Cloud Management

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Practical No 1: Managing Hyper-V environment with SCVMM 2012.

a) Installing and Configuring System Center 2012 R2 VMM

System Center Virtual Machine Manager (SCVMM) forms part of Microsoft's System Center line of management and reporting tools, alongside previously established tools such as System Center Operations Manager and System Center Configuration Manager. SCVMM is designed for management of large numbers of Virtual Servers based on Microsoft Virtual Server and Hyper-V, and was released for enterprise customers in October 2007.A standalone version for small and medium business customers is available.

Installation of SCVMM

- Prerequisites
 - Prepare SQL Server and select following features:

Database Engine Services

Management Tools

- Installing "Windows Assessment and Deployment Kit" (Windows ADK), Select Deployment Tools and Windows Preinstallation Environment (Windows WE)"
- Creating User "VMMService" in Service accounts in "Active Directory Computers and Users"
- Add the user in DNSAdmins
- Create login named as "VMMService" in SQL management studio
- ADSI->New->Object->container. Give value as "VMMDKM" Configure the permission. Copy the content from the "distinguished _name"

• Installation



| Image: Microsoft System Center 2012 R2 Virtual Machine Manager Setup Wizard | × |
|---|--------------------------|
| Getting started | <u>R</u> eport a problem |
| Product registration information | |
| Name: Cloud | |
| Organization: SKGroup | |
| Product <u>k</u> ey: | |
| If you don't provide a product key during setup, VMM will be installed as an evaluation editic provide a product key after setup is complete by using the VMM console. | n. You can |
| Previous <u>N</u> ext > | Cancel |
| Microsoft System Center 2012 R2 Virtual Machine Manager Setup Wizard | X |
| | |
| Getting started | <u>R</u> eport a problem |
| Please read this license agreement | |
| MICROSOFT EVALUATION SOFTWARE LICENSE TERMS | |
| MICROSOFT SYSTEM CENTER 2012 R2 STANDARD | |
| These license terms are an agreement between Microsoft Corporation (or based on where you live, affiliates) and you. Please read them. They apply to the evaluation software named above, which incomedia on which you received it, if any. The terms also apply to any Microsoft | one of its cludes the |
| updates, | |
| supplements, | |
| Internet-based services, and | |
| support services | ~ |
| \checkmark I have read, understood, and agree with the terms of the license agreement | Prin <u>t</u> |
| VMM Privacy Statement | |
| Previous Next > | Cancel |

| E Mi | crosoft System Center 2012 R2 Virtual Machine Manager Setup Wizard | | x |
|---|--|------------------------|----|
| Getting started | | <u>R</u> eport a probl | em |
| Customer Ex If you choose to partic Microsoft will Collect information | perience Improvement Program (CEIP) ipate: about your software and hardware configurations. | | _ |
| Collect information Microsoft will not Collect your name of Ask you to take sun Prompt you with ad Yes, I am willing to | about how you use our software and services to identify trends and usage patterns. or address. veys; nor will you be contacted by a sales representative. ditional messages that might interrupt your work. participate in the Customer Experience Improvement Program | | _ |
| No. I am not willing You can stop participa Settings workspace of More about the Custo Privacy Statement for VMM Privacy Statement | g to participate ting at any time by changing a setting in Customer Experience Improvement Program S the VMM console. mer Experience Improvement Program the Microsoft Customer Experience Improvement Program nt | ettings, found in | |
| | <u>P</u> revious <u>N</u> ext | > Cancel | |
| E Mi | crosoft System Center 2012 R2 Virtual Machine Manager Setup Wizard | | x |
| Configuration | | <u>R</u> eport a probl | em |
| Database co | nfiguration | | |
| Provide information at | bout the database that you would like to use for your VMM management server. | | |
| Server name: CLOUD | DC | <u>B</u> rowse |] |
| P <u>o</u> rt: | | | |
| ✓ Use the <u>following</u> | credentials | | |
| User na <u>m</u> e and domai | n: CLOUDAD\VMMService | | |
| | Format: Domain\UserName | | |
| Pass <u>w</u> ord: | •••••• | | |
| Instance name: | MSSQLSERVER | - | |
| Select an existing data | base or create a new database. | | |
| New <u>d</u> atabase: | VirtualManagerDB | | |
| <u>Existing database</u>: | ReportServer | * | |
| | Previous Next | > Cancel | |

| | Microsoft System Center 2012 R2 Virtual N | lachine Manager Setup Wizard | × |
|--|--|--|--------------------------|
| Configuration | | | Report a problem |
| | | | |
| Configu Virtual Mac | re service account and distribute | ed key management | |
| Select the acc Which typ <u>e</u> o | ount to be used by the VMM service. Highly available VM f account should I use? | M installations require the use of a dom | nain account. |
| Local System Domain according | em account ccount | | |
| <u>U</u> ser name | and domain: | Pass <u>w</u> ord: | |
| CLOUDAD | VMMService | ••••• | <u>S</u> elect |
| Distributed Select whethe | Key Management er to store encryption keys in Active Directory instead of or wis be stored in Active Directory | n the local machine. Highly available VN | /M installations |
| Store my I | keys in Active Directory | | |
| Pro <u>v</u> ide the | e location in Active Directory. For example, CN=DKM,DC= | contoso,DC=com. | |
| CN=VMM | DKM,DC=CLOUDAD,DC=com | | |
| <u>H</u> ow do I con | figure distributed key management? | | |
| | | Previous Next | > Cancel |
| | Missocoft Sustan Contor 2012 D2 Victual N | Aschine Manager Cetur Wizard | × |
| | Microsoft System Center 2012 K2 Virtual N | lachine Manager Setup Wizard | |
| Configuration | | | <u>R</u> eport a problem |
| - 1 1 | | | |
| Port cor | nfiguration | | |
| Manageme | nt Server | | |
| Please select t | the ports for various VMM features. | | |
| 8100 | Communication with the VMM console | | |
| 5985 | Communication to agents on hosts and library servers | | |
| 443 | File transfers to agents on hosts and library servers | | |
| 8102 | Communication with Windows $\underline{D}eployment$ Services | | |
| 8101 | Communication with Windows Preinstallation Environm | ent (Windows PE) agents | |
| 8103 | Communication with Windows PE agent for $\underline{t}ime$ synch | ronization | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| E Mi | icrosoft System Center 2012 R2 Virtual Machine Ma | nager Setup Wizard | × |
|---|---|---------------------------------|--------------------------|
| Configuration | | | <u>R</u> eport a problem |
| Library confi | guration | | |
| Specify a share for | r the Virtual Machine Manager library | | |
| Oreate a new librar | ry share | | |
| Share n <u>a</u> me: | MSSCVMMLibrary | | |
| Share location: | E:\MSSCVMMLibrary | | <u>S</u> elect |
| Share <u>d</u> escription: | VMM Library Share | | |
| O <u>U</u> se an existing lib | rary share | | |
| Share na <u>m</u> e: | MSSCVMMLibrary | | |
| Share location: | | | |
| Share description: | | | |
| | | | |
| | | | |
| | | | |
| | | <u>P</u> revious <u>N</u> ext > | Cancel |
| | | | |
| II Mi | icrosoft System Center 2012 R2 Virtual Machine Ma | nager Setup Wizard | × |
| Configuration | | | <u>R</u> eport a problem |
| | | | |
| Summary | | | |
| Review the selections | for features you are installing. To continue, click Install. To chan | ge these selections, click P | revious. |
| Features selected to I VMM management | be added server | | ^ |
| Installation Location | | | |
| C:\Program Files\M | icrosoft System Center 2012 R2\Virtual Machine Manager\ | | |
| Database Information VirtualManagerDB of | n database will be created on CLOUDDC | | = |
| Service Account CLOUDAD\VMMSer | vice | | |
| Communication Port 8100 - Communicat 5985 - Communicat 443 - File transfers t 8102 - Communicat | s ion with the VMM console ion to agents on hosts and library servers to agents on hosts and library servers ion with Windows Deployment Services | | |
| 8101 - Communicat 8103 - Communicat | ion with Windows Preinstallation Environment (Windows Pl ion with Windows PE agent for time synchronization | E) agents | ~ |
| | | | |

| Microsoft System Center 2012 R2 Virtual Machine Mana | ager Setup Wizard | x |
|---|---|-----|
| Complete | Report a prob | lem |
| Setup completed successfully For detailed information, review the Setup log files that are located in the %SYSTEMDRI Note that the ProgramData folder is a hidden folder. | VE%\ProgramData\VMMLogs folder. | |
| Ø VMM management server | 0 | |
| ♥ VMM console | Release Notes Installation Guide Read Documentation System Center Online | |
| Check for the latest Virtual Machine Manager updates Open the VMM console when this wizard closes | | |
| | Close | |

b) Managing Hosts and Host Groups

VMM Host Groups:

The first obvious question is why you would need a VMM Host Group. It is important to note that before you can manage the virtualization hosts located in datacenters, you would need to add the virtualization hosts in VMM. The Host Groups can be used to group virtualization hosts based on the physical site location.



By default, VMM provides a default Host Group called "All Hosts". "All Hosts" Host Group is the first Host Group in the VMM. You cannot rename and delete this Host Group. It is imperative to understand that a Host Group in VMM is more than just a group. As you can see in the screenshot below, I created three Host Groups in VMM called Dallas, Seattle and



c) Connecting to Hyper-V and deploying VMs.

So let's take a look at how you would go about adding Hyper-V hosts to Virtual Machine Manager, and then we will create some host groups. Begin the process by opening the Virtual Machine Manager console and then selecting the VMs and Services workspace. If you look at Figure A, you will notice that the All Hosts container is selected within the console tree. All Hosts is actually a host group.

| Administrator - VMM2012R2.MG | MT.co | m - Vin | tual Mac | hine Ma | nager | | | | | | | - | Ø X |
|---|-------|----------------|--------------------------|---------|--------|-----------------|----------------|-------------------------------------|-----|------|-------|---------|----------|
| Home Folder Folder Folder Folder Folder Folder Folder Create Create Virtual Create Create Host Cloud Group Create | Crea | de VM twork | Assign Cloud Cloud | Overvie | w VMs | Services how | VM Networks | PowerShell Jobs PRO Window | | | | | * |
| Ms and Services 4 | VM: | (25) | | | | | | | | | | | |
| 🚯 Tenants | | | | | | | | | | | | | |
| Clouds | - | Name | St | Vi | Availa | Host | Cloud | Job Status | - 0 | - Us | - CPU | Service | Opera |
| | 10 | VMM | Running | Running | 8 | lab4 | | | | | 0 % | | Windo. |
| WM INETWORKS | 2. | TS | Stopped | Stopped | | lab4 | | | | | 0% | | Unkno. |
| J Storage | R. | Lab1 | Stopped | Stopped | | lab4 | | | | | 0% | | Unkno. |
| All Hosts | | Lab2 | Stopped | Stopped | | lab4 | | | | | 0% | | Unkno. |
| ∄ lab4 | 2. | DPM | Stopped | Stopped | | lab4 | | | | | 0% | | Unkno. |
| | 100 | ADFS | Stopped | Stopped | | lab4 | | | | | 0 % | | Unkno. |
| | 1.0 | Lab1 | Stopped | Stopped | | lab4 | | | | | 0% | | Unkno. |
| | 1 | Lab1 - | Stopped | Stonned | | lab4 | | | | | 0% | | Unkno |
| | 0.0 | LOUI THE | stopped | stopped | | 1004 | | | | | V /4 | | -0110104 |
| | - | | | | | | | | | | | | |
| WMs and Services Fabric | | | | | | | | | | | | | |
| 📅 Library | | | | | | | | | | | | | |
| Jobs | | | | | | | | | | | | | |
| Settings | | | | | | | | | | | | | |

Figure A: Host servers are displayed through the VMs and Services workspace.

As you look at the figure above, you will also notice that right now a single host is listed beneath the All Hosts group. This host (Lab4) is a Hyper-V host in my lab environment. I manually added this host, but the other hosts have not yet been added.

To add a host server, right click on All Hosts. When you do, you will see a shortcut menu that provides a number of different options for adding hosts, as shown in Figure B. For instance, you can add Hyper-V hosts, Citrix hosts, and of course, VMware hosts. You will also notice that we have the option of adding host clusters. I am not going to get into host clusters in this article, because I have a separate article series on failover clustering for Hyper-V.

| Ms and Servi | ices | | VM | s (25) | | | | | | |
|------------------------|-------------------------|-------------------------|-------------------|---------|---------|------------|-------------|------------------|----------------|-------------|
| 1 Tenants | 63 | | [[| | | | P77905 7597 | 123712 9851 June | | q |
| Clouds | | | | Name | St - | Vi Availa_ | Host Cloud | Job Status | - 0 Us CPU Ser | rvice Opera |
| -VM Net | work | ê | 1.00 | VMM | Running | Running | lab4 | | 0.% | Windo |
| | | | 1.0 | TS | Stopped | Stopped | lab4 | | 0 % | Unkno |
| _ Storage | | | 1.00 | Lab1 | Stopped | Stopped | lab4 | | 0 % | Unkno |
| All Host | All Host Create Service | | - | 000 | Stonead | Stopped | lab4 | | 0% | Unkno |
| Treate Virtual Machine | | | | Stopped | lab4 | | 0% | Unkno | | |
| | | Add Hyper-V Hosts and | Clust | ers. | | Stopped | labe | | 0.% | Unkno |
| | ā | Add Citrix XenServer Ho | ists and Clusters | | Stopped | ister i | | 0.5 | Unknow | |
| | 1 | Add VMware ESX Hosts | and C | Justers | | Stopped | label | | 0.% | Unkno |
| | | Create Host Group | | | | stopped | 1004 | | V /8 | OTHERDE |
| | 20 | Miniar | | | | | | | | |
| | 1949 | View Networking | | | | | | | | |
| | - | view recordining | | | | | | | | |
| | ^ | Delete | | | | | | | | |
| | | Properties | | | | | | | | |

Figure B: You can add Citrix, VMware, and Hyper-V hosts.

For right now, let's go ahead and add some Hyper-V hosts. To do so, select the Add Hyper-V Hosts and Clusters option from the shortcut menu. When you do, Windows will display the Add Resource Wizard. In most cases, you will probably be adding Hyper-V hosts that reside in a trusted Active Directory domain. Therefore, when you see the wizard's first screen, choose the option to add Windows Server computers in a trusted Active Directory domain.

The next screen asks you to provide a Run As account. A Run As account is an account that has permission to perform the operation.

Click Next and you will be asked to specify the computers that you want to add. You can either enter the computer names manually, as I have done in Figure C, or you can perform an Active Directory query.

| 9] | Add Resource Wizard | x |
|---|--|---|
| 1 Discover | y Scope | |
| Resource Location Credentials Discovery Scope Target resources Host Settings Summary | Specify the search scope for virtual machine host candidates Search for computers by whole or partial names, FQDNs, and IP addresses. Alternatively, you may generate an Active Directory query to discover the desired computers. • Specify Windows Server computers by names • Specify an Active Directory query to search for Windows Server computers Enter the computer names of the hosts or host candidates that you want VMM to manage. Each computer name must be on a separate line. Computer names: Lab1.ngmt.com Lab2.mgmt.com Lab3.mgmt.com Skip AD verification Examples: server1 server1.contoso.com 100.1.1 | |
| | Previous Next Cance | |

Figure C: You can manually enter the names of the hosts that you want to add.

Click Next and there will be a brief wait while Virtual Machine Manager verifies the accuracy of the information that you have entered. Once this check completes, you will see a list of the hosts that you can add to the host group. Now, simply select the check boxes that correspond to the hosts that you want to add, and click Next.

Before I move on, I want to point out that it might not always be possible to add every host. If you look at Figure D, you will notice that the servers named Lab1, Lab2, and Lab3 do not have check boxes next to them. The reason for this is because these Hyper-V hosts belong to

a cluster. You will notice that the wizard displays an object named Lab.MGMT.com. This is the cluster to which Lab1, Lab2, and Lab3 belong. I didn't tell Virtual Machine Manager that I wanted to add the cluster, but it displayed the cluster anyway because I specified the individual nodes within the cluster.

| à | Add Reso | ource Wizard | |
|----------------------------------|--|-----------------------------------|------------|
| 臂 Target re | esources | | |
| Resource Location Credentials | Select the computers that Discovered computers: | you want to add as hosts | |
| Discovery Scope | Computer Name | Operating System | Hypervisor |
| Target resources | □ II prod2.mgmt.com | Windows Server 2012 R2 Standard | Unknown |
| Host Sattings | In prod1.mgmt.com | Windows Server 2012 R2 Standard | Hyper-V |
| tiost settings | Lab.MGMT.com | Windows Server 2012 R2 Datacenter | Hyper-V |
| Summary | Lab3.MGMT.com | Windows Server 2012 R2 Datacenter | Hyper-V |
| | Lab2.MGMT.com | Windows Server 2012 R2 Datacenter | Hyper-V |
| | Lab1.MGMT.com | Windows Server 2012 R2 Datacenter | Hyper-V |
| | Select all Refresh | Stop | |
| | | Previous | ext Cancel |

Figure D: Some hosts cannot be individually added to a host group.

With that said, select the hosts that you want to add and click Next. You will now see a screen asking you to verify your settings. Take a moment to make sure that everything is correct and click Next, followed by Finish. The hosts will be added to the host group.

Creating a Virtual Machine

The process of creating a new virtual machine works a little bit differently in Virtual Machine Manager than it does in the Hyper-V Manager. You can begin the process by either selecting a host or a host group and then clicking the Create Virtual Machine tile, located in the ribbon (be sure to choose the Create Virtual Machine option).

The next screen that you encounter asks you to choose the hardware settings for the virtual machine. You can specify the hardware manually as you do through Hyper-V Manager, but there are a couple of other options available to you, as shown in Figure F.



Figure F: Configure the virtual machine's hardware.

d) Performing Live Migration using Hyper-V Manager &j) Moving Hyper-V Storage and Virtual Machines

Prerequisites:

• 2 or more physical servers with the same processor manufacturer:

Intel or AMD CPU supporting Virtualization extensions (VT-x/AMD-V)

SLAT recommended for performance

- Windows Server 2012 with Hyper-V 3.0 Role installed: Install Windows Server 2012 and install the Hyper-V role in server manager
- Both servers members of the same domain Join both servers to the same domain One or both servers may be a domain controller of a new domain if an existing domain is not available
- Both servers set up for Live Migrations

In the Hyper-V Settings in Hyper-V Manager, Live Migrations sub-menu, check the "Enable incoming and outgoing live migrations" checkbox.

