Cisco Desktop Virtualization Solutions

The Evolving End-User Computing Environment

Desktop and application virtualization are increasingly popular approaches that organizations use to reduce desktop IT costs, improve efficiency, increase control, and expand connectivity. With virtual desktops, users can access their desktops hosted on data center servers through thin clients, smartphones, and other devices. Although desktop virtualization has existed for many years, many implementers of the technology have discovered that significant hurdles need to be overcome to fully reap its benefits.

Challenges of Desktop Virtualization

Many organizations that deploy desktop virtualization quickly encounter hurdles that either constrain the success of their deployments or completely prevent their solutions from being introduced on a wider scale. These include:

- **Capital expenditures (CapEx)** associated with upgrading data center computing, storage, and network infrastructure for desktop virtualization
- **Complexity** from integration of a multilayered solution consisting of virtual desktop infrastructure (VDI) software, computing platforms, storage, security, user personalization configurations, and other components, resulting in escalating operating expenses (OpEx) for IT departments
- **Performance differential** between a successful pilot deployment and a high-performance production deployment at scale, resulting in choices that balance the risk of either oversizing the environment and wasting CapEx or undersizing the infrastructure and delivering a poor user experience that does not replicate the success experienced in the pilot phase

Cisco® Desktop Virtualization solutions built with industry-leading partner solutions VMware Horizon View and Citrix XenDesktop address these challenges and deliver an optimized platform for virtual desktops and workspaces.

Cisco Unified Computing System: Optimized Infrastructure for Desktop Virtualization

The foundation of the Cisco Desktop Virtualization solution is the Cisco Unified Data Center. The Cisco Unified Data Center provides an open, end-to-end, service-optimized infrastructure for next-generation virtual workspaces, delivered jointly with our primary industry partners (Figure 1). With it, you can:

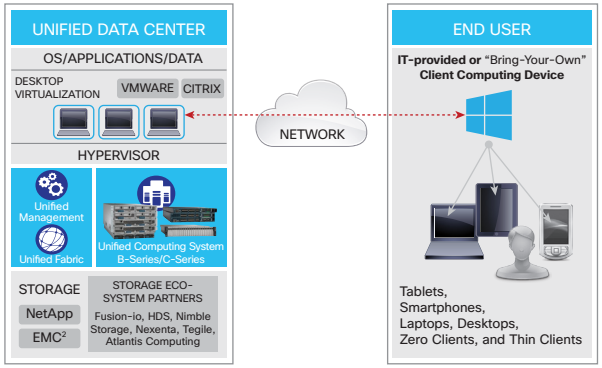
- **Simplify:** Accelerate time to productivity by simplifying the data center infrastructure.
- **Secure:** Improve the protection of data center infrastructure and assets.
- **Scale:** Support more desktops per server with predictable performance.
- **Save:** Achieve accelerated ROI, improved deployment speed, and investment protection.

Cisco Desktop Virtualization Solution Architectures

Cisco and its technology ecosystem partners have developed a comprehensive portfolio of reference architectures that are aligned with specific IT environments and business goals and address the traditional challenges associated with deployment of desktop virtualization. These designs offer:

- Lower initial cost
- Reduced system complexity and simplified management
- Scalable performance for customers of all sizes

Figure 1. Cisco Desktop Virtualization Solution

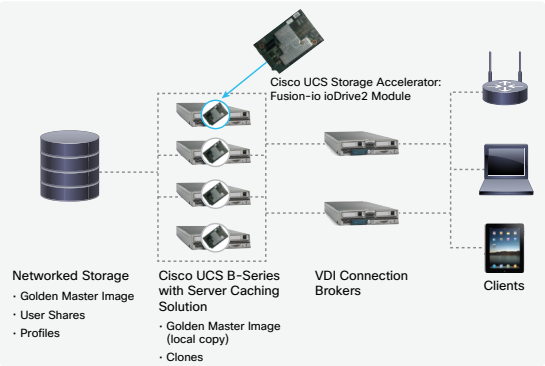


Built on best-in-class technologies, the architectures include on-board, simplified, and scalable models for desktop virtualization. In addition, converged infrastructure solutions such as FlexPod and vBlock™ Systems provide modular, ready-to-deploy solutions for the customer. These designs are suited to organizations of various sizes, ranging from small and medium-sized businesses (SMBs), to large enterprises, to service providers. Also, larger environments can use an approach that is designed for smaller environments when the immediate need is to establish a pilot or proof-of-concept (PoC) environment and prove success quickly.

On-Board Architecture

The On-Board Architecture for Desktop Virtualization (Figure 2) provides high-speed, low-latency flash-memory-based storage (solid-state drives [SSDs] and PCI Express [PCIe] flash-memory modules) on Cisco UCS servers and is well suited to customers who prefer to deliver stateless, or floating, nonpersistent desktops.

