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20247C

Configuring and Deploying a Private Cloud

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[1] *IDC*, Value of Certification: Team Certification and Organizational Performance, *November 2006*

Acknowledgements

Module 1

Planning for the Cloud

Contents:

Lesson 2
Benefits for Deploying a Private Cloud

Contents:

Question and Answers

Question: What are some of the key business advantages of adopting a private cloud?

Answer:

- Competitive Advantage

- Scalability

- Reduced Costs

- Enhanced Security and Control

- Improved SLA

- Controlled Resource Usage

- Availability and Performance

Lesson 3
Designing a Private Cloud Infrastructure

Contents:

Question and Answers

Question: What server workloads do you plan to virtualize in your organization? How will you make the decisions about what to virtualize?

> **Answer:** Most organizations begin by virtualizing test servers, because these servers typically do not have the same availability and performance requirements that production servers have. The first servers that organizations typically virtualize in production are those that are not critical, such as servers with applications that users do not use frequently. In many organizations, virtualization has become the default configuration. This means that the organization virtualizes all servers, unless there is a good reason not to virtualize a specific server.

Question: Which design principle would be the most important for your own organization's private cloud design? Why?

> **Answer:** Answers will vary, but most students will probably point out that Compute or Storage are the most important principles. Without sufficient computing power, there is no reason to satisfy the other principles. The same applies to storage. If there is no storage available, why should you consider the Network or Monitoring design principles?

Lesson 5
Overview of System Center 2012 R2 Components

Contents:

Question and Answers

Question: What does Power Optimization in VMM do?

Answer: VMM can optimize hosts by moving virtual machines from underused hosts, and then powering off the host machine.

Lesson 6
Deploying Hyper-V Clustering with VMM

Contents:

Question and Answers

Question: Do you use the failover clustering feature in your organization? If so, where do you experience the challenges when using it?

> **Answer:** The answers will vary depending on the scenario. Most users experience challenges when configuring shared storage such as storage area networks (SANs), or the network configuration.

Demonstration: Adding a Hyper-V Host to Virtual Machine Manager

Demonstration Steps

1. In the VMM console, click the **VMs and Services** workspace, in the navigation pane right-click **All Hosts**, and then click **Add Hyper-V Hosts and Clusters**.

2. In the Add Resource Wizard, on the **Resource location** page, click the Windows Server computers in a trusted Active Directory domain option, and then click Next.

3. On the **Credentials** page, click Manually enter the credentials, in **User name** text box, type Contoso\administrator, in the **Password** text box, type Pa$$w0rd, and then click Next.

4. On the **Discovery scope** page, click Specify an Active Directory query to search for Windows Server computers, and then click Generate an AD query.

5. In the Find Computers window, next to **Computer name**, type ***host***, and then click **OK**.

6. On the **Discovery scope** page, click **Next**.

7. On the **Target resources** page, in the Discovered computers pane, select Lon-host1.contoso.com and Lon-host2.contoso.com, and then click Next.

8. If a **Virtual Machine Manager** window opens, click **OK**.

9. On the **Host settings** page, click **Next**.

10. On the **Summary** page, click **Cancel** then click **Yes** to cancel the **Add Resource Wizard.**

Module Review and Takeaways

Question: What is a private cloud?

Answer: A private cloud is a cloud infrastructure that is operated for only one organization, and exists either on-premises or off-premises. It may be managed by the organization itself, or by a service provider.

Question: What components does System Center 2012 R2 offer for your private cloud?

Answer: System Center 2012 R2 offers App Controller, Service Manager, VMM, Orchestrator, Operations Manager, DPM, and Configuration Manager.

Lab Review Questions and Answers

Lab: Preparing the Private Cloud Infrastructure

Question and Answers

Lab Review

Question: What should you do if a virtual machine displays a status of Incomplete VM Configuration?

> **Answer:** You should start the virtual machine using the Hyper-V Console and then from the VMM console refresh the virtual machine.

Question: What is the quickest way to determine the status of all hosts managed by VMM?

> **Answer:** From the Fabric pane, click All Hosts. Then from the ribbon, in the Show group, click Fabric Resources. The details pane will display the Host Status of all hosts being managed by VMM.

Module 2

Configuring and Deploying the Private Cloud with Microsoft System Center 2012 R2 Virtual Machine Manager

Contents:

Lesson 1
Overview of VMM Architecture and Components

Contents:

Question and Answers

Question: What is the primary purpose of the VMM library?

> **Answer:** The main purpose of the VMM library is to catalog and index various resources that you can use to build new virtual machines.

