White paper

The Virtues of Virtualization and the Microsoft Windows 10 Window of Opportunity

Cisco HyperFlex VDI for Citrix

Market trends and VDI drivers

The IT industry is trending toward small, incrementally expandable infrastructure to address flexibility, integration, security, and data center control challenges. These market trends have spurred an increased demand for hyperconverged systems, which simplify IT, provide integration, and promote faster deployment.

Hyperconvergence is the ideal platform for Virtual Desktop Infrastructure (VDI), which is one of the primary workloads being deployed on hyperconverged infrastructure (HCI), taking advantage of the scale and flexibility of HCI.

Challenges

Some early VDI solutions, quick to enter the fray, failed the litmus test for success. Glaring weaknesses have included technological shortcomings and costly demands, such as:

- The creation of hardware islands and management silos
- Support for only a small number of virtual desktops
- Lack of integrated networking and security
- Inability to handle graphics-intensive applications

The #1 reason many VDI projects fail is user dissatisfaction.

Trends

Realizing the limitations of domain-specific initiatives, IT directors are now focusing instead on more holistic alternatives to address how emerging disruptive technologies can complement each other to drive greater business value and actionable business insights. Technology leaders are in the process of creating a modern enterprise that includes simplicity, speed to market, and agility.

In order to achieve these goals, islands and silos must be eliminated.

Many of the same disruptive forces that have spawned a market trend toward a single point of control can also be cited as virtual desktop infrastructure (VDI) drivers:

- Digital transformation
- Mobility
- Bring-your-own-device (BYOD) support
- Soaring TCO, CapEx, and OpEx costs

Still, there is one timely VDI driver that is often overlooked—Windows 10 migration imperatives.

Windows 10 imperatives driving VDI

Simplifying migration

As Windows 8 approaches its end of life, migrating to Windows 10 becomes an imperative. For enterprises with scores, hundreds, or thousands of employees, migration becomes an IT desktop-by-desktop, device-by-device nightmare. With VDI, however, migrating to Windows 10 is a "one and done" operation, saving countless hours of work and disruption.

This is easily accomplished by building a Windows 10 image that contains everything that a user, or a group of users, needs. The migration is then executed by essentially swapping that image for an updated image. Patching becomes simpler because IT can now easily test patches before putting them into production.

Handling graphics-intensive applications

Windows 10 is driving greater graphics requirements. Increasing numbers of business applications are making use of graphics acceleration. Employees are using more graphics-intensive applications such as YouTube and social media. Even if the user experience while running Windows 7 or 8 is satisfactory, the next Microsoft Windows update will degrade that experience as graphics demands impact performance. Therefore, powerful graphic processing units (GPUs) are no longer optional—they are essential. A GPU-enhanced environment is required to maintain a level of performance that will continue to support a positive user experience in a graphic-intensive environment.

Key benefits of a hyperconverged infrastructure (HCI)

The value of HCI is rising because it brings three critical components—storage, compute, and networking—together into one system, thereby significantly reducing the cost and complexity of cobbling together those three elements.

Overall, the industry is trending toward small, incrementally expandable HCI to address data center challenges, especially for virtual desktop deployments. This results in a platform that is:

Simple

- Streamline management with a single set of tools
- Manage and protect data with ease using VDI architecture

Efficient

- Deliver a better user experience with fast and intuitive self-service access
- Secure endpoint devices with safe access to desktops, apps, and services

Flexible

- Make the most of end-user devices, including BYOD and mobile, with virtual application delivery
- Scale while maintaining business control with an infrastructure that enables pay-as-you-grow deployment

Not all HCI solutions are created equal

Cisco HyperFlex™ is the only HCI solution that can:

- Deploy faster with a validated, prepackaged solution using service profile templates
- Ready your business for the future using a validated architecture with a highly flexible networking fabric
- Support multiple hypervisors, containers, and bare-metal deployments to power both existing and new cloud-native workloads
- Optimize infrastructure and reduce costs with independent scaling of compute and storage capacity

While most hyperconverged systems combine storage and compute, the networking component remained separate. Cisco HyperFlex is the only HCI that combines all three—storage, compute, and networking—with **networking** as a critical component.

The alliance forged by Cisco and Citrix

Two industry innovators, Cisco and Citrix, have come together to resolve existing and impending issues, bringing to market a complete hyperconverged desktop virtualization solution. Cisco HyperFlex VDI for Citrix, with Citrix Virtual Apps and Desktops, supports thousands of higher-performing virtual desktops and applications, at peak performance and responsiveness levels, thereby ensuring a superior end-user experience that eliminates islands and silos with centralized data center management.

