

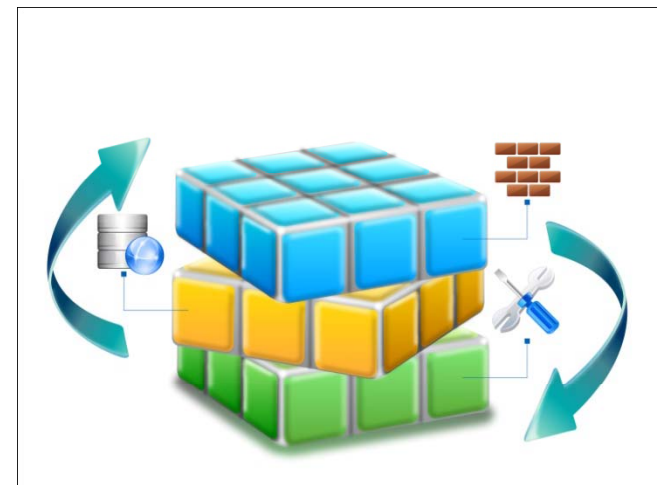
Virtualization in a Multipurpose Commercial Data Center

Gartner Data Center
Conference

December 6, 2010

Hostway Corporation

- Global Provider of Infrastructure, Platforms, and Web Enabled Business Applications
 - Operations in 14 Countries in North America, EMEA, APAC
 - 6 Commercial Data Centers in North America, 6 Global
 - 40,000+ Servers Under Management
- Heterogeneous Data Center Environment
 - Infrastructure as a Service (IaaS)
 - Cloud Computing Platforms (PaaS)
 - Software as a Service (SaaS)
 - Internal Hostway Applications



Drivers Toward Virtualization and Cloud

- Reduce Operating Costs
 - Server consolidation
 - Automation
- Increase Reliability, Scalability, and Performance
 - Dynamic allocation of resources
 - Distribution of workloads, redundancy, and optimization
- Provide Additional Functionality to End Customer
 - Self service and end user control
 - Mobility and portability
 - Interoperability



Trends in Virtualization and Cloud

- Public Cloud
 - Ease of use, open interfaces, cost effectiveness
- Private Cloud
 - Focus on security, control, predictability
- Hybrid Public – Private
 - On-premise / off-premise (federation)
 - Shared and dedicated resource allocation
- Not “One Size Fits All” – Optimized Platforms



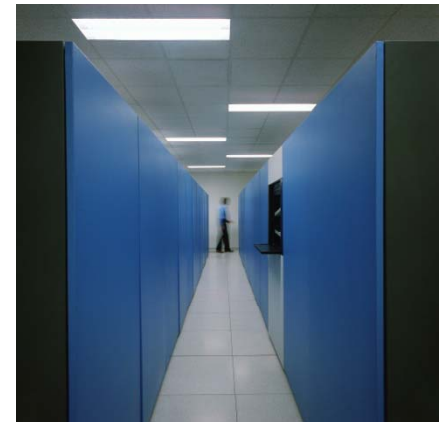
Challenges

- Design
 - Software – hypervisor, management tools, UI, integration
 - Hardware – host configuration, networking, storage
 - Lack of proven best practices
 - Buy versus build
- Roadmap
 - Prioritization and timing of functionality
 - Interoperability and lack of standards
 - Market and vendor noise