Lesson 5
Understanding Host Groups

Contents:

Demonstration: Configuring Networking in Virtual Machine Manager

Demonstration Steps

1. On LON-VM1, in the VMM Console, click the **Fabric** pane and then expand **Networking** and then click **Logical Networks**.

2. Right-click **Logical Networks** and then click **Create Logical Network**.

3. In the **Create Logical Network Wizard**, on the **Name** page type **Demo Network** in the **Name** box.

4. Ensure the **One connected network** option is selected and then select both checkboxes underneath and then click **Next**.

5. On the **Network Site** page click **Next**.

6. On the Summary page click **Finish**.

7. Close the **Jobs** window.

Module Review and Takeaways

Question: What is dynamic optimization?

Answer: Dynamic optimization is a feature that migrates virtual machines within a host cluster to improve load balancing among hosts, and to correct any placement constraint violations for virtual machines.

Lab Review Questions and Answers

Lab: Configuring and Deploying the Private Cloud Infrastructure

Question and Answers

Lab Review

Question: Why do you configure host reserves properties?

> **Answer:** Host reserves properties are configured primarily to reserve some resources on the physical host for the operating system on that host. When you configure host reserve values, these resources are not available for virtual machines.

Module 3

Extending and Maintaining Cloud Infrastructure

Contents:

Lesson 2
Deploying Bare-Metal Hyper-V Host Servers

Contents:

Question and Answers

Question: What role must you configure in VMM in order to deploy a bare-metal Hyper-V host?

Answer: You must configure the PXE Server role.

Lesson 3
Configuring the Update Server Role

Contents:

Question and Answers

Question: After configuring the update server role in VMM you can configure the update settings on both the WSUS server and in VMM.

( ) True

( ) False

> **Answer:**
>
> ( ) True
>
> (√) False

Lesson 4
Creating and Using an Update Baseline

Contents:

Question and Answers

Question: What happens to an update baseline assigned to a host when the host is moved to a different host group?

> **Answer:** The same update baseline is applied to the host in the new host group.

Demonstration: Creating Software Update Baselines in VMM

Demonstration Steps

1. On LON-VM1, in the VMM console, click the **Fabric** workspace.

2. In the navigation pane, expand the **Servers** node, expand **Infrastructure** and then click **Update Server.**

3. Right-click **Update Server**, and then click **Add Update Server**. The **Add Windows Server Update Services Server** dialog box opens**.**

4. In the **Add Windows Server Update Services Server** dialog box, in the **Computer name** field, type **LON-VM1**, and then in the **TCP/IP port** field, type **8530.**

5. Click Enter a user name and password.

6. Type Contoso\Administrator in the User name box, type Pa$$w0rd in the Password box.

7. Click **Add**. The **Jobs** window opens.

8. In the Jobs window, select the **Add Update Server** job. On the **Summary** and **Details** tabs, monitor the status of the configuration job.

9. When the job displays as **Completed w/info**, close the Jobs window.

10. With the **Update Server** node selected, verify that **LON-VM1.Contoso.com** displays in the results pane and the **Agent Status** column displays **Responding**.

11. Click the **Library** workspace.

12. In the navigation pane, expand **Update Catalog and Baselines**, and then click **Update Catalog.**

13. In the results pane, verify that various software updates display. These updates have been synchronized from the Windows Server® Update Services (WSUS) server role.

14. In the ribbon, click **Create**, and then click **Baseline**. The **Update Baseline Wizard** starts.

15. In the **Update Baseline Wizard**, on the **General** page, in the **Name** field, type **Demo Baseline**, and then click **Next.**

16. On the **Updates** page, click **Add**.

17. In the **Add Updates to Baseline** dialog box, press and hold the Ctrl key on your keyboard, and then click the following updates:

- **Update for Windows Server 2012 R2 (KB2956575)**

- **Update for Windows Server 2012 R2 (KB2965065)**

18. Click **Add**, and then click **Next**.

19. On the **Assignment Scope** page, select the check boxes for the following items, and then click **Next**:

- Library Servers: **LON-VM1.Contoso.com**

- PXE Servers: **LON-VM1.Contoso.com**

- Update Server: **LON-VM1.Contoso.com**

- VMM Server: **LON-VM1.Contoso.com**

20. On the **Summary** page, click **Finish**.

21. In the Jobs window, verify that **Create new baseline** has completed successfully.

22. Close the **Jobs** window.

23. Click the **Fabric** workspace.

24. In the navigation pane, expand **Servers**, and then click **Library Servers.**

25. In the ribbon, click the **Compliance** button.

26. In the results pane, note the compliance and operational status of **lon-vm1.contoso.com**. **Compliance Status** should display as **Unknown**, and **Operational Status** should display as **Pending Compliance Scan**.

