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Private Cloud 201
How to Build a Private Cloud

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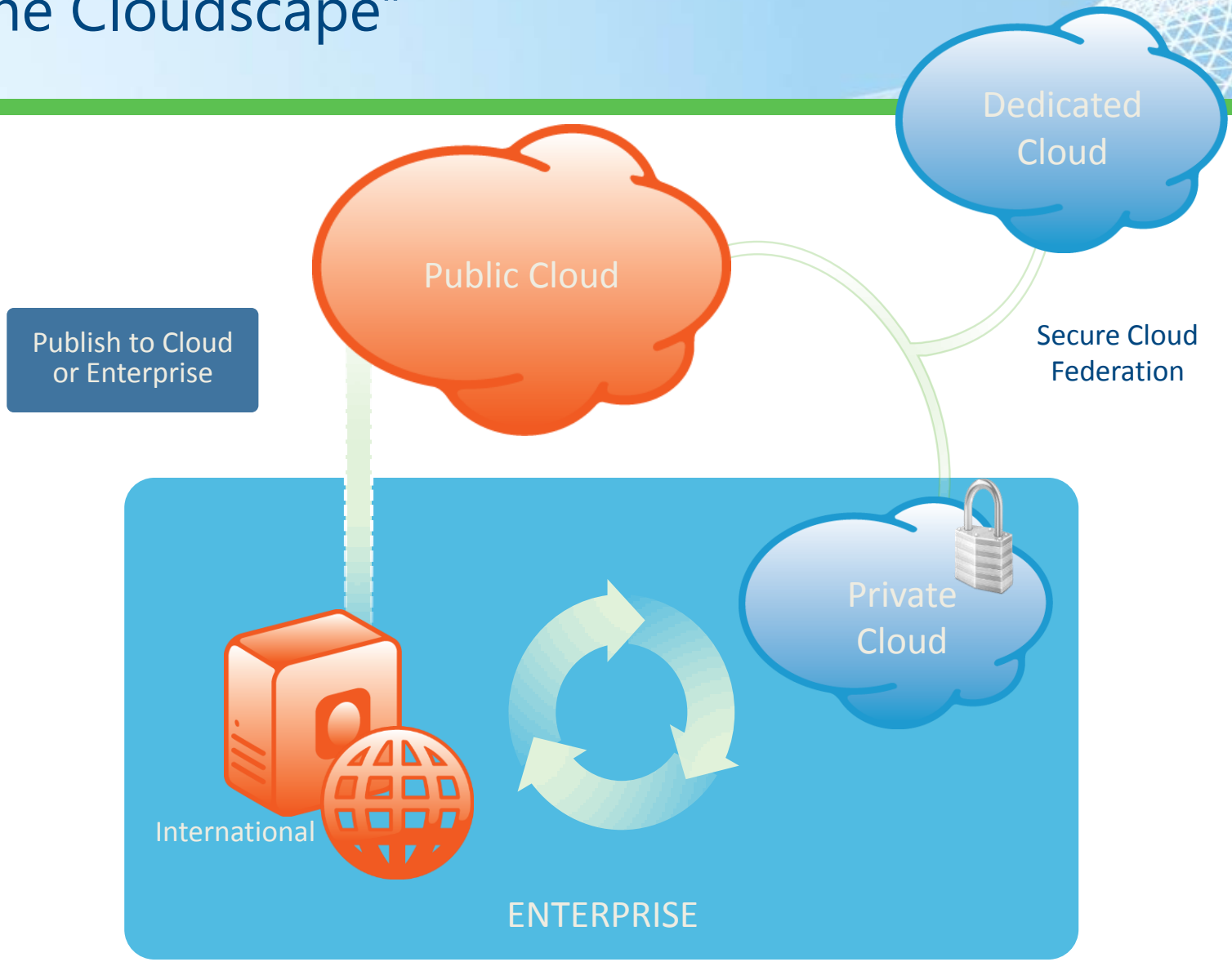
"The Cloudscape"



Cloud Definitions

- **Private cloud**. The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.
- **Public cloud.** The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.
- **Hybrid cloud.** The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

Cloud Computing Characteristics

Ref: The NIST Definition of Cloud Computing
http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-v15.doc

