снарте 2

Microsoft Private Cloud Implementation

In this section, we explore the implementation of a Microsoft Private Cloud solution through integrating the Microsoft Cloud OS into UCS. UCS is a computing systems comprising computing hardware, compute switching fabric, and virtualization and management software. These resources are integrated into a cohesive system that can be managed as an entity.

This provides unique benefits in the data center, such as:

- Hardware virtualization for streamlined deployment
- Ease of Cabling
- Single point of management for the compute resources (including blades, chassis and compute switching fabric)
- High Availability (including 1:N redundancy if desired)

Compute resources in the System Under Test included:

- 2 Cisco UCS 5108 Chassis
- 2 Cisco UCS 2208XP IOMs per chassis
- 2 Cisco UCS B200 M2 Blade Series Serves per chassis
- 2 Cisco UCS 6248UP Fabric Interconnects

The Cloud OS involves the simultaneous operation of several enterprise technologies including:

- UCS SAN Booting
- Windows Server 2012
- SQL Server 2012
- System Center 2012

Refer to the VMWare vSphere with Operations Management website for additional details on VMWare vSphere.

Refer to the Microsoft Private Cloud-Making it Real white paper to learn more about Microsoft's strategic and technical differentiation.

SAN Implementation

The B200 M2 Series server blades in UCS are configured to boot from SAN. UCS has two Fibre Channel port channels that connect Fabric A and Fabric B to two MDS switches. The MDS switches connect to a NetApp storage device.

I

Details on the Service Profile creation for a server Hyper-V on UCS are found Figure 29 of the Deployment Guide.

Boot from SAN Procedures

Before starting, review the Common Errors during Windows SAN Boot Install on NetApp Storage Cisco internal document for lessons learned about the Windows SAN boot install.

Step 1 Shutdown all but one path to the boot logical unit number (LUN)

Microsoft supports only one path to the boot LUN when installing the OS. The Fibre Channel port channel (FC Po10) that connects to the MDS switches was disabled in UCS Manager (UCSM). All but one member of the second Fibre Channel port channel (FC Po20) was disabled.

Step 2 Map to fiber over Ethernet network interface card (fNIC) drivers and ISO image (Optional)

During OS installation, fNIC drivers must be installed in order to scan for the SAN boot LUN. To do this, map to the driver location using the UCS KVM console connection Virtual Media tab before starting the installation, and map to the ISO location of the OS to be installed.

As shown in Figure 2-1, in order to map to more than one image at a time, the FNIC drivers were copied locally (C:tmp in the Drive column). The ISO OS installation image was on a mapped drive to a network share.

Instead of mapping to both images at the same time, you could map and unmap as needed to go between the fNIC drivers and the OS during installation. However, mapping to multiple images supports not having to unmap and remap during installation.

Figure 2-1 shows a display from the KVM Virtual Media tab for what was mapped.