27. Select **lon-vm1.contoso.com**, and then in the ribbon click the Home tab and then click **Scan**.

28. The **Operational Status** column changes to **Scanning**. After a minute or so, **Compliance Status** should report as **Compliant**. This indicates that lon-vm1.contoso.com is compliant with the baseline that you configured in the previous task.

29. Click the **Fabric** workspace.

30. In the navigation pane, expand the **Servers** node, expand **Infrastructure** and then click **Update Server.**

31. In the details pane click **LON-VM1.CONTOSO.COM**, and then from the ribbon click **Remove**.

32. In the Remove Update Server window, click Enter a user name and password.

33. Type **Contoso\Administrator** in the **User name** box, type **Pa$$w0rd** in the **Password** box and then click **OK**.

34. Wait for **LON-VM1.CONTOSO.COM** to disappear from the details pane.

35. Close the **VMM console**.

Module Review and Takeaways

Review Question(s)

Question: What are the physical server and VMM requirements for integrating a PXE Server into the VMM private cloud infrastructure?

Answer: Physical server requirements include support for Hyper-V, support for PXE boot, and support for out of band management. To add the PXE Server role to VMM, you must also install Windows Deployment Services.

Question: What is the difference between managing updates with Configuration Manager and managing updates with VMM?

Answer: Configuration Manager works well with client workstations and servers that are not part of a cluster. For servers that are part of the VMM infrastructure, and for host clusters, VMM is better because it can provide more control for the VMM administrator. VMM also provides an orchestrated update process for host cluster resources.

Lab Review Questions and Answers

Lab: Maintaining Cloud Infrastructure

Question and Answers

Lab Review

Question: In the lab, you added a PXE server to the VMM infrastructure. What additional tasks do you need to complete to perform bare-metal deployments?

> **Answer:** You will need to configure the baseboard management controller (BMC) on the target servers, and create a host profile within VMM.

Question: You need to modify the products that synchronize with Windows Update. Where would you perform this task?

> **Answer:** You would configure this setting from the Update Server Properties window. Note that you do not perform management tasks from the WSUS Administration console.

Module 4

Configuring Application Delivery

Contents:

Lesson 5
Sequencing and Deploying Virtual Applications

Contents:

Question and Answers

Question: Why might you want to back up and restore a deployed application?

Answer: The backup and restore process is beneficial when you need to replace or upgrade a server with a deployed Server App-V package.

Module Review and Takeaways

Review Question(s)

Question: What would happen if the web server (IIS) role was not installed already on the server to which a sequenced application is being deployed to?

> **Answer:** The deployment would fail because the required components were not available.

Real-world Issues and Scenarios

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip

Lab Review Questions and Answers

Lab: Configuring Virtual Application Delivery

Question and Answers

Lab Review

Question: What are web deployment packages used for?

Answer: You use web deployment packages to streamline the deployment of web applications to multiple web servers. Packages can include web content and configuration.

Question: What types of applications can you virtualize using Server App-V?

Answer: There is no exhaustive list of unsuitable applications. However, you cannot use Server App-V to virtualize SharePoint Server, SQL Server, or device drivers.

Module 5

Creating the Private Cloud Building Blocks

Contents:

Lesson 1
Configuring Guest Operating System Profiles

Contents:

Question and Answers

Question: How will you use guest OS profiles in your environment?

> **Answer:** Answers will vary, but most organizations will create profiles based on operating system types, and roles and features that they want to deploy.

Demonstration: Creating a Guest OS Profile

Demonstration Steps

1. On LON-VM1, on the desktop, double-click **Virtual Machine Manager Console**.

2. In the VMM console, click the **Library** workspace, expand **Profiles**, and then click **Guest OS Profiles**.

3. In the ribbon, click **Create**, and then click **Guest OS Profile**.

4. In the **New Guest OS Profile** dialog box, on the **General** page, configure the following settings:

- Name: **Demo Profile**

- Description: **Demo Profile**

5. Click the **Guest OS Profile** page.

6. On the **Guest OS Profile** page, under **General Settings**, click **Identity Information**.

7. In the **Computer name** text box, type **LON-DB#**.

8. Click **Admin Password**, and then click **Specify the password of the local administrator account**. In the **Password** and **Confirm** text boxes, type **Pa$$w0rd**.

