increasing data privacy concerns, features in Citrix Cloud such as advanced credential management and isolation of sensitive data are crucial aspects for organisations selecting a workspace solution.

Figure 1
Citrix Cloud Service Tiers



Source: Citrix Systems

The partnership between Citrix and Microsoft serves as a powerful draw to deliver enterprise-class VDI workload capacity and application delivery on a secure cloud platform. With the aim of offering a highly adaptable service for any cloud or virtual infrastructure, Citrix Cloud on Azure has the added benefit of agile and scalable workload deployment.

POTENTIAL BUSINESS BENEFITS OF VDI IN THE PUBLIC CLOUD

To understand the potential value for organisations of running Citrix on Microsoft Azure, IDC considered the experiences of more than 100 organisations that it has surveyed in the last three years that are running VDI workloads either in the public cloud or in an on-premises environment. These organisations' experiences show that they are benefiting both from a cost perspective and in terms of user enablement. On the cost side, moving VDI to the public cloud minimises expenditures on server-related infrastructure and ongoing infrastructure-related costs.

Meanwhile, IT teams benefit from not needing to maintain on-premises infrastructure, more reliable performance, and ease of delivering new features and applications. In addition, a pay-as-you-go approach means that when VDI instances are powered down in the public cloud you no longer need to pay for that machine until it is booted up again. This has the potential for major cost savings where on-premises infrastructure has to be sized for the peak load and sits idle much of the time but this capacity still has to be paid for.

On the business side, VDI users benefit from improved reliability, faster delivery of new features, better access to applications, and improved performance, all of which generate operational efficiencies and opportunities to capture additional revenue. In total, as shown in Table 1, IDC's research shows that organisations that are running VDI in the public cloud with solutions like Citrix on Microsoft Azure can realise \$2,015 in additional value per-user per-year.

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Table 1
Average Annual Benefits Per User of Running VDI in Public Cloud Compared with On-Premises

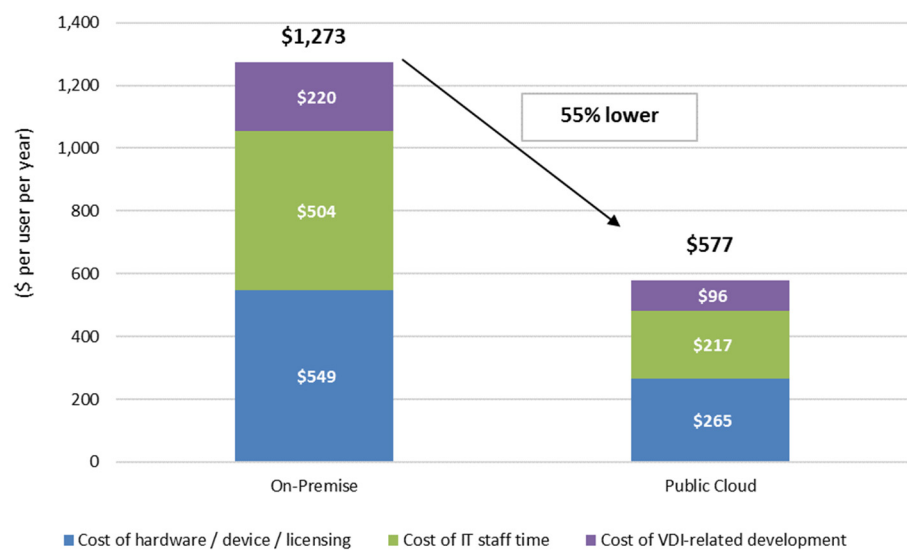
Area of Value	Value per-user per-year
Hardware cost savings	\$285
IT staff time efficiencies	\$287
Development team efficiencies	\$124
Higher user productivity, less downtime	\$111
Higher user productivity, faster to deliver new features	\$382
Higher user productivity, improved performance	\$194
Higher user productivity, increased user adoption	\$407
Higher revenue*	\$225
Total value of public cloud per-user per-year	\$2,015

Source: IDC, 2018 (*IDC recognises revenue by applying a 15% assumed operating margin against total revenue impact)

Cost-Effective VDI

IDC’s research demonstrates that organisations can achieve substantial cost efficiencies in terms of building out and supporting their VDI environments in the public cloud rather than with an on-premises infrastructure. On average, surveyed organisations run VDI workloads at a 55% lower cost per-user per-year than on a legacy on-premises environment (see Figure 2).