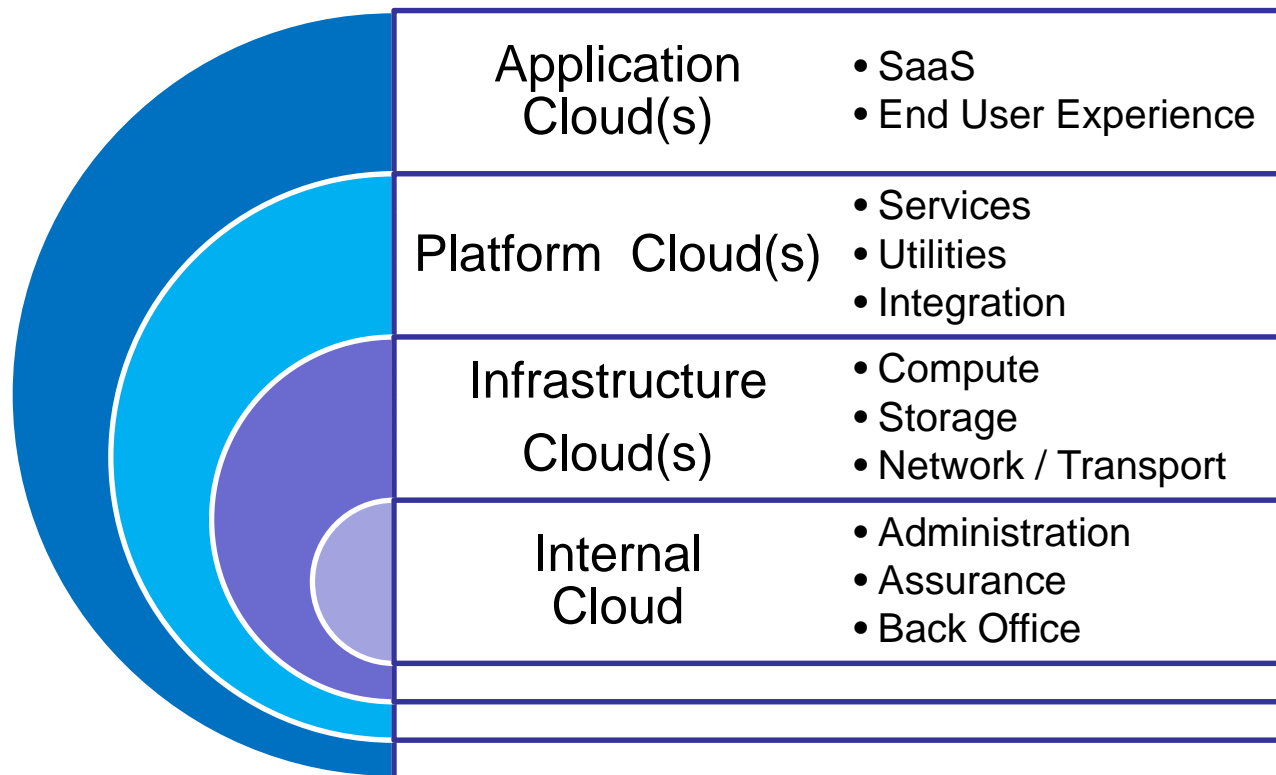


Transforming the Data Center for Virtualization

- Physical Plant
 - Density, power, and cooling
- Geo-Redundancy and Optimization
 - Application and data replication
 - Edge caching and delivery
- Network Design
 - Segmentation and security
 - Storage and resources / services
- Retrofit Versus New Build

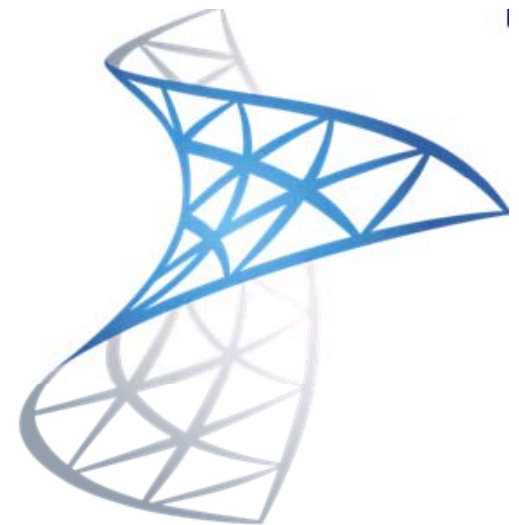


Cloud at Hostway



Detailed Design Example

- Deploy Microsoft Hyper-V with System Center Suite to enable virtualization of customer dedicated servers
- Support both Linux and Microsoft standard distros
- Integrate provisioning and administration of related network and physical resources:
 - IP Addresses, Security, Load Balancing, Storage
- Provide a user self service web interface that supports a multi-tenant cloud environment
- Integrate the platform with existing back office systems to automate ordering, support, payments, and utility charging