9. Click **Operating System**, and then select Windows Server 2012 R2 Datacenter.

10. Under **Networking**, click **Domain/Workgroup**.

11. Click **Domain**, and then in the **Domain** text box, type **Contoso.com**.

12. Under **Domain credentials**, select **Specify credentials to use for joining the domain**.

13. In the **Domain user** text box, type **Contoso\Administrator**. In the **Password** and **Confirm** text boxes, type **Pa$$w0rd**.

14. Click **OK** to close the **New Guest OS Profile** dialog box. The new profile displays in the results pane.

Lesson 2
Configuring Hardware Profiles

Contents:

Question and Answers

Question: When would you typically use a legacy network adapter in a Virtual Machine?

Answer: In PXE boot scenarios where the Operating System is installed over the network.

Lesson 4
Configuring Application Profiles

Contents:

Question and Answers

Question: What application types can be added to an application profile?

Answer: SQL Server DACs

- Server App-V applications

- Web applications

- Scripts

Lesson 8
Configuring User Roles

Contents:

Question and Answers

Question: What functions can be performed by members of an Application Administrator (Self-Service User) User Role?

Answer: This user role profile allows members to create, deploy, and manage their own virtual machines and services within a specified private cloud.

When you create a user role using the Self-Service user role profile, you can also specify the library resources to which you want to allow access. You can also specify a data path to allow users to upload data to a library location.

When you specify the private cloud to which the self-service user will have access, you can also configure quotas on private cloud resources, (such as the number of virtual machines used), and limits to computer resources, such as memory or storage usage.

Module Review and Takeaways

Review Question(s)

Question: What is one of the minimum requirements to deploy the RemoteFX configuration for the video adapter within a hardware profile?

> **Answer:** You need to run the virtual machine on a host computer that contains the Windows Server 2008 SP1 operating system or above.

Lab Review Questions and Answers

Lab: Creating the Private Cloud Building Blocks

Question and Answers

Lab Review

Question: You need to create a guest OS profile that generates a computer name automatically for each virtual machine that you deploy using the profile. How can you do this?

> **Answer:** In the Identity Information section, type an asterisk (*) for the computer name.

Question: You attempt to deploy the Web Server (IIS) server role using a guest OS profile on a Windows Server 2008 server. After the deployment, you notice that the role did not install. What might be wrong?

> **Answer:** You can only specify roles for the Windows Server 2008 R2 operating system and above.

Module 7

Monitoring Cloud Infrastructure

Contents:

Lesson 1
Operations Manager Architecture and Security

Contents:

Question and Answers

Question: What does Operations Manager use to monitor network devices?

Answer: SNMP

Demonstration: Deploying the Operations Manager Agent

Demonstration Steps

1. On LON-OM1 open the Operations console then in the **Administration** workspace, click **Administration**.

2. On the **Administration Overview** page, click **Required: Configure computers and devices to manage**.

3. In the Computer and Device Management Wizard, on the **What would you like to manage** page, click **Windows computers**, and then click **Next**.

4. On the **Auto or Advanced** page, click **Advanced discovery**.

5. In the **Computer and Device Classes** dialog box, select **Servers Only**.

6. Verify that the Management Server is **LON-OM1.Contoso.com**, and then click **Next**.

7. On the **Discovery Method** page, click **Scan Active Directory**.

8. In the **Domain** box, select **Contoso**, and then click **Configure**.

9. In the **Find Computers** window, verify that the **Role** box is set to **Any**, and then click **OK**.

10. On the **Discovery Method** page, click **Next**.

11. On the **Administrator Account** page, click **Other user account,** type Administrator in the User name box, type Pa$$w0rd in the Password box then click **Discover**.

12. On the **Select Objects to Manage** page, select the check boxes for the following servers:

- **LON-DC1.Contoso.com**

13. In the **Management mode** box, select **Agent**, and then click **Next**.

14. On the **Summary** page, read the default agent installation directory. Notice that the Agent Action Account is **Local System**, and then click **Finish**.

15. Wait for agent installation to complete for all four targets, and then click **Close**.

Lesson 2
Operations Manager Installation Considerations

Contents:

Question and Answers

Question: What is the minimum version of Operations Manager that can be upgraded to Operations Manager 2012 R2?

Answer: Operations Manager 2012 SP1.

Lesson 3
Configuring User Roles and Notifications

Contents:

Question and Answers

Question: What is a Command Notification Channel used for?

Answer: The command notification channel allows you to create customized notifications by running a script that generates the notification. You need to create the script.

Lesson 4
Configuring Management Packs

Contents:

Question and Answers

Question: What does the NET Application Performance Monitoring Management Pack template do?

> **Answer:** This template allows you to monitor the server and client side of. .NET Framework applications. Operations Manager automatically discovers applications on monitored computers.

