HP Virtual Desktop Infrastructure with Citrix XenDesktop

The end-to-end solution for desktop virtualization

First step – virtualized servers

You've read the reports. You've scrutinized the findings. And you've taken the first step along the well-marked path to a more flexible, agile and productive business environment: you've virtualized your servers. By consolidating your application and database servers, all resources are now shared across your organization. Server utilization is significantly improved. Costs for power, cooling, management, floor space and licensing are lower. IT systems provide faster access to consistent, accurate, up-to-date information, so your workers are more productive than ever before.

But that's only the beginning. The virtualization path continues…to your desktop environment.

Next step – on-demand desktops

To reduce desktop management costs while increasing flexibility, security and resiliency, you can virtualize your desktop environment using HP Virtual Desktop Infrastructure (VDI) with Citrix XenDesktop. Built on a foundation of best-managed and virtualization-ready servers, storage and client devices from HP—combined with HP services and ground-breaking XenDesktop 4 software—this comprehensive desktop replacement solution delivers a complete desktop experience as an on-demand service to any user, anywhere. Whether users are basic task workers or on-the-go mobile workers, desktops and applications are made available as simple, on-demand services with unified management of both physical and virtual infrastructures from the same centralized console.

When teamed with Citrix, only HP can provide the complete, end-to-end solution that will allow you to realize the promise of client virtualization. To illuminate your path to a virtualized client environment, HP and Citrix have worked together to develop a reference configuration for XenDesktop. Based on HP ProLiant BL460c G6 server blades and HP LeftHand P4500 iSCSI SAN storage, the HP reference configuration for Citrix XenDesktop is intended to help

you build a VDI client virtualization solution capable of supporting typical office productivity users. This reference configuration can be modified to meet your unique business needs. To help determine the best solution for your environment, you can work with your HP representative to complete a proof-of-concept. The HP VDI with Citrix XenDesktop reference architecture:

• Offers a proven starting point for reduced risk

• Simplifies ordering and implementation

• Provides predictable performance through a tuned configuration

• Leverages best practices for increased user productivity

• Reduces acquisition costs through optimized price/performance

• Integrates infrastructure and client management for higher number of servers/clients per administrator

• Reduces power consumption with energy-efficient servers and thin clients and power management software

• Ensures the proper level of availability and allow for scalability as your environment grows

To reduce system complexity and business risk even further, HP VDI solutions include HP Client Automation. This single, comprehensive solution manages all HP Thin Clients and VDI virtual machines, as well as the traditional clients that co-exist with the VDI solution. Offering full Microsoft® Windows® 7 support, the converged management services of HP Client Automation provide:

• Cradle-to-grave services

• Integrated view of planning, implementation and support

• Client virtualization hosting services through HP Enterprise Services (formerly EDS, an HP company)

Foundation for virtualization

According to a recent Citrix survey, over 50% of all Citrix installations worldwide run on HP platforms. These organizations have learned the value of a highly adaptive infrastructure, powered by flexible HP servers and storage solutions. You can, too, when you choose HP BladeSystem c-Class or HP ProLiant servers to drive your Citrix virtualization solution, HP Thin Clients to power your desktop environment and HP management solutions to control your end-to-end client ecosystem. HP StorageWorks storage systems provide the performance and scalability required by virtual desktop deployments, as well as high availability so your desktops and data are safe and there when you need them.

HP BladeSystem c-Class

A highly adaptive infrastructure "in a box," the HP BladeSystem c-Class enables you to build vital business solutions that are more affordable, take less time to manage and maintain, enable you to meet environmental initiatives and are ready to grow. Using advanced HP Virtual Connect Flex-10 technology, HP BladeSystem provides10GbE network capacity, which reduces blade cabling by 94% without adding managed switches. HP Virtual Connect Flex-10 technology enables you to consolidate equipment and changes on the fly, and enables automated failover between blades. You also receive plug-and-play capability for replacing blades. You can enjoy greater flexibility at the network edge to maintain connectivity. And to provide the investment protection you deserve, you can start small with the 8-slot HP BladeSystem c3000 Enclosure, and upgrade to the 16-slot HP BladeSystem c7000 Enclosure as your needs grow.

HP ProLiant servers

The top-selling x86 server platform in the world, HP ProLiant demonstrates the ongoing HP commitment to provide a complete server infrastructure that can support your business objectives and business growth. New to the HP ProLiant server family is the G6 line of products. Available in tower, rack and

blade form factors, HP ProLiant G6 servers double the performance of previous generations. Advances in energy efficiency, virtualization and automation make G6 servers the ideal choice for any organization wanting to boost performance while significantly lowering operating costs.

