Virtualize any workstyle

HP Client Virtualization Gen8 Enterprise
Reference Architecture for Citrix XenDesktop
and Microsoft Hyper-V
The new “work” paradigm—anywhere, any device access for your BYOD workforce

Until recently, most enterprises followed the common practice of tethering Microsoft® Windows® applications to the desktop. This model worked well when workers were also tethered to their desks.

But today, the workforce is going global and mobile. Workers from evolving demographics have new expectations for data and application delivery. They want seamless collaboration, eLearning, and unified communications (i.e., instant messaging and video conferencing) capabilities. They demand support for next-generation applications that can transform the way they work. And they want the ability to work from any location, at any time, using any device.

While mobile computing has distinct advantages—with increased productivity topping the list—it also presents new challenges. For example, managing a large distributed workforce can be complex and time consuming. Security breaches are also a major concern, regardless of the end-point device being used. In fact, in 2010 the Ponemon Institute (in an Intel® commissioned study) reported $6.4 million average annual cost for lost business notebooks. As more smart phones and tablets are used for day-to-day business purposes, that amount will certainly grow.

So the question for today’s enterprises is, “How do we enable anywhere, anytime application and information delivery, while also ensuring the protection of corporate information and minimizing management?”

For many companies, the answer is to virtualize the desktop environment and deploy a flexible workstyle strategy with initiatives such as Bring Your Own Device (BYOD). BYOD enables workers to use their own smartphone, tablet, or notebook for business purposes, but with important improvements: device management and application delivery take place in the data center, not on the end-point device. This approach offers many advantages:

- Increased worker productivity and empowerment
- Lower desktop costs
- Company information remains secure behind the corporate firewall, even when an end-user device is lost or stolen

If a virtualized client environment makes sense for your organization, HP, Citrix and Microsoft can make the transition safe and easier. The HP Client Virtualization (CV) Gen8 Enterprise Reference Architecture (RA) for Citrix XenDesktop and Microsoft Hyper-V has been tested with numerous combinations of storage, networking and server blades, and it is proven to handle today’s CV workloads. In addition to capitalizing on the increased performance and user density of the HP ProLiant BL460c Gen8 Server Blade, the latest reference architecture also features HP’s new Proactive Service and Support.

What is client virtualization?

Taking much of what is traditionally managed at the client/user device, CV centralizes those functions into the security of your data center. This way, your data is better protected, you can manage your systems more easily, you gain greater flexibility and your workers receive a better overall experience. And leading the way in client virtualization solutions is HP, together with Citrix and Microsoft.

Simplicity, optimization, and flexibility

HP CV Gen8 Enterprise RA for Citrix XenDesktop provides a sample configuration that is easy to scale. The single-rack reference architecture contains everything you need to support desktop virtualization—servers, storage, virtualization software, cabling, PDUs and HP Insight Control management software, as well as Citrix and Microsoft software. The reference architecture is designed to scale to two enclosures in a single rack, or up to four enclosures in two racks.

With the recommended guidelines provided by the HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop, you benefit from:

- **Simplicity** – Tailor your CV solution to meet your unique needs. Use HP Insight Control for Microsoft System Center to simplify management for servers, networking, and storage.
  - Includes a sample bill of materials and best practices for configuration and installation
  - Developed with optimized sizing and performance for CV
- **Optimization** – Best practices for CV efficiency
  - Integrated with leading Citrix virtualization software
  - Designed with no external—resulting in better performance at a lower cost
  - Engineered with exceptional power, cooling and storage efficiency
  - Tailored to your requirements, backed by HP Services expertise
- **Flexibility** – Scale-out to adapt to business changes and BYOD initiatives
  - Enable secure mobility with anywhere, anytime, any qualified device support
  - Support a broad range of workloads
  - Create and maintain desktops without business interruption

Driving the virtual desktop revolution

Enterprises around the world are transforming their desktop environments from device-centric management to user-centric models where desktops and applications are delivered as an on-demand service—and XenDesktop stands at the forefront of this revolutionary change.
Whether users are task workers, knowledge workers or mobile workers, XenDesktop can quickly and securely deliver individual applications or complete desktops, on any device. With Citrix FlexCast technology, each desktop can be tailored to meet the performance, security and flexibility requirements of all users across the enterprise.