Select use CreddSSP as the Authentication protocol as it is simpler to configure but requires you to be logged on to the server

Specify 1 or more Simultaneous live migrations

Select "Use any available network for live migration" or configure the IP range if you have multiple networks

| Server Virtual Hard Disks D:(VM Virtual Machines D:(VM Physical GPUs Manage RemoteFX GPUs Manage RemoteFX GPUs Manage RemoteFX GPUs NUMA Spanning Alow NUMA Spanning Live Migrations 2 Smultaneous Migrations 2 Smultaneous Migrations 2 Smultaneous Migration Enabled as a Replica server Ver Keyboard User Keyboard Use on the virtual machine Mouse Release Key CTRL+ALT+LEFT ARROW Reset Check Boxes | Eve Migrations Enable incoming and outgoing live migrations Authentication protocol Select how you want to authenticate live migrations. Use Credential Security Support Provider (CredSSP) You must log on to the server to perform a live migration. Use Kerberos This is more secure but requires constrained delegation for live migration. Simultaneous live migrations Specify how many simultaneous live migrations are allowed. Simultaneous live migrations Simultaneous live migrations Simultaneous live migrations Incoming live migrations Use any available network for live migration Use these IP addresses for live migration: | | | |
|---|---|-----------|--|--|
| | | Add Edit | | |
| | | Move Up | | |
| | | Move Down | | |
| | | Remove | | |

Identical network configuration

This can be tested in SCVMM under the Migrate VM Wizard

This portion of the setup is easier to configure using VMM since it gives feedback and recommendations to your current configuration:

| - | Migrate VM Wizard |
|---|--|
| Select H | lost |
| Select Host Select Path Select Networks | Select a destination for the virtual machine Destinations are rated based on the virtual machine requirements and on the default placement options. Expected Utilization Make this VM highly available |
| Summary | Search P v in All Hosts v |
| | Rating Destination Warnin Transfer Type Netwo ☆☆☆☆☆ ■ hv2.dalaris.local ■ Live (VSM) ☆☆☆☆☆☆ ■ (current host) - HYPERV2012.DALA ■ Live Stora |
| | Placement has finished calculating ratings for each potential destination of this virtual machine. |
| | Placement has finished calculating ratings for each potential destination of this virtual machine. |

If SCVMM is unavailable, name your virtual switches the same on both physical servers:

| Virtual Switches | Virtual Switch Properties | | | | |
|--|---|--|--|--|--|
| and Internal Setth | Name: | | | | |
| Microsoft Network Adapter Multipl | Internal Switch | | | | |
| Extensions | Notes: | | | | |
| Intel(R) 82574L Gigabit Network C | | | | | |
| Extensions | | | | | |
| Global Network Settings | | | | | |
| MAC Address Range 00-15-50-00-A8-00 to 00-15-50-0 | Connection type | | | | |
| | What do you want to connect this virtual switch to? | | | | |
| | External network: | | | | |
| | Microsoft Network Adapter Multiplexor Driver | | | | |
| | Allow management operating system to share this network adapter | | | | |
| | Enable and e-root 1/0 virtualization (SR-10V) | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | VLAN ID | | | | |
| | Enable virtual LAN identification for management operating system | | | | |
| | The VLAN identifier specifies the virtual LAN that the management operating system will use for all network communications through this network adapter. This setting does not affect virtual machine networking. | | | | |
| | | | | | |
| | Remove | | | | |
| | SR-IOV can only be configured when the virtual switch is created. An external virtual switch with SR-IOV enabled cannot be converted to an internal or private switch. | | | | |
| | | | | | |

Recommended:

Same processor architecture (Workaround by setting Compatibility Configuration > "Migrate to a physical computer with a different processor version" checkbox in VM Settings under Processor > Compatibility sub-tree)



After these prerequisites are complete, the process of actually performing a live migration is simple:

- 1. Right click Virtual Machine in Hyper-V manager and select Move.
- 2. Follow the Wizard, specifying the Move Type as "Move the virtual machine"



3. Specify the destination server name

| | Move "WIN2012SRV01" Wizard | × |
|----------------------------|---|---------------|
| Specify De | estination Computer | |
| Before You Begin | Specify the name of the destination computer. | |
| Choose Move Type | Name: hv2 | Browse |
| Virtual Machine Summary | | |
| | < Previous Next > | Finish Cancel |

4. Select the "Move the virtual machine's data to a single location" option

| 2 | Move "WIN2012SRV01" Wizard |
|--|---|
| Choose M | ove Options |
| Before You Begin Choose Move Type Specify Destination Choose Move Options Virtual Machine Summary | What do you want to do with the virtual machine's items? Move the virtual machine's data to a single location This option allows you to specify one location for all of the virtual machine's items. Move the virtual machine's data by selecting where to move the items. This option allows you to select the location of each item to be moved. Move only the virtual machine This option allows you to move the virtual machine without moving its virtual hard disks. The virtual machine's virtual hard disks must be on shared storage. |
| | < Previous Next > Finish Cancel |

5. Specify the location on the target server to save the VM file or browse for the location using Remote File Browser

| P | М | Nove "WIN2012SRV01" Wizard |
|--|------------------|---|
| Choose an | new location for | or virtual machine |
| Before You Begin Chaose Move Type | Specify a locati | tion on the destination computer for the virtual machine's items. location |
| Specify Destination Choose Move Options | Folder: | d:\vm Browse |
| Virtual Machine | Source locatio | ion |
| | | |
| | | < Previous Next > Finish Cancel |

6. Review and accept the configuration by clicking Finish on the wizard

| 2 | Move "WIN2012SRV01" | Wizard | × |
|--------------------------------------|---|-----------------------------|---|
| Completin | ng Move Wizard | | |
| Before You Begin Choose Move Type | You are about to perform the following operat Description: | ion. | |
| Speciry Destination | Virtual machine: | WIN20125RV01 | |
| Choose Move Options | Move type: | Virtual Machine And Storage | |
| Virtual Machine | Destination computer: | hv2 | |
| Summary | Item to move: Attached vistual bard dick, IDE Controller 0 | Destination Location | |
| | Current configuration | d: (vint/virtual hard bisks | |
| | Snapshots | d:lym | |
| | Smart Paging | d:\vm | |
| | To complete the move and close this wizard, d | ick Finish, | |
| | < Prev | ious Next > Finish Cancel | |

e) Creating a Virtual Machine and Modifying Its Properties

Creating Generation 2 VMs:

The Identity page of the Create Virtual Machine Wizard was modified to allow you to select which type of VM you want to create. When creating a Generation 2 VM just select "Generation 2" from the generation dropdown. This will do two major things: First, when you come to the Configure Hardware page you will notice that those hardware devices that are not support by Generation 2 VMs such as floppy drives, legacy networking and IDE controllers will not be present. Second, when selecting the destination host for the VM only Windows Server 2012 R2 hosts will be allowed.

| | | Create Virtual Machine Wizard | | | × |
|--------------------|---|---|---|--|--|
| Identity | | | | | |
| Select Source | Specify Virtual M | lachine Identity | | | |
| Identity | | | | | |
| Configure Hardware | Virtual machine name Description | MyFirstGeneration2VM | | | |
| | Description: | | | | |
| Select Destination | | | | | |
| Select Cloud | Generation: | Generation 1 | | | |
| Add Properties | | Generation 1 | | | |
| 2000000 | | Generation 2 | | | |
| | | | | | |
| | The virtual machin name of the virtua Operations Manag | te name identifies the virtual machine to VMM. The Il machine. However, using the same name ensures ger. | r name does not ha consistent display | ave to match t s in System C | the computer enter |
| | The virtual machin name of the virtua Operations Manag Generation 1 virtu host operating sys Extensible Firmwa For generation 2 v Learn about supporte | te name identifies the virtual machine to VMM. The al machine. However, using the same name ensures ger. al machines have capabilities that were previously stems. Generation 2 virtual machines have new cap re Interface (UEFI), and the ability to boot in ways t virtual machines, the host must run Windows Serve ad guest operating systems for generation 2 virtual | r name does not ha consistent display supported by Wind abilities, such as su hat generation 1 vi r 2012 R2. machines. | ave to match t s in System C dows Server 2 upport for the irtual machine | the computer enter 012 and other Unified es could not. |
| | The virtual machin name of the virtua Operations Manag Generation 1 virtu host operating sys Extensible Firmwa For generation 2 virtue | te name identifies the virtual machine to VMM. The Il machine. However, using the same name ensures ger. al machines have capabilities that were previously stems. Generation 2 virtual machines have new cap re Interface (UEFI), and the ability to boot in ways t virtual machines, the host must run Windows Serve ad guest operating systems for generation 2 virtual | e name does not ha s consistent display supported by Wind abilities, such as su hat generation 1 vi r 2012 R2. machines | ave to match t s in System C dows Server 2 dows Server 2 d | the computer enter 012 and other Unified es could not. |

Figure 1 - Creating a Generation 2 VM



Figure 2 - Hardware for a Generation 2 VM

| 6 | | MyFirstGeneration2VM Properties | |
|----------------------------------|---|--|-----------|
| General | Ngme: | MyFirstGeneration2VM | |
| Status Hardware Configuration | Territoria. | | |
| Checkpoints | Computer name | 1 | |
| Custom Properties | Cost center: Ing | (none) | |
| Settings | Clogd | | (t) |
| Actions | Type: Opgrating system: | Windows Server 2012 R2 Standard | |
| Servicing Windows | Generation: Virtual machine guest se | Generation 2 rvices: Not Detected | |
| Validation Errors | Added Modified | Wednesday, February 19, 2014 1:30 PM Wednesday, February 19, 2014 1:30 PM | |
| Access | | | |
| Storage | | | |
| | | | |
| | | | |
| | | | |
| Yine Scrut | | | OK Cancel |

Figure 3 - Generation 2 VM Properties

f) Cloning a Virtual Machine

To initiate this action from within Hyper-v Manager on Windows 8.1 or Windows Server 2012 R2, use these steps:

Open Hyper-V Manager.

Find the running virtual machine that you want to clone.

Right-click on it and click on Export.

To initiate this process on SCVMM 2012 R2, use these steps:

Launch your Virtual Machine Manager console.

Select the virtual machine tab.

Locate the running virtual machine that you wish to clone.

Right-click on it, hover over "create" and select "clone"

| | Virtual N | Machine Tools Admi | nistrator - scvmm.armstrong.ho | use - Virtual Ma | chine M 🗕 🗖 🗙 |
|----------------|---------------------------|--------------------|--------------------------------|--------------------------------|-------------------------|
| | Home Folder Virtua | al Machine | | | ^ 🔞 |
| Creat Creat | e Shut Power On On Resume | ff Reset | tate Checkpoint Checkpoints | Connect or View + Window | Delete Properties |
| > | VMs (25) | | | | |
| | | | | | ام |
| | Name | Statur Virtu | ▼ Host Job Status | T CDIL Ave | Operatin VM Additions |
| | Status, Russian | Status Virtu | Host Job Status | CPU AVE | Operatin VM Additions |
| | Rordorland | Pupping Puppin | a hunar v 2 Completed | 0.% | 64 bit odi 6 2 0600 162 |
| | Domain Controller - 2 | Running Runnin | g hyper-v-2 Completed | 0 /6 | 64-bit edi 6.2.9600.162 |
| | TMG Server | Running Ruit | Create | 👘 Clone | 9600 163 |
| | hile Server | Running Ru | Shut Down | Create VM 1 | Template 9600.163 |
| e | bomain Controller - 1 | Running Ru 😃 | Power On | 0 % | Windows 6.3.9600.163 |
| Par | Backup Server | Running Ru 🕡 | Power Off | 0 % | Windows 6.3.9600.163 |
| ion | FTP Server | Running Ru 🚺 | Pause | 0 % | 64-bit edi 6.3.9600.163 |
| igat | 🐌 WDS | Running Ru 🕩 | Resume | 0 % | Windows 6.3.9600.163 |
| lavi | 🐌 VPN Server | Running Ru 🔊 | Reset | 0 % | 64-bit edi 6.3.9600.163 |
| 2 | 🐘 WSUS | Running Ru 🗖 | Save State | 0 % | Windows 6.3.9600.163 |
| | л MineCraft Server | Running Ru 🆓 | Discard Saved State | 2 % | 64-bit edi 6.3.9600.163 |
| | 🐁 SCVMM | Running Ru 🚔 | Migrate Storage | 0 % | Windows 6.3.9600.163 |
| | 腸 Gateway | Running Ru 🎴 | Migrate Virtual Machine | 0 % | Unknown Detected |
| | ⊡ Status: Stopped | | Store in Library | - | |
| | File Server | Stopped Sto | Create Checkpoint | 0 % | Unknown Not Detected |
| | Backup Server | Stopped Ste | Manage Checkpoints | 0 % | Unknown Not Detected |
| | Domain Controller - 2 | Stopped Sto | Renair | 0 % | Unknown Not Detected |
| * | MineCraft Server | Stopped Sto | Install Virtual Guest Services | 0 % | Unknown Not Detected |
| 1 2 | Borderland | Stopped Sto | Connect or View | 0 % | Unknown Not Detected |
| | FTP Server | Stopped Sto | | 0 % | Unknown Not Detected |
| | TMG Server | Stopped Sto | Delete | 0 % | Unknown Not Detected |
| = | WSUS | Stopped Ste | Properties | 0 % | Unknown Not Detected |
| ~ | Domain Controller - 1 | Stopped Stoppe | d hyper-v-2 Completed w/ Info | 0 % | Unknown Not Detected |
| - | Domain Controller - 2 | Stonned Stonne | d huner-u-1 Completed | 0 % | Unknown Not Detected |
| | USINAIII CONTIONEI - Z | | | | |

g) Creating a Hyper-V Failover Cluster & h) Managing a Hyper-V Failover Cluster

How to Add a Hyper-V Failover Cluster on Virtual Machine Manager 2012:

Go to Fabric and then click on Add Resources

| Create Logical Network | Create jical Switch | Add Resources • Add | Overview F | Abric sources Show | PowerShell Jobs PRO Window | View Dependent Resources Dependencies | Remove Remove | Properties Properties |
|---------------------------------------|------------------------|---------------------------|------------|--------------------------|---|---|------------------|--------------------------|
| Fabric < | Logical Networks a | nd IP Pools (4) | | | | | | |
| Servers | | | | | | | | |
| A 📥 Networking | Name Subn | et | | Begin Address | | End Ad | dress | |
| The Logical Networks | τ ή τν | | | | | | | |
| MAC Address Pools | τ ή τ ν | | | | | | | |
| 🔛 Load Balancers | 11 v | | | | | | | |
| 🔤 VIP Templates | 1 1 17 V | | | | | | | |
| Switch Extension Managers | | | | | | | | |
| Logical Switches | | | | | | | | |
| Native Port Profiles | | | | | | | | |
| Port Classifications | | | | | | | | |
| Gateways | | | | | | | | |
| Storage Classification and Datala | | | | | | | | |
| Providers | | | | | | | | |
| Arrays | | | | | | | | |
| 📑 File Servers | | | | | | | | |
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| 🗽 VMs and Services | | | | | | | | |
| Pabric | | | | | | | | |
| ibrary | | | | | | | | |
| lobs | | | | | | | | |
| | | | | | | | | |
| ✓– Settings | | | | | | | | |

Add Hyper-V Host and Clusters



In my Scenario I have my Hyper-V Cluster on a Trusted AD

| | Indicate the windows computer location | | | |
|-----------------|---|--|--|--|
| nedentials. | Windows Server computers in a trusted Active Directory domain | | | |
| scovery scope | O Windows Server computer in an untrusted Active Directory domain | | | |
| arget resources | Windows Server computers in a perimeter network | | | |
| ast settings | If you select this option, before you continue, use VMM Setup to install the VMM agent locally on the targeted computers. Ensure that you configure the perimeter network settings during the agent setu | | | |
| ammany | O Physical computers to be provisioned as virtual machine hosts | | | |
| | | | | |
| | | | | |

Specify the credentials for discover the Hosts



Specify the hosts that you want to discover

| 背 Discover | y scope |
|---|--|
| Resource location Credentials Discovery scope Target resources Host settings Summary | Specify the search scope for virtual machine host candidates Search for computers by whole or partial names, FQDNs, and IP addresses. Alternatively, you may generate an Active Directory query to discover the desired computers. Specify Windows Server computers by names Specify an Active Directory query to search for Windows Server computers Finter the computer names of the hosts or host candidates that you want VMM to manage. Each computer name must be on a separate line. Computer names Hyper-V_Cluster01 |
| | Skip AD verification Examples server1 server1.contoss.com 10.0.1.1 2a01:110:1e:3:f8Hcfe44-23 |
| | Previous Next Cancel |

Now select the Hosts or Cluster

| Resource location Credentials | Select the Discovered of | Select the computers that you want to add as hosts Discovered computers | | | | | |
|----------------------------------|-----------------------------|--|--------------------------------|------------|--|--|--|
| Discovery scope | Computer | Name | Operating System | Hypervisor | | | |
| Target resources | | Chuster | Windows Server 2012 Detecenter | Hyper-V | | | |
| Host settings | | HV01, | Windows Server 2012 Datacenter | Hyper-V | | | |
| non annanga | 7 | HV02. | Windows Server 2012 Datacenter | Hyper-V | | | |
| | | | | | | | |

Cluster Added.

i) Configuring and Managing Hyper-V Replica

VM replication with Hyper-v is a built-in feature that can assist with business continuity and disaster recovery in the event of a failure. Server 2012 R2 and Hyper-v Server 2012 R2 allow for a third replica server, but R2 is not available as of the creation of this how-to.

This how-to assumes that you have a primary Hyper-v server already in production, and a host which you plan to use as your replica server online with Server 2012 and the Hyper-v role installed.

| Step | 1: Configure | Your Secondary | y Hyper-v | Host as a Re | plica Server |
|------|--------------|----------------|-----------|--------------|--------------|
| | | | | | |

| Server | Replication Configuration |
|-----------------------------|---|
| 🧾 Virtual Hard Disks | |
| E: WHD | I ⊆nable this computer as a Replica server. |
| E:\VM | Authentication and ports |
| Physical GPUs | Specify the authentication types to allow for incoming replication traffic. Ensure that the ports you specify are open in the firewall. |
| | ✓ Use Kerberos (HTTP): |
| Allow NUMA Spanning | Data sent over the network will not be encrypted. |
| Live Migrations | Specify the port: 80 |
| Storage Migrations | Use certificate-based Authentication (HTTPS): |
| 2 Simultaneous Migrations | Data sent over the network will be encrypted. |
| Replication Configuration | Specify the port: 443 |
| Enabled as a Replica server | Specify the certificate: |
| Wer Keyboard | |
| Use on the virtual machine | Issued to: Issued By: |
| 🎒 Mouse Release Key | Expiration Date: |
| CTRL+ALT+LEFT ARROW | Intended Purpose; |
| Reset Check Boxes | Select Certificate |
| Reset check boxes | |
| | Authorization and storage |
| | Specify the servers that are allowed to replicate virtual machines to this |
| | computer. |
| | Allow replication from any authenticated server |
| | Specify the <u>d</u> efault location to store Replica files: |
| | E:\Replica |
| | |
| | Browse |
| | Allow replication from the specified servers: |
| | Drimary Server Storage Location Trust Croup |
| | Frindry Server Storage Location Trust Group |

- Open Hyper-v Manager.

- Right click "Hyper-v Manager" in the left pane, and select "add server". Enter the computer name of the server you plan to use for your replica server and click "ok". The replica host will appear in the left pane.

- Right click on your replica host in the left pane, and select "Hyper-v Settings...".

- The Hyper-v Settings window will appear. Select "Replication Configuration" on the left side of the window.

- Check the "Enable this computer as a replica server" box.

- The "Use Kerberos (HTTP)" checkbox will be checked by default. With this setting selected, replica traffic is sent using HTTP. Hyper-v also allows you to configure the replica traffic to be sent as HTTPS traffic using certificate based authentication, but in this how-to, we will utilize HTTP.