HP VDI with Citrix XenDesktop

The Citrix XenDesktop solution from HP includes the HP integrated Citrix XenServer that enables customers to start up a virtualized platform in minutes, saving time by eliminating tedious set-up tasks. The HP ProLiant Virtual Console, which ships with the HP integrated Citrix XenServer gives single-server console access to every virtual machine (or up to nine at once!) and a powerful configuration and setup wizard as well. HP serves as the single point of contact for XenDesktop with the integrated HP XenServer offerings and provides Technical Support services and upgrades with every purchase.

HP Thin Client access devices

Providing the ultimate in mobility while offering desktop-like performance, HP Thin Clients are designated as Citrix and HDX Ready devices. You can choose from many models, all of which are ideal choices for HP VDI with XenDesktop:

• **HP t5325 Thin Client** – Low-cost, high-value access appliance based on HP Thin Pro and ARM technology; offering an excellent combination of performance and affordability in an energy-efficient design; providing business class web browsing and basic multimedia for Citrix environments at entry-level pricing

• **HP t5740 Thin Client** – First Windows Embedded Standard 2009 thin client with Intel® Atom Processor N280 and Intel GL40 Express Chipset for high-performance and rich media experiences; full-featured and highly extensible offers dual monitor, open RAM slot, and optional PCI expansion bay, secondary solid state flash, and WIFI; supports local applications, full-featured Internet Explorer; designated Citrix and HDX Ready, this HP thin client is the ideal for Citrix VDI environments.

• **HP t5745 Thin Client** – HP Thin Pro thin client with Intel Atom Processor N280 and Intel GL40 Express Chipset for high-performance and rich media experiences; full-featured, highly extensible thin client offers dual monitor, open RAM slot, and optional PCI expansion bay, secondary solid state flash, and WIFI; designated Citrix and HDX Ready, this HP Thin Client is the ideal Linux-based client for Citrix VDI environments.

HP StorageWorks storage solutions

A key part of the virtual desktop infrastructure is the storage system. HP can help virtualize your storage

infrastructure with a range of solutions to match your specific needs, including the HP StorageWorks Modular Smart Array (MSA), Enterprise Virtual Array (EVA) and XP arrays, as well as HP LeftHand SAN Solutions.

Certified with XenDesktop and Citrix StorageLink, HP LeftHand P4000 SAN solutions integrate cleanly and easily within your HP VDI with Citrix environment—providing high availability and advanced data recovery capabilities at an affordable price. With a pay-as-you-grow, all-inclusive pricing model and intuitive storage management software, the HP LeftHand SAN is perfect for the budget-minded organization. Every HP LeftHand SAN includes network RAID, which means the storage system is protected from component and even site-wide failures—ensuring that your desktop community stays up, no matter what.

The HP LeftHand P4000 SAN can easily grow as you add users, and can scale performance as user demands increase. HP SmartClone and Thin Provisioning technologies ensure a high degree of storage efficiency, automatically sharing common storage between users and never reserving more capacity than necessary. And most importantly, the system is highly automated and can be easily managed by administrators with no specialized storage area network (SAN) training or experience, allowing your administrators to focus on managing the virtual desktop environment. HP LeftHand P4000 SAN:

• Provides optimized storage for virtualized servers

• Reduces costs with simplified management

• Increases business agility with non-disruptive scalability

• Eliminates single points of failure with an innovative approach to data availability, to reduce risk without driving up costs

• Substantially increases storage efficiency through thin provisioning

HP Client Automation management software
One of the most significant challenges to a successful VDI implementation is manageability. In many cases, existing, traditional client management solutions are unable to manage thin clients or the virtualized VDI infrastructure in the data center. This forces many organizations to create a separate virtual client administration team. Trained on virtualization tools, this team must coordinate complex new processes with existing client and data center management teams.

You can overcome these challenges by using HP Client Automation management software, which significantly reduces complexity and improves quality of service by automating many routine tasks, as well as identifying and remediating security, compliance and vulnerability

issues in your client environment. This comprehensive suite of management tools manages the complete VDI environment—including thin clients, the virtual client infrastructure and traditional PCs—so you can avoid the additional complexity and cost that other solutions may require. Offering full support for Windows 7, HP Client Automation enables you to easily migrate to a VDI environment and to the latest operating system at the same time.

In addition, HP Client Automation can help size your initial VDI deployment by taking inventory of your workers' traditional PCs and measuring software usage so that you can develop profiles of resource utilization. As your end-user needs change over time, this inventory and usage information can help you re-optimize your infrastructure for improved utilization and lower cost.