Γ

| | V2-C203-P1 | (Chassis - 2 S | erver - 3) - KVM Co | nsole | | | | > |
|------------|--|--|--|-----------------------|-----------------------|----------------------------------|---|--------------|
| e | Help | | | | | | | |
| , B | Boot Server 🧠 | 😹 Shutdown Sei | rver 🔐 Reset | | | | | |
| M | Console Prop | erties | | | | | | |
| VM | Virtual Media | | | | | | | |
| d | lient View | | | | | | | |
| | Mapped | Read Only | Drive | | | | | Exit |
| L | | | A: - Floppy | | | | | Create Image |
| L | | 1 | 🗟 E: - CD/DVD | | | | | Add Image |
| L | | 1 | 🛓 D: - CD/DVD | | | | | Add Inage |
| L | 7 | 1 | 🚽 C:\tmp\x64.img | - Floppy Image | File | | | Remove Image |
| | | | A Y:\ISO\WMDC4\ | Win2012\en_win | dows_server_20 | 012_x64 | | Details ± |
| L | | | | | | | | |
| L | | | | | | | | |
| | | | | | | | | |
| L | | | | | | | | |
| l | | | | | | | | |
| | | | | | | | | |
| | etails Target Drive | Mapped | To | Read Bytes | Write Bytes | Duration | 1 | _ |
| | etails Target Drive irrtual CD/DVD | Mapped | To 50/VMDC4\Win2012 | Read Bytes | Write Bytes | Duration 00:00:01 |] | USB Reset |
| | etails Target Drive Irrtual CD/DVD Removable Disk | Mapped P:\ts Sc:\tr | To :O\VMDC4\Win2012 mp\x64.img - Flopp | Read Bytes | Write Bytes | Duration 00:00:01 00:00:21 |] | USB Reset |
| | etails Target Drive irbual CD/DVD Lemovable Disk | Mapped Y: VS C: \tr Not mapp | To :O\VMDC4\Win2012 mp\x64.lmg - Flopp ped | Read Bytes .0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | 1 | USB Reset |
| | etails Target Drive Irtual CD/DVD Removable Disk Toppy | Mapped Y:\s C:\r Not mapp | To SO (VMDC4 (Win2012 mp \x64.img - Flopp bed | Read Bytes .0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 |] | USB Reset |
| R | etails Target Drive Îrtual CD/DVD Removable Disk Îoppy | Mapped Y:12 C:\r Not map; | To SO (VMDC4\Win2912 mp\x64.lmg - Flopp bed | Read Bytes 0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | 1 | USB Reset |
| | etails Target Drive Îrtual CD/DVD Removable Disk Îoppy | Mapped Y: [JS C: \tr Not map; | To SO (VMDC4\Win2012 mp\x64.lmg - Flopp bed | Read Bytes 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | 1 | USB Reset |
| | etails Target Drive Îrtual CD/DVD Removable Disk Îoppy | Mapped Y: \[S C:\tr Not map; | To SO (VMDC 4\Win 2012 mp)x64.img - Flopp ted | Read Bytes .0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | | USB Reset |
| | etails Target Drive Îrtual CD/DVD Removable Disk Îoppy | Mapped Y:\IS C:\tr Not map; | To SO\VMDC4\Win2012 mp\x64.img - Flopp sed | Read Bytes .0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | | USB Reset |
| | etails Target Drive Irtual CD/DVD Removable Disk Hoppy | Mapped Y: \/s C: \/t Not map; | To :O\VMDC4\Win2012 mp\x64.lmg - Flopp ped | Read Bytes 0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | 1 | USB Reset |
| | etails Target Drive Irtual CD/DVD Removable Disk Hoppy | Mapped Y: \Is C: \tr Not map; | To SO (VMDC 4 (Win 2012 mp)x64.lmg - Flopp bed | Read Bytes .0 0 | Write Bytes 0 0 | Duration 00:00:01 00:00:21 | | USB Reset |

Figure 2-1 Mapped KVM Virtual Media

If you forget to remap to an ISO image, the disk comes online but Windows fails to install and produces the following error:

I

| Isk 6 Unallocated Space 20.0 GB 20.0 GB Isk 8 Unallocated Space 20.0 GB 20.0 GB | Offline |
|---|---------|
| Disk 8 Unallocated Space 20.0 GB 20.0 GB | Offline |
| | Online |
| Install Windows | x |
| | ОК |
| find | |
| | |

Figure 2-2 Forgot to re-map to ISO image



To proceed to the next step, you must remove the driver CD, insert the Windows CD, and refresh.

Step 3 Verify the NetApp LUNs are type **Windows GPT**. There are 2 Windows options for Type in the NetApp used during the testing, Windows and Windows GPT.