Project Goals

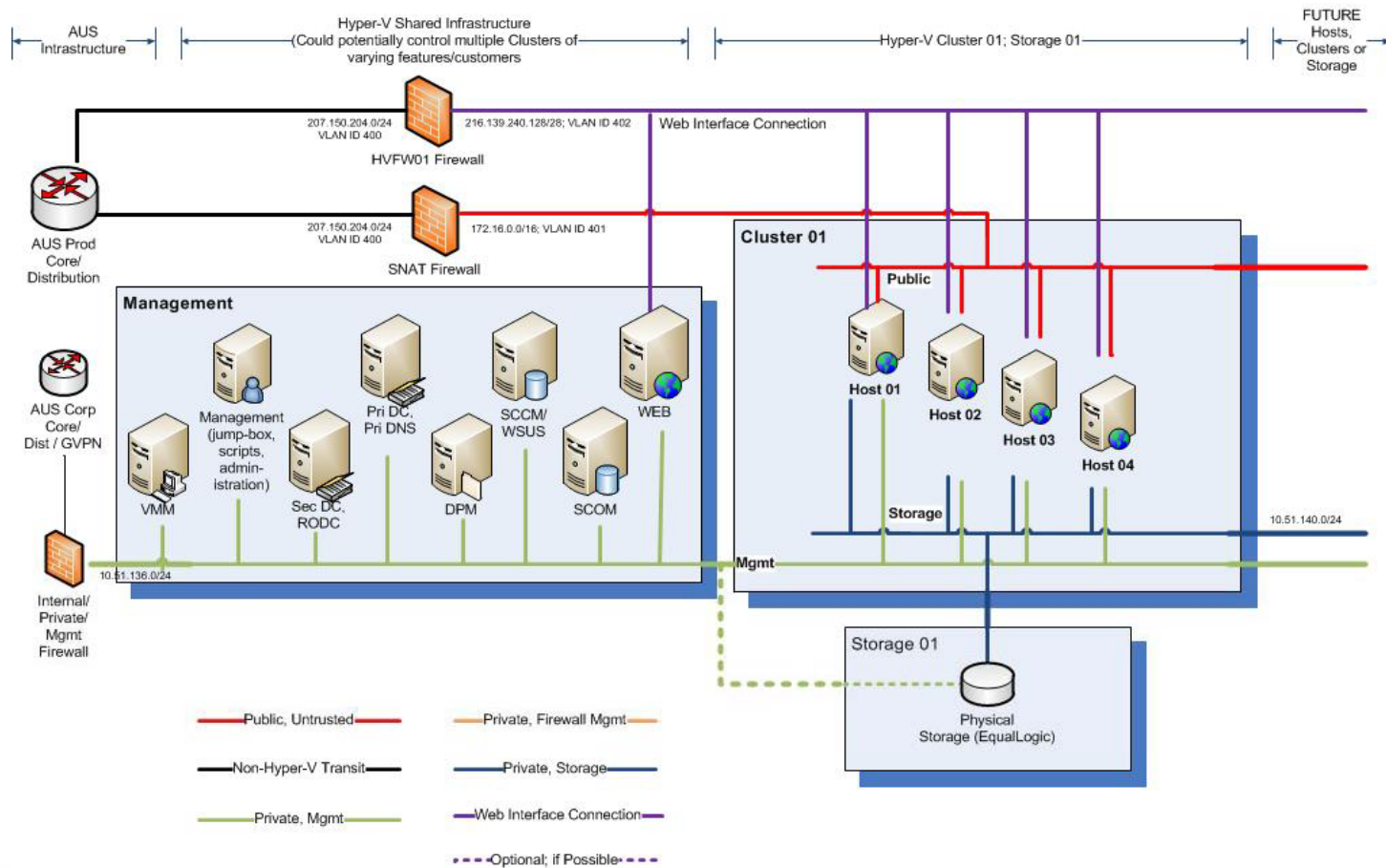
- Reduce physical, electrical, & cooling footprint for customer dedicated servers
- Automate build and configuration processes
- Enable customers to instantiate, configure, & manage their own compute resources
- Enable high availability, portability, and of server and network resources
- Provide a flexible foundation for future applications and optimization