FIGURE 2
Annual Cost of VDI per User



Source: IDC, 2018

Infrastructure and Operational Cost Savings

Efficiencies from running VDI workloads on the public cloud begin with significant savings in hardware-related costs. While organisations using public cloud-based VDI solutions such as Citrix on Microsoft Azure pay an annual or monthly fee per user (depending on the version), they more than offset that cost with savings from not needing to deploy servers and associated infrastructure, and from lower ongoing costs related to power consumption.



"Scope is expecting a significant advantage to scaling our IT environment and ensure that we only pay for the IT resources that we need"

Scope Group

- Scope is a Berlin-based financial credit-rating agency with 200 employees across Europe.
- The business strategy called for further European expansion, but Scope was limited by on-premise datacentres. This was due to constraints on:
 - Affordability
 - Physical space
 - Cooling capacity
 - Power supply
- Scope is in the process of moving all on-premise IT services to the public cloud, to reduce need for on-premise management and increase the working mobility of employees without compromising productivity.
- For its VDI strategy, Scope opted for Citrix on Azure due to its extensive use of Microsoft Office combined with Azure's data security features and compliance with the European General Data Protection Regulation.

With public cloud VDI solutions, organisations have better visibility into their licensing, and pay an annual or monthly use fee on a per-user basis, also allowing them to avoid potential upfront licensing costs.

By running VDI workloads in the public cloud, organisations can either retire or reallocate existing servers, or avoid buying new servers. In both cases, they avoid not only a potential Capex investment, but also software costs associated with building out and maintaining an on-premises server environment. Further, organisations can optimise licensing costs with public cloud solutions. In particular, organisations may carry unnecessary licensing costs that deliver little value. With public cloud VDI solutions, organisations have better visibility into their licensing, and pay an annual or monthly use fee on a per-user basis, also allowing them to avoid potential upfront licensing costs. These efficiencies can translate to cost savings; IDC's research shows that organisations are able to reduce these types of VDI-related costs by an average of 55% per-user per-year (\$549 to \$265) with a public cloud-based VDI solution such as Citrix on Microsoft Azure.

IT Staff and Development Efficiencies

IDC's research also demonstrates that VDI deployments in the public cloud enable organisations to free up time for their IT teams and make VDI-related development efforts more effective. Many organisations see a business need to move skilled IT staff members away from day-to-day support for infrastructure and devices to the greatest extent possible; IT teams can use this saved time to work on other value-generating IT and business initiatives. By running VDI workloads in the cloud with solutions like Citrix on Microsoft Azure, surveyed organisations operate, support and develop for their VDI environments more efficiently.

For staff responsible for managing and supporting server infrastructure and devices, moving VDI to the public cloud reduces the day-to-day friction associated

with these efforts. Server, storage and network hardware no longer needs to be deployed, maintained and upgraded, while improved VDI performance means fewer requests from users for time-consuming support. The result is that less IT staff time is needed on a per-user basis for these activities, freeing up time to be used for other IT initiatives or for expanding VDI access to new users cost-effectively. IDC puts efficiencies realised by IT management and support teams at 57% on average compared with running VDI on-premise.

In addition, development teams benefit from public cloud-based VDI services by making deployment of virtual desktops and applications less time consuming and enabling constant access to compute resources to carry out development activities. With on-premises VDI deployments, these teams must often work through multistep processes to achieve deployment. Their work can also be slowed by the necessity of provisioning additional compute or storage resources to service additional users, whereas VDI solutions such as Citrix on Microsoft Azure minimise these concerns. IDC calculates that organisations can make their VDI-related development efforts 57% more efficient with a public cloud approach compared with a traditional on-premises architecture.



"You get all the benefits of Citrix with all the flexibility of a cloud infrastructure"

Mazars

- Mazars is an accounting and audit firm with 2,300 employees spread across 17 global offices.
- Having on-premise Citrix datacentres made global office access hard to achieve.
- Mazars wanted to:
 - Become more agile
 - Improve upload times
 - Keep costs down
 - Improve service delivery
- Mazars started a Citrix to Azure migration in June 2017, and rolled out its first virtual desktops in December 2017. It will complete the migration by March 2018.
- Mazars can now provide employees with the right types of virtual environment on demand, whether an email client or a full desktop solution.
- By using Citrix and Microsoft support to manage and run the VDI platform, internal IT is now freed up to focus on a business advisory role.