On-demand self-service

Ubiquitous network access

Location transparent resource pooling

Rapid elasticity

Measured service with pay per use

The *aaS's

- IaaS Infrastructure as a Service (TBA)
- SaaS Software as a Service (Office 365)
- PaaS Platform as a Service (Windows Azure)
- ITaaS IT as a Service (Private Cloud/HyperV Cloud)

Private Cloud Build Options

- Build your own private cloud with help from the Hyper-V Cloud Deployment Guides and Hyper-V Cloud partners.
- Get a pre-validated private cloud configuration from Hyper-V Cloud Fast Track OEM partners. Hyper-V Cloud Fast Track partners have worked with Microsoft to combine hardware and software offerings based on a reference architecture for building private clouds.
- Find a service provider in the Hyper-V Cloud Service Provider Program who can host a dedicated private cloud for you.

Pre-Validated Private Cloud Configuration

- Hyper-V Cloud Fast Track partner offerings provide flexibility and choice while reducing risk and increasing the speed of deployment. Click on the partner tabs below to learn about the available options from each partner.

Build Your Own Private Cloud

- What benefits will I get from MY Private Cloud?
  - Self-service
  - Scalability
  - Elasticity
  - Resource Pooling

System Requirements

Supported Host Operating Systems:

- Windows Server® 2008 R2 Standard Edition x64 with Hyper-V™
- Windows Server® 2008 R2 Enterprise Edition x64 with Hyper-V™
- Windows Server® 2008 R2 Datacenter Edition x64 with Hyper-V™

Intel Processor Requirements:

- x64 Processor Architecture
- Support for Hardware Execute Disable
- Intel® VT Hardware Virtualization

AMD Processor Requirements

- x64 Processor Architecture
- Support for Hardware Execute Disable
- AMD-V® Hardware Virtualization

Minimum CPU Speed: 1.4 GHz
RAM: Minimum of 512 MB of RAM
Required Available Disk Space: 10 GB of available hard disk space

Note

The Standard Edition does not support Hyper-V™ High Availability configurations.

Hyper V R2 Host Limitations

Functionality	Windows Server® 2008 R2 Standard Edition	Windows Server® 2008 R2 Enterprise Edition	Windows Server® 2008 R2 Datacenter Edition
Logical Processor Support	64 LP	64 LP	64 LP
Physical Memory Support	Up to 32 GB	Up to 1 TB	Up to 1 TB
Max # of VMs	8 V-Procs per LP or 384 VMs, whichever is lower	8 V-Procs per LP or 384 VMs, whichever is lower	8 V-Procs per LP or 384 VMs, whichever is lower
VM Licensing	1 Free Per License	4 Free Per License	Unlimited

Hyper V R2 Guest OS Processor Limitations

	Processors		
	1	2	4
Windows Server® 2008 R2	X	X	X
Windows Server® 2003 x86x64 w/ SP2	X	X	
Windows® 2000 Server & Advanced Server w/ SP4	X		
Windows® HPC Server 2008	X	X	X
SUSE® Linux Enterprise Server 10 x86x64 w/ SP1/SP2	X		
Red Hat® Enterprise Linux	X	X	X
Windows 7	X	X	X
Windows Vista® x86/x64 w/ SP1	X	X	
Windows® XP Pro x64 w/ SP2 & x86 w/ SP3	X	X	
Windows® XP Pro x86 w/ SP2	X		

Demo

Private Cloud Infrastructure Walkthrough

System Center

System Center Virtual Machine Manager

- SCVMM Server
- SCVMM Administration Console
- SCVMM Self Service Portal
- SCVMM Agent
- SCVMM Library Server