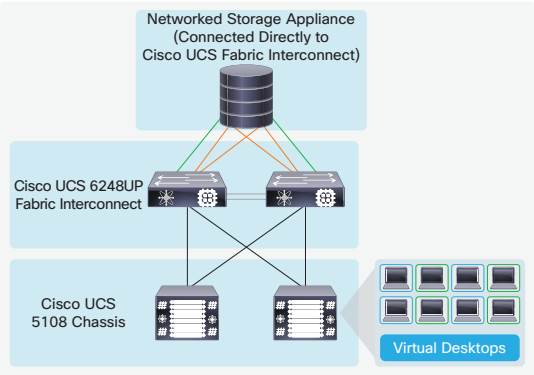
Figure 2. On-Board Architecture



Simplified Architecture

Cisco offers the Simplified Architecture for Desktop Virtualization (Figure 3), which employs an appliance-based model for virtual desktop storage. This architecture does not require an intermediate switching layer between the storage and the server. This architecture includes solutions from various Cisco ecosystem partners and offers a lower initial cost, making it well-suited to customers who do not have an existing investment in an enterprise-class SAN infrastructure.

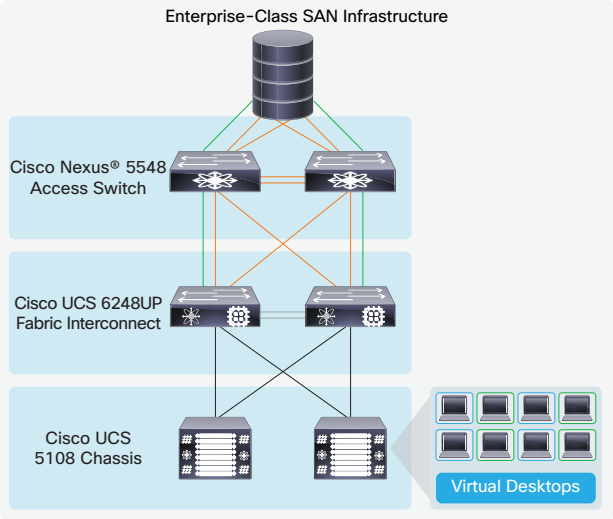
Figure 3. Simplified Architecture



Scalable Architecture

Cisco offers the Scalable Architecture for Desktop Virtualization (Figure 4), which, as documented in Cisco Validated Designs, has successfully demonstrated high performance in dense, large-scale environments and benefits such as the capability to log into 5000 desktops in as little as 30 minutes. This architecture is the approach recommended for truly scale-out environments. This architecture has no single points of failure, and it supports both single-domain and multidomain Cisco Unified Computing System™ (Cisco UCS®) environments, providing an expandable infrastructure in which an organization can expand its virtual desktop footprint.

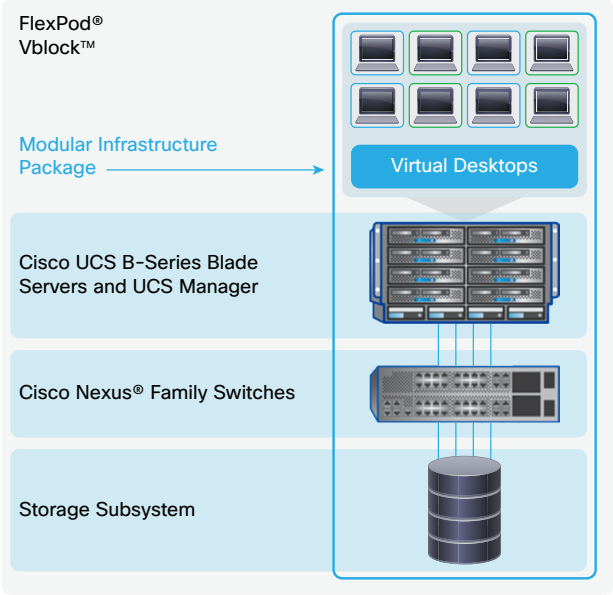
Figure 4. Scalable Architecture



Converged Infrastructure

Cisco offers the Converged Infrastructure for Desktop Virtualization (Figure 5), built on the technologies of ecosystem partners NetApp and the Virtual Computing Environment (VCE) coalition. This architecture, based on Vblock Systems and NetApp-based FlexPod, offers a convenient packaged infrastructure approach that modularizes data center components into easily consumable building blocks that can be added as needed for scale. Each unit of infrastructure offers self-contained computing, storage, and network fabric resources coupled with virtualization software. Implementers of this approach benefit from ordering simplicity, rapid deployment, simplified support, and building-block-based scalability.

Figure 5. Converged Architecture



Conclusion

Cisco and its technology ecosystem partners are addressing the challenges commonly associated with desktop virtualization – cost, complexity, and performance with scalability – and offering a portfolio of architectural approaches built on the Cisco Unified Data Center and best-in-class partner technologies and solutions. These solution architectures can address IT environments ranging from SMBs, to large enterprises, to service providers, offering a quicker, simpler, and more cost-effective approach to virtual desktop deployment with reduced risk and higher performance with scale.

For More Information

- Reference Architectures with VMware
- Reference Architectures with Citrix
- Desktop Virtualization Solution Paks
- www.cisco.com/go/vdi
- www.cisco.com/go/vdidesigns

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