Figure 2-3 NetApp LUN configuration for B-Series Servers

| LUNs | | | | | | | | |
|--------------------|--------------------------------|------------------|----------------|------------|--------|-------------|------------------|---|
| LUN Management | Initiator Groups | | | | | | | |
| 🔒 Create 🛛 🔒 Clone | 📝 Edit 🛛 🗙 Delete 🛛 🙆 Status 👻 | G.Refresh | | | | | | |
| Name | Container Path | Thin Provisioned | Available Size | Total Size | % Used | Туре | Status | |
| V2-C1B1-P1_boot | /vol/V2_C1B1_P1_boot_vol | No | 200.03 GB | 200.03 GB | 0.0% | Windows GPT | \varTheta Online | - |
| V2-C1B2-P1_boot | /vol/V2_C1B2_P1_boot_vol | No | 199.94 GB | 200.03 GB | 0.04% | Windows GPT | 😔 Online | |
| V2-C1B3-P1_boot | /vol/V2_C1B3_P1_boot_vol | No | 192.11 GB | 200.03 GB | 3.96% | Windows GPT | 😔 Online | |
| V2-C1B4-P1_boot | /vol/V2_C1B4_P1_boot_vol | No | 199.94 GB | 200.03 GB | 0.04% | Windows GPT | 😣 Online | |

Deployment Guidelines

- **1.** Refer to Windows Boot from Fibre Channel SAN guide for an overview and the detailed instructions the administrator should follow.
- 2. Refer to Support for booting from a Storage Area Network (SAN) for information about booting a Windows server from a SAN.

I

3. Shutdown all but one path to Boot LUN.

Refer to Windows Setup in a boot from SAN configuration reports. Setup was unable to create a new system partition or locate an existing system partition.

4. Configure the NetApp Boot LUN as Windows GUID Partition Table (GPT).

Microsoft Windows Server 2012 and Hyper-V Implementation

This section covers Microsoft Windows Server 2012 and Hyper-V implementation. A common misconception of Microsoft Hyper-V is that it is a Type-2 hypervisor because installation of Windows Server 2012 is required. However, Hyper-V is considered a Type-1 hypervisor because VMs can interface directly with the hypervisor layer, bypassing the operating system layer.

There are two versions of Hyper-V. The first is a standalone product called Microsoft Hyper-V Server 2012. This free product is available for download from Microsoft. The second version is the Hyper-V feature bundled with Microsoft Windows Server 2012.

For Microsoft Server 2008 R2, there were three editions: Standard, Enterprise, and Datacenter. For Windows Server 2012, the Enterprise edition was eliminated. The Standard and Datacenter editions support installing Hyper-V.

| 🃥 / V2-C2B3-P1 (Chassis - 2 Server | - 3) - KVM Console | X |
|------------------------------------|---|----|
| File View Macros Tools Help | | |
| 📣 Boot Server 🛛 🔩 Shutdown Server | O Reset | |
| KVM Console Properties | | |
| KVM Virtual Media | | |
| KVM Virtual Media | Select the operating system you want to install Operating system Architecture Date modified Windows Server 2012 Datacenter (Server Core Installation) x64 7/26/2012 Windows Server 2012 Datacenter (Server with a GUI) x64 7/26/2012 Description: This option is useful when a GUI is required—for example, to provide backward compatibility for an application that cannot be run on a Server Core installation. All server roles and features are supported. You can switch to a different installation option later. See "Windows Server Installation Options." | |
| | | |
| | | |
| | | -1 |
| 4 | | · |

Figure 2-4 Data Center Edition

I

The choice between Standard and Datacenter Edition depends upon the number of active VMs required in the datacenter. Standard Edition supports a maximum of two VMs, but the Datacenter Edition does not limit active VMs.

Microsoft Windows Server 2012 Installation

The Windows Server 2012 edition (Standard or Datacenter) to be installed depends upon the product key entered. To simplify installation, use the GUI to install Windows Server 2012 using the GUI. This is also the reason why it is better to install the full Windows Server 2012 instead of the standalone Hyper-V server.

Step 1 Install Windows Server 2012.

Refer to the Installing Windows Server 2012 site for detailed guidance.

Step 2 After the installation completes, install the Cisco eNIC drivers to enable the network interface cards (NICs). The drivers are available on the Cisco software download site.

Figure 2-5 NIC Driver Installation



Step 3 After the NICs are enabled, verify that the server joins an Active Directory (AD) domain. This also satisfies the Network Time Protocol (NTP) requirement.

