



White Paper

Citrix Cloud Services:  
Total Economic Benefits Assessment Guide

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# 1 Executive Summary

Citrix Cloud services represent the fastest, simplest, and most flexible approach to delivering integrated digital workspaces available today. Services are provided either as full Software-as-a-Service (SaaS), or other cases, as hybrid cloud services where Citrix provides cloud-based management, while customers determine where workloads are located. All services are sold in the form of 1- 2- and 3-year subscriptions which include service activation, support, and constant SaaS-based updates during the lifetime of the subscription.

This paper provides guidance to customers wanting to draw economic comparisons between perpetually licensed Citrix software, and the newer Citrix Cloud service equivalents.

Compared to purchasing, installing, and maintaining traditional perpetually licensed software, the new SaaS/Subscription approach offers unique technical, financial, and capability benefits. Some of the main benefits and often cost avoidances that Citrix Cloud services bring to customers in this paper include:

<b>Hard cost avoidances</b>	<b>Soft cost avoidances / new capabilities</b>
Reduced maintenance and support <ul style="list-style-type: none"> <li>○ <i>Avoid ongoing maintenance costs</i></li> </ul> Eliminated software upgrades and patching <ul style="list-style-type: none"> <li>○ <i>Avoid upgrade risk / expense</i></li> </ul> Reduced time-to-production <ul style="list-style-type: none"> <li>○ <i>Labor &amp; staging savings</i></li> </ul> Automation efficiencies with Smart Tools <ul style="list-style-type: none"> <li>○ <i>Labor reduction</i></li> <li>○ <i>Infrastructure cost reduction</i></li> </ul> Reduced installation and management <ul style="list-style-type: none"> <li>○ <i>Less (or no) hardware</i></li> <li>○ <i>Little (or none) capacity re-sizing</i></li> </ul>	Flexible on-ramp to any cloud <ul style="list-style-type: none"> <li>○ <i>Reduced lock-in risk</i></li> <li>○ <i>Greater infrastructure choice</i></li> </ul> Security and compliance advantages <ul style="list-style-type: none"> <li>○ <i>Greater infrastructure flexibility</i></li> </ul> CapEx vs. OpEx advantages <ul style="list-style-type: none"> <li>○ <i>Avoid capital cost-of-funds</i></li> <li>○ <i>Greater operational predictability</i></li> </ul> Minimized downtime <ul style="list-style-type: none"> <li>○ <i>Avoid cost/risk of downtime</i></li> </ul> Enabling business continuity options <ul style="list-style-type: none"> <li>○ <i>Infrastructure and management efficiency</i></li> <li>○ <i>Multi-location management options</i></li> </ul>

Citrix Cloud also brings several intrinsic “soft” benefits to customers beyond cost avoidance; these benefits should be evaluated holistically as customers consider cloud services versus software implementation. This paper also provides insights and data intended to help Citrix Cloud services customers create a framework from which they can quantify their own unique economic and net-new capability benefits.

## 2 Citrix Cloud – A Brief Overview

Citrix Cloud helps deliver an integrated digital workspace by seamlessly uniting all Citrix services and technologies into a single platform to simplify and eliminate manual integration between them. Citrix Cloud also provides underlying platform services for operations, service administration, resource management, upgrading, and user experience monitoring. The entire platform and services are delivered as Software as a Service (SaaS) via a subscription based pricing model. The main services that Citrix Cloud delivers as of today are XenApp, XenDesktop, XenMobile, ShareFile and NetScaler.

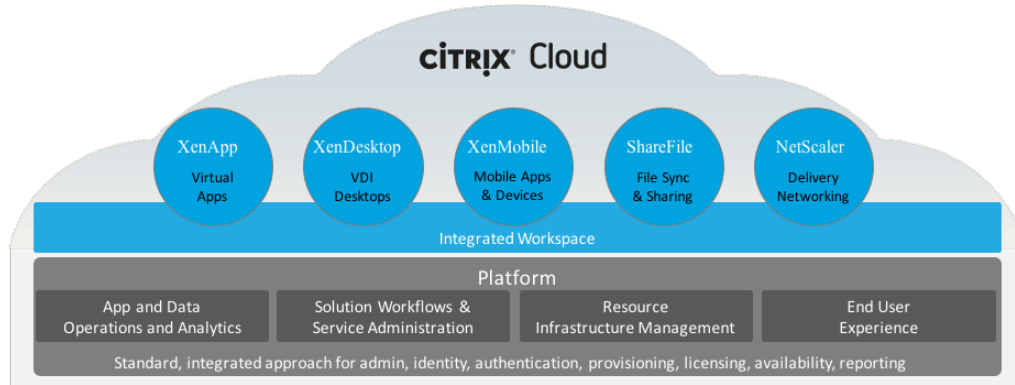


Figure 1: Citrix Cloud Services Integration

The Citrix Cloud platform can be thought of as a management plane spanning multiple services. The core cloud services are operated and maintained by Citrix, and contain all management functions that customers would otherwise have to install and provision themselves. By seamlessly managing the infrastructure related operational tasks such as software version updates, maintenance and support, services integration, etc. on behalf of the customer, Citrix Cloud enables its customers to better focus on their core business rather than on maintaining Citrix infrastructure.