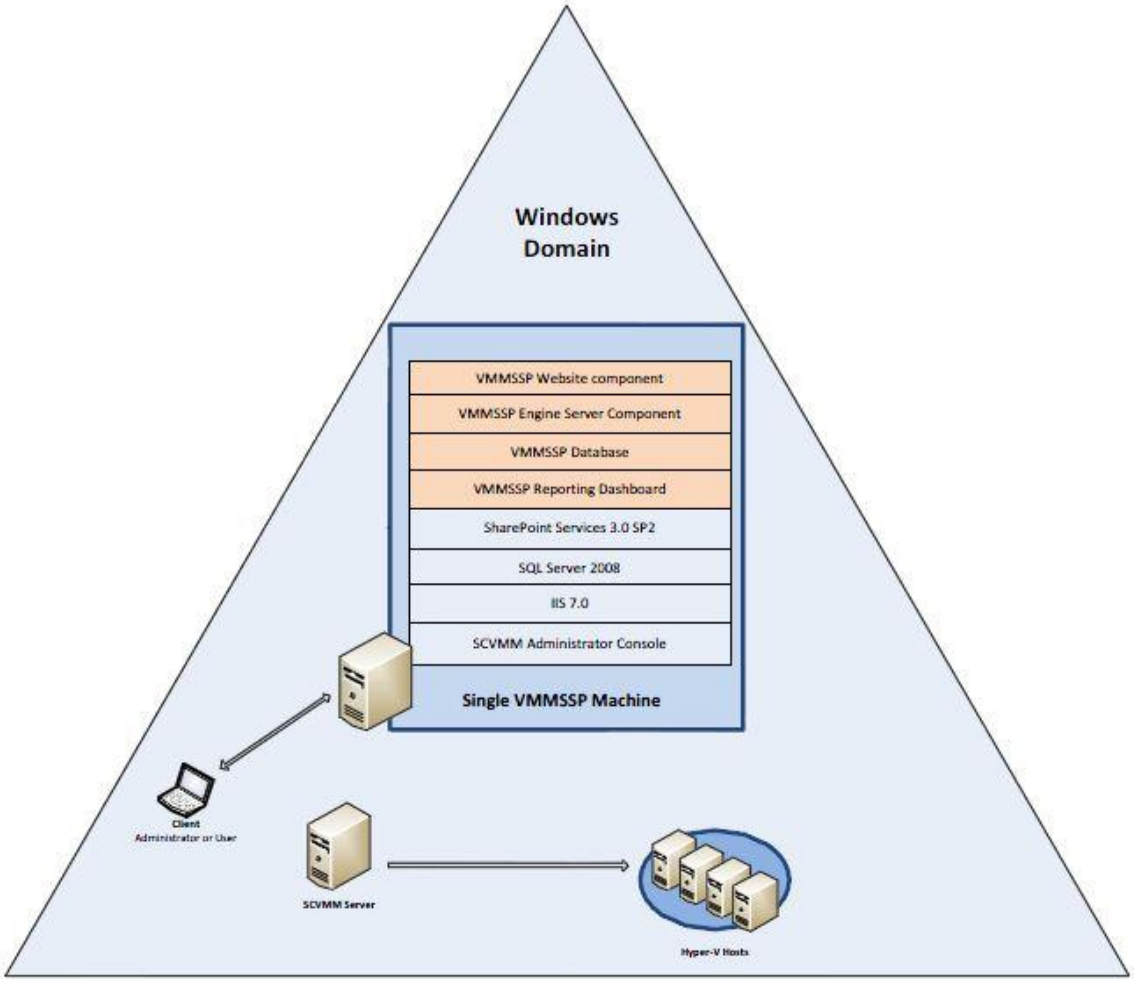
SCVMM Server

- Runs SCVMM Service
- Connects to a SQL Database
- Is the Default Library Server