- At the bottom of the "Replica Configuration" options, you have the option to allow replication from any authenticated server, or configure the replica server to only allow replication from specific servers. By default, "Allow replication from any authenticated server" is selected. Select the appropriate option (for this how-to, we will be using the default "Allow replication from any authenticated server" option).

- At the bottom of the "Replication Configuration" window, select the default location to store replica files. This is going to be where the VM's and VHD or VHDX files are stored on your replica server.

- Once all options in the replica configuration have been configured, click "OK" on the Hyper-v Settings window.

Step 2: Configure Replication of the Virtual Machines on the Primary Hyper-v Host

| 20 20 | Enable Replication for | × |
|--|--|--|
| Specify Rep | ica Server | |
| Before You Begin Specify Replica Server Specify Connection Parameters Choose Replication VHDs Configure Recovery History Choose Initial Replication Method Summary | Specify the Replica server name to use to replicate this virtual m failover cluster, specify the name of the Hyper-V Replica Broker Failover Cluster Manager on the Replica server to find the name Replica server: | hachine. If the Replica server is on a as the Replica server. Use the e of the Replica Broker. Browse |
| | < Previous Next | > Finish Cancel |

- Open Hyper-v Manager.

- Right click "Hyper-v Manager" in the left pane, and select "add server". Enter the computer name of your primary Hyper-v host and click "ok". The primary host will appear in the left pane.

- Select the primary host in the left pane. Your virtual machines will appear in the right pane.

- Right click on a VM that you would like to replicate to your secondary server, and select "Enable Replication".

- The "Enable Replication" wizard will appear. Click "Next" on the "Before you Begin" section.

- The next section of the "Enable Replication" wizard asks for your replica server. Enter the name of your replica server, and click "Next". This section also allows you to browse for the server if you need to.

- The "Specify Connection Parameters" section of the wizard will appear. The replica server, replica server port, and authentication type will be grayed out because you configured these options on your replica previously. The checkbox for "Compress the data that is transmitted over the network" is checked by default, you can uncheck if you wish. Compressing the replica traffic uses additional system resources because the Hyper-v host has to compress the data after it is received. Of course, compressing the replica traffic will decrease bandwidth usage. Click "Next".

- The "Choose Replication VHDs" section of the replication wizard will appear. By default, the VHD or VHDX file for the virtual machine that you are configuring replication for is selected. Unless there are any additional VHDs that you need to replicate (like if you have a separate VHD for a dedicated paging file), select "Next".

- The "Configure Recovery History" section of the replication wizard will appear. You have the option to only keep the latest recovery point on the replica server, or maintain additional recovery points. By default, the option for "only the latest recovery point" is selected. If you would like to keep additional recovery points (snapshots) on the replica server, chose "additional recovery points", and select the options that you require. Click "next".

- The "Choose Initial Replication Method" section of the wizard will appear. You can choose to send the initial copy of the network, or send the initial copy using external media. Be aware that sending the initial replica between sites or over a slow connection can take quite a long time. You can also select the option to use an existing virtual machine on the replica server as the initial copy, which you can use if you have restored a copy of the VM to the replica server. The restored VM will be used as the initial copy. For this how-to, we are going to select the default option, "Send initial copy over the network". At the bottom of this section of the wizard, select whether you would like to start replication immediately, or start at a specific time. Select "next" to continue.

- The "Completing the Enable Replication Wizard" section will appear. This page provides a summary of the options that you selected in the previous sections of the wizard. Click "Finish" to start the initial replication.

Step 3: Monitor Initial Replication:

| | | | | | | Hyper-V Manage |
|-----------------------|----------------|---------|-----------|-----------------|-------------|---------------------------------|
| File Action View Help | | | | | | |
| 💠 🤿 🙍 📰 🚺 | | | | | | |
| Hyper-V Manager | Virtual Machin | nes | | | | |
| | Name | State | CPU Usage | Assigned Memory | Uptime | Status |
| | | Running | 0 % | 2048 MB | 29.04:19:47 | |
| | | Running | 0 % | 8192 MB | 1.13:50:10 | Backing up |
| | | Off | | | | |
| | | Running | 6 % | 4096 MB | 2.18:36:03 | |
| | | Running | 0 % | 8192 MB | 8.08:13:47 | |
| | | Off | | | | Replicating changes - Succeeded |
| | 100 | Running | 0 % | 16384 MB | 4.21:24:50 | |
| | | Running | 0 % | 3072 MB | 34.11:32:40 | |
| | I | Off | | | | |

- After you have started the initial replication, you can monitor the replication status in Hyper-v Manager.

- Select your Hyper-v Host in the left pane, and your VM's will appear in the right pane. Within the "status" section of the VM on the right, it should state "Sending Initial Replica" and provide a completion percentage for the VM that you just configured replication.

- If you select your replica host from the right pane, the status for the VM will be listed as "receiving initial replica" and it should provide the same percentage that your Hyper-v host displays.

Step 4: Monitor Ongoing Replication:



- After the initial replica has completed, you can monitor the ongoing replication health from Hyper-v Manager.

- From Hyper-v Manager, select your Hyper-v Host from the left pane. Your VM's will appear in the right pane.

- Select the VM from which you configured replication.

- At the bottom of the Hyper-v Manager window, select the "Replication" tab.

- If replication is occurring successfully, your replication health will be listed as "Normal". The replication tab will also display the last synchronization.

- Hyper-v replication can also be monitored by Microsoft System Center Operations Manager 2012.
Practical No 2: Provisioning Self-Service using App-Controller.

a) Deploying a new virtual machine running Windows Server 2012 Data center edition to Windows Azure cloud. (Should be performed Online)

How to create the virtual machine:

This section shows you how to use the Preview portal to create a VM, using Windows Server 2012 R2 Datacenter as an example. You can use Azure's default settings for most of the configuration and create the VM in just a few minutes.

- 1. Sign in to the Preview portal.
- 2. On the Hub menu, click New.



3. In the New blade, click Compute, and then click Windows Server 2012 R2 Datacenter.



4. On the Create VM blade, fill in the Host Name you want for the VM, the administrative User Name, and a strong Password.

| Create VM windows server 2012 r2 datacenter | |
|---|----------|
| Host Name | |
| azurevm | ~ |
| User Name | |
| azureuser | × 🗸 |
| Password | |
| ••••• | <u> </u> |
| PRICING TIER Basic A1 | > |
| OPTIONAL CONFIGURATION Network, storage, diagnostics | > |
| resource group Group-5 | > |
| subscription Internal Consumption | > |
| LOCATION Central US | > |
| Pin to Startboard Create | |

5. Review the default settings, such as the Pricing Tier and Optional Configuration. These choices affect the size of VM as well as networking options such as domain membership. For example, to try out Premium Storage on a virtual machine, you'll need to pick a region and size that supports it. For your first virtual machine, the defaults are usually fine.

6. When you're done reviewing or updating the settings, click Create.

7. While Azure creates the VM, you can keep track of the progress in Notifications, in the Hub menu. After Azure creates the VM, you'll see it on your Startboard.



How to log on to the virtual machine after you create it:

This section shows you how to log on to the VM so you can manage its settings and the applications that you'll run on it.

- 1. If you haven't already done so, sign in to the Preview portal.
- 2. Click your VM on the Startboard. If you need to find it, click Browse and then click Virtual machines. Then select your VM from the list.



3. On the VM blade, click **Connect** at the top.

| RUNNING | ··· * _ 🗖 × |
|----------------------|--|
| | |
| Settings | nrt Shut down Capture Reset Delete Remote |
| Essentials ^ | A 199 |
| Resource group | DNS name |
| Group-5 | azurevm-30000 (N.cloudapp.net |
| Status | Virtual IP address |
| Running | 104.43.220 1 |
| Location | Private IP address |
| Central US | 10.4.0.4 |
| Subscription name | Size |
| Internal Consumption | Basic A1 (1 Core, 1.75 GB) |
| Subscription id | Operating System Windows |
| | All settings 🔿 |

- 4. Click Open to use the Remote Desktop Protocol file that was automatically created for the virtual machine.
- 5. Click Connect to proceed with the connection process.
- 6. Type the user name and password of the administrative account on the virtual machine, and then click OK.
- Click Yes to verify the identity of the virtual machine.
 You can now work with the virtual machine just as you would with any other server.

b) Deploying a new virtual machine running Windows Server2012 Data center edition to Hyper-V using App-Controller &f) Deploying a Virtual Machine in App Controller

Log on to the App Controller website, which takes the form https://<App Controller Server>. Next, choose the Settings navigation node and the Connections child navigation node. Choose the Connect, SCVMM action, as shown in Figure 1.

| +ttps://savdalvm | m12. savilltech.net /#/Shell/Clo | udSystemsMa | ana: 🎗 🗝 🖨 C 🔲 App Controller 🛛 🗙 | | | = □ × ⋒ ★ 8 |
|--|---|---------------------|---|---------------------|-----------|---|
| SAVILLTECH IT I | Dept | | | | Hi, Adı | Cloud Portal ministrator Sign out Help |
| Overview | Connections (| 3) | | | Enter k | eyword 🔎 |
| Clouds | Connect • Remove | Propertie | 25 | Q | 11 | Last refresh: 2:08:06 PM |
| 🖉 Services | SCVMM Service Provider | em Type | Description | | | |
| 🔚 Library | Service Howael | | Edit connection properties to specify internet proxy se | ettings. This conne | ction ca | nnot be removed or renamed. |
| Jobs Settings Connections Subscriptions User Roles | Savdalvmm12 SC Windows Azure Windows Azure Windows Azure | VMM indows Azure | Built-in connection for accessing Windows Azure. Edit | t connection prope | erties to | specify Internet proxy settings |

Figure 1: Connecting App Controller to VMM

Once you are connected to VMM you will have access to all the Virtual machine and can also deploy new Virtual machines.

| ← → ■ https://savdalvmm12 | 2.savilltech.net/#/Shell/VmsManagement 🔎 | - 🔒 C 🔲 App | Controller | × | | | | | | × ★¤ |
|---|--|-----------------------------|------------|-----------------|---------|-----------------------|------------|--|-------------------------|-------------|
| SAVILLTECH IT DE | pt | | | | | | | C Hi, John 117 | Cloud Por Sign out H | tal Help |
| < Overview | Virtual Machines (3) | | | | | | Enter | keyword | | P |
| Clouds | Deploy Open Diagram Properties | s Shutdown | Pause | Turn Off Save | Store | Ŧ | Q 🖞 | Last re | fresh: 4:42:3 | 5 PM |
| Virtual Machines | Name | Status | Cloud Name | Connection Name | Service | CPU Usage | Memory | VM Size | Processors | Oper |
| 🚽 Library | 📱 savdalwin7 | Running | Test Cloud | Savdalvmm12 | | 0 % | 624 MB | | 1 | 64-bi |
| Jobs | ScratchWrkGrp | Stored | Test Cloud | Savdalvmm12 | | 0 % | 1 GB | Open D | iagram | bi |
| | TestVMMig | Stored | Test Cloud | Savdalvmm12 | | 0% | 512 MB | Shutdor Pause Turn Of Save Store Mount i Remote Console | r f Desktop | j |
| | | | | | | | | | | • |
| Service Pack 1 © 2012 Microsoft. All righ | savdalwin7 Status: Running Computer name: savdalwin7.savilltech.r Operating system:64-bit edition of Windc Processors: 1 Memory: 624 MB Dynamic memory:4.00 GB maximum VM Network: Not connected Date modified: 3/27/2013 4:38 PM Owner: SAVILITECHYlohn117 (hts reserved. Privacy Send feedback to Microsoft | net wws 7 "Lab Users) | | | 1110 | INSTANCE savdalwin | 7 | | | ~ |

c) Creating a Service Template & d) Deploying a Service and Updating a Service Template

Create a service template in VMM

Follow these steps in System Center 2012 VMM to create a service template. A prerequisite is that you have defined VM Templates for each VM application role that you want to add to the service template. Also you need to have created a private cloud in VMM with resources available to match those required by the VM Templates. These prerequisites will allow VMM to match application VMs to fabric resources that will support them.

- 1. Navigate to the Library space and click the Create Service Template button in the ribbon.
- 2. Select one of the predefined service templates and press OK. (See Figure B.)
- 3. Observe your list of VM templates on the left side of the designer (see Figure A, VM Templates tab).
- 4. Drag VM templates into the designer canvas to add VMs to that tier. Alternatively, drag a VM template onto a tier to replace the default settings for that tier.
- 5. Add hardware load balancers and logical networks to the designer canvas. Use the connector button in the ribbon to connect network interfaces.
- 6. Press the Save and Validate button in the ribbon when done, then exit the designer.

| 🚺 Administrator - Virtual Machin | e Manager | | | |
|--------------------------------------|---------------------|--------------------------------|--------------------------------|----------------------------------|
| Home Folder | | | | |
| Create Service Create VM Create | Add Library | Import Import Physical | Export Physical | PowerShell Jobs Library |
| Template • | Server | Template Resource | Resource | Settings PRO |
| Library | | lome | mpiate Designer - | |
| | | - 1 🕋 🗶 Cu | t i 🦛 i | Add Logical Network |
| Templates | New Service Ter | nplate | | × |
| Service Deployment Service Templates | Name: N | ew Service Template 1 | | Release: new |
| VM Templates | | | | |
| Profiles | Patterns (4) | | | |
| Application Profiles | | | | |
| Capability Profiles | | | | |
| Guest OS Profiles | | | | |
| Hardware Profiles | | | | |
| Host Profiles | Blank | Single Machine | Two Tier Application (v1.0) | Three Tier Application (v1.0) |
| SQL Server Profiles | - | (1.0) | Application (VIII) | |
| 🗊 Equivalent Objects | Description: Create | a new service template startir | ng from a blank canva | 5 |
| 🚔 Cloud Libraries | | | | |
| Self Service User Content | View Script | | | OK Cancel |

Figure B:

Creating a service template in in the VMM Library space.

Use a service template in App Controller:

Figure C:

App Controller should be connected to our on-premise VMM server for access to our private cloud resources, as well as connecting to Azure for management of our public cloud subscriptions. Now that we have defined a service template, we can use App Controller to actually launch the application deployment to our private cloud.



App Controller: Self-service deployment of an application using a service template.

Figure C from the App Controller web portal lists the same Two Tier Application template seen in the VMM template designer in Figure A. Here are the steps to deploy the application with App Controller:

- 1. From the App Controller Library space, select Templates, then select the template of the application you want to deploy, and click on Deploy in the templates menu.
- 2. You will be presented with a screen to select which private cloud to deploy the application to, then a graphical representation of the application you are about to deploy as seen in **Figure D**.
- 3. Click the Deploy button and VMM will start to execute your instructions and deploy the application to the fabric.

Figure D:

| 🖉 App Controller - Windows Internet Explorer | | _ 🗆 × |
|---|--|---------------|
| 🚱 🗢 🔲 https://concero/#/Shell/Library | 💌 🔒 🐼 🖘 🗙 🔁 Bing | ₽ |
| 🙀 Favorites 🛛 🙀 🚺 Suggested Sites 👻 🙋 Web Slice Gallery 👻 | | |
| App Controller | 🏠 🔹 🖾 👻 🖃 🛻 👻 Page 👻 Safety 🕶 | Tools 🔹 🔞 🗸 |
| | | |
| New Deployment | Copy URL to clipt | oard X |
| | | |
| | PRIVATE CLOUD | Â. |
| | | |
| | | 100 |
| | SERVICE Two Tier Application | 12 |
| | | 12 |
| | | 12 |
| MACHINE TIER Windows 2008 R2 Standard HA LAN B - Machine Tier : | 1 - MACHINE TIER Windows 2008 R2 Standard HA LAN A - Machine Tier 1 | |
| | | |
| INSTANCE 01d4f2ac-1f68-4241-a225 | INSTANCE b324a132-24a6-4c18-9fc8 | |
| | | |
| | | |
| NETWORK | NETWORK | - |
| 50 150 | Deploy | Cancel |
| © 2012 Microsoft, All rights reserved. Privacy Send feedback to Microsoft | t | |
| Done | 📄 📄 🚺 Internet Protected Mode: On | \$_100% ▼ //. |

App Controller: Graphical depiction of the application you are about to deploy.

Figure E below shows the progress of VMM as the jobs are executing. These are the jobs to deploy the application to the private cloud selected by the user with App Controller.

- Two VMs (ServiceVM00001 and ServiceVM00002) have been automatically named and placed (one VM each) in two host clusters in the private cloud.
- In the design of this application, the network of the host cluster matches the network fault domain the VM is assigned to.
- The fact that both the VM Templates and the host clusters in the private cloud have "LAN A" and "LAN B" associations permits VMM to intelligently distribute the VMs to host clusters that preserve the isolation between the fault domains.

| I Iguie D. |
|------------|
|------------|

| Administrator - | Virtual M | lachine | Manager | | 9 | | | | | | | | | | | | -10 |
|-----------------|-----------|-----------|---------------|---------------|---------------|-----------------------|---------------------|----------------|------------------|-------------|---------|----------------|----|-------------------|----------|---------------|----------|
| | rin . | P | owerShell | | | | | | | | | | | | | | |
| 202 | | Ē. | obs | | | | | | | | | | | | | | |
| Restart Cancel | Load All | E P | RO | | | | | | | | | | | | | | |
| Job | View | W | /indow | | | | | | | | | | | | | | |
| bs | < Jobs | s - recen | t jobs (55) | | | | | | | | | | | | | | |
| 🗐 Jahr | | | | | | | | | | | | | | | | | |
| Jobs | | Name | | | | | | | tatus | - | Start - | Time | τ. | Result Name | | Owner | - |
| | | Create | Service Insta | nce | | | | | | 72 % | 4/6/20 |)12 3:40:31 PM | 1 | Two Tier Applicat | ion Te | ODYSSEY\JJovn | er |
| | 0 | Update | placement of | a service | | | | C | mpleted | P. W. L. S. | 4/6/20 |)12 3:40:24 PM | 1 | Two Tier Applicat | ion Te | ODYSSEY\JJovn | er |
| | 0 | Modify | existing VM d | leployment co | nfiguration | | | C | mpleted | | 4/6/20 | 12 3:40:23 PM | 10 | ServiceVM00002 | | ODYSSEY\JJoyn | er |
| | 0 | Modify | existing VM d | leployment co | nfiguration | | | C | mpleted | | 4/6/20 | 12 3:40:22 PM | | ServiceVM00001 | | ODYSSEY\JJoyn | er |
| | 0 | Create | a new service | configuration | 1 | | | C | mpleted | | 4/6/20 | 12 3:40:19 11 | 1 | Two Tier Applicat | ion Te | ODYSSEY\JJoyn | er |
| | | Create | Service Inst | tance | | | | | | | / | | e | | | | |
| | Ste | :p | | | Name | | | | | / | | Status | | Start Time | | End Time | |
| | | () E | Ξ1 | | Create Servi | ice Instance | | | | | | | | 72 % 4/6/2012 3: | 40:31 PM | 1 | |
| | | 0 | 1.1 | | Update place | ement of a service | | | | / | | Completed | | 4/6/2012 3: | 40:32 PM | 4/6/2012 3: | 40:37 PM |
| | | 0 | 1.2 | | Evacuate hig | ghly available VMs | | | / | | | Completed | | 4/6/2012 3: | 40:38 PM | 4/6/2012 3: | 40:39 PM |
| | | | ⊟ 1.3 | | Create group | p of virtual machines | / | | | | | | : | 16 % 4/6/2012 3: | 40:39 PM | 1 | |
| | | ۲ | ⊡ 1.3.1 | | Parallel exec | cution step | | | | | | | | 16 % 4/6/2012 3: | 40:39 PM | 1 | |
| | | ۲ | ⊟ 1.3.: | 1.1 🤇 | Create virtua | al machine in cloud | > | | | | | | | 18 % 4/6/2012 3: | 40:39 PM | 1 | |
| VMs and Ser | r | ۲ | Ξ 1.3 | 3.1.1.1 | Create virtua | al machine | | / | | | | | | 18 % 4/6/2012 3: | 40:40 PM | 1 | |
| | | 0 | | 1.3.1.1.1.1 | Create virtua | al machine | 1 | | | | | Completed | | 4/6/2012 3: | 40:45 PM | 4/6/2012 3: | 40:59 PM |
| Fabric | | ۲ | | 1.3.1.1.1.2 | Deploy file (| using BITS over HTTP | 'S): 0 of 1 mes (| 2.00 GB/7.69 G | 3) time remainir | ng 00:10:• | 42 | | | 26 % 4/6/2012 3: | 41:00 PM | 1 | |
| Library | | ۲ | ⊡ 1.3.: | 1.2 🤇 | Create virtua | al machine in cloud | >// | | | | | | | 15 % 4/6/2012 3: | 40:39 PM | 1 | |
| - | _ | ۲ | Ξ 1.3 | 3.1.2.1 | Create virtua | al machine | | | | | | Ē. | : | 15 % 4/6/2012 3: | 40:40 PM | 1 | |
| Jobs | | 0 | | 1.3.1.2.1.1 | Create virtua | al machine | | | | | | Completed | | 4/6/2012 3: | 40:56 PM | 4/6/2012 3: | 41:04 PM |
| Z Settings | | ۲ | | 1.3.1.2.1.2 | Deploy file (| using BITS over HTTF | 'S): 0 of 1 files (| 939.27 MB/7.69 | GB) time rema | ining 00:2 | 27:19 | | 1 | 11 % 4/6/2012 3: | 41:05 PM | 1 | |
| | * SL | ummary | Details | Change Tr | racking | | | | | | | | | | | | |
| | | | | | g | | | | | | | | | | | | |

Watching the progress of deploying the two-tier application in the VMM console.

e) Configuring App Controller

App Controller provides a self-service experience for deploying and managing virtual machines (VMs) and services in cloud environments. The self-service experience provided by App Controller through a web browser is consistent across all types of clouds, including private, public, and hosted clouds. This capability makes App Controller the ideal platform for implementing the hybrid computing model.