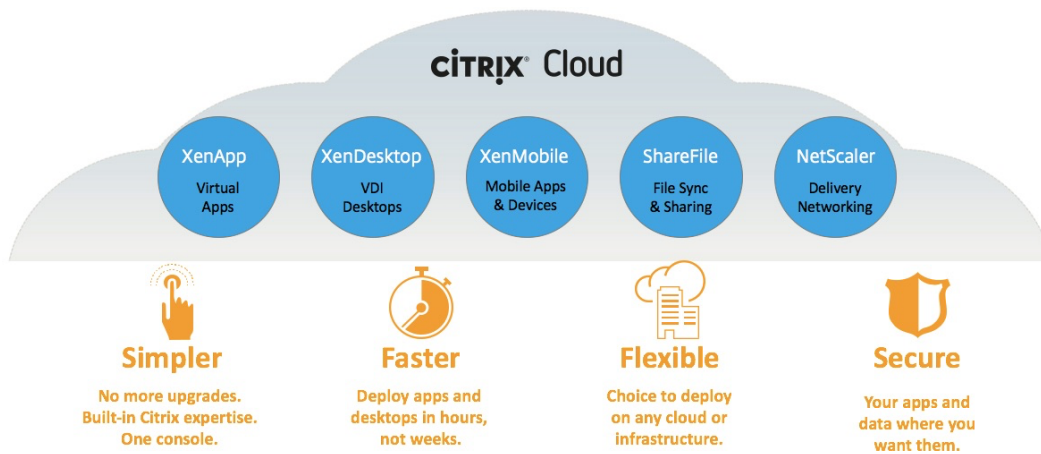


Figure 2: Best Way To Deliver Citrix Services

One of the critical values that Citrix Cloud services bring to customers is that they are easier and faster to integrate than traditional software, and are ready to be consumed with minimal effort. In many cases, all customers need to do is activate, configure, and onboard users to the services. Maintenance and support tasks such as periodic installation of software version upgrades, patches, etc. is Citrix's responsibility.

In a few cases (such as with the XenApp and XenDesktop service) management of certain software and networking components is explicitly placed under customer management, ensuring that customers are in complete control of proprietary data and workloads. For example, Virtual Delivery Agents\*\* (VDAs) in Resource Locations are explicitly under customer control/management, while all other XenApp and XenDesktop components are cloud-based.

*\*\*VDA Definition: A VDA enables connections to applications and desktops. The VDA is installed on the machine that runs the applications or virtual desktops for the user. It enables the machines to register with Delivery Controllers and manage the High Definition eXperience (HDX) connection to a user device.*