Network Diagram

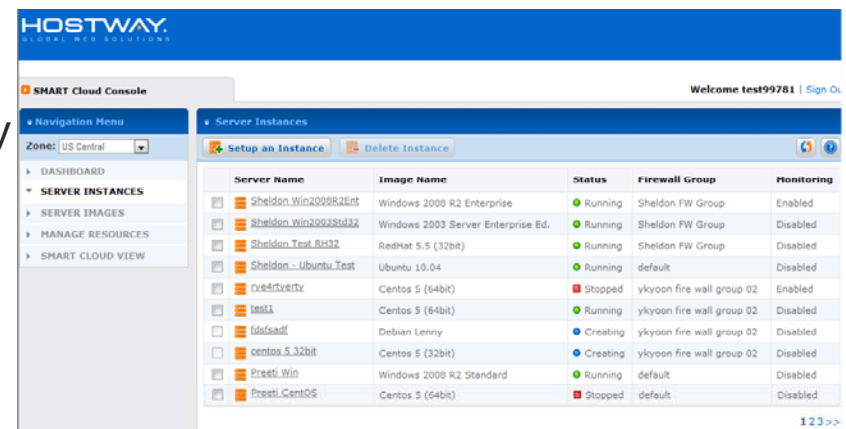
Austin SmartCloud: Network (Logical)

2010.08.27 sk (rev0.0)



Benefits and Results

- 1,700 virtual servers deployed in six months
 - 41 physical hosts with N+2 redundancy
 - Automated fail-over & live migration
 - Support for Linux & Windows
- Custom user self service portal
 - Provision & manage server instances
 - Public and private image libraries
 - Storage management
 - IP address management
 - Snapshots and monitoring
- **Fulfillment reduced from 24 hours + to 20 minutes on average**
- **Scheduled downtime virtually eliminated**



The screenshot displays the Hostway SMART Cloud Console interface. The main content area shows a table of server instances with columns for Server Name, Image Name, Status, Firewall Group, and Monitoring. The table lists several instances, including Windows 2008 R2 Enterprise, Windows 2003 Server Enterprise Ed., RedHat 5.5 (32bit), Ubuntu 10.04, Centos 5 (64bit), Debian Lenny, and Windows 2008 R2 Standard. The status of these instances varies, with some running, some stopped, and some in the process of creating.

Server Name	Image Name	Status	Firewall Group	Monitoring
Sheldon_Win2008R2Ent	Windows 2008 R2 Enterprise	Running	Sheldon FW Group	Enabled
Sheldon_Win2003StdEd	Windows 2003 Server Enterprise Ed.	Running	Sheldon FW Group	Disabled
Sheldon_Test_Rh32	RedHat 5.5 (32bit)	Running	Sheldon FW Group	Disabled
Sheldon_Ubuntu_Test	Ubuntu 10.04	Running	default	Disabled
rv4rtvrtv	Centos 5 (64bit)	Stopped	ykyoon fire wall group 02	Enabled
test1	Centos 5 (64bit)	Running	ykyoon fire wall group 02	Disabled
ldfsaull	Debian Lenny	Creating	ykyoon fire wall group 02	Disabled
centos_5_32bit	Centos 5 (32bit)	Creating	ykyoon fire wall group 02	Disabled
Prestl_Win	Windows 2008 R2 Standard	Running	default	Disabled
Prestl_CentOS	Centos 5 (64bit)	Stopped	default	Disabled

Financial Overview

	Physical			Virtual			
Servers	259	1000	259,000	38	4000	152,000	
Racks	16	680	10,880	4	680	2,720	
Power Strips	32	590	18,880	4	672	2,688	
Switches	16	695	11,120	8	1895	15,160	
	259		299,880	800		172,568	58%
			1,158			216	DAS
					90	306	SAN

Why Brocade?

- **Single Vendor to Support Full Range of Requirements:**
- Transport and Transit Network (NetIron Core Routers)
 - Port density / price per port
 - Footprint consolidation
- Edge Routing (End of Row Switches)
- Load Balancing (ServerIron)
- Specialized Applications
 - SSL acceleration
 - DDoS mitigation
- **Easy to do Business With**
 - Ease of procurement, use, cost, support



BROCADE

QUESTIONS?



todd.benjamin@hostway.com