ſ

| 🗼 / ¥2-C2B3-P1 (Cha | assis - 2 Server - 3) - KVM Console | |
|-------------------------|---|---|
| File View Macros | Tools Help | |
| Boot Server 🤳 Sh | hutdown Server 🤐 Reset | |
| KVM Console Propertie | 15 | |
| Real Proval Media | System | _ @ x <mark>_</mark> |
| ··· | System | u d Small Castal Basel 0 |
| C T | - Control Panel - All Control Panel items - System | V O Search Control Parler |
| Control Panel | Surtem Dreportion | C III |
| 🛞 Device Manag | System Properties | |
| Remote setting | Computer Name/Domain Changes | |
| log Advanced syst | You can change the name and the membership of this omputer computer. Changes might affect access to network resources. | Windows Server [®] 2012 |
| | Computer name: V2-C283-P1 | X5690 @ 3.47GHz 3.46 GHz (2 processors) |
| | Full computer name: V2C283-P1 | x64-based processor |
| | More | available for this Display |
| | Member of | |
| | Domain: | 😚 Change settings |
| | Vindesher | |
| | Workgroup: | |
| | | |
| See also | OK Cancel | |
| Action Center | 475 | ctivation |
| Windows Upd | OK Cancel Apply | |
| 🛞 占 | | ▲ P 2 4 7:14 PM 6/19/2013 |
| B Logged in ascompu | iteToken_@10.0.64.100 Not registered with UCS Central | System Time: 2013-06-19T15 |

Figure 2-6 Joining an AD Domain

- **Step 4** On the AD server, verify that the **Administrator** account has Domain Administrator access. Add the **scvmmadmin** account and grant it the Domain Administrator access.
- **Step 5** On the Windows Server 2012 server, verify that the AD **Administrator** and **scvmmadmin** accounts are available and add them if they are not available. After AD **Administrator** and **scvmmadmin** accounts are available, log off and log on as the Domain Administrator.

| 🇼 / ¥2-C2 | 283-P1 (Chassis - 2 Server | - 3) - K¥M Console | | | |
|-------------|----------------------------|---|---------------------------|--|---------------------------|
| File View | Macros Tools Help | | | | |
| 👍 Boot Ser | rver 🜙 Shutdown Server | 🤐 Reset | | | |
| KVM Consol | e Properties | | | | |
| KVM Virtu | al Media | | | | |
| - | | o 00 o | o o oo o | | |
| | | User Accounts | X | the second second | |
| Rec | | USCI ACCOUNTS | | | |
| Us | sers Advanced | | | and the second | |
| | Use the list below | to grant or deny users | access to your computer, | | |
| | and to change par | sswords and other sett | ings. | anager | |
| | Users for this computer: | | | stem32\cmd.exe | |
| | User Name | Domain | Group | erved. | <u>^</u> |
| | Administrator | VMDC | Administrators | | |
| | Numerical Administrator | V2-C2B3-P1 | Administrators | | |
| | 🗟 scvmmadmin | VMDC | Administrators | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | [| A <u>d</u> d | Semove Properties | | |
| | | Summer and a second seco | | | |
| | Password for Administrat | or | | | |
| | To change you | r password, press Ctrl-, | Alt-Del and select Change | | |
| | Password. | r | | | |
| | | | Keset Password | | |
| | | | | | |
| | | OK | Cased Analy | à | н |
| | | UK. | | | |
| | | | | - | |
| | | | <u>\$2</u> | 🔺 🕩 🤤 | 1:04 PM |
| | | | V | 1 10 | 6/19/2013 |
| 🔒 Logged in | ascomputeToken@10.0 | 0.64.100 Not register | ed with UCS Central | Syst | em Time: 2013-06-19T15:56 |

Figure 2-7 Administrator and scvmmadmin Accounts

Step 6 After logging in, turn off the Windows Firewall in the Windows Firewall control panel.