Cisco and Citrix forged this alliance to provide a complete hyperconverged desktop virtualization solution, combining Cisco HyperFlex systems with Citrix Virtual Apps and Desktops. With this solution, enterprises get support for more higher-performing virtual desktops and applications than with other solutions. The Cisco HyperFlex VDI for Citrix solution can be managed centrally and consistently with all of the other applications running in a data center.

The combined offering:

- Simplifies the deployment of a desktop virtualization environment
- Delivers virtual disk (vDisk) and pooled (nonpersistent) virtual desktops, full desktops, and application streaming with Citrix Virtual Apps and Desktops
- Scales out linearly as the environment expands
- Automatically optimizes data and storage resources with always-on compression and deduplication, aligning with application requirements
- Achieves sub-second end-user response times,[1] up to three times faster than competing solutions
- Increases virtual desktop density and reduces costs
- Reduces initial investment costs with a pay-as-you-grow deployment model
- Implements end-to-end deployment best practices tested and validated by Cisco

Cisco HyperFlex systems with Citrix Virtual Apps and Desktops delivers a superior, industry-leading virtual desktop experience to all of your organization's end users. Its optimized data platform delivers better performance and lower latency, making it well suited for virtual desktop responsiveness.[1]

Overview and value proposition

The combination of Cisco HyperFlex systems with Citrix Virtual Apps and Desktops solves many of the toughest digital workplace issues. Enterprises can maintain business control with an infrastructure that enables pay-as-you-grow pricing and delivers consistent performance as you scale. At the same time, the solution enables BYOD support and simplified, secure desktop and application access to any device, over any connection, at any time.

Cisco HyperFlex VDI for Citrix can be implemented with confidence using a validated VDI architecture that integrates with a highly flexible networking fabric. It offers increased application and data protection enabled by centralized data and execution, which means fewer attack vectors, simplified backup, and greater control over sensitive data.

Cisco HyperFlex VDI for Citrix and the Microsoft Windows 10 window of opportunity

With Cisco HyperFlex VDI for Citrix, Windows 10 can be pushed quickly and easily out to every desktop and device in one simple move.

Cisco HyperFlex systems, powered by the latest Intel® Xeon® Scalable processors, deliver a new generation of more flexible, more scalable, enterprise-class hyperconverged solutions. Cisco delivers a complete solution based on a next-generation data platform—one that smoothly integrates into the existing data center. It is faster to deploy, simpler to manage, easier to scale, and ready to provide a unified pool of resources to power users' desktops as business needs dictate.

Graphics

Operating systems have become more graphics intensive over the years, as highlighted by the increasing complexity in Microsoft Windows 10.

In order for a Windows 10 migration and deployment to be simplified and successful, a GPU-enhanced VDI environment is required. Cisco HyperFlex systems with M5 nodes and NVIDIA Tesla M10 GPUs with NVIDIA GRID are the answer. This solution supports up to 64 users per node with a 1-GB profile, and 128 users per node with a 512-MB profile, providing exceptional simplicity, scalability, speed, and flexibility.

Speed

The speed of booting and provisioning desktops has been proven in tests.

Cisco used the Login Virtual Session Indexer (Login VSI) 4.1 knowledge worker workload running in benchmark mode to test the responsiveness of the solution. The test ran Microsoft Windows 10 with Office 2016 on Citrix XenDesktop 7.11 using 1000 pooled desktops, 1000 persistent desktops, and 1200 Citrix XenApp 7.11 hosted server desktop sessions (Windows Server 2012 R2 RDS server-based sessions on vSphere 6.0 U2). Even with the systems being pushed hard, Cisco HyperFlex VDI for Citrix delivered sub-second response times.[1]

Virtual desktops, with enhanced graphics, can be deployed in less than an hour. The cluster ships with the hypervisor and data platform preinstalled and ready to launch through the installation wizard. The entire virtual desktop environment can be managed through a single interface based on business policies. These management capabilities enable the installation and operation of the Cisco HyperFlex system with high-level management tools that support operations across both hyperconverged and traditional infrastructures.

Scalability

Scaling is fast and simple. The system automatically discovers new hardware when it is installed. Then adding it to the cluster takes only a few mouse clicks. If more data storage is needed, additional data nodes can be added, simply, to the cluster. However, often the need is not for more storage, but for more computing and graphics power. In this situation, a Cisco UCS® C240 M5 Rack Server can be added as a computing-only node with either 1 or 2 GPUs in the cluster. This provides increased power without all of the costs and unneeded storage.