The industry-leading HDX user experience rivals that of a local PC, even when using multimedia, real-time collaboration, USB peripherals and 3D graphics. Integrated WAN optimization capabilities boost network efficiency and performance even over challenging, high latency links.

XenDesktop means:

- **Supporting** any device, anywhere with the Citrix Receiver
- **Providing** a rich high-definition HDX user experience both over LAN and WAN environments
- **Moving** beyond VDI with FlexCast technology to tailor the best desktop experience for each user
- **Accessing** Microsoft Windows, web or SaaS apps
- **Delivering** open, scalable, proven solutions

### Persistent and Non-persistent VMs

For a virtual desktop, persistent and non-persistent users need to be considered. A persistent user maintains changes to their desktop between logins. A non-persistent user gets a fresh new desktop from a base image every time they log in. The primary difference between a hosted desktop user and a non-persistent user is user isolation. What one user does in the hosted desktop environment can affect other users in that hosted environment, all users are sharing the memory and CPU of the server.

In many cases instituting a client virtualization solution is not a single solution, but a hybrid model. Companies that have tried to use hosted desktops for all users have found that not all users fit into the entry level user, nor do they all use the same applications.

For VDI, the non-persistent user is the most desired model. With a single or only a few images to maintain, no one user can affect other users, and the amount of required storage can be reduced.

For non-persistent users, user virtualization needs to be implemented using tools like AppSense or Citrix User Profile Manager. This allows a user to customize their environment and have those customizations applied at each login. With the addition of Personal vDisk in XenDesktop 5.6, Citrix has provided a method to use non-persistent single image management but allow the user the benefits of being a persistent user.

### Infrastructure designed to optimize the user experience

Getting the most from your virtualization software means using infrastructure that’s purpose-built for CV. And that means choosing HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop and Microsoft Hyper-V to design an efficient solution.

Designed to reduce system complexity while also increasing IT automation and efficiency, HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop includes the following best-in-class HP components:

- **HP ProLiant BL460c Gen8 Server Blade** – More IT managers depend on the BL460c than any other blade in the world. The reason is simple: The HP ProLiant BL460c Gen8 Server Blade offers the ideal balance of performance, scalability, and expandability for any workload, making it the standard for dense data center computing. An ideal platform for all user types, the BL460c offers not only high user counts per host, but also incredible density—which is important for optimizing power and boosting management efficiency, as well as reducing the infrastructure footprint. It also makes no compromises with memory speed, which helps HP CV Gen8 Enterprise Reference Architecture achieve maximum performance.

- **HP D2700 Disk Enclosures** – The D2700 disk enclosures deploy with the next generation 6Gb SAS low cost for a flexible tiered external storage system. The 7.5 TB bundle allows for ease of growth by adding additional shelves to support additional blades.

- **HP P4800 SAN Solution for BladeSystem** – Offering a highly dense storage solution that dynamically scales as the client infrastructure expands, the HP P4800 SAN is based on tight integration with HP BladeSystem. Because of this, the HP P4800 SAN provides network convergence of the virtual server and SAN using 10Gig Ethernet and Flex-10 Virtual Connect, enabling simplified administration, improved security, flexibility, and enhanced performance. By converging the storage and transport layers into a single, easy-to-manage infrastructure means intensive multi-team and multi-skill set involvement is no longer required—which leads to more rapid deployment and faster response to business-driven change requests.

- **HP P4000 Virtual SAN Appliance Software** – HP P4000 Virtual SAN Appliance is a VM running the SANIQ software allowing local storage to be used to create volumes and clusters to be shared between servers. Utilizing HP LeftHand P4000 Virtual SAN Appliance Software (VSA) for selective use as a storage layer allows for migration of infrastructure VMs, creation of volumes for clustering between hosts and SQL servers, and storage for provisioning servers. VSA is even managed from the same console as the other HP P4000 storage tiers and scales simply to meet demand.