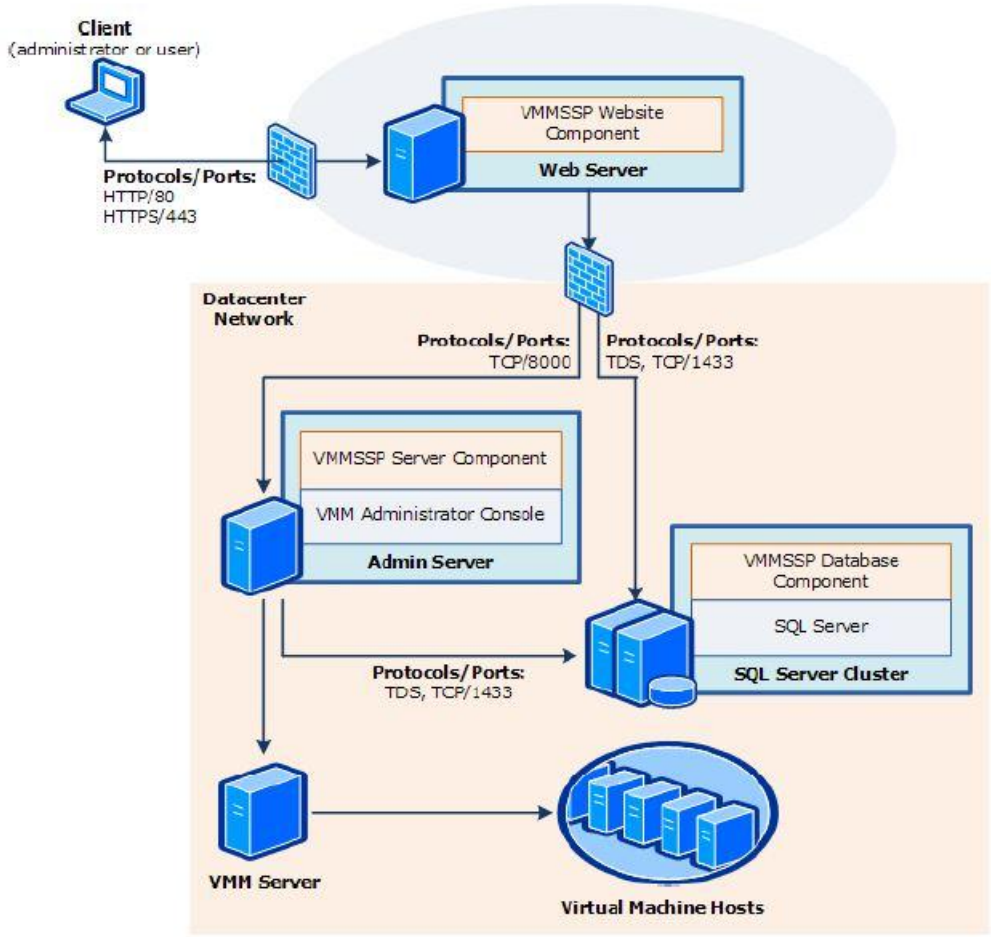
SCVMM Administration Console

- Create, deploy, and manage virtual machines and templates
- Monitor and manage hosts (Windows Server® 2008/ Windows Server® 2008R2 Hyper-V™, Microsoft® Virtual Server 2005 and VMware® Virtual Center managed ESX servers) and library servers
- Manage library objects and jobs
- Manage global configuration settings

Architecture (Single Server)



Architecture (Four Server)



SCVMM Library Server

Important

After the setup is complete, the default library server and library share cannot be moved. Give careful consideration to its location when running Setup.

SCVMM Server Placement

One is enough except…

- When the development and test environments are managed separately from the production virtual environment
- When the virtual environments grows—or is planned to grow—beyond the supported maximum of 400 hosts and 8,000 virtual machines

Monitoring and Reporting

- Provided through the Server Virtualization Management Pack for System Center Operations Manager 2007.
- Before reports can be viewed and used, Operations Manager must be installed and the Server Virtualization Management Pack deployed.

Physical 2 virtual Migrations

Operating system	P2V offline	P2V online	V2V
Windows Server® 2008 / Windows Server® 2008 R2 with Hyper-V role enabled	No	No	No
Windows Server® 2008 / Windows Server® 2008 R2 without Hyper-V role enabled	Yes	Yes	Yes
Windows Server® 2003 SP1 or later	Yes	Yes	Yes
Windows Server® 2003 x64 Edition	Yes	Yes	Yes
Windows® 2000 Server SP4	Yes	No	Yes
Windows® XP SP2 or later	Yes	Yes	Yes
Windows® XP x64 Edition	Yes	Yes	Yes
Windows Vista®	Yes	Yes	Yes
Windows Vista® x64	Yes	Yes	Yes
Windows® 7	Yes	Yes	Yes
Windows® 7 x64	Yes	Yes	Yes

Resources

http://chrisavis.com

Resources

- www.microsoft.com/virtualization
  - White Papers
  - Case Studies
  - Deployment Guides
  - Partners
- http://TechNet.microsoft.com/Virtualization
  - Links to webcasts
  - Videos
  - Whitepapers
- http://chrisavis.com