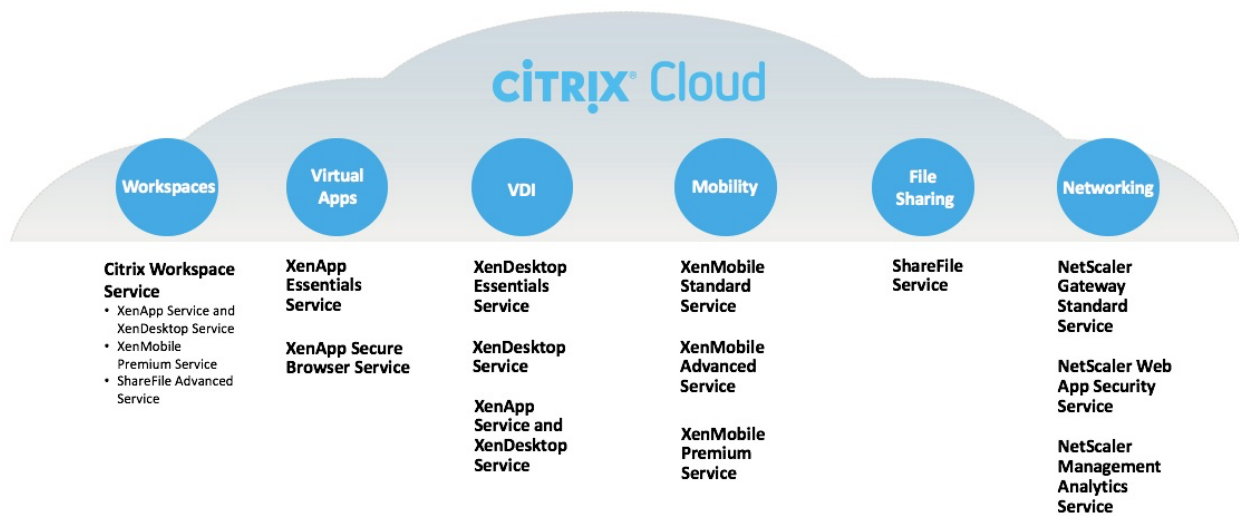


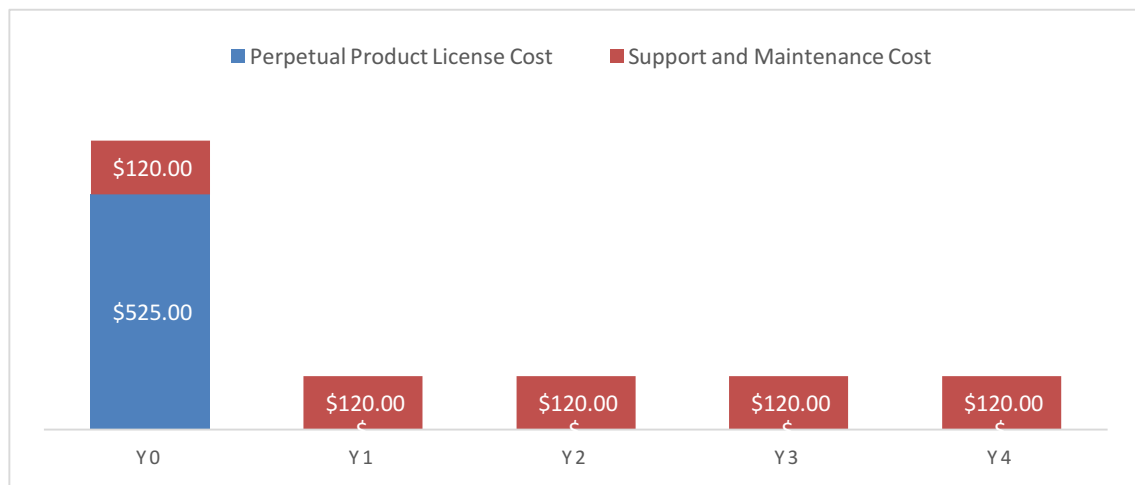
Figure 3: Citrix Cloud services portfolio (July 2017)

### 3 Citrix Licensing Options – A Perspective

In order for customers to determine which Citrix delivery model works the best for them, it is important to understand both the traditional perpetual licensing model as well as the subscription based Citrix Cloud service model. This will allow customers to compare and contrast the two approaches and highlight how and where Citrix Cloud adds value.

#### 3.1 Perpetual Licensing Economics

In a perpetual licensing model, the customer may use licensed software indefinitely. However, customers also often choose to pay an optional annual software maintenance and support fee. The fee entitles access to any subsequent versions of the software, software upgrades, patches and technical support. From a cost perspective, a hypothetical perpetual licensing cost structure for the first 5 years will look similar to Figure 4.



**Figure 4: Typical Perpetual License Cost Structure**

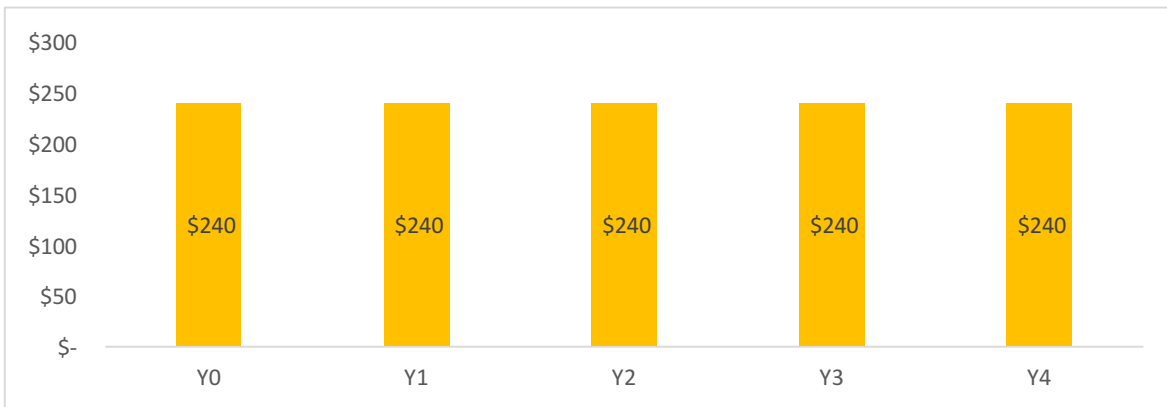
In the above example, the first year (i.e. Y0) cost includes the license cost (typically recorded as a capital investment) plus the support and maintenance cost (\$525 + \$120). For Y1 - Y4, the customer pays just support and maintenance cost (\$120) for the subsequent years until the version of the software reaches “End of Life” (EOL). Of course, the yearly support and maintenance fee is not mandatory and the customer could potentially choose to discontinue paying this fee at any point in time. However, without this fee, the customer will lose access to future upgrades, software support and patch releases. In the scenario where upgrades and patches become available, it is the responsibility of the customer to install these updates themselves.

It is also important to realize that in order to successfully deploy a software offering, there are other significant costs including hardware, labor, datacenter heating and cooling, supporting infrastructure (e.g. database, load balancer), etc. that need to be considered to establish a complete economic snapshot of the associated cost structure.

## 3.2 Subscription Based SaaS Delivery

In contrast to the perpetual software model, Citrix Cloud utilizes a SaaS delivery and subscription model where customers select services and then with little-to-no infrastructure (depending on the service) configure and activate each. Each service, including updates, configuration, integration and support is encapsulated in a single year-to-year, flat-rate subscription price.