Lesson 5
Configuring Integration with System Center 2012 R2

Contents:

Question and Answers

Question: What does a PRO Tip do?

> **Answer:** PRO tips in the management pack can perform actions in VMM automatically in response to monitored events in Operations Manager.

Module Review and Takeaways

Review Question(s)

Question: Why is it valuable to integrate VMM and DPM with Operations Manager?

> **Answer:** Integrating VMM and DPM with Operations Manager allows you to centralize monitoring of VMM and DPM. When VMM and DPM are not integrated, you must monitor each Virtual Machine Manager server or DPM server separately. In addition, VMM integration provides PRO tips, which you can use to optimize your virtual environment automatically.

Question: Your organization is using Operations Manager to monitor 100 servers with a single management server. However, there is a concern that Operations Manager is not highly available. Can you make the management server highly available?

> **Answer:** In Operations Manager, you do not need to make a specific management server highly available. Instead, multiple management servers are configured as a resource pool. If a management server fails, agents communicating with the failed management server select another management server in the resource pool.

Module 8

Extending and Customizing Monitoring of the Cloud Infrastructure

Contents:

Lesson 1
Configuring System Center Advisor

Contents:

Question and Answers

Question: System Center Advisor can be integrated with Operations Manager

( ) True

( ) False

> **Answer:**
>
> (√) True
>
> ( ) False

Lesson 2
Configuring the SharePoint Server Portal

Contents:

Question and Answers

Question: What does the SLA Widget do?

Answer: The SLA widget is used to display service level objectives that have been created in Operations Manager.

Lesson 3
Monitoring Templates

Contents:

Question and Answers

Question: What function does the Web Recorder provide?

> **Answer:** Web Recorder records a session in the application. While you use Windows Internet Explorer® to perform actions in the web application, the Web Recorder saves those actions. When a watcher monitors the application, it performs the same actions. If necessary, you can edit the details of the recorded steps to fine-tune them.

Demonstration: Creating a Windows Service Monitor

Demonstration Steps

1. On LON-OM1, open the **Operations console**, then click the **Authoring** workspace then click **Management Pack Templates**.

2. In the Tasks pane, click **Add Monitoring Wizard**.

3. In the Add Monitoring Wizard window, on the **Select Monitoring Type** page, click **Windows Service,** and then click **Next**.

4. On the **General** page, enter the following information, and then click **Next**:

- Name: **VMM Service**

- Select destination management pack: **Windows 2012 Overrides**

5. On the **Service Details** page, next to **Service name,** click the ellipsis button.

6. In the Select Windows Service window, in the **Computer name** box, type **LON-VM1**, and then press Enter.

7. In the Select service area, scroll down, click **System Center Virtual Machine Manager**, and then click **OK**.

8. On the **Service Details** page, next to **Targeted group**, click the ellipsis button.

9. In the Group Search window, click **Search**, click **Windows Server 2012 R2 Full Computer Group**, and then click **OK**.

10. On the **Service Details** page, verify that the **Monitor only automatic services** check box is selected, and then click **Next**.

11. On the **Set Performance Data Collection Settings** page, enter the following information, and then click **Next**:

- **Generate an alert if CPU usage exceeds the specified threshold**: selected

- CPU Usage: **50**

- Number of samples: **3**

- Sampling interval: **5 minutes**

12. On the **Summary** page, click **Cancel** and then click **Yes** to cancel the creation of the Monitor.

Lesson 4
Distributed Application Monitoring

Contents:

Question and Answers

Question: What are the three tools you can use to create Distributed Application Diagrams in Operations Manager?

Answer:

- Distributed Application Designer

- Operations Manager 2007 R2 Authoring Console

- Visual Studio Authoring Extensions

Module Review and Takeaways

Review Question(s)

Question: How does using the OLE DB Data Source template differ from monitoring the TCP port for SQL Server?

> **Answer:** The OLE DB Data Source template monitors a specific database running on a SQL Server. It can identify whether a particular database is available, and whether it is responding properly and quickly to requests. When you monitor the TCP port SQL Server, you verify that the server is functioning, but it does not identify if there is a problem with a specific database.

Question: How can Operations Manager help you monitor compliance with service level objectives?

> **Answer:** The combination of service level tracking and service level reporting in Operations Manager allows you to track availability of any monitored component or applications, and report on their availability. If availability falls below the specified valued, then the state of the service level objective changes to a warning or error.

