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# 10750A

**Monitoring and Operating a Private Cloud  
with System Center 2012**

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Product Number: 10750A

Part Number (if applicable):

Released: 07/2012

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# Module 1

## Introduction to the Private Cloud

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## Lesson 1

# Overview of the Cloud Computing Model

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# Questions and Answers

## Public vs. Private Clouds

### Considerations When Moving to a Cloud-Based Model

When moving to a cloud computing model, regardless of the type of cloud that you choose to adopt, you need to consider the following factors:

1. *Internet connection.* When moving your applications to a cloud computing model, your Internet connection can become a single point of failure when using your line-of-business (LOB) applications. Whether moving to a public or private cloud, you need to ensure that the connectivity between your computers on premise and the applications in the cloud are always available. Network latency is also a major factor. If the cloud is spread across multiple sites and site links and over wide areas, this can have a detrimental effect on the performance and availability of your applications.
2. *Public cloud vendor.* If you choose to adopt a public cloud, there are a number of additional factors to consider, such as:
  - What virtualization technologies does the public cloud vendor offer?
  - Are the technologies compatible with your applications?
  - Is the vendor a reputable company that can cope with your expanding business requirements and geographical locations?
3. *Data protection and recovery.* Although you will have methods already in place to protect and recover your mission-critical data, you need to consider the following questions when moving to a cloud computing model:
  4. Are the current protection and recovery methods compatible with the virtualization technologies that are used in the cloud?
  5. Is the data being stored securely?
  6. Do you need a local backup of your data in the event of an Internet connection failure? In this case, how is the data transferred back to your premise and how is the data restored in the event of a catastrophic failure?
7. *Performance and availability.* Performance and availability of your applications is a key factor to consider when adopting any cloud model. With a public cloud, you need to be assured that the service provider can meet the performance and availability requirements of your applications. You need to consider the Service Level Agreements (SLAs) that the service provider includes with their service. When adopting a private cloud, consider the following questions:
  - Are the virtualization technologies that you plan to adopt compatible with your applications?
  - What guarantees can you make to your organization that the mission-critical applications will always be available?
  - What tools will you have in place to monitor application performance and how will they alert you to the occurrence of when potential issues are about to occur?

8. *Disaster recovery.* Ask yourself the following questions:

- What is your current disaster recovery model?
- Do you have mirrored sites? How is data synchronized between sites?
- How does disaster recovery affect the cloud model that you choose?

**Question:** What are the benefits of moving to a private cloud over a public cloud?

**Answer:** With a private cloud, you have more control over the management, configuration, and customization of the infrastructure. You also have the decision on the technologies, such as Windows Server® 2008 and Microsoft Hyper-V, that you want to adopt in the cloud.

**Question:** When you move to a private cloud, what other considerations might you have in your organization?

**Answer:** Answers will vary, but can include the security and sensitivity of the applications that are being hosted in the cloud. You might also have particular regulatory requirements in data storage.

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## Additional Reading

### Public vs. Private Clouds

- [Private Cloud — A Technical Perspective](#)

### Cloud Service Models

- [Private Cloud — A Technical Perspective](#)

### Methods to Implement the Private Cloud

- [Private Cloud — A Technical Perspective](#)

### System Center 2012 and the Private Cloud

- [Microsoft Private Cloud](#)
- [Microsoft System Center 2012 | System Center Next Version](#)

## Lesson 2

# Requirements for the Private Cloud

### **Contents:**

Questions and Answers

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# Questions and Answers

## Key Business Requirements

**Question:** What are some of the questions that management asks when moving to the cloud?

**Answer:** Some of the questions that management asks when moving to the cloud are:

- How much is it going to cost and will I save money?
- Is it going to improve productivity?
- How safe and secure is the private cloud model?
- What is the availability and performance of the private cloud?
- What are the service level agreements (SLAs)?
- Does the provider comply with any regulatory requirements?

**Question:** What other business requirements can you think of that would affect your decision in moving to a cloud-based infrastructure?

**Answer:** Answers will vary, but can include compliancy of data retention. That is, you might have a requirement to keep data for 10 years. You need to ask if the cloud can meet this requirement.

## Service Identification and Onboarding

**Question:** You have an LOB application that you administer for Contoso, Ltd. It has been developed in-house, and is a .NET application that uses the following technologies:

- Windows Server 2008 R2
- SQL Server 2008 R2
- Internet Information Services (IIS) 7.5

You are required to identify if the application is suitable for the private cloud. What qualifying questions should you ask the application developer to determine if it is suitable to move to the private cloud?

**Answer:** Answers will vary. One possible question is if any error checking is available in the application that can be used to monitor it.