- **HP Insight Control for Microsoft System Center** – Time-smart management software delivers total control, maximum flexibility and tangible savings for HP ProLiant Gen8 servers operating in Microsoft environments

### Thin clients with superior capabilities

Critical components in any client infrastructure are the access devices. And for the HP CV Gen8 Enterprise Reference Architecture, one line of thin clients stands above the rest—HP’s. For task workers or workers accessing top-security data—such as government or financial services—or personal customer data, thin client computing is a proven alternative to traditional PC computing.

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1 IDC Worldwide Quarterly Server Tracker, Q410
Depending on your needs, you can choose from:

- **Smart Zero Clients** – Keeping it quick, simple and flexible is the goal of HP Smart Zero Clients. No need to worry if the backend software changes. HP’s Smart Zero Clients operate like a zero client, but are intelligent enough to reconfigure themselves to Citrix HDX protocols. Simply plug your Smart Zero Clients in, turn them on, and they work.
- **Flexible Thin Clients** – HP understands that the key to growth is remaining flexible and secure. HP Flexible Thin Clients meet those needs by providing options to grow and expand, combined with the security you need now and in the future. And it’s all delivered with PC-like performance. Thin clients are secure by nature, but we made top-level security a priority. In fact, the HP t610 meets National Institute of Standards and Technology (NIST) security recommendations.

### Services and support

Complete your HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop and Microsoft Hyper-V solution with services and support, delivered by HP experts you trust.

- **HP Always-On Support** – The new HP Always On Support portfolio features three levels of on-going customer support services and a comprehensive family of added value service offerings that customers can deploy as needed. The portfolio includes:
  - **HP Foundation Care** – A portfolio of reactive hardware and software support services that is now significantly enhanced with the introduction of HP Collaborative Support.
  - **HP Proactive Care** – An innovative, higher value support services leveraging new product technology and HP support infrastructure investments to achieve an unprecedented price point for proactive support.
  - **HP Datacenter Care** – Our name for custom support agreements that are enabled by proprietary HP tools and analytics for customers with unique support requirements.
  - **Our HP Lifecycle Event Services** – A complete portfolio of ad hoc services that reduce customer’s time to value throughout the technology lifecycle.

- **HP Consulting Services** – Transforming your desktop environment is a major undertaking—both complex and risky. Rather than face the task alone, work with HP Service professionals to plan your transition one step at a time.

- **Step 1: Assess, design, and validate** – Participate in the Transformation Experience Workshop for Mobility. This half-day executive workshop simulates a transformation of the enterprise to incorporate new desktop and application delivery models, as well as new mobile devices and applications. This rapid, intensive experience helps you define priorities and business justifications, as well as create a roadmap for your client and mobile infrastructure. Also consider the Client Analysis and Modeling service.

- **Step 2: Pilot** – Work with HP to implement a production pilot using a small subset of users. See first-hand that CV will work in your environment.

- **Step 3: Deploy** – Choose from numerous pre-tested, end-to-end solutions that HP, Citrix and Microsoft have jointly developed. If you work with one of HP-Microsoft Frontline Partners, rest assured that they have been trained to deliver a high-quality experience.

Once your new system is installed, HP can migrate your workloads onto the HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop and Microsoft Hyper-V, and help with deeper integration into your data center.

### Take the next step

Contact your HP representative today to learn more about HP CV Gen8 Enterprise Reference Architecture for Citrix XenDesktop and Microsoft Hyper-V. Discover how these recommended guidelines can help virtualize any workload, while also streamlining management, better protecting your information and lowering operating costs. For more information on this solution, you can also visit:

hp.com/go/cisystems

Note: For customers that maintain Enterprise License Agreements, please inform your sales team so that your HP Client Virtualization solution takes advantage of your site license for the operating system. The software is installed and support is included.

Installation and support services for both hardware and software are included with HP CV Gen8 Reference Architecture for Citrix XenDesktop on Microsoft Hyper-V, however Microsoft System Center Virtual Machine Manager (SCVMM) and Citrix XenDesktop software licenses are not included and must be purchased separately from an Authorized Reseller. If your organization already has a Microsoft Volume License for System Center, consult with your internal software licensing specialist to assure that the new servers are covered by that license. Otherwise, refer to the “How to Buy” link at microsoft.com/systemcenter to determine how to purchase System Center licenses for HP ProLiant BL460c servers.