Tools

System Center 2012 Visual Studio Authoring Extensions can be downloaded from the following website: http://go.microsoft.com/fwlink/?LinkID=402019

System Center Operations Manager 2007 R2 Authoring Resource Kit can be downloaded from the following website: http://go.microsoft.com/fwlink/?LinkID=402024

Lab Review Questions and Answers

Lab: Extending and Customizing Monitoring

Question and Answers

Lab Review

Question: Where are the files that you need to configure SharePoint Server integration with Operations Manager located?

Answer: The files for configuring SharePoint integration with Operations Manager are located on the Operations Manager media. You need to copy these files to the SharePoint server for installation.

Question: What is a watcher node?

Answer: A watcher node is a computer with the Operations Manager agent that performs monitoring tasks. For example, a watcher node that is defined for the OLE DB Data Source template is a computer with the Operations Manager agent that connects to a SQL Server database to confirm its availability.

Module 9

Implementing Service Management for the Cloud

Contents:

Lesson 1
Service Manager Architecture Overview

Contents:

Question and Answers

Question: Describe the components of the Service Manager Self-Service Portal

> **Answer:** The Self-Service Portal is a Microsoft SharePoint® website that accompanies a set of Microsoft Silverlight® applications. The Self-Service Portal consists of two elements: a SharePoint Server website, and a web content server. The web content server is a web application that provides a path for data from the Service Manager database server to the Silverlight-based application that is running in the browser.

Lesson 2
Upgrading to System Center 2012 R2 Service Manager

Contents:

Question and Answers

Question: Can you upgrade from Service Manager 2012 RTM directly to Service Manager 2012 R2?

> **Answer:** No, you must first upgrade to Service Manager 2012 SP1 and then apply CU2 before upgrading to Service Manager 2012 R2.

Lesson 3
Understanding Service Manager Work Items

Contents:

Question and Answers

Question: What is the primary goal of Incident Management?

> **Answer:** To restore normal operations as quickly as possible, with the least possible impact to the business or user, and at a cost-effective price.

Lesson 4
Configuring Service Manager Connectors

Contents:

Question and Answers

Question: What does the Operations Manager Configuration Item Connector do?

Answer: The Configuration item connector imports objects that Operations Manager

Demonstration: Configuring the Active Directory Connector

Demonstration Steps

1. On LON-SM1,from the desktop, open the **Service Manager Console**, if a **System Center Service Manager** popup window appears, click **OK**,

2. Click the **Administration** workspace, expand **Administration**, and then click **Connectors**.

3. Right-click **Connectors**, select **Create connector**, and then click **Active Directory connector**.

4. In the Active Directory connector wizard, on the **Before You Begin** page, click **Next**.

5. On the **General** page, in the **Name** text box, type **Demo** and then click **Next.**

6. On the **Domain or organizational unit** page, click **Use the domain: CONTOSO.COM**, and then in the **Credentials** section, click **New**.

7. In the Run As Account window, fill in the text boxes as follows, and then click **OK**:

*   Display name: **Demo account**

*   Account: **Windows Account**

*   User name: **Administrator**

*   Password: **Pa$$w0rd**

*   Domain: **CONTOSO**

8. Click **Test Connection**. Verify that that connection was successful.

9. Click **OK**, and then click **Next**.

10. On the **Select objects** page, click **All computers, printers, users and user groups**, select **Automatically add users of AD Groups imported by this connector**, and then click **Next**.

11. On the **Summary** page, click **Cancel** to cancel the Active Directory connector wizard.

12. In the **Cancel Wizard** window that opens click **Yes**.

Lesson 5
Configuring Service Manager Notifications

Contents:

Question and Answers

Question: What must you do before adding recipients to a Notification Subscription?

> **Answer:** You configure and run the Active Directory connector to import the user objects from Active Directory.

Module Review and Takeaways

Review Question(s)

Question: What kind of certificate do you need for the Self-Service Portal?

Answer: You need to install a trusted web server Secure Sockets Layer (SSL) certificate.

Real-world Issues and Scenarios

Lab Review Questions and Answers

Lab: Implementing Service Management for a Cloud

Question and Answers

Lab Review

Question: Why is it important to create a priority calculation matrix for incidents?

> **Answer:** You create a priority calculation matrix so that Service Manager can automatically calculate incident priority based on values that you select for the Impact and Urgency values.

Question: Which connector requires a connection to the Service Manager data warehouse management server?

> **Answer:** The Operations Manager Configuration item connector requires a connection to the Service Manager data warehouse management server.

Module 10

Configuring High Availability, Disaster Recovery and Protection for a Cloud

Contents:

Lesson 1
Planning for Hyper-V Recovery Manager

Contents:

Question and Answers

Question: What tasks can be performed in VMM when it is integrated with Hyper-V Recovery Manager?