ſ



Figure 2-8 Disabling Windows Firewall

Step 7 Verify that Windows Server 2012 can access the internet and activate Windows.

| P | Windows Activation | | - U X |
|-----------------------------|--|-------------------------|--------|
| 🍥 💿 🕤 🛧 🏲 🕨 Control Panel 🕨 | System and Security + Action Center + Windows Activation | ✓ C Search Control Pane | ρ, |
| | | | |
| ð | Windows isn't activated | | |
| ſ | | × | |
| | 💿 훢 Windows Activation | | |
| | R. | | |
| | Activating Windows | | |
| | | | |
| | This might take a few minutes | | |
| | - | | |
| | | · · · · · | |
| | | | |
| | | \odot | |
| | | Ŭ | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | Cancel |
| | | | |

Figure 2-9 Windows Activation

Microsoft Hyper-V Installation

Although Microsoft Hyper-V is included in Windows Server 2012, Hyper-V is not installed by default. After the initial Windows Server 2012 install finishes, the System Administrator must add the Hyper-V role manually. This section outlines the steps to install and configure Hyper-V.

Step 1 In Server Manager, bring up Add Roles and Features Wizard.

ſ

| Re. | | | | Server Manager | r | | | | | - | D X |
|-----|---|--|-------------|--|--|-------------------------|----------|---------------|----------|------|------|
| | L | Add Roles and Features Wi | zard | | x | | <u>a</u> | IF | | | |
| | Select server role | Select one or more roles to install on the selecte | d server. | DESTINATION SERV V2-C283-P1.vmdc | tver Loet | | • @ | Mana <u>o</u> | ge Tools | View | Help |
| | Instaliation Type Server Selection Server Roles Peatures Application Server Role Services Hyper-V Virtual Switches Migration Default Stores Confirmation Results | Roles Active Directory Rights Management Se Application Server DHOP Server DNS Server Fax Server Fax Server Bill And Storage Services (Installed) PHEPST Network Policy and Access Services Print and Document Services Remote Access Remote Desktop Services Volume Activation Services | vices | ption -V provides the services that in use to create and manag machines and their resour titual machine is a virtualiza tete system that operates is desecution environment. T you to run multiple operat is simultaneously. | at ge rces. red n an This ting | | | | | Hid | e = |
| | | Web server (IIIs) Windows Deployment Services Windows Server Update Services Vindows Server Update Services Vindows Server Update Services | us Next > | Install Cance | el | Servers 1 ageability | | | | | |
| | | Performance | Services | | Sen | vices | | | | | |
| | | BPA results | Performance | | Perf | formance | | | | | |
| | | | BPA results | | BPA | results | | | | | ~ |

Figure 2-10 Add Roles and Features Wizard

Step 2 In the Wizard, click **Next** until the "Server Roles" window appears. Verify that the **Hyper-V** role is selected and click **Next**. In the **Features** window, verify that **Failover Clustering** and **Multipath I/O** are selected.

| à | Add Roles and Features Wizard | _ _ X |
|---|--|--|
| Select features | | DESTINATION SERVER WIN-DJFUJ49ER67 |
| Before You Begin | Select one or more features to install on the selected server. | |
| Installation Type | Features | Description |
| Server Selection Server Roles Features Confirmation Results | └ Client for NFS ^ □ Data Center Bridging | Multipath I/O, along with the Microsoft Device Specific Module (DSM) or a third-party DSM, provides support for using multiple data paths to a storage device on Windows. |
| | < Previous Next | > Install Cancel |

Figure 2-11 Features Wizard

Step 3 With the Hyper-V role selected, the Wizard prompts for the creation of virtual switches. Depending on the number of available NICs, it is a good practice to create at least one switch for management. At the same time, reserve at least one NIC for the Nexus 1000V Switch for Microsoft Hyper-V.