Installation of App Controller

- Prerequisites
 - Installing VMM Console
 - Creating Self-Signed Certificate in IIS

• Installation

L

| | App Controller Setup | | – – X |
|--|--|---|------------------------------------|
| Micr | osoft System Center 2012 R2 | | |
| Арр | Controller | | - |
| ⇔ [] G Si In d | Install You might have to restart the computer after you install App Controller. Image: Stall Standalone Components Stall Standalone components. Install Windows PowerShell module for App Controller | Release <u>N</u> otes Installation <u>G</u> uide App Controller <u>O</u> nline <u>S</u> ystem Center Online | |
| ® Convright 2013 Microsoft Corro | oration All rights received | | <u>C</u> lose |
| | orabolit. All rights reserved. | | |
| | App Controller Setup | | × |
| Getting Started Review the sof | App Controller Setup | | × |
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| Getting Started Getting Started Review the soft MICROSOFT EV MICROSOFT SYST These license terms affiliates) and you. F media on which you updates, supplements internet-base support serve for this software, un By using the so | App Controller Setup App Controller Setup App Controller Setup Autor Alignet reserves Active and agreement between Microsoft Corporation (or bacelease read them. They apply to the evaluation software received it, if any. The terms also apply to any Microsof , ed services, and ices less other terms accompany those items. If so, those tervices, and ices less other terms accompany those items. If so, those tervices, and ices less other terms accompany those items. If so, those tervices, and ices less other terms accompany those items. If so, those tervices, and ices less other terms accompany those items. If so, those tervices and agree with the terms of the license agreement | rms apply. t them, do not use the so ent to the transmission of | of its es the offtware. f |

| App Controller Setup |
|---|
| Configuration |
| |
| Select the installation path |
| Path: C\Program Files\Microsoft System Center 2012 R2\App Controller Free disk space: 56.84 GB Required disk space: 50.00 MB |
| © 2013 Microsoft Corporation. All rights reserved. Cancel |
| App Controller Setup |
| Configuration |
| Configure the services |
| Select an account under which to run App Controller services. You can use the Network Service account or a domain account. |
| Network <u>S</u> ervice account |
| O Domain account |
| Domain and <u>u</u> ser name: |
| Pass <u>w</u> ord: |
| Specify a port for App Controller to use for its internal communication Po <u>r</u> t: 18622 |
| |

| App Controller Setup | , x |
|---|--|
| Configuration | |
| Configure the website Specify the binding settings you want to use for the App Controller website Type: IP address: Port: HTTPS All unassigned 446 Generate self-signed certificate Use existing certificate: CLOUDDC.CLOUDAD.com Vie | ite. ew <u>R</u> efresh |
| © 2013 Microsoft Corporation. All rights reserved. | < <u>P</u> revious <u>N</u> ext > Cancel |
| App Controller Setup | |
| | |
| Configure the SQL Server database | |
| Server name: Port: CLOUDDC | |
| Instance name: MSSQLSERVER | |
| | |

| App Controller Setup |
|--|
| Configuration |
| Help improve App Controller for System Center 2012 R2 |
| Customer Experience Improvement Program |
| The Customer Experience Improvement Program (CEIP) collects data about your use of Microsoft applications to identify possible improvements for Microsoft products. |
| ○ <u>Y</u> es, I am willing to participate in CEIP |
| No. I am not willing to participate |
| Read the Customer Experience Improvement Program (CEIP) privacy statement |
| Microsoft Update |
| ✓ Use Microsoft Update to receive updates for App Controller for System Center 2012 R2 and other Microsoft products. |
| Read the <u>U</u> pdate Services privacy statement |
| |
| |
| |
| |
| |
| © 2013 Microsoft Corporation. All rights reserved. Cancel |

| | App Controller Setu | p | x |
|---|---------------------|---------------------------------------|---|
| Configuration | | | |
| Confirm the settings | | | ^ |
| Installation location: C:\Program Files\Microsoft System Center 2012 | R2\App Controller | | |
| Service account: NT AUTHORITY\NETWORK SERVICE | | | |
| Communication port: 18622 | | | |
| Website: https://clouddc.cloudad.com:446/ | | | ≡ |
| SQL Server instance name: CLOUDDC | | | |
| SQL Server database name: AppController | | | |
| SSL certificate: CLOUDDC.CLOUDAD.com | | | |
| CEIP opt-in: No | | | |
| Microsoft Undate ont-in: | | | ~ |
| © 2013 Microsoft Corporation. All rights reserved. | | <u>Previous</u> <u>Install</u> Cancel | |

| | | App Controller Setup | × |
|------|--------------------------------------|---|---|
| Inst | all | | |
| Ins | stalling componen | ts | |
| - | Server | Core components and services | |
| | Website | IIS website and firewall settings | |
| | Database | SQL Server database and SQL Server Agent jobs | |
| | Windows PowerShell | Windows PowerShell module | |
| | Completing installation | Registration and start-up | |
| Inst | alling components | | |
| | | | |
| Exec | uting MSI | | |
| © 20 | 13 Microsoft Corporation. All rights | reserved. Cancel | |

| App Controller Setup | x |
|--|--|
| Finished | |
| Setup completed successfully Review the installation results. For detailed information, review the Setup logs. | |
| Server Website Database Windows PowerShell Completing installation | Release No <u>t</u> es Installation <u>G</u> uide App Controller <u>O</u> nline System Center Online <u>V</u> iew logs |
| App Controller website URL: https://clouddc.cloudad.com:446/ ✓ Start the App Controller website when Setup closes | |
| © 2013 Microsoft Corporation. All rights reserved. | <u> </u> |

| App Controller × | | | ≜ _ 0 × |
|-----------------------------------|---|----------------|--|
| C https://clouddc.cloudad.com/446 | | | ik û ^{(Cor} |
| | Microsoft-System Center 2012 R2 Enter your credentials to sign in User name: Password: | App Controller | |
| | © 2013 Microsoft. All rights reserved. | | |
| | | | Activate Windows Go to Action Center to activate Windows. |

| App Controller × | | | | | ≐ <u> </u> |
|---|---|---------------|---|--|-------------------------------------|
| ← → C 🏠 https://cloud | ddc.cloudad.com:446 | | | | \$ <mark>×</mark> ☆ ≡ |
| Microsoft ⁻ System Center 2012 | ? R2 | | | | App Controller Hi, Sign out Help |
| < | Overview | | | | |
| Clouds 🕸 Services | | | | Q | Last refresh: 3:58:33 PM |
| 🔋 Virtual Machines 🚍 Library | Status | | | | |
| Jobs | Private Clouds | Public Clouds | tion | Hosting Service Providers | |
| | Next Steps <u>Common Tasks</u> Connect a Virtual Machine Manager server and clouds Connect a Virtual Machine Manager server and clouds Add a network file share | | Online Help Chaina Windows Azure subscript Leanetwork file shares for templat Manage private cloud quota Manage services Create service templates Add a service template to a cloud Moving from virtual machines to su | ion es and resources envices | |
| | Community | | | | |
| | System Center Blogs | | Recent Forum Posts Loading | | |
| © 2013 Microsoft. All rights reserved. | Privacy Send feedback to Microsoft | | | R Activate Windows Go to Action Center to | ; activate Windows. |
| - | | | | | |

Sign:_____

Practical No 3: Managing Private cloud with App Controller.

a) Deploying a new virtual machine.

To deploy a new application workload to an existing private cloud using System Center

2012 R2 App Controller, complete the following steps:

1. Click the Clouds page and then right-click the private cloud to which the new application workload should be deployed and select the Deploy option shown in Figure 2-14.

| System Center 2 | 012 | App Controller Hi, KeithMayer.com Sign out Help |
|--|---|--|
| Overview Clouds Services Virtual Machines Library Jobs Settings Connections | Clouds (3) Connect Deploy VMM Server Connection Connection Connection Connection Connection Connection Connection Deploy Disaster Recovery Cloud Keith's On-Premise Clou Manage Run As accounts | Enter keyword P Enter keyword Description Subscription s |
| Subscriptions & User Roles | | |

FIGURE 2-14 A new workload can be deployed to a private cloud.

2. From the right-click menu, select Deploy to launch the New Deployment dialog box, as shown in Figure 2-15.

| New Deployment | | Copy URL to clipboard X |
|----------------|------------------------------------|-------------------------|
| | | |
| | PRIVATE CLOUD Developer Sandbox | |
| | TEMPLATE Select a template | |
| | | |
| 50 | 150 | Deploy Cancel |

FIGURE 2-15 Use the New Deployment dialog box to select a template.

3. On the New Deployment dialog box, click Select A Template and select the appropriate VM Template or Service Template previously defined in System Center 2012 R2 VMM (see Figure 2-16). VM Templates are used to specify a template configuration for a single VM being deployed to a private cloud, whereas Service Templates can include a template configuration for more complex multi-tier applications that can involve multiple virtual machines, applications, virtual networks, and load balancers as part of a single template.

| | | | | | | | | х |
|---|---------------------------------|------------|---------------------|---------------------|--------|-------------|------------|------------|
| Choose a template | | | | | | | | |
| The available quota after the dep available quota for the cloud. Location: My Private Clouds\Develo | oloyment is disp per Sandbox | olayed for | the selected templa | ite. You cannot dep | oloy a | template ti | nat exceed | s the |
| | | | | F | ilter: | | | × |
| Name | Туре | Release | Date Modified | Virtual Machines | CPU | Memory | Storage | Custom Quo |
| 😰 Blog Engine Web App | Service | 2.7 | 3/22/2013 3:14 PM | 1 | 2 | 2048 MB | 127 GB | |
| 😰 Blog Engine Web App | Service | 2.7.1 | 3/25/2013 1:35 PM | 2 | 4 | 8192 MB | 254 GB | |
| 🛐 Blog Engine Web App | Service | 2.8 | 3/22/2013 5:46 PM | 2 | 4 | 8192 MB | 254 GB | |
| Gold Application Server Image | e Virtual Machine | 9 | 7/25/2013 7:44 AM | 1 | 1 | 512 MB | 60 GB | |
| Gold Web Server Image | Virtual Machine | è | 6/24/2013 9:29 PM | 1 | 2 | 2048 MB | 127 GB | |
| Intranet Web Server Template | Virtual Machine | 9 | 6/24/2013 9:29 PM | 1 | 1 | 2048 MB | 127 GB | |
| Intranet Web Site Application | Service | new | 3/22/2013 5:19 PM | 1 | 1 | 2048 MB | 127 GB | |
| | | | | | | | | |
| | | | | | | | | |
| • | | | | | | | | |
| | | | | | | OK | | Cancel |

FIGURE 2-16 You can select a template from the Choose A Template dialog box.

4. After selecting the desired template for deploying a new workload, click OK. This will return to the prior New Deployment dialog box where you'll be presented with options to configure the settings for this new deployment, as shown in Figure 2-17.

| New Deployment | | Copy URL to clipboard 🗙 |
|----------------|--|-------------------------|
| | PRIVATE CLOUD Developer Sandbox | |
| | SERVICE Configure | |
| | MACHINE TIER Blog Engine Web Server | |
| | INSTANCE Configure | |
| | INSTANCE Configure | - |
| 50 | 150 | Deploy Cancel |

FIGURE 2-17 Use the Configure Settings from the New Deployment dialog box to configure the deployment.

5. On the New Deployment dialog box, click Configure in the SERVICE box to configure the general configuration properties for this new application workload. This will display the Properties page for the new service, or application workload, being deployed to the selected private cloud (see Figure 2-18).

| | | × |
|--------------|----------------------------------|---|
| 🅸 Properties | s of Blog Engine Web App service | |
| Show all | General | |
| General | Service name: * | |
| | Blog Engine Web App 01 | |
| | Description: | |
| | Single Computer Tier Pattern | |
| | Priority: | |
| | Normal | |
| | Cost center: | |
| | Marketing | |
| | | |
| | | |
| | | |
| | | |
| | OK Cancel | |

FIGURE 2-18 Configure the properties of the new service.

6. In the Properties page, enter a Service name for the new service being deployed, and optionally assign a Description, Priority, and Cost Center. Click OK to save this configuration information for the Service and return to the New Deployment dialog box, as displayed in Figure 2-19.

| New Deployment | | Copy URL to clipboard 🗙 |
|----------------|--|-------------------------|
| | PRIVATE CLOUD Developer Sandbox | • |
| | SERVICE Blog Engine Web App 01 | |
| | MACHINE TIER Blog Engine Web Server | |
| | INSTANCE Configure | |
| | INSTANCE Configure | • |
| 50 | 150 | Deploy Cancel |

FIGURE 2-19 A summary of the new deployment showing the configured service.

7. Similarly, to configure each VM in each Machine Tier of the service being deployed, click each Configure in the INSTANCE box in the New Deployment dialog box to enter virtual machine configuration settings, if required by the template being used for deployment (see Figure 2-20).

| Virtual machine name: * |
|---|
| Blog Engine Web Server Image - Machine Tier 1-f9103952-ef37-4628-a3e4-b |
| To generate a computer name, enter * only. |
| Computer name: |
| * |
| Description: |
| Operating system: 64-bit edition of Windows Server 2012 Standard |
| |
| Memory: |
| 4096 MB |
| |

FIGURE 2-20 You can set the name and description in the Properties Of New Virtual Machine page.

8. For the Service Template that is being used in this example, all VM properties have been completed automatically by the template, so there's no additional configuration information needed. Click OK to return to the prior New Deployment page.

9. To deploy the new application workload to the selected private cloud, click Deploy.

Depending on the complexity of the Service Template or VM Template being deployed to a private cloud, the deployment process can require several minutes to complete. While the deployment is being processed, the Jobs page on the App Controller portal can be used to confirm the status of in-progress jobs. When all jobs associated with the new deployment are displayed with a Completed status, the new application workload will have\ been successfully deployed, as shown in Figure 2-21.

After the successful deployment of the application workload to the selected private cloud, the Services and Virtual Machines pages in the App Controller portal can be used to confirm workload status and manage the deployed workloads, as shown in Figure 2-22 and Figure 2-23.

| System Center 2 | 012 | | | App Cor Hi, KeithMayer.com Sign ou | | | | | |
|---|--|--|--|---------------------------------------|--|----|--|--|--|
| Overview | Jobs (14) | | | Enter keyword | | Q | | | |
| Clouds | Show all | | 0 | 👫 ⊡ Last | refresh: 9:14:49 / | AM | | | |
| Virtual Machines Library Jobs Settings Connections Subscriptions User Roles | Job Start virtual machine Start virtual machine Add network file share Import VMM library server Add connection Delete network file share Delete connection | · certificates | Target BLOGENG02 BLOGENG01 \\CAFSC01\HVCVMStorag kemlabvmm01.kemlabdor My Private Clouds \\cafsc01\HVCVMStorage KEMLAB On-Premise | e n01.keithmayer.c | Status Completed Completed Completed Completed Completed Completed | | | | |
| | Add network file sh Copy Job Details to Cli Status: Sub status: Duration: Owner: | are pboard Completed 00 hrs 00 mins 00 KEMLABDOM01\v (Not applicable) | Commi secs Administrator | and Parameters (1 |) ~ | | | | |

FIGURE 2-21 The App Controller Portal allows you to view the Jobs page.

| System Center 2 | 2012 | App Controller Hi, KeithMayer.com Sign out Help |
|---|--|--|
| Overview Clouds Services Virtual Machines Library Jobs Settings Connections Subscriptions User Roles | All Deployed Services (1) Deploy Open Diagram Start Stop Status Name Status Blog Engine Web App 01 OK Blog Engine Web App 01 Status: OK Service type: System Center Service template release: 2.7 Owner: | Enter keyword |

FIGURE 2-22 You can view all Deployed Services in a private cloud.

| System Center 20 | 012 | App Controller Hi, KeithMayer.com Sign out Help |
|---|--|--|
| Overview | Virtual Machines | Enter keyword |
| Clouds | Deploy Open Diagram Properties Shutdo | own 💂 🔇 👔 💽 Last refresh: 9:33:31 AM |
| Virtual Machines | Name Status Cloud Name | Connection Name Service Name CPU Me |
| 🧮 Library | BLOGENG01 Running Developer Sandbox | My Private Clouds Blog Engine 0 % |
| 📋 Jobs | 🚪 BLOGENG02 Running Developer Sandbox | My Private Clouds Blog Engine 0 % |
| Settings | | |
| a Connections | BLOGENG01 | ~ |
| Subscriptions <section-header> User Roles</section-header> | Library BLOGENG01 Running Developer Sandbox My Private Clouds E Jobs BLOGENG02 Running Developer Sandbox My Private Clouds E Settings Image: Connections BLOGENG01 Image: Connections Image: Connections Image: Connections Subscriptions Status: Running Image: Connections Image: Connections Image: Connections Subscriptions Status: Running Computer name: BLOGENG01 Image: Connections Image: Connections Status: Running Image: Connections Image: Connections Image: Connections Status: Running Image: | SERVICE Blog Engine Web App 01 |
| | Memory: 2 GB Dynamic memory:Disabled VM Network: LABNET Date modified: 8/12/2013 3:38 PM Owner: | MACHINE TIER Blog Engine Web Server |
| | | INSTANCE BLOGENGO2 |
| | | |

FIGURE 2-23 You can view the deployed Virtual Machine instances in a private cloud.

b) Adding Virtual Hard Disks and integrating it with VMs.