Answer: Replicating virtual machines and connecting then to networks. Assigning IP addresses.

- Enabling security protection for pre-existing VMs.

- Setting default protection levels for VMs via VM Template integration.

- Setting and enabling protection levels when creating a VM via the Wizard.

- Using the VMM console to manage the system replication health.

- Grant and enable specific actions to the Replica VMs.

Lesson 2
Planning DPM Deployment

Contents:

Question and Answers

Question: Name two considerations that should be taken into account before deploying DPM.

Answer:

- What is your budget?
- Which operating systems and applications will DPM protect?
- Where and how long will DPM retain data?
- What is the recovery point objective (RPO) for each application?
- What is the recovery time objective (RTO) for each application?
- How much data will DPM protect for each application?
- How many computers are domain-joined, how many are non-domain-joined, and where are they located?
- Will you perform all recovery operations, or will you delegate this task to others?

Lesson 3
DPM Architecture and Components

Contents:

Question and Answers

Question: What is the purpose of a Protection Group in DPM?

Answer: Protection groups define storage pools, retention settings, and data sources that need protecting. All data sources in the same protection group share storage allocation, replication creation methods, and settings for on-the-wire compression.

Lesson 4
Upgrading DPM

Contents:

Question and Answers

Question: Can you upgrade from DPM 2012 RTM to DPM 2012 R2?

(   ) True

(   ) False

> **Answer:**
>
> (   ) True
>
> (√) False

Lesson 5
Configuring DPM for the Private Cloud

Contents:

Demonstration: Deploying DPM Protection Agents

Demonstration Steps

1. On LON-DM1, Open the System Center 2012 R2 DPM Administrator Console, then click the **Management** workspace.

2. In the navigation pane, click **Agents**, and then on the ribbon, click **Install**.

3. In the Protection Agent Installation Wizard, on the **Select agent deployment method** page, click **Install agents** and then click **Next**.

4. On the **Select computers** page, select **LON-DC1**, click **Add** and then click **Next**.

5. On the **Enter credentials** page, fill in the following information, and then click **Next**:

- User name: **Administrator**

- Password: **Pa$$w0rd**

- Domain: **Contoso.com**

6. On the **Choose restart method** page, select **No. I will restart the selected computers later**, and then click **Next**.

7. On the **Summary** page, click **Install**.

8. After the installation results display **Success**, click **Close**.

Lesson 6
Configuring Application Protection for a Cloud

Contents:

Question and Answers

Question: Can a protection group protect data for more than one computer?

Answer: Yes.

Lesson 7
Restoring Applications to the Cloud

Contents:

Question and Answers

Question: When performing a virtual machine recovery whet recovery options are available?

> **Answer:**
>
> - Recover data to the original instance
>
> - Recover data as a virtual machine to any host
>
> - Copy to a network folder

Module Review and Takeaways

Review Question(s)

Question: What is a storage pool in DPM?

> **Answer:** A storage pool is a collection of disks that are configured for DPM to use as storage for protection data.

Real-world Issues and Scenarios

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
.	

Lab Review Questions and Answers

Lab: Protecting the Private Cloud Infrastructure

Question and Answers

Lab Review

Question: Are you required to create two separate protection groups to protect both the Hyper-V and SQL Server computers?

> **Answer:** No. You can create one protection group to protect both Hyper-V and SQL Server computers. However, separating the types of applications into separate protection groups allows you to configure different schedules and protection settings.

Question: What is an RPO?

> **Answer:** An RPO is the maximum amount of data that can be lost during a failure that requires a restore.

Module 11

Automating and Standardizing a Cloud

Contents:

Lesson 1
Orchestrator Architecture and Components Overview

Contents:

Question and Answers

Question: What function does the Runbook Server provide in Orchestrator?

Answer: The runbook server is a computer that runs an instance of a runbook. Runbook servers communicate with the orchestration database. You can configure multiple runbook servers to provide additional resources or for redundancy.

Lesson 2
Deploying and Configuring Core Components

Contents:

Question and Answers

Question: What three actions must be performed before you can use an Integration Pack in Orchestrator?

> **Answer:** You must register and then deploy the Integration Pack. Then you must configure the appropriate connection in the Runbook Designer.

Lesson 3
Managing Runbooks

Contents:

Question and Answers

Question: What can the File Management Activities do in Orchestrator?

> **Answer:** The activities within the File Management activity group include basic file management tasks. You can copy, delete, move, and rename files and folders. You can also compress and decompress files, print files, and monitor file changes. You can use these activities to create a runbook to manage file server content.