Cisco HyperFlex systems provide the scalability and capability to adjust the ratio of CPU and GPU resources to storage resources. An environment can be created, deployed, and supported at a large scale, with end-to-end monitoring and insight. These features simplify infrastructure management and ultimately lower TCO.

Flexibility

There is also a choice in the way that virtual desktops are delivered. It's possible to start as small as a 3-node cluster, and then scale to support several thousand users as required, one node at a time.

Efficiency

With Cisco HyperFlex systems, as the number of users increases, the environment scales linearly by adding resources to the cluster as needed and still maintaining excellent user response times. In fact, end-user response times of up to three times faster than with competing solutions can be achieved. Either a storage node or a computing-only node can be added, resulting in exceptional flexibility when needed to scale. And, because data is automatically optimized through compression and deduplication, outstanding efficiency and utilization of storage resources are achieved.

Meeting predictions for the future of VDI

The value of HCI is predicted to rise by bringing everything—storage, compute, and networking—into one package, thereby significantly reducing the cost and complexity of cobbling together those three elements. As one indication of just how quickly the VDI market is evolving, this prediction for the future of VDI in 2017 has already become a reality in 2018, with Cisco HyperFlex leading the charge. As a result, VDI will become a necessity rather than a nice-to-have option.

Another example of how quickly predictions become reality can be seen in a TechTarget article by site editor Eddie Lockhart, who envisaged that "...the rise of graphics intensive apps with Windows 10 and in general is going to be important. A lot of Windows 10 apps call for 3D or 4D graphics and it's not just limited to computer-aided design anymore. Simple mainstream apps like Microsoft PowerPoint need 3D capabilities now in some cases. VDI shops have to be able to render these graphics so NVIDIA GRID will become increasingly important."[2]

Cisco HyperFlex VDI for Citrix already incorporates enhanced NVIDIA GRID capabilities, a critical feature for handling the graphics-intensive applications inherent in Windows 10.

Accelerate to Windows 10 with Citrix Virtual Apps and Desktops

There are four ways that the Cisco HyperFlex VDI for Citrix solution will accelerate and facilitate the migration to Microsoft Windows 10:

1. Citrix Virtual Apps and Desktops enable employees to stay agile on any device, while maintaining productivity with company-owned and-supported applications and desktops—before, during, and after a corporate-supported Windows 10 migration.
2. Apps run from the data center, not on the endpoint, avoiding OS compatibility issues. IT provides users with the flexibility they desire, while keeping the supported applications, desktops, and data secure in the data center.
3. Radically simplify the OS migration process by centralizing the delivery of new Windows 10 virtual desktops to all employees, while streamlining ongoing maintenance and future updates. With VDI, you can embrace Windows 10 devices quickly and easily to provide the experience users demand, while maintaining control over the migration process.
4. Advanced application compatibility analysis and conflict remediation allow customers to clearly see which applications will work with Windows 10 and the Edge browser, any dependencies those apps may have, and how to resolve issues. Citrix Virtual Apps and Desktops can reduce the cost and complexity of application management by as much as 90 percent.

Cisco HyperFlex VDI for Citrix includes:

Cisco HyperFlex HX 240c M5 Nodes

Cisco UCS C240 M5 Rack Server computing-only node (optional)

NVIDIA Tesla M10 GPUs with NVIDIA GRID software (optional)

VMware vSphere hypervisor or Microsoft Hyper-V

Desktop and application virtualization broker: Citrix Virtual Apps and Desktops

Virtualization, mobilization, performance, scale, storage, compute, and networking

Cisco HyperFlex delivers the only HCI that combines storage, compute, and networking. Citrix Virtual Apps and Desktops deliver virtual disk (vDisk) and pooled (nonpersistent) virtual desktops, full desktops, and application streaming. Cisco HyperFlex VDI for Citrix combines all of the elements needed for a successful VDI transition and Microsoft Windows 10 migration with an incrementally expandable HCI and sub-second response time for user satisfaction.

Source:

[1]Cisco Solution Brief April 2017
https://www.cisco.com/c/dam/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/sb-hx-citrix-vdi.pdf

[2]What does the future of VDI hold in 2017?
https://searchvirtualdesktop.techtarget.com/answer/What-does-the-future-of-VDI-hold-in-2017