To upload a virtual hard disk or image to Windows Azure

- 1. On the Library page, expand the Windows Azure node.
- 2. Expand the Windows Azure subscription to the Windows Azure storage account in which the destination container is located.
- 3. Do one of the following:
 - To upload a virtual hard disk, select the **Disks** folder and click **Add** in the taskbar.
 - To upload an image, right-click the **Images** folder and click **Add** in the taskbar.
- 4. Specify the file share, VMMlibrary, or Windows Azure storage container from which you want to retrieve the source disk or image.
- 5. Do one of the following:
 - For a virtual hard disk, specify the operating system that is installed on the disk. If no operating system installed, select **None**.

- \circ $\,$ For a disk image, specify the operating system that is installed on the image.
- 6. Click OK.

| System Center 2 | 012 | App Controller Hi, KeithMayer.com Sign out Help |
|--|--|--|
| Overview Clouds Services | Images Add Remove Deploy | Enter keyword 🔎 |
| Virtual Machines Library Dobs Connections Subscriptions User Roles | Shares Reith's Public Cloud Lab Disks Images Images | Name Categor C ☆ 03f55de797f546a1b29d1b8d66be687 Micros V ☆ 0b11de9248dd4d87b18621318e037d RightS L ☆ 0b11de9248dd |

You can manage disks and images from the Library page.

Practical No 4: Using Data Protection Manager for Backup and Recovery.

a) Creating a new protection group from the Protection workspace.

Create Protection Groups

Protection Groups are groups of servers that are configured to backup at certain times. This allows you to segregate server types and backup systems in various groups.













b) Performing a recovery from the Recovery workspace.



| Protection Group Member | Туре | Protection | on Status | 1 |
|---|--------------------|-------------|----------------------------|---|
| B | Config DB (Total r | members: 6) | | |
| 🖻 🔋 Computer: DPM10.test.local | | | | |
| DPM10\MSDPMV4BETAEVAL\DPMDB | SQL Data | Ø OK | | |
| DPM10\MSDPMV4BETAEVAL\master | SQL Data | Ø OK | Perform consistency check | |
| DPM10\MSDPMV4BETAEVAL\model | SQL Data | О К | Create recovery point | |
| DPM10\MSDPMV4BETAEVAL\msdb | SQL Data | Ø OK | Stop protection of member | |
| DPM10\MSDPMV4BETAEVAL\ReportServe. | SQL Data | Ø OK | Remove inactive protection | |
| DPM10\MSDPMV4BETAEVAL\ReportServe. | SQL Data | Ø OK | Switch disaster protection | |
| B Protection Group: Domain Controllers (Total | members: 3) | | Resume disk backups | |
| 🗉 🔋 Computer: DC10.test.local | | | Resume tape backups | |
| | Volume | Ø OK | Recovery point status | 1 |

On the test.local domain we need a complete backup of the Domain Controller

| Create New Protection Gr | pup | | |
|---|---|------------------------------------|----------------------------|
| Select Group I Select the data that y | Members. rou want to protect. | | |
| Steps: Welcome Select protection group type | To choose the data to protect, select the check boxes in the Ava directory structure, and clear the check box of the folder. If you do not see the data source you want to protect in the tree b configurations. | ilable members section. To ex | clude a folder, expand the |
| Select group members | Unsupported configurations | | |
| Select data protection method Available members Select short+erm goals Image: Construction goals | Available members | Selected members | |
| | E - B test local | Selected Members | Computer |
| Select short-term goals | lect short⊀em goals | DPM10\MSDPMV4BETA | DPM10.test.local |
| Choose consistency check | | DPM10\MSDPMV4BETA DPM10.test.loo | |
| options | B I SQL Servers | DPM10\MSDPMV4BETA | DPM10.test.local |
| SummaryStatus | E- CALL (Auto) DPM10/MSDPMV4BETAEV/ | DPM10\MSDPMV4BETA | DPM10.test.local |
| | | DPM10\MSDPMV4BETA DPM10.test.local | |
| Status | Orgen System Protection | DPM10\MSDPMV4BETA | DPM10.test.local |

And we will need the configuration database for Data Protection Manager

| Selected: | DPM10\MSDPMV4BETAEVAL\DPMDB, DPM10\M |
|---|---|
| Member type: | SQL Server 2008 database |
| Create recovery point for: | Long term tape protection |
| Recovery point creation | options |
| A full backup will be cre point on disk will be bac configured in the protect | ated for the protected member. The latest recovery ked up to the tape. The library to be used is tion group settings. |
| Library to be used: | Firestreamer Media Changer-2 |
| Available free tapes: | 10 |
| | |
| | |
| | |

After creating the Protection Groups create a manual recovery point to tape, both for the domain controller and the Data Protection Manager configuration database

| Data Organize Include in library Share with New folder Pavonites Desktop Downloads Recent Places Downloads BLYP4XYFXGK_1000000001.fsrr BLYP4XYFXGK_1000000001.fsrr BLYP4XYFXGK_1000000001.fsrr BLYP4XYFXGK_1000000001.fsrr BLYP4XYFXGK_1000000001.fsrr | | | | | |
|---|--|---------------------|-------------|--------------|---|
| 🗿 🕞 🕨 • Compute | Solution • Computer • Local Disk (D:) • Data nize • Include in library • Share with • New folder Pavorites Name Desktop BLYP+0XYFXGK_10000000012.fsrm Downloads BLYP+0XYFXGK_10000000001.fsrm EUbraries BLYP+0XYFXGK_1000000001.fsrm Documents BLYP+0XYFXGK_1000000000.fsrm Pictures BLYP+0XYFXGK_1000000000.fsrm Pictures BLYP+0XYFXGK_1000000000.fsrm Videos Div/FaxyFXGK_10000000000.fsrm | - 🖽 | Search Data | | 2 |
| Organize 👻 Include in lib | rary 👻 Share with 👻 New folder | | | # • 🗊 | 0 |
| * Favorites | Name | Date modified | Туре | Size - | - |
| E Desktop | BLYP-6XYFXGK_10000000012.fsrm | 11/27/2011 11:01 PM | FSRM File | 5,110,784 KB | |
| Downloads | BLYP4XYFXGK_100000000Y.fsrm | 11/29/2011 9:35 PM | FSRM File | 5,110,656 KB | |
| E Recent Places | BLYP4XYFXGK_10000000010.fsrm | 11/29/2011 9:31 PM | FSRM File | 5,110,656 KB | |
| 1 brarian | BLYP-4XYFXGK_10000000011.fsrm | 11/27/2011 11:04 PM | FSRM File | 3,856,896 KB | |
| Documents | BLYP4XYFXGK_100000000X.fsrm | 11/29/2011 9:36 PM | FSRM File | 543,616 KB | |
| J Music | BLYP-8XYFXGK_100000000Z.fsrm | 11/29/2011 9:31 PM | FSRM File | 543,616 KB | |
| E Pictures | BLYP-4KYFXGK_10000000013.fsrm | 11/27/2011 10:34 PM | FSRM File | 29,312 KB | |
| Videos | Ok.fsmap | 11/27/2011 10:21 PM | FSMAP File | 1 KB | |

For testing I am using Cristalink brilliant Virtual Tape Library for Data Protection Manager http://www.cristalink.com/fs/, so here the backup is located on 3 virtual tapes.



We need a new domain to restore to until we can get the original production environment up and running so here we created a new domain and is adding a Data Protection Manager Server to the same domain.

| Edit Load From File Unload All 0CHGR16E44C6BC51AE1118E5A806E6 T Storage slots: 10 Help Isyout: Dement Bement Medium Medium Maximum Read-only Bar pome number type name size Read-only code |
|---|
| Help layout: |
| Bement Bement Medium Medium Maximum Read-only Bar |
| |

To simulate adding tapes from the library we use FileStreams Import feature Load From File

| Firestreamer | | | | | | | | |
|---|--|------------------------------------|---|-----------------------|------------------------------------|---------|-----------|------|
| File Action View | Help | | | | | | | |
| Image: Second state of the second s | | | | | | | | |
| Firestreamer | Media | Allows you to lo | ad media into Fire | streamer tape librari | es. | | | |
| Current State | Library: Tape drives: 1 Storage slots: 10 Initial media layout: | | | | | | | |
| | 11 - 1 | 1 of Bement | 10 P P | Medium | Medum name | Maximum | Read-only | Bar |
| | | Storage slot | | File medium | D:\DATA\BLYP4XYFXGK_100000000S.fsm | 4.88 GB | E | |
| | | Storage slot | | File medium | D.\DATA\&LYP4XYFXGK_100000000T.fsm | 4.88 GB | Г | |
| Firestreamer File Action View I Firestreamer Media Current State Activity | | Storage slot | | File medium | D.\DATA\BLYP4XYFXGK_100000000W fam | 4.88 GB | | |
| | | Storage slot | | File medium | D-\DATA\BLYP4XYFXGK_100000000Xfam | 4.88 GB | | |
| | | Storage slot | | File medium | D:\DATA\BLYP4XYFXGK_100000000Yfsm | 4.88 GB | | |
| | | Storage slot | Initial into Firestreamer tape libraries. Initial initinitial initinitial initinitial initinitial initial initial initial | | | | | |
| | Intestreamer Zecton View Help Prestreamer Media Activity Media Activity Media Iterstreamer Media Current State Lbrary: Tape divers: 1 Storage slots: 10 Initial media layout: Iterstreamer Media Diversity Media Diversity Bemerit Demerit Medium Medium name Diversity Nonzon Storage slot Storage slot Nonzon Storage slot Storage slot File medium DivDATA/sELYP4XYFXGK_10000000000 Storage slot File medium DivDATA/sELYP4XYFXGK_1000000000000000000000000000000000000 | D.\DATA\BLYP4XYFXGK_1000000010.fem | 4,88 GB | | | | | |
| | | Storage slot | | File medium | D:\DATA\BLYP4XYFXGK_1000000011.fem | 4.88 GB | | |
| | | Storage slot | | File medium | D.\DATA\BLYP4XYFXGK_1000000012.fsm | 4.88 GB | | |
| | | Storage slot | | File medium | D.\DATA\BLYP4XYFXGK_1000000013.fsm | 4.88 GB | | |
| | | | | | | | | 10.5 |

And then we can see the same tapes as we had before the wipe of the Domain Controller and Data Protection Manager Server

| DPM 2012 Administrator Console File Action View Help | | | | | | | - Y |
|---|------------------------------|----------------|-------------------------------------|----------------------|-----------------------|---------------------------|-------|
| Inventory Rescan Refresh Unlock door Librates | Rename Optimiz usage | e Disable | Check Options updates Options | About DPM Help | | | |
| Agents | Search list below | N. | | | | 2. | ∏ Sea |
| Protected 0 | Name | Status | Tape Label | Barcode | | Offsit | Da |
| linoretette 0 | 🗄 📳 Library: F | irestreamer M | ledia Changer-2 | | | | |
| Unorade available: 0 | R Drives (In use: 0[Idle: 1) | | | | | | ry |
| | E Slots (| Tape available | : 10[Empty: 0) | | E. | Rescan | |
| Disks | Slot 1 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 000000 | Refresh Uslada Baranad | |
| Number of disks: 0 | Slot 2 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 000000 | Rename library o | oor . |
| Total capacity: 0 KB | Slot 3 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 000000 | Disable library | |
| | Slot 4 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | BLYP4XYFXGK_100000000 | | ort) |
| 8 3 h | Slot 5 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 000000 | Optimize tape a | sage |
| Libraries | Slot 6 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 000000Z | | |
| Total libraries: 1 | Slot 7 | Tape availa | ble Unknown | BLVP4XVFXGK_1000 | 0000010 | | - |
| Total drives: 1 | Slot 8 | Tape availa | ble Unknown | BLVP4XVFXGK_1000 | 0000011 | | |
| Tapes ready for offsite: 0 | Slot 9 | Tape availa | ble Unknown | BLYP4XYFXGK_1000 | 0000012 | | |
| | Details: | Firestreamer | Media Changer-2 | | | | |



We then need to start a detailed inventory so we can see what's on the tapes

| me | Δ | Status | Tape Label | | | E | 0 | 1 | 1 | |
|----|-----------|----------------------|---|-----|-------|----------|---------|--------|---|--|
| | Firestrea | Idle | | | | None | | - | - | |
| • | Slots (| Tape available: 10 E | impty: 0) | | | | | | | |
| | Slot 1 | Tape available | Free | | | BLY | | - | | |
| | Slot 2 | Tape available | Free | | | BLY | | - | | |
| | Slot 3 | Tape available | Free | | | BLY | | - | | |
| | Slot 4 | Tape available | (Imported) Domain Controllers-00000006 | 100 | Dame | 0111 | A.E. | | | |
| | Slot 5 | Tape available | (Imported) Domain Controllers-00000005 | 100 | Remo | ve tap | | portj | | |
| | Slot 6 | Tape available | (Imported) Domain Controllers-00000004 | | View | trans of | nown t | ape | | |
| | Slot 7 | Tape available | (Imported) Domain Controllers-00000003 | | Frank | tape co | ntente | | | |
| | Slot 8 | Tape available | (Imported) Domain Controllers-00000002 | 100 | Mark | as dea | nina ta | ne | | |
| | Slot 9 | Tape available | (Imported) Domain Controllers-00000001 | 20 | Mark | tape at | free | 4- | | |
| | Slot 10 | Tape available | (Imported) Data Protection Manager Config DB-00000001 | 127 | Reca | talog in | porter | i tape | | |

After the detailed inventory have completed we need to Recatalog Imported Tape to add the content of the tapes to the Data Protection Managers configuration database

| 🗑 DPM 2012 Administrator Console | | | |
|---|---|--|--|
| File Action View Help | | | |
| Recover Show all versions Pecovery Configure Opti | Options About Help DPM Help | | |
| < Browse | Recovery points for: System Protection | on | |
| Fitter servers | Available recovery points are indicated in bo | ld on the calendar. | |
| Search Search Search Search Files and folders | Select the date from the calendar and the tir pane to open the Recovery Wizard. November 2011 • <u>Sun Mon Tue Wed Thu Fri Sat</u> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 | ne from the drop down list for the recovery p Recovery date: November 29 2011 Recovery time: 8:02 PM(Tape) Recover from: Tape All tapes online V | oints that you want. Click recover i |
| Exchange mailboxes SharePoint | Path: All DPM Protected Data | | |
| | Search list below | | P 🖌 🔽 Search in det |
| Monitoring | Recoverable item | Last Modified | Size |
| b Protection | System Protection | G Show all recovery points | () () () () () () () () () () () () () (|
| Recovery | | Kecover | |

We then need to recover the System Protection from the tapes we did a recatalog on



Only restore option for systemprotection is a network folder
| S Recovery Wizard | |
|-------------------------------------|---|
| Recovery State | us |
| Steps: | Recovery status: In progress |
| Review recovery selection | Start time: - |
| Select recovery type | End time: - |
| Specify destination | Data transferred: - |
| Specify recovery options | Recovering |
| Summary | |
| Recovery status | You can now close the Recovery Wizard and view the recovery status in the Monitoring task area. |
| | |

And its time to start the restore

| 🖏 Recovery Wizard | | | × |
|---------------------------|-------------------|------------------------|---|
| Recovery Stat | tus | | |
| Steps: | Recovery status: | Successful | |
| Review recovery selection | Start time: | 11/29/2011 10:32:37 PM | |
| Select recovery type | End time: | 11/29/2011 10:37:22 PM | |
| Specify destination | Data transferred: | 9.715.50 MB | |
| Specify recovery options | | | |
| Summary | | | |
| Recovery status | | | |
| | | | |

Data Protection Manager == Success

| 🕌 DPM_11-29-2011_20 | 2.51 | | | _ [] × |
|---------------------|--|---------------------|---------------|------------------|
| G Comp | ter * Local Disk (D:) * DPM_11-29-2011_20.2.51 * | - 📖 | Search DPM_11 | -29-2011_20.2.51 |
| Organize 👻 🏹 Open | Include in library | | |)II • 🔟 0 |
| Favorites | Name - | Date modified | Туре | Size |
| Desktop | DPM_Recovered_At_11-29-2011_22.32.31 | 11/29/2011 10:32 PM | File folder | |
| Ubraries | | | | |

We then need to share the folder out so we can access it from the Windows 2008 R2 installation media

| | 2 1 | |
|---------------------|--|--|
| ß | Windows Server 2008 | |
| | | |
| Langua <u>ge</u> to | o install: <mark>English</mark> | - |
| and currency | format: Danish (Denmark) | |
| ard or input r | nethod: Danish | - |
| Enter your la | nguage and other preferences and click "Nex | t" to continue. |
| icrosoft Corpori | ation. All rights reserved. | Next |
| | Language to and currency ard or input r Enter your la | Windows Server 2008 Language to install: English and currency format: Danish (Denmark) ard or input method: Danish Enter your language and other preferences and click "Nex |

to Restore from the recovered data we need to start the Windows 2008 R2 installer , DHCP needs to be enabled for networking support

| Install Windows | | |
|------------------------|---------------------|--|
| | | |
| | • •• | |
| | Windows Server 2008 | |
| | Carlos Carlos | |
| | | |
| | Install now 😜 | |
| | | |
| | | |
| What to know before in | stalling Windows | |
| | | |
| | | |

Select a repair

| 📕 Sy | stem Recovery Options | | 2 | × |
|------|--|-------------------------------|---------------|---|
| 0 | Use recovery tools that can hel Select an operating system to r | p fix problems star epair. | ting Windows. | |
| | If your operating system isn't lis install drivers for your hard disk | sted, click Load Dri s. | vers and then | |
| | Operating System | Partition Size | Location | |
| | | | | |
| ۲ | Restore your computer using a earlier. | system image that | t you created | |
| | | Load Drivers | Next > | |
| 100 | A COLUMN TWO IS NOT | | | |

As there are no local images to restore from select next

| and then dick R | age is on an external device, attach the efresh. | e device to this computer, |
|---|---|--|
| If the system imag Advanced to add up in the list below | e is on a DVD, insert the last DVD from a network location or install a driver for | the system image backup. Click a backup device if it does not show |
| Location | Most recent system image | Computer |
| | | |
| | | |
| | | |
| 1 | Re-image Your Computer | |
| Advanced | Are you sure you | want to connect to the network |
| | Make sure you are co this type of restore, updates installed and | onnecting to a trusted network. Durin your computer does not have securit I might be vulnerable to malicious or offware |

And start networking

| Re-image Your Computer | | × |
|---|----------|---|
| Specify the location of the system image. | | |
| Network folder: | | |
| \\tempdpm10\restore | | |
| Example: \\server\share | | |
| | | |
| | OK Cance | 1 |

Connect to the DPM Server

| × |
|--------|
| 7 |
| |
| |
| Cancel |
| |

With Credentials from the new temporary domain

| 🚑 Re | -image your computer | | | × |
|------|---|--|---|------------------|
| Se | lect the location of the If the system image is on and then click Refresh. | backup for the computer you an external device, attach the de | want to restore | è |
| | If the system image is on a Advanced to add a network up in the list below. Current time zone: GMT-8:0 | DVD, insert the last DVD from the location or install a driver for a bi | system image backup. (ackup device if it does n | Click ot show |
| | Location | Most recent system image | Computer | |
| | \\172.16.1.17\Restore\ | 11/29/2011 11:00:50 AM | DC10 | |
| | | | | |
| | Advanced | | Refres | h |
| | | | | |

Select the Image to restore

| | | Your computer will be image: | restored from the following system |
|---|--------|---|------------------------------------|
| | | Date and time: | !9/2011 11:00:50 AM (GMT-8:00) |
| A | | Computer: | DC10 |
| | | Drives to restore: | \\?3568a871-1931-11e1- |
| | layout | and data in the system imag | e. |
| | Are yo | and data in the system imag ou sure you want to continue | Yes No |

Start the ReImage

| Windows is restoring your comput from a few minutes to a few hours | ter from the system image. This might take s. |
|---|--|
| 1 | |
| Restoring disk (C:) | |
| | |
| | Stop restor |

And Wait 🤒

| Re-image Your Computer | | × |
|---|---|---------------|
| Do you want to restart your comp Your computer has been restored and | puter now? will automatically restart in 5 | 1 seconds. |
| | Restart now | Don't restart |
| Re-image your computer Restore completed successfully. | | × |
| | | Close |

For about 12 minutes on my test setup



And after a reboot and setting fixed ip address the domain is up and running, and we now have a working domain so we can start to restore the Data Protection Manager server and then start restore all remaining workloads.