Demonstration: Deploying a secondary Runbook Server in Orchestrator

Demonstration Steps

1. On LON-OR1, from the desktop, double-click **Deployment Manager**.

2. In the left pane, expand the **Runbook Servers** node.

3. Right-click **Runbook Servers**, and then click **Deploy new Runbook Server**. The Runbook Server Deployment Wizard starts.

4. On the **Welcome** to the Runbook Server Deployment Wizard page, click **Next**.

5. On the **Service Information** page, enter the following information, and then Click **Next**:

- Computer: **LON-AP1**

- Account Information – User name: **Contoso\Administrator**

- Account Information- Password: **Pa$$w0rd**

6. On the Integration Pack or Hotfix Deployment page, click **Next**.

7. On the Completing the Runbook Server Deployment Wizard page, click **Finish**.

8. Wait for deployment to complete, this can take up to 15 minutes.

Lesson 4
Configuring Integration Packs

Contents:

Question and Answers

Question: Name three tasks that can be automated in Virtual Machine Manage by using Orchestrator and the VMM Integration Pack?

Answer:

- Restart virtual machines.

- Manage the self-service virtual machine library.

- Create virtual hard disks (VHDs).

- Create new virtual machines:

- From virtual machine templates.

- From VHDs.

- Based off other virtual machines.

- By modifying existing virtual machines.

- Start and shut down virtual machines in batch mode.

- Move virtual machines to a new host.

- Create and restore virtual machine checkpoints.

Module Review and Takeaways

Review Question(s)

Question: When a specific activity is not available, what might you use to obtain similar functionality?

Answer: If there is not an activity available for a specific task, you may use a Windows PowerShell® script to quickly accomplish similar tasks.

Real-world Issues and Scenarios

Lab Review Questions and Answers

Lab: Automating a Private Cloud

Question and Answers

Lab Review

Question: Why should you use folders for variables and runbooks?

> **Answer:** Using folders helps organize the runbooks and global settings within Orchestrator to make it easier for the administrator. You can also use folders to apply permissions.

Question: What is a runbook?

> **Answer:** A runbook is a set of activities that define an automated process.

Module 12

Configuring a Self-Service and Multi-Tenant Private Cloud

Contents:

Lesson 1
Implementing the Cloud Services Process Pack

Contents:

Question and Answers

Question: What connections in Service Manager must be configured for the Cloud Services Process Pack?

Answer:

- Operations Manager Configuration Items Connector

- Virtual Machine Manager Connector

- Orchestrator Connector

Lesson 2
Configuring the Windows Azure Pack

Contents:

Question and Answers

Question: What are the core components in Windows Azure Pack?

Answer:

- *End User Portal*. A portal built to look and feel just like the Windows Azure environment, this is a customizable self-service environment for users to access and manage resources offered to them in their clouds. Although the portal is multi-tenant aware, the administrator configures offerings for each tenant.

- *Management Portal* – A second portal offered specifically for cloud administrators to configure and manage the offerings and services which can then be offered to the tenants, through the End User Portal.

- *Management API* – This is a "behind the scenes" web service that the management portal connects to and executes all its work against. This API is also usable by third parties through the ODATA REST standards permitting custom portals and management interfaces to interface with WAP.

- Service Management API database - The core installation of the Windows Azure Pack Service Management API uses a SQL Server to store its configuration data.

Module Review and Takeaways

Review Question(s)

Question: What is a Tenant in the Cloud Services Process Pack terminology?

> **Answer:** This is the organization that uses the private cloud resources. Tenants are defined based on how you want to track and control the utilization of resources. You may choose to have tenants be the equivalent to specific departments or specific projects.

Tools

You can download the latest version of the Cloud Services Process Pack from the **System Center 2012 SP1 – Service Manager Component Add-ons and Extensions** website here:

http://go.microsoft.com/fwlink/?LinkID=402023

You can download Windows Azure Pack by using **Microsoft Web Platform Installer 5.0** which can be downloaded from here: http://go.microsoft.com/fwlink/?LinkID=402026

Lab Review Questions and Answers

Lab: Configuring the Cloud Services Process Pack

Question and Answers

Lab Review

Question: What is the difference between a request offering and a service offering?

> **Answer:** A request offering is a catalog item that describes a service or assistance that is available to users. Service offerings are categories that organize the display of request offerings in the service catalog.

Question: Which System Center 2012 R2 products must you implement in your environment before implementing the Cloud Services Process Pack?

> **Answer:** To implement the Cloud Services Process Pack, you must first have implemented Service Manager, Orchestrator, Operations Manager, and VMM in your environment.