As an example, a hypothetical subscription's typical cost modal via Citrix Cloud for the first 5 years is depicted in Figure 5 below:



**Figure 5: Typical Subscription cost structure (Per User) Pricing**

As shown in the above graph, a typical Citrix Cloud service cost structure is constant and predictable, often with lower (or no) infrastructure costs, and significantly less software and support, labor, and datacenter-related investments. Most important, updates/patches are automatically tested and applied. Lastly, as a subscription, accounting rules typically allow treatment of the cost as an operational (not capital) expense.

## 3.3 Comparing Perpetual vs. SaaS

Clearly, the up-front capitalized costs for traditional software are greater than for the fixed-cost SaaS equivalent. Amortized over a longer-term (usually 3-5 years or more) the SaaS alternative will at first appear more expensive from a pure cash-flow perspective.

However, customers need to take into account

- Eliminating costs such as maintenance and support
- Avoiding the need for staging and implementing regular upgrades
- Sizing, deploying, and refreshing hardware

Therefore, due to hard- and soft-cost avoidances provided by the SaaS model, the subscription approach will present a lower overall total cost of ownership – and higher overall value – when compared with software. The remaining sections of this paper will examine these in detail.

## 4 Estimating Cost Avoidances When Using Citrix Cloud Services

### 4.1 Hard Cost Avoidances

The below section discusses various areas where a Citrix Cloud implementation makes direct impacts on the cost structure of customer IT environments. We encourage customers to use these areas as guidance for creating their own economic evaluations.

#### 4.1.1 Reduced Maintenance and Support Costs

**Background:** Upgrades to the Citrix Cloud management plane, as well as upgrades to individual services, are automatic (managed by the Citrix Cloud operations team). Customers therefore have access to the latest Citrix technology as soon as it's available, and avoid the operational overhead, time, and testing necessary to perform manual upgrades.

Citrix also manages and supports all services on behalf of the customer. This means customers are free from most tedious support tasks resulting into significant cost savings in terms of the number of personnel needed for support related work.

**Benefits Framework:** Statistics show that the greatest long-term cost component of computer software often lies with software support: The installation, training, maintenance, upgrades, troubleshooting and time lost due to system failures and lack of user training.

**Savings Estimation:** Per Gartner Research, Inc., Software is either the first or second largest cost in the IT budget; software support/maintenance accounts for between 50% - 60% of that overall software cost.

In contrast, leveraging Citrix Cloud services helps eliminate most if not all of these typical maintenance and support costs; besides the service subscription itself, there are no additional requires maintenance costs.

#### Further References and Data Points:

1. Gartner Research titled Reduce Your Software Maintenance and Support Costs by Up to 50% by Deploying These Often-Overlooked but Effective Best Practices
  - a. <https://www.gartner.com/doc/3525658/reduce-software-maintenance-support-costs>

#### 4.1.2 Automatic software upgrading and patching

**Background:** Software upgrading often means time, money and complexity. As a result, upgrades are often delayed or avoided altogether. Avoidance often prevents short-term headaches but often keeps users from leveraging the latest and greatest product versions. According to Forrester research, 5% to 10% of enterprise software vendors' customers move to the latest release; 40% to 50% of customers stay on the release prior to the latest one; and 40% to 50% remain on older releases--including 10% to 20% of the customer base who stay on releases that are no longer fully supported by the vendor. It is important to note that Citrix releases 2-4 such updates to XenApp and Xen Desktop each year.

Lack of upgrading software potentially leads to Security vulnerabilities, Loss of productivity, Compatibility and integration challenges with other technologies, and compromised maintenance and/or support.



**Benefits Framework:** Due to the complexity involved, enterprises tend to delay pushing software upgrades out, sometimes indefinitely, as they want to avoid business disruption and associated downtime. This effort is postponed until the enterprises hit a road block in the form of security vulnerability, cyber-attack, software incompliance, or end of support for a software version.

With Citrix Cloud services, Citrix is responsible for the maintenance and support of the management infrastructure including software version upgrades. This ensures customers are always on the latest version of the software, and are compliant and protected against security vulnerabilities. (A current exception is that management and support of XenApp and XenDesktop VDAs in customer-determined resource locations are intentionally not updated automatically)

**Savings Estimation:** According to Gartner, enterprise software upgrades can cost up to 30% of the original software installation price, can take more than a year to complete and require companies to revamp their technology infrastructures and business practices. Direct upgrade costs can include

- Installation
- Data migration
- Staging/test
- Roll-out & potential conversion downtime

The Citrix Cloud service delivery model eliminates any future need to patch or upgrade Citrix technologies.

**Further References and Data Points:**

- 1) Enterprise Software Upgrades: Less Pain, More Gain
  - a. <http://www.cio.com/article/2440405/enterprise-resource-planning/enterprise-software-upgrades--less-pain--more-gain.html>
- 2) The Hidden Cost of Upgrading
  - a. [http://www.medscape.com/viewarticle/466064\\_2](http://www.medscape.com/viewarticle/466064_2)
- 3) Mission Impossible: Judging TCO of Enterprise Software Upgrades
  - a. <http://www.cio.com/article/2417113/enterprise-software/mission-impossible--judging-tco-of-enterprise-software-upgrades.html>

### 4.1.3 Reduced Time-to-Value, Time-to-Production

**Background:** Deploying traditional software on-premises requires a number of capital acquisition activities, including acquiring and provisioning hardware, networking, storage and data center resources. Deployment begins with installation, configuration and tuning – often within a staged environment – to be followed by production deployment. These precursors to full production can span weeks or months.