Practical No 5: Using Advisor for proactive Monitoring.

a) Reviewing a critical alert for a Virtual Machine Manager server and assigning an alert.

| 0 | Alerts Total Display Itams: 84 | | | | | | | C |
|---------|---|--|----------------------|------------------|------------------------|--------------------------|------------|----------|
| Close | Arativate Sgre | ore View Configuration Hanage al | lerts | | Group by: Severity | • Search | | |
| T | Server | Path | Class | | Alert Tible | Status | T Last Ocr | parred |
| # Error | (6 items) | | | | | | | |
| | SCVMM2012.expertit.local | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | peating System | Windows operati | ing system missir Active | 13/09/20 | /11 101 |
| | SCVMM2002.expertit.local | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | operating System | Hissing Operation | sg System Update Active | 11/09/20 | 111 1/04 |
| | SCVMM2012.expertit.local | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | perating System | B Missing Operator | g System Update Active | 13/09/20 | 11 100 |
| . 0 | SCVMM2012 | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | operating System | Windows operat | ing system missir Active | 13/08/20 | 11 7/0 |
| . 0 | SCVMM2012 | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | perating System | Hissing Operation | vg System Update Active | 13/09/20 | 117.0 |
| | SCVMM2012 | /Microsoft Windows Server 2008 R2 Enterprise | Windows 0 | operating System | Missing Operatio | g System Update Active | 13/09/20 | 111 7.0 |
| # Warni | ing (76 items) | | | | | | | |
| | ENVY.expertit.local | /Microsoft Windows Server 2008 R2 Standard | Windows 0 | operating System | 🦩 Windows operati | ing system has er Active | 15/09/20 | 11 93 |
| 1 | ENVY.expertit.local | /ENVY expertit local | Advisor Ag | ert | 🌾 Health Service P | Iodule reported a Active | 14/05/20 | 11 9:0 |
| A | SCVMM2012.expertit.local | /MSSQLSERvER,ReportServer | SQL Databa | 110 | 1 The transaction | log may grow wit Active | 13/09/20 | 111 10 |
| 1 | SCVMM2012 expertitional | /MSSQLSERVER/ReportServerTempD8 | SQL Dytabi | 214E | SQL Server data | base present with Active | 13/09/20 | 111 10 |
| A | SCVMM2012.expertit.local | /MSSQLSERVER | SQL DB En | pine | SQL Server miss | ing update KB90-Active | 15/05/20 | 111 10 |
| 4 | SCVMM2012 expertitional | /MSSQLSERVER/master | SQL Databa | 114 | SQL Server data | base present with Active | 13/08/20 | 11 10 |
| 1 | and the commentation of the | and the second | 1 | | the trace of the sport | the second second second | A DECEMBER | - |
| | | | | | | | | |
| | Vindows operating sys erformance problems Jert description: | item missing update K0976700 to pre with SQL Server | vent | Information | detected relating to | • this locus: | 00 | R |
| 3 | ou are missing Windows | Update K8976700. This update addresses | a known | Property Nan | ne/ Description | Value | | |
| - 2 | isue that leads to poor p erforms large 1/0 operat | enformance for applications like SQL Serve sons frequently. When this issue occurs, to | or that | Current NTO | SKRNLEXE file version | 6.1.7600.16385 | | |
| 3 | nexplained high CPU us indows 7 and Windows | ige in privileged mode. This issue occurs o Server 2008 R2 operating systems. Apply | oly in the | Required NT | OSKRIAL EXE File | 6,1.7600.20700 | | |
| 1 2 | his fix. See the Knowled | on Kay 76700 or any Windows hotto, that on Base article for more information on he | Includes Includes | Current NTIO | RNLPA.EXE file version | 6 | | 1 |
| | ddress this issue. | | 51615-74 | Bassinet IC | WENI DA ENE Alla | | | |
| | | | | | | | | |

The Alerts view informs you of severity, time and server name to expedite troubleshooting.

| ystem Center | Welcome, Paul Expert IT Solutions | istp Pandback Sign out |
|--------------------------|--|------------------------|
| Seneral account | ettings for System Center Advisor | C C |
| Company Information | | |
| You can view and edit yo | ur company account information have. | * Required |
| Company ID: | plantation of 17 million with a statistical and | |
| Company name: * | Expert IT Solutions | |
| 5000 | test | |
| User Information | | |
| You can view and edit yo | ur personal information here. | * Required |
| Windows Live ID | president result generation and some | |
| First name * | Paul | |
| Last same " | | |
| | Schlackenpurg | |
| C Receive email not | fications of new System Center Advisor Alerts | |
| Save I P | east | |
| Manage User Accounts | | |
| You can add new users, a | emove existing users, or change the permission level for users associated with this System Center Advisor account. | |
| Manage Users | | |
| Close Company Account | L | |
| Close account and remov | e al data. | |
| Close Company Ao | zeunt | |
| | | |

Setting up user accounts and configuring SCA e-mail alerts

b) Integrating Advisor with Operations Manager.

1.) Install SCOM 2012 R2, in my case I am using the SCOM 2012 R2 preview version. I am not showing how to setup SCOM 2012 R2 because this is not the focus of this post.

2.) Sign up for a Microsoft account aka Windows Live ID

3.) Go to Administration/System Center Advisor/Advisor Connection and choose Register Advisor. Because I have already setup SCA there is only a Re-configure Advisor link on the screenshot...



A wizard will open and you need your previously created Microsoft account...

| 8 | Re-configure Advisor | × |
|--|---|---|
| Advisor Onboarding | | |
| Autorotation Account Summary Finadi | Sign into your Microsoft account | Connectal Audubblig What's New |
| | Microsoft System Center Advisor Mercesoft Sacar being was a bound on the served was reader was a bound on the served was a bound on the served was reader Mercesoft Sacar Benerge was a bound on the served was a bound on the | Sign in Morent assure What's teal omeone@example.com Passeore Carl assure a signed in Carl assure poor assured? Don't have a Microsoft account? Sign up now |
| | 62013 Montoff. Terms Privacy & Costles | Herp Carmer - Peedback |
| | Authentication resultes that JavaScript and cookies are enabled in International Cookies are enabled in International Cookies are enabled in International Cookies and Cookies are enabled in International Cookies are enab | ernet Explorer. |
| | | CPrevious Next> Update Cancel |

Enter a new Advisor Account by typing an account name. I have accounts created before therefore I will select scomfaq. You can create as many Advisor accounts as you want. These accounts will be used to separate the data if you login into the System Center Advisor portal. There you will be prompted or you can select via dropdown to choose from which account to want to see the data....

| 8 | Re-configure Advisor |
|------------------|---|
| Advisor Onboardi | ng Wizard: Select Account |
| | |
| Authentication | |
| Summer | Create or Select Advisor Account |
| Finish | |
| | Enter a name for your Advisor account, or select an existing account: |
| | i v |
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| | (Devices Bend) Update Carcel |

If you click Update in my case or Done if you run this wizard for the first time, your setup is finished. YES, that's it, the Advisor setup is finished! So easy...

| 9 9 | Re-configure Advisor X |
|--------------------|-----------------------------|
| 🗛 Advisor Onboardi | ng Wizard: Summary |
| Authentication | |
| Account | Confirm the settings |
| Summary | |
| Finish | Microsoft Account: |
| | Advisor Account: scomfaq |
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| | Chevious Not> Update Cancel |

If you go to Administration/Internal Connectors you will see 2 new connectors have been added...

| | Internal Connectors - om,R2 - Operations Manager | = 0 X |
|--|--|--|
| File Edit View Go Tasks Tools Help | | |
| Search* , S Scope Print C | Tada 😧 , | |
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| Administration | | |
| K My Workspace | | |
| Ready | 2 N 2 | |
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Configuration

As a next step we need to tell Advisor which computers to monitor. Therefore we go to Administration/Advisor Managed/Add a Computer Group...

| 2 | Advisor Managed - om_R2 - Operations Manager | _ O X |
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| File Edit View Go Tasks Tools Help | | |
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| Ready | | |
| - | | |

You can add computers and groups, this means you can create a dynamic group and add this group to Advisor and Advisor will automatically analyze all objects in this group...

| Computer Search | | ? × |
|--|---|---|
| e computers and then add them to the selected co | nputers list. | |
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| | | |
| | | |
| | | Search |
| FullName | | |
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| System.Network/Management.Monitored/Ldapter | | |
| Microsoft SystemCenter Advisor Library ServerU | | |
| Microsoft Windows Server InstanceGroup | | ~ |
| | Add | Remove |
| FullName | | |
| Microsoft Windows Computer FILE 01 bigfirm.com | | |
| Microsoft Windows Computer SCOM2012R2.big | | |
| C | OK | Cancel |
| | Computer Search computers and then add them to the selected co Full Name Microsoft Windows Clerit BusinessChicalClert System Network Management All Fletwork Conne System Network Management All Fletwork Conne System Network Search Sonalows Clerit Human Search Sonalows Full Name Microsoft Windows Computer FILE01 biglim.com Microsoft Windows Computer FILE01 biglim.com Microsoft Windows Computer SCOM2012/R2.big | Computer Search computers and then add them to the selected computers list. Full Name Microsoft Windows Clerk BusinessChicaClerk System Network Management All Network Corres System Network Management Monitore@All Select Nicrosoft Windows Clerk BusinessChicaClerk Nicrosoft Windows Clerk BusinessChicaClerk Add Full Name Microsoft Windows Computer FILE 01 bigitm.com Microsoft Windows Computer SCOM2012R2.big |

SCOM Views

After a few hours the first alerts are flying into your management group. Go to Monitoring/System Center Advisor and you will find a bunch of alerts. Look close at the alert description how detailed the information appears...

| Notice | Active Alerts (3) | | | |
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On the right hand side you will find 4 tasks...

- Ignore Alert...
- Manage Alert Rules...
- View Configuration
- View Solution/KB Article



Ignore Alert will allow you to disable the rule...



Manage Alert Rules, will show you all the rules available...

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View Configuration will show you all the detailed properties collected from the system where the alert occurred...

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View Solution/KB Article shows you the solution to this problem...



If you navigate to Advisor Health State dashboard you will have an overview if the management server is connected correctly to System Center Advisor and if all the Advisor agents are in a healthy state...

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| Show or Hide Lievel. | | | | |

Advisor Portal

If you would like to check your data online navigate tohttp://www.systemcenteradvisor.com and login with your Microsoft account...



You will get a nice dashboard with your most important information...

| e Edit \ | View Favorites Tools | Help | | | |
|----------|--|--|--|------------------|---|
| S Error | r 404 Page Not Foun_ | Citrix XenApp - Anwendu | 10 | 🗟 • 🖾 • 📾 | 👘 🔹 Page 👻 Safety 👻 Tools 👻 🕢 |
| System | n Center | | | Welcome, Stefan | (ggamfag) Help Feedback Sign |
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Or detailed alert information as you have seen in your SCOM console...

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You also can change the rules, account information or add and remove Advisor agents.

Sign:_____

Practical No 6: Using Service Manager to Standardize.

a) Creating a new related service request.

Configuring General Settings

The Request Offering wizard experience begins on the "General" page, pictured in Figure 1.

| efore You segin | Specify the information for this offering | |
|--------------------|---|---|
| ieneral | | |
| ser Prompts | Title: Create a Service Request | |
| onfigure Prompts | | - |
| tap Prompts | Image (32 x 32): | |
| Knowledge Articles | Browse | |
| ublish | | |
| ummary | Description, shown on the request offering page: | - |
| ompletion | Allows end-users to create a service request | _ |
| | Template name: | |
| | Default Service Request 🦢 Select template 💌 | • |
| | Management pack | |
| | Service Manager Service Request Configuration Library New | |

Figure 1: General Page

| berore rou beyin | Specify the information for this offering | | |
|--|--|-----------------|-------------|
| General | | | |
| Jser Prompts | Title: | | 201 |
| Configure Prompts | | | |
| Aap Prompts | Image (32 x 32): | | |
| Considerine Articles | Browse | | |
| a la | | | |
| NDIISD | Description, shown on the request offering page: | | |
| Summary | Allow end-users to create a service request | | |
| | | | |
| ampletion | Template name: | Select template | . . |
| ampletion | Template name: | Select template | • • |
| Completion | Template name: Management pack Contex Management Configuration Library | Select template | o ▼ vest |

Figure 2: General Page, Select template drop down active

Creating User Prompts

On the "User Prompts" page of the RO wizard, a request author configures the set of prompts that will be displayed to the end user. Each user prompt typically represents (1) a *question* that the service provider will ask the user in order to take action on his or her request or (2) *read-only information* that the service provider will supply to the user to so that he or she can better answer a question.

| Before You Begin General | Form | er the prompts or information text | | |
|-----------------------------------|-------|---|---------------|-------------|
| Configure Prompts | | | | |
| Map Prompts Knowledge Articles | Enter | prompts or information text | | 4 X 1 |
| | | User Prompts or Information | Response Type | Prompt Type |
| | > 1 | Type the name of the computer that you would like to cr | si Required | Text |
| summary | * 2 | How many CPU cores would you like to create? | Required | Integer |
| Completion | - 3 | | Required | Text |
| | | | | |
| | | | | |

Figure 3: User Prompts Page

Configuring User Prompts

Once the Request Offering author has selected the type of control to display to the user, he or she can configure the parameters of that control on the next wizard page: "Configure Prompts." This is the page on which the interactive behavior of each prompt control is defined.

| Before You Begin General User Prompts | Conf | igure user prompts a prompt and click Configure below to constrain valid in | put for the prompt. | |
|---|------|--|----------------------|-----------|
| * Configure Prompts | | | | Configure |
| Map Prompts | | User Prompts or Information | Prompt Output | Configure |
| Knowledge Articles | » 1 | Type the name of the computer that you would like to | 1: String (string) | |
| Publish | + 2 | How many CPU cores would you like to create? | 1: Integer (int) | |
| Summary | . 3 | Select a Computer | | |
| Completion | > 4 | Create in WORKGROUP domain? | 1: True/False (bool) | |
| | | | | |

Figure 4: Configure Prompts Page

| eneral | ∧ Map Prompts | | | |
|-------------------|--------------------------------------|-------------------------|--------------------|--------------------|
| ser Prompts | Map prompts to properties | | | |
| | Select an object and map its propert | ies: | | |
| ontigure Prompts | - Default Service Request - (Service | e Request) | | |
| ap Prompts | Approve Service Request - (Revi | ew Activity) | | |
| nowledge Articles | Apply Service - (Manual Activity) | 1 | | |
| ublish | | | 1 | |
| story | Property | Default Value | 3 | |
| | Linearcy | | - | |
| | > Noter | | 4. enum prompt: Li | ist Item (Unbound) |
| | Area | | | <u>v</u> 🛛 |
| | Support Group | | | - |
| | > Title | Default Service | | • • |
| | Display common properties | Display all properties | 2 | 1.00 |
| | 0 | | - | |
| 1 | ^ Knowledge Articles | | | |
| | Select the knowledge articl | les that are related to | this offering | |
| | Related knowledge articles: | | | |
| | | | | 1 |

Figure 5: Map Prompts Page

Knowledge Article

Links to relevant knowledge articles can be established on the "Knowledge Article" page. These articles are associated with the request offering when it is displayed on the web portal.

| Before You Begin General | Select the knowledge articles that Related knowledge articles: | t are related to this offering | |
|-----------------------------------|---|--------------------------------|--------|
| iser Prompts Configure Prompts | Identifier Title | Last Modified | Add |
| Man Promots | KAZ ro knowledge | 10/11/2011 10:44:57 PM | Remove |
| Knowledge Articles | | | Open |
| Aublish | | | |
| Summary | | | |
| Completion | | | |
| | | | |

Figure 6: Knowledge Articles Page

Publish

Completing the "Publish" page ends the Request Offering wizard experience. On this page, request authors can designate an owner for the request offering and set the request offering status as either "Draft" or "Publish." Only published request offerings are visible in the self-service portal. A request offering created in "Draft" status mode can later be promoted to "Publish" status.

| Sefore You Begin Seneral | Specify publishing information. Offerings must be set to Published in order for them to appear on the portal. |
|-----------------------------|---|
| ser Prompts | Offering status: Offering owner: |
| Configure Prompts | Draft 🖉 🥥 |
| Map Prompts | Outstand date: |
| (nowledge Articles | Published date: Published by: |
| ublish | |
| ummary | Internal notes: |
| Completion | |
| | |
| | |
| | |
| | |

Figure 7: Publish Page

If the status of the request offering is set to "Publish," validation runs before the wizard completes to alert the user to any configuration errors in the request offering. Two common configuration errors include:

1. Failing to map a Required user prompt to at least one property on the Map Prompts page

2. Failing to specify a target relationship for a Required Query Results prompt when that prompt's outputs are *not* transmitted through token criteria to a subsequent Query Results prompt. Checking either of the two relationship checkboxes on the Options page of the Query Results configuration form bypasses this error.

b) Configuring the settings for an incident and reviewing an incident that has been closed.