User-Generated Value

Beyond cost and operational efficiencies, IDC's research demonstrates that much of the value of using a cloud-based public cloud VDI solution such as Citrix on Microsoft Azure relates to empowering users of virtual desktops and applications. With a public cloud VDI solution, organisations can support their employees with agility, improved performance, and more functionality. The result is that employees use virtual desktops and applications more effectively, thereby increasing their productivity. On average, as shown in Figure 3, IDC's research shows that moving to a public cloud-based VDI solution such as Citrix on Microsoft Azure can generate value in higher productivity and revenue worth \$1,319 per user per year in the following ways:

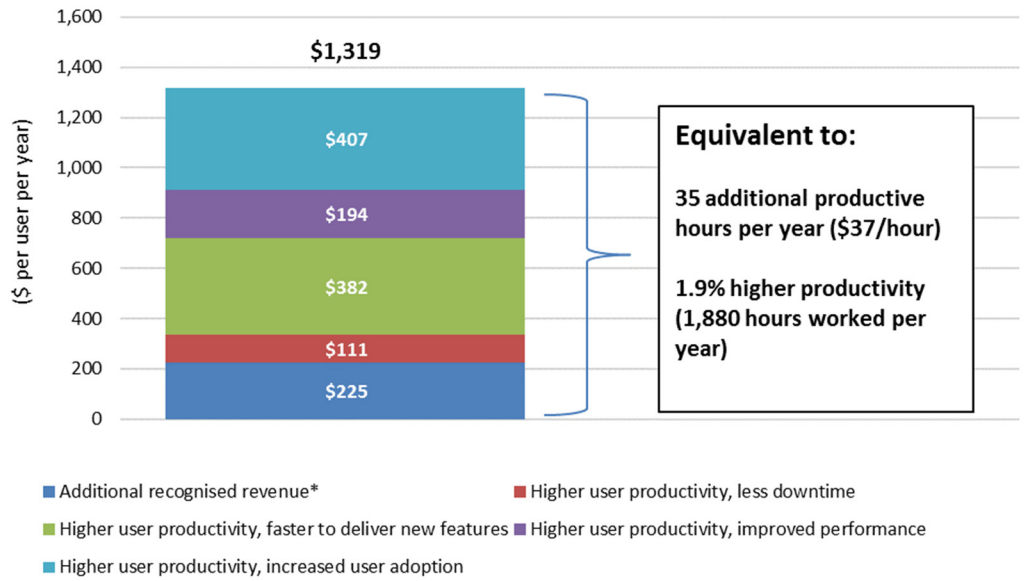
- **Less downtime:** Organisations can reduce the frequency of user-impacting outages by moving VDI workloads out of on-premises infrastructure that

can be more susceptible to human and configuration errors. IDC calculates that reducing the impact of unplanned outages on VDI users has an average value of \$111 per-user per-year.

- **Faster access to new features/functionality:** Organisations can deliver virtual desktops and applications sooner to users with public cloud-based VDI, and thereby better meet demand from users for particular capabilities and features. This increases user productivity through earlier and more timely access to VDI functionality, as well as performance enhancements to existing services that can be accessed immediately through cloud-based VDI. IDC calculates the value of higher productivity related to faster deployment of VDI resources at \$382 per-user per-year.
- **Improved performance:** Organisations avoid performance degradation to their VDI workloads that occur more often with on-premises deployments. This helps users work at full productivity, thereby increasing their value. IDC estimates that the value of higher productivity through improved VDI performance is \$194 per-user per-year.
- **Increased user adoption:** Organisations benefit from increased user adoption of virtual desktops and applications when they perform better and are delivered earlier. IDC projects that organisations realise \$407 per-user per-year in value from higher adoption rates.
- **Higher revenue:** Organisations can win more business by having employees who are empowered through higher performing VDI solutions, and by deploying and extending VDI with greater agility as needed to support business growth. On average, IDC calculates that organisations can increase revenue by \$1,503 per-user per-year, which translates to \$225 per-user per-year in recognised revenue after applying a 15% operating margin assumption.
- **Enhanced flexibility:** Cloud-based VDI solutions can enable organisations to quickly disperse VDI environments across global offices, as well as be more flexible in the types of VDIs deployed than would be possible with non-cloud VDI solutions.

For organisations whose employees rely on virtual desktops and applications, these efficiencies with public cloud VDI solutions such as Citrix on Microsoft Azure have substantial value. The \$1,319 gain per-user per-year shown in Figure 3 translates to an equivalent of 35 hours of additional productive time per-user per-year, or 1.9% higher average productivity for employees using VDI.