Deploying traditional software into cloud IaaS can avoid the hardware procurement delays, but still requires all other manual installation, configuration, and staging steps.

**Benefits Framework:** Using Citrix Cloud services, the speed with which services can be deployed is increased, chiefly due to the fact that most services are activated rather than installed and configured. Many services are pure cloud-only services and do not require any additional provisioning.

Citrix Cloud services allow customers to vastly reduce (or eliminate) costs and delays associated with designing for and preparing POCs, staging, and upgrades - and more quickly serve their internal line-of-business customers.

**Savings Estimation:** A typical 5,000 user XenDesktop traditional deployment may take 3-9 weeks to stage, configure, deploy and move the core components into production<sup>1</sup> including back-end resources and necessary networking components.

In contrast, using the Citrix Cloud model, the customer is only responsible for the deployment and maintenance of the VDAs and integration with the local Active Directory (AD). The remaining infrastructure is deployed, configured and managed by Citrix. This could translate into a significantly shorter implementation and test time for the customers thereby reducing time to production.

Apps and Desktop Components	Citrix Cloud Implementation	Traditional Software Implementation
Delivery Controllers	SaaS	Manual Config.
StoreFront or Web Interface Servers	SaaS	Manual Config.
SQL Server data store	SaaS	Manual Config.
Licensing Server	SaaS	Manual Config.
NetScaler Gateway	SaaS	Manual Config.
Studio and Director	SaaS	Manual Config.
Server VDAs	Manual Config.	Manual Config.
Desktop VDAs	Manual Config.	Manual Config.
Active Directory integration	Manual Config.	Manual Config.
Cloud Connectors	SaaS	(n/a)

In the case of other Citrix Cloud services (i.e. Secure Browser, ShareFile, XenMobile Services, NetScaler Gateway Service, NetScaler MAS and others) zero additional software or hardware or software provisioning is required – services are simply activated and configured.

**Further References and Data Points:**

- 1) Stages of Software Deployment
  - a. [https://en.wikipedia.org/wiki/Software\\_deployment](https://en.wikipedia.org/wiki/Software_deployment)

### 4.1.4 Automation with Smart Tool Management

**Background:** Citrix Smart Tools (formerly Citrix Lifecycle Management) are a set of cloud-based tools to help customers speed up and simplify the design, deployment, and management of Citrix solutions across any on-premises or cloud environment. Customers can get the benefits of automation, proactively check the health of their systems, and keep costs under control with on-demand scaling.

**Benefits Framework:** One central component of Smart Tools is Smart Scale. Smart Scale enables proactive scaling and power management of machines (e.g. VDAs) in XenApp and XenDesktop public cloud deployments.

Using Smart Scale, customers can reduce the costs of running XenApp and XenDesktop VDAs in public clouds, such as with Microsoft Azure or Amazon Web Services (AWS). Smart Scale achieves this by dynamically scaling-up or scaling-down the number of powered-on virtual machines in a given VDA Delivery Group. Smart Scale can also estimate the savings based on the per-machine costs and utilization history.

Smart Scale manages machine power and capacity using the following methods:

- Schedule-based scaling: Powers machines on and off based on a schedule that customers define.
- Load-based scaling: Powers machines on and off based on the level of demand for sessions.

- Load and schedule-based scaling: Keeps a minimum number of machines powered on at time periods the customer defines while accommodating the current level of demand for sessions.

**Savings Estimation:** In a hypothetical example with the Citrix Cloud XenApp and XenDesktop Service, with VDAs deployed into a public cloud, Citrix Smart Scale can be used to control a 3,000 VM Delivery Group:

Assumptions	
Number of VMs	3,000
Total hours/week VMs run 100% capacity	40
Total hours/week VMs run 50% capacity	16
Total hours/week VMs run 10% capacity	112
Hourly cost per VM	\$0.07

Annual Costs	
Cost with "traditional" approach:	\$1,839,600
Cost using Smart Scale power management	\$646,464
Potential Savings	<b>\$1,193,136</b>

**Further References and Data Points:**

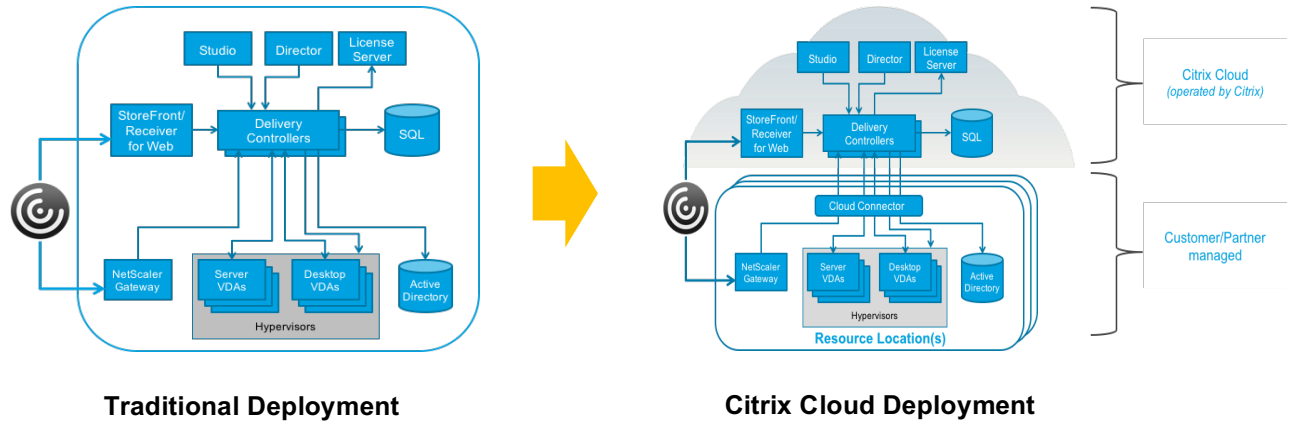
- 1) Citrix Smart Tools <https://manage-docs.citrix.com/hc/en-us>