To create the alert connector, perform the following steps:

1. In the Administration workspace of the Server Manager console, click Connectors.

- 2. On the Tasks pane, click Create Connector, and then click Operations Manager Alert Connector.
- 3. On the General page of the Operations Manager Alert Connector Wizard, provide a name for the alert connector.
- 4. On the Server Details page, shown in Figure 1-8, specify the name of the Operations Manager server and a Run As account that has permission to connect to Operations Manager. Ensure that you use the Test Connection button to verify that the account works and has appropriate permissions.

| 9 | Operations Manager Alert connector wizard | | | × |
|---------------------------------|--|-------------|--------|----|
| 🚽 Server Deta | ails | | | |
| Before You Begin General | Enter the server name and credentials for the Operations Man | ager serve | r | |
| Server Details | Server Information | | | 1 |
| Alert Routing Rules Schedule | Server name: opsmgr.tailspintoys.internal | | |] |
| Summary | Credentials | | | -1 |
| Completion | Run As account: | | | |
| | Administrator | • Test C | New | 1 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | Cancel < Previous | Next > | Create | |

FIGURE 1-8 Alert connector configuration

- 5. On the Alert Routing Rules page, click Add to add an alert routing rule. An alert routing rule allows you to specify which Service Manager incident template will be used to create an incident based on an Operations Manager alert.
- 6. In the Add Alert Routing Rule dialog box, shown in Figure 1-9, provide the following information:
 - **Rule Name** The name of the alert routing rule.
 - **Template** The Service Manager incident template that will be used when creating the Service Manager incident.
 - **Criteria Type** Here you can select the conditions that trigger the alert routing rule. You can choose between the alert being generated by a specific Operations Manager management pack, being generated by a specific computer or security group, a custom field, or an Operations Manager monitoring class.

• Select Alert Severity And Priority Allows you to specify the alert priorities and severities that will trigger the alert routing rule.

| | Add Alert Rou | iting Rul | le 💶 🗖 | × |
|---|---------------------------------------|-------------|-------------------------------|-----|
| | iting Rule | | | |
| Rule Name | | | | |
| Network Alerts | | | | |
| Template | | | | |
| Networking Issue Inciden | t Template | | | • |
| Select Criteria Type Operations Manager M alert | 1anagement Pack con | taining th | e Rule or Monitor raising the | 5. |
| Manag <mark>ement Pack</mark> Name | Equals | • | Network Management - Co | ore |
| Computer for which the | e alert was raised | | | |
| Computer is a member of | group | | | ٣ |
| Custom Field | | | | |
| | • | | | |
| Operations Manager cl | ass for wh <mark>i</mark> ch the aler | t was raise | ed | |
| Monitoring class name | | | | |
| Select alert severity and Priority High Severity Critical | priority ▼ ▼ | | | |
| | | | | -1 |

FIGURE 1-9 Alert routing rule

7. As Figure 1-10 shows, alerts that don't match any of your configured rules will automatically be created as incidents using the Operations Manager Incident Template.

| | Specify the routing | g rules for incoming alerts | |
|--|---|--|------------------------|
| General Server Details Alert Routing Rules | Rule name Network Alerts | Template Networking Issue Incide | Edit |
| Schedule Summary Completion | | | Remove Up Down |
| | Alerts that do not fit ar Operations Manager I | ny of the rules above will be routed with the follow ncident Template 🔻 | wing default template: |

FIGURE 1-10 Routing rules

8. On the Schedule page, select the frequency at which Service Manager will query the Operations Manager server for alerts. You can also configure the connector so that alerts within Operations Manager will be closed when the incident that relates to the alert is resolved or closed in Service Manager. You can also configure Service Manager to automatically mark incidents as Resolved if the incident that triggered the alert in Operations Manager is closed. Figure 1-11 shows these settings.

| 3 | Operations Manager Alert connector wizard |
|---|--|
| Schedule Before You Begin General Server Details Alert Routing Rules Schedule Summary Completion | Operations Manager Alert connector wizard Create a schedule Poll alerts every 30 + seconds Image: Close alerts in Operations Manager when incidents are resolved or closed Image: Resolve incidents automatically when the alerts in Operations Manager are closed |
| | Cancel < Previous Next > Create |

FIGURE 1-11 Schedule settings

9. On the Summary page, review the connector setup, and then create the connector.

Once the connector is created, you can modify the alert routing rules by editing the properties of the connector as shown in Figure 1-12.

| S | | Edit | | × |
|---------------------------|----------------------|--|-----------------|-----|
| General Server Details | Alert Routing Rul | es g rules for incoming alerts | | - |
| Alert Routing Rules | Rule name | Template | Add | ĩ – |
| Schedule | Network Alerts | Networking Issue Incide | Edit | Î. |
| | | | Remove | 1 |
| | | | 🔮 Up | I |
| | | | Down | |
| | Operations Manager I | Incident Template 🔻 | | |
| | ^ Schedule | | | - 1 |
| | Create a schedule | | | |
| | Poll alerts every 30 | seconds | | |
| | Close alerts in Oper | ations Manager when incidents are resolved or | closed | |
| | Resolve incidents a | utomatically when the alerts in Operations Man | ager are closed | - |
| | 1111 C | [| OK Cance | el |

FIGURE 1-12 Connector properties

Practical No 7: Using Orchestrator for automation.

a) Creating a simple virtual machine in Windows Azure using System Center Orchestrator. (Should be performed Online)

Step 1. Create a new configuration item class in Service Manager

So for the Windows Azure VM configuration to come out of Service Manager we will need to create a new configuration item class which you can do with the **System Center Service Manager Authoring Tool** which can be downloaded here:http://www.microsoft.com/en-us/download/details.aspx?id=36214

Start the Authoring Tool, click "File" and then "New" and let's create a new management pack and a new configuration item class:



Since I wanted an unique identifier (not a GUID) which I could refer to, I decided to create an "Azure VM Config ID" which I made my key property. I initially wanted to use my Azure VM ConfigName as an unique name (sounds logical doesn't it?), but quickly found out that if you delete that configuration, you can't re-use that same name, because it is still in the database with the status of "pending delete". So first delete the famous "*Property_4*" default key property:

| lans prop | erties and relationships: | | | Create property. Create relationship. |
|-----------|-----------------------------------|--------------|--------------------|---------------------------------------|
| Key | Name | Data type | Value constraints | |
| | About Configuration Item | Relationship | Configuration Item | |
| | Affects Customers | Relationship | User | |
| | Annet Status | Liet | Annet Statum | |
| | Collection has configuration item | Relationship | Configuration Item | |
| | Config Item References Location | Relationship | Location | |
| | Contains Configuration Term | Relationship | Configuration Item | |
| | Display Name | String | | |
| | DisplayName (Internal) | String | | |
| | Has File Attachment | Relationship | File Attachment | |
| | ld (internal) | GUID | | |
| | Is Related to Configuration Item | Relationship | Configuration Item | |
| | LastModified (Internal) | Date Time | | |
| | LastModifiedDy (Internal) | Shing | | |
| | Notes | Rich Text | | |
| | Object Status | List. | Object Status | |
| | Owned By User | Palationship | User | |
| | Serviced By User | Relationship | User | |
| | TimeAdded (Internal) | Date Time | | |
| ۹. | Property_4 | String | × | |

If you want your new key property to be filled in and incremented automatically then set these two fields:

| A | zure VM Config ID (Property | n |
|---|-----------------------------|---------------------|
| | 21 🔤 | |
| Ξ | General | |
| | Data Type | String |
| | Description | |
| | Internal Name | AzureVMConfigID |
| | Name | Azure VM Config ID |
| Ξ | Others | |
| | Auto Increment | True 🔶 |
| | Case Sensitive | False |
| | Default Value | {0} < |
| | Key | True |
| | Maximum Length | 256 |
| | Maximum Value | 2147483647 |
| | Minimum Length | 0 |
| | Minimum Value | -2147483648 |
| | Required | False |

This will automatically increment your ID *without* prompting the user for a value when the configuration form is being filled in.

The next step is to think about which fields you need and would like to have. Your logical starting point I think is to look at the *"AzureDeploymentDemo.txt"* text file and get those fields in there which I've done to start with:

| operties and relationships: | | | Create property. Create relation |
|--|-----------|--------------------|----------------------------------|
| Name | Data type | Value constraints | |
| Asure VM ConfigID | Seing | | |
| Agure VM Config Name | String | | |
| Ekile VHO Name | String | | |
| Service Description | String | | |
| Service DNS Pretx | String | | |
| Service Label | String | | |
| Service Location Affinity | List | Azure VM Config - | |
| Service Location Or Affinity Group | List | Agure VMI Config - | |
| Storage Account Description | String | | |
| Storage Account Label | String | | |
| Storage Account Location Affinity | List | Azure VM Config - | |
| Storage Account Location Or Affinity Group | List | Agure VM Config - | |
| Storage Account Name | String | | |
| Storage Container Name | Siring | | |
| VM Conputer Name | String | | |
| VM Deployment Label | Siring | | |
| VM Deployment Name | String | | |
| VM Deployment Slot | List | Agure VM Config - | |
| VM Endpoint Local Port | List | Agure VM Config - | |
| VM Endpoint Name | String | | |
| VM Endpoint Protocol | List | Azure VMI Config - | |
| VM Endpoint Public Port | List | Azure VM Config - | |
| VM Image Type | List | Azure VM Config - | |
| VM Instance Name | String | | |
| VM Instance Size | List | Azure VM Config - | |
| VM Operating System Type | List | Azure VM Config - | |

Since my initial objective was to "just deploy a Windows Azure VM" I initially used only those fields to just do that, you can pretty much create your own property if you see a need for it. My recommendation to you is to really overthink the property you are adding. Is it a configuration property or for example a connection string, which probably should be stored in another place.

Step 2. Create a custom form

Now that you have added all the custom properties to your new configuration item class, you can go all fancy with creating a custom form. You can add text labels, dropdown boxes, a logo, different font types and colors, etc.:



Use the "Form Customization Toolbox" to create the form you would like, just start drop and dragging:



And you will end up with something like this:

| 0 | Windows Azure Virtual Machine Configuration |
|--|--|
| VM Config Name: | 1 |
| Service Service Label: | Service Description: Location OR Affinity Group: |
| Service DNS Prefix | Senice Location Affinity: |
| Storage Account Name: Storage Account Label: VM VM Deployment Name: | Storage Account Description: Storage Location OR Affinity Group: Storage Container Name: Storage Account Location Affinity: VM Deployment Labet: Image Type: |
| VM Deployment Slot | Operating System Type: |
| VM Computer Name: | VM Instance Name: Blob VHD Name: |
| VM Instance Size: | VM Source Image: |
| Endpoint VM Endpoint Name: | VM EndPoint Protocol |

Notice that I'm using dropdown boxes for fields that are common or fields that you don't want your users to become "creative" with like VM sizes or the source image you would like them to use. To achieve that you change the property to a "list data type" property:

| VM Deployment Slot | List | Azure VM Config - Deployment Slot |
|-------------------------|--------|--|
| VM Endpoint Local Port | List | Azure VM Config - Endpoint Local Port |
| VM Endpoint Name | String | |
| VM Endpoint Protocol | List | Azure VM Config - Endpoint Protocol |
| VM Endpoint Public Fort | List | Azure VM Config - Endpoint Public Port |
| VM Image Type | List | Azure VM Config - Image Type |

| D | etals | - ₽ × |
|---|------------------------------|---------------------------------|
| ١ | M Deployment Slot (Property) | |
| | 021 🖂 | |
| ۵ | General | |
| | Data Type | List |
| | Description | |
| | Internal Name | VMdeploymentSlot |
| | Name | VM Deployment Slot |
| ۲ | Others | |
| | Auto Increment | False |
| | Case Sensitive | False |
| | Default Value | |
| | Key | False |
| | Maximum Length | 256 |
| | Maximum Value | 2147483647 |
| | Minimum Length | 0 |
| | Minimum Value | -2147483648 |
| | Required | False |
| Ξ | Value Constraints | |
| | List type | Azure VM Config - Deployment SI |
| | List type internal name | AzureVMConFigDeploymentSlotList |
| - | | |

And then create a custom list:

| Select a list | | |
|---------------------------------------|------------------------|----------|
| felect a list in: | | |
| All Management Packs | | 2 |
| Search | | P |
| | | |
| kvailable lists: | Selected list preview: | |
| Action Log | Production | |
| A Activity Area | Steping | |
| A Activity Priority | | |
| Activity Record Enum | | |
| A ACTIVELY STOLE | | |
| A Cover States | | |
| All Console Views | | |
| All Groups | | |
| All Object Templates | | |
| All Queues | | |
| All Reports | | |
| Announcement Priority | | |
| A Approval | | |
| Asset Status | | |
| Azure VM Config - Deployment Slot | | |
| Azure VM Config - Endpoint Local Port | | |
| Acre in comp - proport motoco | | |
| | | |
| | | |
| | | 1 |
| Dreate List | OR | Cancel |

If you would like to put entries/values in the list you can edit your new management pack with a XML editor or you can add those values later in the Service Manager console. Here's a snippet view from Visual Studio:



If you are not comfortable with XML editing then import your new management pack into Service Manager, add values to your new list, export your management pack and open the modified management pack in the authoring console.

Note: This would be a good time to start saving different versions of your management pack in case something goes wrong and you need to revert back 😕

Step 3. Create a Service Manager console view

Now that you have created your custom configuration class, a custom form, your lists and added those to dropdown boxes onto your form, it is time to finally import your new management pack into Service Manager. After importing your MP you can create a new folder & view to expose your new class and form:

| Configuration Items | < |
|------------------------------|---|
| 🔺 🔼 Configuration Items | |
| 🔺 🚞 Azure VM Config | |
| 🔼 Azure VM Config | |
| A pullet | |

If you create your new view, you need to browse for your new configuration item class:

| Advanced Search | | | |
|--|---|---|------|
| while chieves of a searche classe | | | |
| infiguration Item | | | Brow |
| | | | |
| elect a Class | X. You can use Filter by name and the View list to bette | r define the list of displayed classes. | |
| elect a Class slect the class you want and click (source yrs] | K. You can use Filter by name and the View list to bette | r define the list of displayed classes. | -10 |
| elect a Class elect the class you want and click (azure vm) Name | K. You can use Filter by name and the View list to bette Management Pack | P All basic classes Description | |

Then add all the the columns you wish to display.

Before you create your first Windows Azure VM configuration, make sure that all the lists are populated. Go under "Library" and then "Lists" and search for you custom class:

| Lists 11 | |
|--|--|
| azure vm | |
| Name | Description |
| Azure VM Config - Deployment Slot | |
| Azure VM Config - Endpoint Local Port | |
| Azure VM Config - Endpoint Protocol | |
| Azure VM Config - Endpoint Public Port | |
| Azure VM Config - Image Type | |
| Azure VM Config - Location OR Affinity Group | Select either Location or Affinity Group |
| Azure VM Config - Operating System Type | |
| Azure VM Config - Service Location Affinity | |
| Azure VM Config - Source Image Name | |
| Azure VM Config - Storage Location Affinity | |
| Azure VM Config - VM Instance Size | |

Verify that you have entries:

| E List Properties | |
|--|--|
| | |
| List Properties Lat name: Asser VH Carlig - Service Location Affecty | |
| Select a latition to edit | Nove Up |
| faet US | Hove Down |
| East Asia | Delete |
| North Europe | Add Item |
| West Europe | Add Child |
| Name: West Europe | |
| | Aure VM Carlin - Service Looder Alfredy Select at Rem to etit: Wate US East US East As South ease North Europe Name: Vest Europe |

Now go back to "Configuration Items" node and create your first Windows Azure VM configuration:



| form Host | |
|------------------------------------|--|
| 8 | Windows Azure Virtual Machine Configuration |
| VM Config Name: |] |
| Service | |
| ervice Label: | Service Description: Location OR Affinity Group: |
| xwservice01 | my demo Location * |
| ervice DNS Prefix: | Service Location Affinity: |
| wservice01 | West Europe * |
| | |
| storage | Conses Annual Description: Conses Location OD Afficials Conses |
| wdraeecount | mu damo |
| and a grant a second | ADDIDU |
| torage Account Label: | Storage Container Name: Storage Account Location Affinity: |
| xxiservicestorage | xwservicestorage Vest Europe |
| M Deployment Name: xwdeployment | VM Deployment Label: Image Type: xwdeployment PlatformImage |
| /M Deployment Slot: | Operating System Type: |
| Production | • Windows • |
| M Computer Name: | VM Instance Name: Blob VHD Name: |
| xwdemovm | xwdemovm xwdemovm.vhd |
| VM Instance Size: | VM Source Image: |
| ExtraSmall | a699494373c04fc0bc8f2bb1389d6106 Windows-Server-2012-R2-Preview-201306.01-enus-127G8.vhd |
| | |
| Endpoint | |
| VM Endpoint Name: | VM EndPoint Protocol: |
| xwendpoint | 102 |
| VM Endpoint Local Port: | VM Endpoint Public Port: |
| 3389 | × 2389 × |
| | |
| | |
| | No. Court Last |
| | Cit. Cance Apply |

Step 4. Create a Service and a Request Offering for the self-service portal

Now that we have a Windows Azure VM configuration stored into the CMDB the next step is to make a Request and a Service Offering. Since there are a bunch of blog posts out there on how to do that, I won't dive into it right here, but one thing to consider is to determine which values you would like to be "overwritten". You could go ahead and deploy this configuration as is or you could decide which fields you would allow to be set through self-service. To keep it simple and to test drive what I've created, I decided to just allow the self-service user to

select a Windows Azure configuration and to provide only the Virtual Machine Name. Your Request Offering would then look like this:

| 2 Edit Request Of | ering | | _ 0 |
|-------------------|--|-----------------------------------|-----------------|
| General | User Promots | | |
| User Prompts | Enter the prompts or information text | | |
| Configure Prompts | Form instructions: | | |
| Map Prompts | Please fill in the form below to deploy a Windows Azure VM Conf | ña | |
| Nowledge Articles | | | |
| Fublish | Enter prompts or information text | | • X • • |
| History | User Prompts or Information | Response Type | Prompt Type |
| | ▲ 1 Please select a Windows Azure Configuration | Required | Query Results * |
| | 3 2 Please provide a new VM Name | Required | Text |
| | 3 | | |
| | You can configure the prompts above on the next wizard page | 246. | |
| | | | |
| | Configure user prompts | | |
| | | | |
| | Select a prompt and click Configure below to constrain valid input | t for the prompt. | Configure |
| | Select a prompt and click Configure below to constrain valid input | Prompt Output | Configure |
| | Select a prompt and click Configure below to constrain valid input | Prompt Output 1: Azure/MConfig | Configure |

Configure your query:

| elect Class 2. Configure Orberia (option | nal) 3. Display Columns 4. Options | |
|--|---|-----------------------|
| ect the type of object to display: | P Frequently u | sed basic classes 🔹 |
| iane | Management Pack | Description |
| Agreement Cost Event | Provance ITAM Core Library | Defines the basic |
| Authority Document | System Risk and Compliance Management | Defines the basic |
| Authority Document Citation | System Risk and Compliance Management | Defines the basic |
| Azure VM Config | Azure_VM_Config_Sample_MP | Azure VM Configu |
| Change Request | System Work Item Change Request Library | Defines the basic (|
| Company Company | Provance ITAM Core Library | Defines the basic |
| Configuration Manager Control Activity | System Risk and Compliance Management | Defines the prope |
| Contact | Provance ITAM Core Library | Defines the basic |
| Control Activity Result | System Risk and Compliance Management | Defines the basic |
| Control Objective | System Risk and Compliance Management | Defines the basic |
| Cost Center | Provance ITAM Core Library | Defines the basic (|
| Cost Event | Provance ITAM Core Library | Defines the basic |
| Dependent Activity | System Work Item Activity Library | Defines the basic |
| Desired Configuration Management Incider | nt Service Manager Incident Management Librar | y Defines the basic |
| P Disposal Agreement | Provance ITAM Core Library | Defines the basic (🐷 |
| (| | ÷ |

Map your prompt to the "Runbook Automation Activity":

| elect an object and map its properties: | | | |
|---|-----------|---------------|--|
| Deploy Windows Azure Config VM - (Service Request) | | | |
| Anure VM Confin Deployment - RRA - (Runhook Automatic | in Activi | b) | |
| | | | |
| | | | |
| | | | |
| | | 1 | |
| Property | De | Prompt Output | |

You might wonder why only map the VM Name and not the selected Azure VM Configuration? Well remember the golden rule when you retrieve Service Manager data from Orchestrator. If your data is in the Service Manager CMDB, you don't have to map that and don't put it into the "Initialize Data" activity as a parameter, just use Orchestrator to retrieve that CMDB relationship, that is the beauty of a correlated CMDB. In addition you cannot map a multi-value instance to a string.