HP services
The service professionals at HP provide a comprehensive suite of desktop virtualization planning, design, implementation and support services that enable you to assess your business needs and develop a strategic desktop technology roadmap. Beside you every step of the way, HP services can help you design, migrate and implement a robust and productive virtual infrastructure solution. We begin by developing a solid strategy:

• **Client Virtualization Transformation Experience Workshop** – During this intensive one-day session, you will build a strategy for your virtualized solution, identify a high-level roadmap and achieve executive consensus.

• **Client Virtualization Business Benefit Workshop** – Before you enter the planning stage, you can attend this one-day session to identify, quantify and analyze the business benefits of client virtualization, as well as set return-on-investment targets.

• **Roadmap and Architecture** – During this multi-week engagement, we create a clear roadmap, architectural blueprint and phased implementation strategy to ensure the successful integration of your new VDI solution into your existing IT infrastructure. Significant components are:

  o **End User Discovery** – Discover, identify and classify the user population by workload. This enables us to design the right client virtualization solution for each workload, for each user population.

  o **Application Discovery** – Similar to user discovery, we identify the server and client applications used by the user population, and then build a design and test plan for each, ensuring compatibility and user acceptance.

What makes XenDesktop 4 so effective for desktop virtualization?
Open architecture – XenDesktop works with existing hypervisor, storage and Microsoft infrastructures, enabling you to leverage your current investments while providing the flexibility to add or change to alternatives in the future. Whether you use XenServer, Microsoft Hyper-V or VMware ESX or vSphere, XenDesktop supports them all. In addition, XenDesktop uses the advanced StorageLink technology to simplify management of networked storage including HP StorageWorks EVA, MSA and LeftHand solutions. XenDesktop will also closely integrate with Microsoft App-V and System Center for comprehensive application and desktop management.

Data security and access control – With XenDesktop, users can access desktops and applications from any location or device, while IT sets policies that control whether data ever leaves the data center. XenDesktop can dramatically improve endpoint security by eliminating the need for data to reside on the users' devices. Centralized data, encrypted delivery, a hardened SSL VPN appliance and multi-factor authentication further ensure that only authorized users connect to their desktops, intellectual property is protected and regulatory compliance requirements are met.

Enterprise-class scalability – XenDesktop includes application, desktop and server virtualization infrastructure that scales to meet the demanding requirements of global enterprises. Proactive monitoring and reporting enables rapid problem resolution, while intelligent load and capacity management helps ensure that problems never arise in the first place. Built-in virtualization management features such as live migration, high availability and bare-metal server provisioning make the infrastructure robust and resilient.

These services provide entry points for large organizations to begin their journey toward a robust, virtualized client infrastructure. HP implementation, support and education services complement these VDI services—offering world-class support for the entire infrastructure based on your specific requirements.

Quantity	Component
1	HP BladeSystem c7000 Enclosure
2	HP ProLiant BL460c G6 Server Blades (management servers)
14	HP ProLiant BL460c G6 Server Blades (hosting Citrix XenDesktop and Citrix XenServer)
4	HP LeftHand P4500 SAN Solutions
2	HP ProCurve 6600 Switches
2	HP Virtual Connect Flex-10 10Gb Ethernet Modules for c-Class BladeSystem

Your partners in virtualization

Strategic partners since 1996, HP and Citrix collaborate to deliver innovative solutions for your toughest business challenges. HP and Citrix have integrated Citrix XenDesktop with HP platforms to create a highly unique virtualization solution, available in two packages: HP VDI Enterprise Edition and the newly released Platinum Edition. You can choose the package that best meets your needs today, and then easily upgrade as your business requirements evolve.

Are you ready to virtualize?

You're already walking the virtualization path. Complete the journey by choosing HP VDI with Citrix XenDesktop so that your organization can:

- Reduce desktop management costs

- Consolidate computing resources into pools that are shared company-wide

- Ensure business continuity with robust security and resiliency

- Accelerate flexible work models, including telecommuting, working from home, day extenders and flex-offices

- Foster environmental initiatives by reducing your data center carbon footprint

- Deploy a single manageability solution across both your traditional and virtual clients

Call your HP sales representative today and arrange for an assessment of your business environment. Discover how virtualizing your desktop infrastructure with HP VDI and Citrix XenDesktop can satisfy your organizations requirements for future growth and expanded productivity.

There's no better time to consider alternatives to your legacy business environment. And there's no better time to benefit from the advanced virtualization capabilities of HP and Citrix.

For more information, call your HP representative today or visit www.hp.com/go/vdi/citrix and www.citrix.com/hp.

Technology for better business outcomes

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