### 4.1.5 Reduced Installation and Management infrastructure

**Background:** The Citrix Cloud control plane is provided and maintained by Citrix, and is furnished as an always-on SaaS-style cloud service. Most associated infrastructure components needed to support Citrix products are no longer required (exception being VDAs for the XenApp and XenDesktop Service in customer-managed Resource Locations). Elimination of most Citrix software also eliminates the periodic need for hardware refresh for an on-premises Citrix environment.

Since Citrix operates the management components of each cloud service, customers often have less management infrastructure to buy – or if customers choose to deploy services into a cloud, they may have less IaaS to consume as compared with traditional software.

As shown in Figure 6, with Citrix Cloud, a large fraction of the XenApp/XenDesktop infrastructure will be managed by Citrix (e.g. Delivery Controllers, StoreFront, Studio, Director, license server and associated networking)



**Figure 6: XenApp and XenDesktop Infrastructure Reduction with Citrix Cloud Implementation**

**Benefits Framework:** Avoiding provisioning and maintaining hardware to support Citrix management is the goal. Note

Hardware maintenance costs rise over time, and performance lags behind more current server offerings.

Energy efficiency is not as advanced in older server models, leading to increasing power/cooling costs in the latter years of the server’s usable life cycle

Applications software and systems software fall behind the current versions available in the marketplace, and security may require frequent updates. If the application or the system software is declared End-Of-Life (EOL), security patches may no longer be provided, leaving the system vulnerable to cyber threats.

**Savings Estimation:** To illustrate the infrastructure reduction provided by Citrix Cloud, assume a typical 1,000-user XenDesktop on-premises software environment. Per Citrix best-practices, between 4-10 servers may be required to support Delivery Controllers, Databases, Studio, Director, etc., (depending on performance, redundancy, etc.). This does not include the workload VDAs.

Where Citrix Cloud is applied, this hardware cost is completely avoided, as all services are provided via the Citrix Cloud control plane.

Following industry statistics, a physical server’s initial capital cost may represent only 20%-50% of its total cost of ownership (TCO) over a 3-5 year financial lifetime.

In the case of other Citrix Cloud services (i.e. Secure Browser, ShareFile, XenMobile Services, NetScaler Gateway Service, NetScaler MAS and others) zero hardware provisioning is required – services are simply activated and configured.

**Further References & Data Points:**

- (1) Total Cost of Ownership: Factors to consider
  - a. <https://software.intel.com/en-us/articles/total-cost-of-ownership-factors-to-consider>
- (2) Citrix XenApp 7.5 Design Guide: Mobilizing Windows Apps:
  - a. [https://www.citrix.com/content/dam/citrix/en\\_us/documents/products-solutions/mobilizing-windows-apps-xenapp-75-design-guide-on-vsphere-55.pdf](https://www.citrix.com/content/dam/citrix/en_us/documents/products-solutions/mobilizing-windows-apps-xenapp-75-design-guide-on-vsphere-55.pdf)
- (3) Microsoft Azure TCO Calculator:
  - a. <https://www.tco.microsoft.com/Home/Calculator>

- (4) XenApp and XenDesktop on Azure Cost Calculator:
  - a. <https://costcalculator.azurewebsites.net/estimate?topologyType=xenApp>
- (5) Cost of Server Ownership: On-Premise vs. IaaS
  - a. <http://www.sherweb.com/blog/total-cost-of-ownership-of-servers-iaas-vs-on-premise/>

## 4.2 Soft Cost Avoidances

Here we discuss harder-to-quantify net-new benefits that Citrix Cloud services bring to customer organizations. We focus on improving operational efficiency and adding net-new capabilities to the IT organization – and helping estimate added value.

### 4.2.1 Providing Flexible On-Ramp Options for Any Cloud

**Background:** Citrix Cloud XenApp and XenDesktop services are completely hybrid in nature, allowing customers to deploy virtual App and Desktop workloads onto any cloud or virtualization platform, including

- Existing or new On-Premise infrastructure
- Public Clouds like Azure or AWS
- Other Hybrid Clouds
- Hyper-converged infrastructure (HCI)

The most important factor to note is that Citrix Cloud allows customers to leverage their existing infrastructure investments, whether it is their existing on premise environment or their existing public cloud infrastructure. In this manner, they can make a smooth (and presumably lower-risk) transition to the cloud infrastructure of their choice.

