



VIRTUALIZATION
REVIEW
FIRESIDE CHAT SOLUTIONS BRIEF

Establishing a Private Cloud

By Miklos Sandorfi, *Vice President of Solutions & Cloud, Hitachi Data Systems*

Claude Lorenson, *Senior Product Manager, Cloud OS Marketing, Microsoft*

 Hitachi Data Systems

Microsoft

TABLE OF CONTENTS

Introduction	1
General Benefits of the Private Cloud	2
Meeting the Challenges of Implementing a Private Cloud	3
Hitachi Unified Compute Platform (UCP) Select for Microsoft Private Cloud	4
Features and Advantages	4
Features and Advantages of Microsoft Technologies for the Private Cloud	5
The Joint Solution for Establishing a Private Cloud	7
Creating the Future of the Private Cloud	8

VIRTUALIZATION
REVIEW

© Hitachi Data Systems

Microsoft

For a growing number of organizations, the private cloud—a cloud-like model managed entirely in-house—is proving to be the best option.

Cloud computing has introduced both simplicity and complexity in IT departments. The cloud model promises decreased costs, on-demand applications, high levels of service and increased efficiency, all in an easy-to-manage format. However, cloud computing can fall short in several areas, making it very important for enterprises to choose the cloud format that's right for them.

For some organizations, a simple public cloud model—involving outsourced operations to a cloud provider, usually for a fixed monthly fee—is the answer. But the public cloud also comes with the potential hazards such as security and data protection issues, and it can also create roadblocks to scalability. Not all public cloud providers have solved for these problems. Companies can quickly find themselves at the mercy of third-party cloud providers lacking consistency for in service levels. The public cloud also assumes a company will store its critical data with a third-party provider, quickly becoming a roadblock for many organizations, particularly in health care and financial services.

The hybrid cloud—a mix of the public cloud and an internal private cloud managed in-house—can offer greater scalability and increased control over the computing environment. But it can also bring challenges. Integrating elements of public and private clouds can be difficult and surprisingly expensive. Plus, with a third-party provider still in play, questions about security, data protection and management can still persist.

For a growing number of organizations, the private cloud—a cloud-like model managed entirely in-house—is proving to be the best option. Investing in a private cloud gives an enterprise control over its data and provides a higher level of security, while also enabling IT to manage its own service levels and scale applications as needed. Essentially, the private cloud leverages existing IT infrastructure, takes facets of the cloud and maps them into the enterprise. The result is a mix of cost savings, efficiency and control that brings the security of classic IT models with the efficiency of the cloud.

This white paper examines the advantages of the private cloud, and how enterprises can overcome some of the common challenges with

Any cloud model should deliver on three basic principles: self-service applications, the ability to scale both up and down quickly, and applications set up on a pay-for-use basis.

a jointly validated solution from Hitachi Data Systems and Microsoft®. These technologies are designed for rapid implementation, automations and orchestration with ongoing management and control for private cloud environments.

General Benefits of the Private Cloud

Any cloud model should deliver on three basic principles: self-service applications, the ability to scale both up and down quickly, and applications set up on a pay-for-use basis. A correctly chosen private cloud can deliver these functions with simplicity and efficiency.

Business users, both those within a company and those who are external, such as customers and partners, are essentially the consumers of every organization's IT infrastructure. These workers rely on IT services to get their jobs done. They have come to expect on-demand, self-service applications that allow them to find information independently, without involving IT or subject-matter experts. Self-service applications are critical to maintaining both business efficiency and user satisfaction. The private cloud provides a platform for developing self-service applications that use minimal resources while remaining under the control of IT.

Scalability is always a major issue, and it's not just scaling upward, either. Some short-term projects might call for heavy application usage, then wind down, requiring fewer resources. Functionality in the private cloud enables IT managers to offer application resources that can expand and contract dynamically, based on user. The private cloud also enables IT managers to set up applications in a pay-for-use format, which could operate on a per-consumption basis or be billed to a business unit for the duration of a project using a charge-back mechanism.

A private cloud environment also gives users the independence of accessing applications the way they would over the public Internet. Users can access services such as banking within seconds or have ERP functionality provisioned to them within minutes, compared to the old way of provisioning IT, which typically required weeks or months to get applications up and running. With the simplicity of

IT managers need access to toolsets that let them create the optimal end-user experience without relinquishing command and control.

application automation and integration the private cloud delivers, IT managers can prevent facing that situation again.

Meeting the Challenges of Implementing a Private Cloud

The private cloud delivers the broad benefits of cloud computing with added levels of control and customization, but without the right tools and guidance, building a private cloud can be a daunting task. The cloud does not eliminate IT. In fact, IT professionals are a necessary part of implementing and maintaining a private cloud. IT managers need access to toolsets that let them create the optimal end-user experience without relinquishing command and control. The private cloud is designed to provide business flexibility and back-end services. Its design must scale. It also needs to and cater to the particular needs of test and development scenarios. And it needs to do all of this with service levels comparable to or better than what the public internet can provide.