Γ

| Ъ. | Add Role | s and Features Wizard | _ _ × |
|---|--|--|---|
| Create Virtual Sv | witches | idual suitchar to communicate with other compute | DESTINATION SERVER V2-C283-P1.vmdc.net |
| Before You Begin Installation Type Server Selection | One virtual switch will be o at least one virtual switch is | machines and attach them to a virtual switch. reated for each network adapter you select. We rec now to provide virtual machines with connectivity to for unany internal publices there have no the Virtual S | ommend that you create a physical network. You |
| Server Roles Features Hyper-V | Network adapters: | Description | vitch Manager. |
| Virtual Switches Migration | Ethernet | Cisco VIC Ethernet Interface Cisco VIC Ethernet Interface | |
| Default Stores Confirmation | We recommend that y network adapter, do n | III YOU reserve one network adapter for remote access ot select it for use with a virtual switch. | to this server. To reserve a |
| nesuis | | | |
| | | | |
| | | < Previous Next > | Install Cancel |

Figure 2-12 Creating Virtual Switches

Step 4 Verify that Live Migrations are selected. This is a key advantages of Hyper-V.

Figure 2-13 Live Migration Option

| L | Add Roles and Features Wizard | _ D X |
|--|---|---|
| E Virtual Machine I Before You Begin Installation Type Server Selection Server Roles Features Hyper-V Virtual Switches | Add Roles and Features Wizard Wigration Hyper-V can be configured to send and receive live migrations of virtual mac Configuring Hyper-V now enables any available network on this server to be you want to dedicate specific networks for live migration, use Hyper-V setting Allow this server to send and receive live migrations of virtual machines Authentication protocol Select the protocol you want to use to authenticate live migrations. Use Credential Security Support Provider (CredSSP) This protocol is less secure than Kerberos, but does not require you to a deleadion. To perform a live migration, would be loaged on to the | DESTINATION SERVER V2-C283-P1.vmdc.net thines on this server. used for live migrations. If gs after you install the role. |
| Migration Default Stores Confirmation Results | delegation. To perform a live migration, you must be logged on to the Output of the Comparison of the Section of | egation in your egation in your is server remotely. td, you will configure the the cluster. |
| | < Previous Next > | Install Cancel |

Step 5 Use the Defaults for the rest of the Wizard. Once the installation completes, reboot the server. The Windows Server 2012 server might reboot several times to install the added Roles and Features. This is normal. Simply wait until all the installation completes.

<u>Note</u>

Run Windows Update to ensure that all installed components are running the latest versions.

Figure 2-14 Windows Update

| 3 3 | Windows Update | | | • × |
|--------------------------|---|-----|----------------------|----------|
| 🔄 💿 👻 🕇 🐝 🕨 Control Pane | el 🔸 All Control Panel Items 🔸 Windows Update | ~ C | Search Control Panel | <i>م</i> |
| Control Panel Home | Windows Update | | | • |
| Check for updates | | | | |
| Change settings | Checking for updates | | | |
| View update history | | | | |
| Restore hidden updates | | | | |
| | | | | |
| | Most recent check for updates: Never | | | |
| | Updates were installed: Never | | | |
| | You receive updates: For Windows and other products from Microsoft Update | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| See also | | | | |
| Installed Updates | | | | |
| | | | | |
| Sten 6 Rene | eat the above procedures for all Hyper-V hosts | | | |

SQL Server 2012 Installation

Before setting up Microsoft System Center 2012, we highly recommend that the System Administrator sets up a dedicated Microsoft SQL Server 2012 instance. Although System Center can install SQL Express, it is prudent to use the full version of SQL Server because it enables users to back up the database or set up MSCS clustering, which supports easy database recovery if a disaster occurs.

Step 1 Installing the SQL Server is straightforward. Unless MSCS clustering is required, no Windows Server 2012 customization is needed. Simply install Windows Server 2012 (either Standard or Enterprise) and then install SQL Server 2012 onto Windows Server 2012. After installation finishes, run Windows Update to obtain the latest patches and updates.

Refer to Install SQL Server 2012 from the Installation Wizard guide for information on installing SQL server.