**Benefits Estimation:** The true hybrid nature of Citrix Cloud brings the following benefit to its customers:

- a. **Lower cloud adoption cost:** Thanks to its hybrid characteristics, Citrix Cloud helps lower adoption cost and transition risk. For VDA workloads, customers have the freedom of leveraging their existing infrastructure investments and have the flexibility to choose any public cloud they prefer to deploy into. No “fork-lift” migration is necessary. For existing Citrix perpetual software customers, promotional transition licensing is available that includes “hybrid rights” allowing them to simultaneously operate both on-premises and in-the-cloud implementations.
- b. **Minimize cloud lock-in risk:** One of the biggest concerns customers have with migrating to the public cloud is that it becomes difficult to move workloads elsewhere. Citrix Cloud is completely cloud-agnostic in nature, and allows for workloads to be moved to another cloud or to any on-premises environment. In fact, customers can run and manage multiple Citrix workloads in multiple clouds, simultaneously.

#### Further References and Data Points:

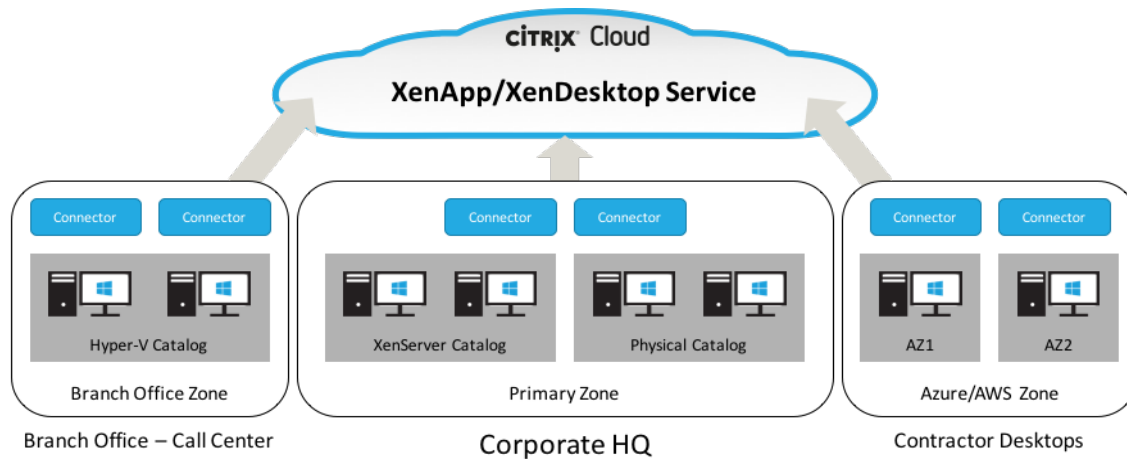
- 1) Top 3 Benefits of Hybrid Cloud
  - a. <http://www.hosting.com/hybrid-cloud-top-3-benefits/>

## 4.2.2 Security and Compliance Advantages

**Background:** In order to ensure that compute environments are fully secured, Citrix is committed to managing and deploying regular updates and implementing security patches as necessary to keep ahead of cyber security breaches, and stay defensible in an evolving world of cyber hacks and attacks.

Also, in the case of XenApp and XenDesktop Services, customers can also be assured that Citrix has no access to the customer's VDI data, which resides outside of Citrix Cloud and in customer-selected Resource Locations. Customers are fully responsible for their own data which gives the customers complete control over the security of their data.

Most important, the ability to control the location of Resource Locations for data, application, and desktop images, enables customers to adhere to specific regulatory, compliance, and data sovereignty rules.



**Figure 7: Manage Multiple XenApp/XenDesktop Resource Locations with Citrix Cloud**

### Benefits Estimation:

- a) **Data location flexibility:** From a compliance standpoint, Citrix Cloud significantly facilitates security, compliance and data sovereignty requirements by allowing customers to locate desktops and sensitive data in the location(s) of their choice, while managing those multiple locations all from a single management plane. Customers need only deploy VDAs in required locations and manage the corresponding data as per local or regional compliance needs (as shown in Figure 7).

This approach reduces the amount of regionally-located management infrastructure, corresponding labor, and overall complexity. Centralizing management helps reduce overall cost, while adhering to local or distributed security and compliance needs.

### Further References and Data Points:

- 1) Is Data Sovereignty a Barrier to Cloud Adoption?
  - a. <https://www.forbes.com/sites/forbestechcouncil/2017/04/11/is-data-sovereignty-a-barrier-to-cloud-adoption/#5f8ef2f31c82>
- 2) Data Privacy and Sovereignty: Global Challenges in the Cloud
  - a. <https://www.bc.net/sites/www.bc.net/files/bcnet/NewsEvents/ConferenceArchives/2016Slide/s/Tuesday-Day1/2016-Conference-Data-Privacy-And-Sovereignty-V001.pdf>

### 4.2.3 Minimized Downtime Cost

**Background:** According to IDC, on average, infrastructure failure can cost large enterprises \$100,000 per hour. Critical application failures exact a far steeper toll, from \$500,000 to \$1 million per hour. Hence it is extremely critical to minimize Citrix infrastructure and application downtime.