FIGURE 3
Business and User Benefits of Public Cloud VDI



Source: IDC, 2018 (*IDC recognizes revenue by applying a 15% assumed operating margin against total revenue impact)

Added Security Value

Security is becoming of paramount concern for organisations across Europe, due not only to the increasing frequency of cyber-attacks, but also to the upcoming EU General Data Protection Regulation (GDPR) that comes into force in May 2018. GDPR requires specific levels of capabilities and protection, with heavy penalties imposed on organisations that fall prey to cyber-attacks due to inaction.

VDI delivered through the cloud can minimise the risk of systems being compromised for a number of reasons. Firstly, VDI itself lowers the risk of a data breach because the data is stored in the datacentre and not on end-user workstations, with a low risk at an individual user level with device loss or theft. Secondly, leading cloud providers can quickly and efficiently patch the cloud infrastructure as well as VDI platforms, ensuring that customers are always up to date. This contrasts with on-premises IT where assessment and patching can take weeks if not months to move into production.

CHALLENGES TO BE AWARE OF

Although the benefits of VDI in the public cloud most often outweigh the drawbacks, implementing such a VDI solution is not without challenges:

- **Migration strategy:** If organisations already have an on-premises VDI solution, they need to decide whether to transition completely to a cloud-based VDI or to add capacity through a cloud solution.
- **Performance guarantees:** The inability to ensure that virtualised workloads perform at least as well as on-site installations can be a challenge, and may impact the success of VDI implementation. Public cloud-hosted VDI helps address this by offering faster procurement than

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local installations, while eliminating up-front infrastructure costs. SLAs ensure performance consistency as well as uptime availability.

- **Compliance:** Due diligence is a necessary step for organisations, as not all cloud providers offer the same level of infrastructure security and compliance-related support. While VDI solutions predominantly improve security by managing end desktops more easily, providers need to demonstrate to what level they are GDPR compliant.
- **Provider dependency:** Buyers need to do due diligence when selecting VDI solutions to ensure the provider has a strong reliability record and the ability to shift cloud services to alternative solutions in the case of downtime or service inaccessibility. This may include the option to shift services back on-premises or to another provider should the need arise.

ESSENTIAL GUIDANCE

When considering a rollout, refresh or expansion of a VDI solution, IT decision makers should understand and evaluate the implications of running VDI services from the public cloud, including:

- **Cost savings:** This is a significant attraction on a number of fronts, due to paying only for what is used, and scaling up as requirements change. In addition, reduced costs associated with infrastructure management and server maintenance are observed through using public cloud VDI solutions due to a reduced datacentre footprint.
- **Agility:** Using a public cloud VDI solution enables businesses to scale up or down based on workload needs, which can be a crucial competitive aspect when new business opportunities arise. It also reduces the amount of decision-making risk, as organisations are not tied down to expensive and long-term infrastructure investments if a business idea fails.
- **Migration Strategy:** Rather than a complete cloud transition, organisations may prefer to opt for a hybrid deployment solution to gradually move workloads to the cloud. This can allow migration at a speed that is more suited to each use case.
- **Responsibility:** The deployment and maintenance of the VDI control plane is handled by the VDI service provider, freeing up valuable time for internal IT teams from managing on-premises servers, and regular infrastructure optimisation processes. Much of the hard work is removed from the user side, with only the decision to make about how much scale to take on.
- **Functionality:** Using a VDI solution alongside an application marketplace can enable easier access to new solutions and functionalities, such as advanced developer tools, security and identity control, and technologies like blockchain.
- **Security:** Many companies struggle to keep IT infrastructure fully updated and patched as threats and vulnerabilities are exposed and exploits developed. Leading public cloud providers update infrastructure and

applications on an on-going basis, ensuring that customers are always on recent releases, rather than having to plan, fund and implement on-premises upgrades — the difficulty of which often means outdated and hard to secure on-premises IT services. In addition, cloud providers can patch vulnerabilities quickly and effectively without customer intervention, greatly increasing security confidence and reducing the IT team's workload.

APPENDIX: METHODOLOGY

IDC compiled the data used in this IDC Solution Brief from assessments it conducts every year with organisations that are running various workloads, including VDI, on the public cloud. For the purposes of this study, IDC considered the experiences of 120 organisations that have deployed VDI workloads in the public cloud. Business value results were normalised by expressing them in terms of dollar benefits per-user per-year. IDC has also translated these dollar values to productive hours where appropriate using a \$70,000 per year salary assumption and 1,880 hours worked per year assumption.

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