As part of their solution for establishing a private cloud, Hitachi Data Systems and Microsoft address all of these issues. Microsoft offers the Private Cloud Fast Track reference architecture program. This program provides Hitachi Data Systems a set of architecture and deployment guides, and a set of tests that that we've successfully passed and validated, all based on deployment of a private cloud on a Microsoft infrastructure.

Microsoft's technologies for the private cloud are heavily tied to market-leading Windows Server® 2012 and System Center 2012. These popular solutions provide flexibility and scalability, immediately helping ease IT concerns about provisioning applications to the proper number of users. Complexity is a major challenge in building a private cloud, but Microsoft's reference architecture, validated by a series of tests, greatly simplifies deployment of a private cloud. Getting the best mileage from equipment can be tricky, but Hitachi and Microsoft validation tools and Hitachi implementation solutions and factory pre-configuration eliminate much of the complexity in building a private cloud.

UCP Select for Microsoft Private Cloud offers usage-based automation to securely spin up and spin down virtual machines as needed in the private cloud infrastructure.

Hitachi Unified Compute Platform (UCP) Select for Microsoft Private Cloud

Together, Hitachi Data Systems and Microsoft have joined to offer a solution for the private cloud that greatly simplifies implementation and quickly delivers the benefits of the computing model while overcoming many of its challenges.

Features and Advantages

UCP Select for Microsoft Private Cloud tackles the challenges of implementing a private cloud while still allowing IT to realize all the benefits of the private cloud model. With this solution, companies can have private clouds up and running in just days, rather than weeks or months, and can begin reaping benefits almost immediately.

UCP Select for Microsoft Private Cloud offers usage-based automation to securely spin up and spin down virtual machines as needed in the private cloud infrastructure. With templating, orchestration, and runbook automation, it eliminates complex manual provisioning, and puts automation and sophistication around them. This allows customers to use self-service catalogs of mission-critical applications delivered by IT.

UCP Select addresses service levels by providing the right level to the appropriate application. Mission-critical, revenue-generating applications can run with a 100 percent uptime guarantee. For other applications, however, three nines service levels will suffice without sapping resources. The idea is to maximize automation and management for IT so that users have the level of service they expect and need while IT continues to provision its resources and stay within budgets. One of the main advantages of the private cloud—or any cloud model—is resource provisioning, which allows IT to pool resources and use them for the applications that need them on an as-needed basis. Computing resources are not idle and therefore not wasted.

Furthermore, UCP Select for Microsoft Private Cloud delivers simplicity by enabling customers to buy the solution in a fast, flexible way geared for easy deployment. It features templated, qualified and

Tangible benefits of UCP Select for Microsoft Private Cloud include ease of consumption, with pre-built and pre-configured templates; and lower costs of operations, with increased automation and simplified environments.

certified stacks, which make the process of buying and right-sizing applications simple and lets IT simply acquire the resources it needs right now. The solution comes from the factory to the data center ready to go to work.

Tangible benefits of UCP Select for Microsoft Private Cloud include ease of consumption, with pre-built and pre-configured templates; and lower costs of operations, with increased automation and simplified environments. Specifically, this solution achieves these goals by offering unprecedented sophistication and simplicity. Keys to rapid deployment include:

- The infrastructure is already pre-configured with:
 - Gigabit Ethernet networks
 - RAID groups and storage pools
 - Fibre-channel networks
- Managing and provisioning VMs is easy, thanks to:
 - Customizable PowerShell cmdlets that enable automation
 - Orchestration integrations with SCO runbooks
 - Designed to build and manage “gold image libraries”
 - Support for “Sys-prepped” ISO Images
 - Pre-configured and sized based on users and applications
- Ready for the data center, with the following advantages:
 - Ability to get up and running quickly
 - Easy ongoing management
 - Dynamic allocation of resources

Features and Advantages of Microsoft Technologies for the Private Cloud

On the Microsoft side, with Windows Server 2012 Hyper-V®, it is easier than ever for organizations to take advantage of the cost savings of virtualization and build powerful cloud-based computing in today’s datacenters. Hyper-V in Windows Server 2012 includes greatly expanded support for host processors and memory. Specifically, it includes support for up to 64 processors and 1 TB of memory for Hyper-V guests, and a new VHDX virtual hard disk format with larger disk capacity up to 64 TB and additional resilience.

Microsoft has established a solid foundation for customers to optimize their cloud infrastructure with System Center 2012 providing the unified management for the cloud infrastructure.