**Benefits Estimation:**

- a) Fully-managed platform: Citrix Cloud is monitored on a 24x7x365, and services run on a highly-available and globally-distributed infrastructure. This minimizes the customer's downtime risk for the components that Citrix manages, and alleviates much of customer needs to design for availability (customers are still responsible for the VDAs and their availability).

**Further References and Data Points:**

- 1) Citrix Cloud services uptime monitor
  - <http://status.cloud.com>
- 2) IDC Survey: Downtime Costs Large Company Billions
  - <http://devopsdigest.com/idc-survey-appdynamics-devops-application-performance>

### 4.2.4 Shifting Expenses from CapEx to OpEx

**Background:** Typically, capital infrastructure investments are large and often unpredictable, often with a significant cost-of-capital – literally, the cost of money – as well as with a typical return-on-capital-assets requirement made by most finance departments.

Many organizations are limited by the markets or private lenders in the amount of capital expenditure they are able to access. This is why many organizations prefer to lease rather than purchase; they don't want to tie up precious capital. This philosophy, within various industries, is causing the shift towards adopting cloud services.

Large IT expenses like procuring software and infrastructure fall under the umbrella of capital expenses (CapEx), including capitalizing software. With the advent of cloud computing and the periodic subscription-style consumption-based purchasing, many organizations are successfully shifting some or all IT investments to the operational expense ledger (OpEx).

**Benefits Estimation:**

- a) Avoiding cost-of-capital hurdles: By shifting from a CapEx to an OpEx model, customers can potentially eliminate risk and unpredictability associated with large hardware/software investments. IT SaaS infrastructure can become a regular, predictable, and often consumption-based operational expense – often preferred by finance departments. This avoids cost-of-capital expenses as well as return-on-capital requirements.

**Further References and Data Points:**

- 1) Understanding CAPEX vs OPEX for technology spending
  - a. <http://blog.au.logicalis.com/understanding-capex-vs-opex/>
- 2) Cloud Economics: Making the Business Case for Cloud
  - a) <https://assets.kpmg.com/content/dam/kpmg/pdf/2015/11/cloud-economics.pdf>

## 4.2.5 Enable Disaster Recovery and Business Continuity options

**Background:** According to IDC, Unplanned application downtime costs the Fortune 1000 from \$1.25 billion to \$2.5 billion every year. This implies that it is critical that enterprises implement business continuity and a disaster recovery solutions to address unforeseen events that could disrupt operations.

### Benefits Estimation:

- a) Simplifies recovery location creation/management: Citrix Cloud can easily manage multiple Resource Locations across data centers or clouds or a hybrid of both – making it easier to establish and maintain primary and secondary availability locations. This helps avoid the cost of duplicate Citrix management facilities.
- b) Facilitates Disaster Recovery: Citrix Cloud simplifies how Delivery Groups of VDAs are created, allowing administrators to create duplicate Delivery Groups in recovery locations. In the event of an unforeseen outage in a primary location, the Citrix Cloud console can be used to activate Delivery Groups in a recovery location(s) – helping avoid the redundant cost of establishing duplicate Citrix

### Further References and Data Points:

- 1) IDC Survey: Downtime Costs Large Company Billions
  - a. <http://devopsdigest.com/idc-survey-appdynamics-devops-application-performance>
- 2) Disaster Recovery Is Not Business Continuity
  - b. <http://www.datacenterknowledge.com/archives/2013/01/04/disaster-recovery-is-not-business-continuity/>
- 3) Citrix Cloud Business Continuity Advantage (Blog)
  - c. <https://www.citrix.com/blogs/2017/04/05/citrix-cloud-business-continuity-advantage/>



## 5 Conclusion

Compared to the traditional purchasing, installing, and maintaining of traditional perpetually licensed software, Citrix Cloud's SaaS/Subscription approach offers unique technical, financial, and capability benefits.

Considering the additional value, convenience, speed and reliability of SaaS-style delivery, Citrix Cloud services provide a superior economic and strategic option to purchasing and maintaining a traditional Citrix environment.

Purchasing evaluations based upon sole comparisons of cash outflows for perpetual licensing versus SaaS-style subscription access may fail to take into account hard- and soft-cost avoidances, as well as net-new value and capabilities.

When building an economic model for Citrix Cloud services, Citrix recommends customers factoring-in the value of net-new capabilities, as well as using industry benchmarks to estimate direct and indirect savings of infrastructure, updating, time, labor, and implementation risk.

To learn more about Citrix Cloud services, please visit <https://www.citrix.com/cloud>

### About Citrix

Citrix (NASDAQ: CTXS) aims to power a world where people, organizations and things are securely connected and accessible to make the extraordinary possible. Its technology makes the world's apps and data secure and easy to access, empowering people to work anywhere and at any time. Citrix provides a complete and integrated portfolio of secure digital workspace, application delivery, virtualization, mobility, network delivery and file sharing solutions that enables IT to ensure critical systems are securely available to users via the cloud or on-premises and across any device or platform. With annual revenue in 2016 of \$3.42 billion, Citrix solutions are in use by more than 400,000 organizations and 100 million users globally. Learn more at [www.citrix.com](http://www.citrix.com).

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