Step 2 Verify that all SQL Server services are running and bring up the SQL Server Configuration Manager.

| | Sql Server Configuration Manager | | | | | | | | | | |
|--|--|--|--|--|---|---|--|--|--|--|--|
| File Action View Help Image: Sever Services Image: Sever Services Image: Sever Services Image: SQL Server Network Configuration (32bit) Image: SQL Server Network Configuration (32bit) Image: SQL Server Network Configuration Sever Network Configuration Image: SQL Server Network Configuration Sever Network Configuration Image: SQL Server Network Configuration Image: SQL Network Configuration Image: SQL Network Client 11.0 Configuration Image: SQL Network Client 11.0 Configuration | Name | State Running | Start Mode Automatic | Log On As NT Service\MsDtsS | Process ID 1260 | Service Type | | | | | |
| | SQL Full-text Filte SQL Server (MSS SQL Server Analy SQL Server Report SQL Server Browser SQL Server Agent | Running Running Running Running Stopped Running | Manual Automatic Automatic Automatic Manual Automatic | NT Service\MSSQL NT Service\MSSQL NT Service\MSSQL VMDC\Administrator NT AUTHORITY\LO NT Service\SQLSER | 2716 1320 1360 1396 0 2088 | SQL Server Analysis Server Report Server SQL Agent | | | | | |
| | | | | | | | | | | | |

Figure 2-15 SQL Server Configuration Manager

Step 3 Add, view, delete, or perform maintenance on any databases using SQL Server Management Studio.

Microsoft SQL Server Management Studio (Administrator) _ 0 × File Edit View Debug Tools Window Help 🎦 🕶 🖅 😅 🛃 🤰 🔔 New Query 📑 🔧 📸 🤧 🖓 🖓 🖉 // - 🗠 - 💭 - 🖏 🖓 🙀 🕨 - 🛛 🖄 🚆 Object Explorer Connect 🕶 📑 📑 👕 🐼 🗉 🐻 VMI-HYPERV-SQL (SQL Server 11.0.3128 🖃 🚞 Databases 🗉 🚞 System Databases 🗉 🧰 Database Snapshots 표 🧻 OperationsManager 🗄 🧻 ReportServer ReportServerTempDB 🕀 间 SC01 🖃 🧻 VirtualManagerDB2 Database Diagrams 🗉 🚞 Views ⊞ 🚞 Synonyms ⊞ 🚞 Programmability 🗄 🚞 Service Broker 🗉 🚞 Storage 🗉 🧻 VirtualManagerDB3 🗉 🚞 Security 🗉 🚞 Server Objects E
 Replication 🗉 🚞 AlwaysOn High Availability 🗉 📸 SQL Server Agent

Figure 2-16 SQL Server Management Studio



I

The necessary databases are automatically created when any System Center 2012 components are installed. No user intervention is necessary.

I

Deployment Guidelines

- **1.** If a System Center 2012 component cannot communicate with SQL Server 2012, the problem might be caused by Windows Firewall. Disable Windows Firewall on all servers.
- 2. We highly recommend making periodic database backups to ensure effective disaster recovery. For more information about database backups, refer to Create a Full Database Backup (SQL Server).
- **3.** Before installing System Center 2012, the System Administrator should create a test database and verify that all servers can connect to that test database.

Microsoft System Center 2012

This section describes Microsoft System Center 2012 (MSC) and System Center Virtual Machine Manager 2012 (SCVMM).

Refer to Installing System Center 2010 – Virtual Machine Manager for installation guidance.

SCVMM is part of MSC. Evaluation copies of MSC can be downloaded from the Microsoft System Center 2012 website.

SCVMM can reside on a VM or a physical server. The Administrator can base the decision on preference and the availability of resources.

SCVMM requires a MS-SQL database server and an Active Directory server with the existing setup.

- **Step 1** Connect the Windows Server 2012 server to the AD domain where the Hyper-V servers resides on.
- Step 2 The installation prompts for database information and automatically create a database instance on the server. If no database server is available, MS-SQL Express is automatically installed. After the installation finishes, the Virtual Machine Management (VMM) Console icon should appear on the Windows Server 2012 desktop.