Customers can use Hyper-V to efficiently run multiple operating systems like Windows, Linux and others in parallel. The four primary areas in which Hyper-V delivers in private cloud environments are:

- 1. Scalability, performance and density.** Microsoft now has something very compelling for cloud-based computing in large virtualization deployments.
- 2. Secure multitenancy.** This is a key tenet of any cloud infrastructure.
- 3. Flexible infrastructure.** The Microsoft Private Cloud Fast-Track program provides guidance and validation for all sorts of infrastructures. Microsoft partners can use their strength in matching their capabilities with the software stack.
- 4. High availability and resilience.** This area has been strengthened greatly since the first release of Hyper V.

Microsoft has established a solid foundation for customers to optimize their cloud infrastructure with System Center 2012 providing the unified management for the cloud infrastructure. The capabilities of System Center in private cloud deployments include:

- **Infrastructure provisioning.** This is about enabling enterprises and service providers to provision infrastructure that meets their key requirements such as workload scale/performance, heterogeneity, multi-tenancy and chargeback. System Center can help provision custom or standardized infrastructure r on-premise, or for a service provider or Windows Azure environments.
- **Automation and self-service.** System Center will continue to give application owners the agility they need while enabling data-center administrators with the tools they need to drive cost-effectiveness and IT control.
- **Infrastructure monitoring.** System Center provides a single toolset to monitor infrastructure resource—physical, virtual or cloud computing models—across on-premises, service provider and Windows Azure environments.
- **Application performance monitoring.** Recognizing that applications are what really matter to the business, System Center provides deep insight necessary to deliver predictable SLAs to application owners.

The management capabilities of System Center 2012 have proven to be enterprise-grade and ready to use today.

- **IT service management.** System Center will continue to provide enterprise IT services in a flexible manner by offering service management processes, such as custom service request offerings, process/knowledge integration, and chargeback.

Hitachi Data Systems has integrated these capabilities into the UCP Select for Microsoft Private Cloud solution so that customers have seamless views of their infrastructure and can easily manage all moving parts in a unified way.

The management capabilities of System Center 2012 have proven to be enterprise-grade and ready to use today. System Center supports best-in-class management performance and scale for Windows Server environments and Microsoft workloads (such as Exchange, SharePoint®, Lync and SQL). It supports management of SAN-based storage technologies and virtual networking in multitenant environments. System Center also enables robust management of heterogeneous datacenters in a simple and cost effective way.

The Joint Solution for Establishing a Private Cloud

With strong products for establishing a private cloud, Hitachi Data Systems and Microsoft have come together to offer a formidable portfolio of solutions and services. UCP Select for Microsoft Private Cloud includes all of the features and advantages of the Hitachi and Microsoft technologies, powerfully combined with centralized management for administrators and implementation architecture templates validated by Microsoft.

Together, Hitachi and Microsoft are revolutionizing the private cloud, reducing implementation time from months to days, bringing benefits almost immediately and greatly simplifying management and control of the infrastructure. Some of the more notable features and benefits of the joint solution include:

- Virtualization capabilities in the storage layer. IT can leverage those, and they're integrated into the full management framework of the UCP Select for Microsoft Private Cloud solution.
- Disaster recovery and high availability. The joint solution offers the

Hitachi Data Systems and Microsoft have an established, long-term relationship focused on providing solutions and services for the private cloud, today and well into the future.

guarantee of 100 percent uptime. Machine portability with VM migrations and data portability with the replication and snapshotting capabilities of the data center infrastructure are tied together. This enables IT to deploy a private cloud in a predictable, functional state very rapidly.

- Microsoft applications and workloads validated by Hitachi
- Pre-configures infrastructures at global Hitachi distribution centers.
 - Orders are typically built and ship within 5 business days.
- Delivers the full value of Hitachi, with:
 - Mission-critical expertise
 - Designed for the most demanding workloads
 - Predictable, sustainable performance and scalability
- Data protection. UCP Select for Microsoft Private Cloud works with Microsoft Volume Shadow Service (VSS) and is integrated within Hitachi Application Protection software. This product brings the ability to take all the capabilities of application-aware snapshotting and integrate that into the storage layers. IT can provide users with a service catalog—including data protection, site resilience, and the services the Microsoft stack can offer—and do so in a way that's very simple.

Creating the Future of the Private Cloud

The private cloud is the most efficient, secure and safe form of cloud computing an enterprise can implement, but it does come with challenges. Complexity, cost and time to implement can be major hurdles. However, UCP Select for Microsoft Private Cloud enables IT to easily clear those hurdles and quickly reap the benefits of the private cloud.

Hitachi Data Systems and Microsoft have an established, long-term relationship focused on providing solutions and services for the private cloud, today and well into the future. With R2 version of Windows Server 2012 and System Center on the way from Microsoft, Hitachi and Microsoft are committed to providing enterprises with ever-advancing technologies for implementing and managing private cloud infrastructures. ■