Step 5. Create an Orchestrator runbook, which will be called from Service Manager

Now the Service Manager side is ready, you can leverage Charles Joy's comprehensive Windows Azure runbooks in a number of ways. You can create a "master" runbook to retrieve the Service Manager relationships and invoke several other runbooks from there. To quickly test drive what has been created and to "just deploy a Windows Azure VM" you could also create a simple runbook which looks like this:



Don't get intimidated because of the number of activities. If you watch closely you see that the first 6 activities – after the "Initialize Data" activity – are all about retrieving the Service Manager CMDB relationships. You actually only need 4 Windows Azure activities to deploy a VM, including the creation of a Cloud service and storage. The rest of those are all meant to impress whoever you would like to impress and demonstrate the flexibility and power of System Center.

The Initialize Data activity only contains, besides an identifier, the AzureVMname in my simple test scenario:



I'm using the standard Windows Azure Orchestrator activities which you need to populate with fields coming from the Service Manager CMDB. To do that you just retrieve the relationship one time where the "related class" is your new configuration item class:



Set your filter settings as follow and you're done:

| | | Properties | | |
|-----------|-------|---------------------------|-----------------|--------|
| | | Connection | xw-sm12 | _ |
| General | | Class | Azure VM Config | |
| Details | | Fibers | | |
| Run Beha | whor | Name Ralatio | n Value | Add |
| | | SC Object G Equals | (Related Objec | Edt |
| | E | Iter Settings | × | Remove |
| lame: | SC 0 | bject Guid | ~ | |
| telation: | Equi | ls . | ~ | |
| /alue: | Obela | ted Object Guid from "Get | RBA rela | |

Now configure all the activities so that all fields come from the data bus "Get Object" activity (called "Get Azure VM Config" in my example)

| efre the propertie | s used by the activity. | |
|-------------------------|--|---|
| Ceneral | Configuration Name: XW295 Azure | |
| Properties | Properties Change an Arthofy | County Cloud Service |
| Filters Run Behavior | Service DRS Prefix Label Description Location/Affinity Group Location/Affinity Group Value | (Service DKS Hrefts from "Get Apre (Service Label from "Get Abure VM C (Service Description from "Get Abure Location (Service Location Affinity from "Get A |
| | _ | |

You will notice that some fields cannot use a data bus value like this one:

| Location/Affinity Group | Location | |
|-------------------------|----------|--|
| | | |

Since I'm anticipating for Windows Azure PowerShell usage, I decided to keep those fields in the config, although you can't use them in the standard Windows Azure activities.

Because I don't like to store passwords in a configuration - which I think is a bad practice - I've added a "Generate Admin Password" activity so that you can decide how complex your password needs to be:

| etails Informati | ion | |
|------------------|-----------------------------------|--------------------|
| General General | Generate Random Test Test Length: | |
| Details | Text Contents | following antions: |
| Run Behavlor | Lower-Case Characters | 3 |
| | Upper-Case Characters | 3 |
| | ✓ Numbers | 2 |
| | Symbols | 2 |
| | | |

The downside is that if you don't have proper notification or registration in place, you will end up with a deployed VM which you cannot RDP into because of the automated password generation, but hey, good security has its price

To have notification in place which not only sends confirmation to the requesting user - in Service Manager terminology called the "affected user" - but also sends the generated password, I've added a "Send Email" activity. In here you can add data bus values like AzureVMname and password.

For the email to be sent to the "affected user" - so the user who has requested the VM - you need to use some get relationship activities to get that user (Get SR relationship, Get Affected User Relationship, Get Affected User):



If you want to create a really fancy HTML email with nice formatting and colors, just create your email in Word and save as HTML. Then cut and paste the HTML code in the message area of the "send email" activity and pick your fields where you want Orchestrator data bus values to appear, like in the example below.

Snippet from the send email activity (using HTML for fancy formatting):


Let's do one more fancy thing and that is to add the RDP file as an attachment to the email so that your user just has to open the RDP file to connect to the new Windows Azure VM, isn't it cool that we have a standard Windows Azure cascading activity for that?:

| | Configuration | |
|-------------|---------------------------|-------------------------------------|
| anaral . | Name: XWING Azure | |
| | Properties | |
| roperties | Choose an Activity | Get VM RDP File |
| | VM Service Name | (Service DNS Prefix from "Get Azure |
| HORTS | VM Deployment Name | (VM Deployment Name from "Get Azi |
| un Rebasion | VM Instance Name | (AzureVMname from "Initialize Data" |
| un penerior | Location to save RDP File | C:\Transport |
| | RDP File Name | (AzureVMname from "Initialize Data" |
| | | |

Add it to the email and we're done:

| to a car mapping i | and second s | a province of the second second | |
|--------------------|--|---|--------|
| | Subject: | Your Azure VM *(VH Competer Rame from, | |
| General | Recipients: | to: (UPN from "Get Affected User") | 4dd |
| Details | | R | ernove |
| Advanced | Message: Text | <pre>chtml xmins.vv*'um:schemes-microsoft-com: xmins:o="um:schemes-microsoft-com:office:s</pre> | |
| Connect | Offe | xmins.w= urn.schemas.microsoft.com/offic | |
| Security | Attachments: | Decators to save RDP File from "Download RD | 4dd |
| Run Belhavior | T | 8 | enove |
| | | Task fails if an attachment is missing | |

Step 6. Deploy a Windows Azure VM through the self-service portal

Now that we're all set up, it's time to test drive!

Let's start with the Service Manager self-service portal (assuming that you have at least 1 Azure VM Config entry):

| Deploy Windows Azure Config VM | | | |
|---|-----------------------|--|--|
| Please fill in the form below to deploy a Wir | ndows Azure VM Config | | |
| Please select a Windows Azure Configuratio | D Refresh | | |
| Azure VM Config Name | | | |
| | | | |
| 1 object selected (out of 1). 28 | | | |
| Please provide a new VM Name | | | |

You can have your users look at the "Gold" configuration by clicking on it:

| 815 | | | |
|-----------------------------|--------|--|--|
| Property | Туря | Value | |
| Azure VM Config (27 items) | | | |
| Service Location Affinity | enum | West Europe | |
| Service Description | string | my demo | |
| Service Label | string | xwservice01 | |
| Service DNS Prefix | string | xwservice01 | |
| Storage Account Name | string | xwstorageaccount | |
| Storage Account Description | string | my demo | |
| Storage Account Label | string | xwservicestorage | |
| Storage Container Name | string | xwservicestorage | |
| VM Computer Name | string | xwdemovm | |
| VM Instance Name | string | xwdemovm | |
| Blob VHD Name | string | xisidemovm.vhd | |
| VM Endpoint Name | string | xwendpoint | |
| VM Source Image Name | enum | a699494373c04fc0bc8f2bb1389d6106Windows- Server-2012-R2-Preview-201306.01-en.us-127G8.vhd | |
| VM Deployment Name | string | xwdeployment | |
| VM Endpoint Protocol | enum | TCP | |
| VM Endpoint Public Port | enum | 3389 | |
| VM Endpoint Local Port | enum | 3389 | |

Let's submit the Service Request:

| All Open Service Requests 1 | | | | | |
|-----------------------------|--------------------------------|-------|-------------|----------|--|
| Filter | | | | | |
| i0 ^ | Title | Owner | Status | Priority | |
| SR1654 | Deploy Windows Azure Config VM | | In Progress | Medium | |

Orchestrator runbook has successfully run:



Checking the Windows Azure portal, looks good:

| 🔣 Windows Azure 🛛 🧹 | | | | | | ۵ |
|---------------------|--------------------|-----|-----------------|-----------|--------------------|-------------|
| ALLITEMS | all items | | | | | |
| WEB SITES | NAME | | TYPE | STATUS | SUBSCRIPTION | LOCATION |
| VIRTUAL MACHINES | xwingstorage2 | - + | Storage Account | 🗸 Online | Windows Azure MSDN | West Europe |
| | xwstorageaccount 🧹 | | Storage Account | V Online | Windows Azure MSDN | West Europe |
| MOBILE SERVICES | TianderVM01 | | Virtual machine | 🗸 Running | Windows Azure MSDN | West Europe |
| | xwservice01 🧲 | | Cloud service | 🗸 Running | Windows Azure MSDN | West Europe |
| · · · | xwing | | Web Site | 🗸 Running | Windows Azure MSDN | West Europe |
| | | | | | | |

Got a nice email confirmation (notice the attachment, it's the RDP file):



Open the RDP file:



| | Remote Desk | top Connection | |
|-----------------------------|--|--------------------------------------|-----------------|
| U The you | identity of the remot want to connect any | e computer cannot way? | be verified. Do |
| The remote recurity cert | computer could not be au ficate. It may be unsafe t | thenticated due to pro p proceed. | blems with its |
| Cetficate | name | | |
| Nan Tiar | ne in the certificate from t nderVM01 | he remote computer: | |
| Certficate | errors | | |
| The follow computer | ving errors were encounts 's certificate: | red while validating the | e remote |
| 🔔 The | certificate is not from a b | usted certifying author | a. |
| Do you wan | t to connect despite thes | e certificate errors? | |
| Don't asi | k me again for connection | is to this computer | |
| Vew certi | ficate | Yes | No |

Securing remote connection ...

Logged on to our new Windows Azure VM!:



b) Creating runbook that automates a process relating to VMware vSphere.



A whole new set of tools for vSphere has been released for Orchestrator 2012 R2. Over 30 Activities to build out incredible automation Runbooks.

System Center 2012 R2 Integration Pack for VMware vSphere

http://www.microsoft.com/en-us/download/details.aspx?id=40874

Feature Summary

The Integration Pack includes the following activities:

- Add Network Adapter
- Add VM Disk
- Clone Linux VM
- Clone Windows VM
- Create VM
- Customize VM
- Delete VM
- Get Cluster Properties
- Get Datastore Capacity
- Get Hosts
- Get Resource Pool Runtime Info
- Get Resource Pools
- Get VM List
- Get VM Properties
- Get VM Status
- Migrate VM
- Move VM
- Reconfigure VM
- Reset VM
- Revert VM Snapshot
- Set Guest Info Variables
- Set VM CD/DVD to ISO Image
- Set VM Networks
- Start VM
- Stop VM
- Suspend VM
- Take VM Snapshot
- Maintenance Mode
- Get Host Properties
- Get Host Datastores

Configuration Screen

| | Add Confi | iguration × |
|----------|------------------|-------------|
| | | |
| Name: | vSphere1 | |
| Type: | vSphere Settings | |
| Properti | ies | |
| Server | · | |
| User | | |
| Passw | ord | |
| SSL | 1 | True |
| Port | | |
| Webse | ervice Timeout | |
| | | |
| | | |
| | | OK Cancel |
| | | |

Sign:_____

Practical No 8: Using Configuration Manager 2012 for managing and maintaining.

a) Setting up an alert for compliance.

Load up your SCCM console. Once loaded go to 'Assets and Compliance' and go to 'Device Collections'. Select a collection you want to set an alert on and right click it then select 'Properties'.

Along the top of the window select 'Alerts'. Tick the 'View this collection...' tick box and then select 'Add'.

| Windows XP Properties | > |
|--|------|
| General Membership Rules Power Management Deployments Maintenance Windows Collection Variables Out of Band Management Distribution Point Groups Security Alert | s |
| ✓ Mew this collection in the Endpoint Protection dashboard | |
| Configure the alert thresholds. | |
| Conditions | |
| There are no items to show in this view. | |
| | |
| | |
| Add Remove | • |
| Definitions | |
| | |
| | |
| | |
| | |
| | |
| | |
| OK Cancel A | pply |
| | |

Alerts

On the next screen you will see lots of boxes. Here you can pick and choose what you would like SCCM to alert you about. As we are only doing a malware detection alert only that box will be checked.

| Add New Collection Alerts | × | | | |
|--|---|--|--|--|
| Client status: | | | | |
| Clight check pass or no results for active clients falls below threshold (%) | | | | |
| Client remediation success falls below the threshold (%) | | | | |
| Gient activity fails below threshold (%) | | | | |
| Endpoint protection: | | | | |
| ✓ Malware is getected | | | | |
| The same type malware is detected on a number of computers | | | | |
| The same type malware is repeatedly detected within the specified interval on a computer | | | | |
| Multiple types of malware are detected on the same computer with the specified interval | | | | |
| OK Cancel | | | | |

Alert Choices

Once selected make your way back to the main SCCM window. Next go to 'Monitoring' on the left hand side then expand 'Alerts'. In here find 'Subscriptions', right click it and select 'Configure Email Notification'.



Configure Email

On the next window tick 'Enable email notifications for alerts'. In the field below put in the FQDN of your mail server. You will then want to select 'Specify an account' and use an account that has access to connect to the mail server. Lastly set an email address the alerts will be sent from.

| Email Notification Component Properties | × |
|---|---|
| General General General Finable email notification for alerts | |
| EQDN or IP Address of the SMTP server to send email alerts: Port: | |
| mailserver.domain 25 👘 | |
| SMTP Server Connection Account None (anonymous access) Use the gomputer account of the site server Specify an account domain'user Senger address for email alerts: noreply@email.address.co.uk | Y |
| Test SMTP Server | |
| OK Cancel App | y |

Email Notification Settings

Once done run a test and if that's successful click 'OK'.

Next go back to 'Subscriptions', right click it and this time select 'Create Subscription'. On the next window you will need to give the subscription a name and set an email address that SCCM will send the alerts to. At the bottom of the window you will see some tick boxes. These are default ones already created as well as any you have created. Find the one created earlier and tick it then when all done click "OK'.

| 1 | New Subscription | × |
|---|--|---|
| Specify a name, one or more en You can separate multiple email | nail addresses and a selected language for this subscription addresses with a semicolon (.). | - |
| Subscription game: | Windows XP Malware Detection | |
| Email address: | destination@email.address.co.uk | ^ |
| | | ~ |
| Email language: | English (United States) | v |
| Selected alerts: | | |
| Filter | | 2 |
| Alert Generate alert when malwa Generate alert when malwa Generate alert when malwa Citical low free space alert | re detected - Malware detection alert for collection: Windo. re detected - Malware detection alert for collection: Servers re detected - Malware detection alert for collection: Windo. for database on site: TWR | |
| Warning low free space ale | et for database on site: TWR | |
| Low Sideloading Activation | soment taked to run on site 1 WPs S | |
| Ste backup task falure ale | rt at site: Towers School Site (TWR) | |
| | | |
| 0 | OK Cance | 4 |

Subscription Settings

And that's all there is to it. If it's all successful you should now start receiving emails with information about any malware detected on your system as well as alerts in Endpoint Monitoring on the SCCM console.

b) Connecting devices and monitoring its health.

- Run the full discovery for the Active directory users, system and groups, wait for few minutes while the discovery cycle is complete.
- Click on Assets and compliance, click on Devices and click on All Systems.

| Selected Object Folder Tools Syste | n Center 2012 Con | figuration Manager (| Connected to IND - | Bangalor | e Headquarter | s Site) |
|--|--------------------|--|--------------------------------|----------|---------------|-----------------|
| Home Collection Close Home Collection Close Manage Affinity Requests Add Selected Items Client Client Collection Collecti | Hents | mbership A Export rces Copy rotection • X Delete | Deploy Prop Deployment Prop | perties | | |
| Assets and Compliance Assets and Compliance | All Systems 6 iten | es • All Systems | | | | |
| 3 Users | Icon Name | Cli | ent Type | Client | Site Code | Client Activity |
| 🖌 🏥 Devices | 🛤 🛛 AD | N | one | No | | |
| all Systems | CLIENT1 | N | one | No | | |
| 🛃 User Collections | CLIENT2 | N | one | No | | |
| Device Collections | SCCM | N | one | No | | |
| 先 User State Migration | 🔝 x64 Unki | nown Computer (N | one | No | IND | |
| Asset Intelligence Software Metering Compliance Settings Endpoint Protection | 🕵 x86 Unk | nown Computer (N | one | No | IND | |
| | | | | | | |

c) Managing users and user groups hierarchy.

- Run the full discovery for the Active directory users, system and groups, wait for few minutes while the discovery cycle is complete.
- Click on All Users and Users Groups

| Selected Object Folder Tools Sys | tem Cente | r 2012 Configuration Manager (Conne | ected to IND - | Bangalore Headquarters Site |
|--|-------------|-------------------------------------|----------------|-----------------------------|
| Home Collection Close | | | | |
| 🕂 🖍 👔 🕹 Ada | l Resources | Copy | | |
| Add Manage Affinity Update Selected Items * Requests Membership | | Export Deploy Pr | operties | |
| Collection | | Deployment Pr | operties | |
| 🗲 🔶 \star 🙉 🛝 + Assets and Compliance + | Overview | ► Users ► All Users and User Grou | ps | |
| Assets and Compliance | < All Use | rs and User Groups 22 items | | |
| 4 🍠 Overview | Search | | | |
| 🔺 👗 Users | Icon | Name | Domain | Resource Type |
| All Users and User Groups | 8 | PRAJWAL\Administrator (Administrat | PRAJWAL | User |
| Devices | 8 | PRAJWAL\Allowed RODC Password | PRAJWAL | User Group |
| 💕 All Systems | | PRAJWAL\Cert Publishers | PRAJWAL | User Group |
| 彭 User Collections | | PRAJWAL\Denied RODC Password R | PRAJWAL | User Group |
| 🥩 Device Collections | 8 | PRAJWAL\DHCP Administrators | PRAJWAL | User Group |
| 🐁 User State Migration | | PRAJWAL\DHCP Users | PRAJWAL | User Group |
| 🕨 🚰 Asset Intelligence | | PRAJWAL\DnsAdmins | PRAJWAL | User Group |
| 🗒 Software Metering | | PRAJWAL\DnsUpdateProxy | PRAJWAL | User Group |
| 🕴 🛄 Compliance Settings | 20 | PRAJWAL\Domain Admins | PRAJWAL | User Group |
| Endpoint Protection | 93 | PRAJWAL\Domain Computers | PRAJWAL | User Group |
| | | PRAJWAL\Domain Controllers | PRAJWAL | User Group |
| | 8 | PRAJWAL\Domain Guests | PRAJWAL | User Group |
| | 93 | PRAJWAL\Domain Users | PRAJWAL | User Group |
| | 90 | PRAJWAL\Enterprise Admins | PRAJWAL | User Group |