Γ



Figure 2-17 Virtual Machine Management Console Icon

Step 3 Bring up the VMM Console. You can now add Hyper-V hosts and the Nexus 1000V Switch for Microsoft Hyper-V.

| Administrator - VMI-SCVMM.vmdc. | net - Virtu | al Machir | ne Manag | ger | | | | | | | | _ 0 | x |
|--|----------------------|--------------------------|----------|----------|--------------|----------------|-------------------------------------|---------|---|------|---------|---------|-------|
| Home Folder | | | | | | | | | | | | | ^ 🕜 |
| Create Create Virtual Create Create Host Cloud Group Create Create Virtual Cloud Create Host Cloud Create | Create VM Network | Assign Cloud Cloud | Overview | VMs S | Services how | VM Networks | PowerShell Jobs PRO Window | | | | | | |
| VMs and Services < N | VMs (0) | | | | | | | | | | | | |
| 🐯 Tenants | | | | | | | | | | | | | ٩ |
| a Clouds | Name | St * | Vir 👻 | Availa | Host | Cloud | Job Status | Ŧ | 0 | " Us | · CPU A | Service | Opera |
| 🚢 VM Networks | | | | | | There are no | o items to show in th | is view | | | | | |
| 📴 Storage | | | | | | | | | | | | | |
| 🗎 All Hosts | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | * |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| w VMs and Services | | | | | | | | | | | | | |
| J Fabric | | | | | | | | | | | | | |
| 🗮 Library | | | | | | | | | | | | | |
| 🗄 Jobs | | | | | | | | | | | | | |
| Settings | | | | | | | | | | | | | |
| • | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Figure 2-18 VMM Console

Deployment Guidelines

SCVMM requires .NET Framework 3.5 and .NET Framework 4.0 to be installed on the Windows Server 2012 server that SCVMM resides on. While .NET 4.0 can easily be added through the Roles and Features Wizard, installing .NET 3.5 through the same wizard will only result in an error. This is a known Microsoft issue. The only workaround to this issue is to use the following method.

- 1. Verify that the Windows Server 2012 server can connect to the internet.
- 2. Bring up the KVM console using UCSM.
- 3. Mount the Windows Server 2012 installation media onto the CD/DVD drive (D:).
- 4. Enter the following command on a DOS prompt:

```
dism /online /enable-feature /featurename:NetFX3 /all /Source:d:\sources\sxs
/LimitAccess
```

Figure 2-19 dism Output



5. Repeat the same command and procedure for "asp.net".

dism /online /enable-feature /featurename:iis-aspnet /all /Source:d:\sources\sxs
/LimitAccess

This should satisfy all the prerequisites for SCVMM.

Virtual Switch Module Installation on Nexus 1110

The Cisco Nexus 1000V Switch for Microsoft Hyper-V Distributed Virtual Switch requires a Virtual Supervisor Module (VSM) for control and management. The VSM controls multiple Virtual Ethernet Modules (VEMs) as one logical modular switch. However, while a physical switch uses linecards for Ethernet connectivity, VEMs are logical entities running in software inside physical servers.

In this test setup, VSMs were deployed in a Nexus 1110 Virtual Service Appliance (VSA), instead of in a Windows Server 2012 blade with Hyper-V enabled. From an architectural perspective, the idea is that the VSA resides in the management pod (called "VMI"), colocated with other management servers, rather than with production resources.

The deployment procedure for the Nexus 1000V Switch for Microsoft Hyper-V VSMs (VSBs) for Hyper-V is the same as for VMware deployments.

Refer to Installing VSM on Cisco Cloud Service Platform for additional guidance.

Refer to Cisco Nexus Virtual Services Appliance Release Notes, Release 4.2(1)SP1(5.1a) for more information about new features and caveats.

Deployment Guidelines

1. Use the correct ISO image for Hyper-V.

When creating the VSB, use the correct ISO for Hyper-V, as described in Step 4 of *Configuring Virtual Service Blades* in the Configuration guide.

2. Use a unique Domain ID in the VSM.

The Domain ID configured in the VSBs must be different than the domain ID used for the Nexus 1110 VSA. If domain IDs are not unique, the secondary VSA continuously reboots and message similar to this is seen:

```
2013 Jun 1 10:07:53 vsm-1 %KERN-1-SYSTEM_MSG: Dropping received frames from duplicate VSM saddr (0x1010000) - kernel
```



See CSCtq75997 more information.

1