## Lesson 3

# Operating a Private Cloud Infrastructure with System Center

### Contents:

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## Additional Reading

### Managing Public and Private Clouds with App Controller

- [Cloud and Datacenter Management](#)

### Service Management with Service Manager

- [Cloud and Datacenter Management](#)

### Automating Data Center Processes with Orchestrator

- [Orchestrator Capabilities](#)
- [Cloud and Datacenter Management](#)

## Lesson 5

# Integrating System Center Components

### **Contents:**

Question and Answer

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## Question and Answer

### Verifying the Health and Performance of the System Center Components

**Question:** You need to view the health state and alerts of the storage pool in VMM. Where do you look for this health state in the Operations Console?

**Answer:** You should open the Storage Pool Health view under Managed Resources.

## Lesson 6

# Verifying the Compliance of the Private Cloud Infrastructure

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## Additional Reading

### Configuring Software Update Compliance

- [Managing Fabric Updates in VMM](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** Provide two business requirements in moving to a private cloud.

**Answer:** Two common business requirements when moving to a private cloud are scalability and reduced costs.

**Question:** Name three key private cloud health and performance indicators.

**Answer:** The three key private cloud health and performance indicators are performance, time, and quality.

**Question:** List the System Center components that are used in the private cloud.

**Answer:** System Center include the following components: App Controller, Service Manager, VMM, Orchestrator, Operations Manager, and DPM.

**Question:** Explain how System Center components are integrated and list the benefits of integration.

**Answer:** System Center integrates the various components by using:

- Operations Manager Monitoring Management Packs
- Orchestrator Integration Packs
- System Center Cloud Services Process Pack
- Connectors

Integration provides the monitoring of the System Center environment and automation of several data center–related tasks that are involved with managing and maintaining the private cloud. This includes provisioning virtual machines and automatically creating incidents in Service Manager by using alerts within Operations Manager. Also, many of the tasks that you perform within individual consoles can be performed within the Operations Console.

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# Lab Review Questions and Answers

## Lab: Verifying the Private Cloud Infrastructure

**Question:** When checking the health of Orchestrator, what did you notice?

**Answer:** The Orchestrator database is shown with a green tick that denotes it is in a healthy state. When testing the connections in the Runbook Designer, they successfully connected.

**Question:** When checking the health of Operations Manager, what was displayed in the Distributed Application Diagram?

**Answer:** In the Distributed Application Diagram, various components that Operations Manager relies on including the database and management servers' resource pools are displayed. All these components are in a healthy state indicating that Operations Manager is running in a healthy state.

**Question:** When creating a Software Update Baseline in VMM, what servers can be updated with the baseline?

**Answer:** You can apply updates to host groups or individual hosts, library servers, Preboot Execution Environment (PXE) servers, WSUS server, and the VMM management server.

**Question:** After applying updates, does VMM automatically restart the servers?

**Answer:** You can configure to automatically restart the servers or you can ensure a manual restart of the servers by selecting the Do not restart the servers after remediation check box during remediation.

# Module 2

## Configuring and Optimizing Business Unit Clouds

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## Lesson 1

# Overview of System Center 2012 - Virtual Machine Manager

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## Question and Answer

### Virtual Machine Manager Security

**Question:** Describe the difference between an Administrator and a Delegated Administrator.

**Answer:** Members of Delegated Administrator User roles can perform all administrative tasks within their assigned host groups, clouds, and library servers, except adding XenServer and adding WSUS servers.

## Additional Reading

### Introduction to Virtual Machine Manager

- [What's New in System Center 2012 - Virtual Machine Manager](#)

### Key Features of Virtual Machine Manager

- [Microsoft Server and Cloud Platform](#)

## Lesson 2

# Managing the Virtual Environment with Virtual Machine Manager

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# Questions and Answers

## Fabric Resources in Virtual Machine Manager

**Question:** Name the types of storage arrays that are supported by VMM.

**Answer:** The types of storage arrays that VMM supports are: EMC Symmetrix, EMC CLARiiON CX, HP StorageWorks Enterprise Virtual Array (EVA) and NetApp FAS.

## Virtual Machines

**Question:** What does VMM use the CPU Priority and Memory Weight options for when you create a virtual machine?

**Answer:** When memory or CPU utilization of the host is high VMM automatically assigns CPU resources and memory to virtual machines with a higher priority before virtual machines with a lower priority.

## Overview of Jobs

**Question:** What are the three places in VMM where you can view jobs?

**Answer:** The three places in VMM that jobs can be viewed are: Jobs view, Jobs Window, and Recent Jobs.

## Overview of the Settings Navigation Pane

**Question:** What does the **Automatic creation of logical networks** setting do?

**Answer:** The **Automatic creation of logical networks** setting enables the automatic creation of a logical network based on the logical network matching selection. This only occurs if the physical network adapter on the host does not have a logical network associated with it.

**Question:** What does the **Automatic creation of virtual networks** setting do?

**Answer:** The **Automatic creation of virtual networks** setting enables the creation of an external virtual network when a job connects a Virtual Machine to a logical network that is associated with a physical network adapter. This only occurs if the host has a physical network adapter with an associated logical network but no virtual networks attached.

## Additional Reading

### Fabric Resources in Virtual Machine Manager

- [Preparing the Fabric in VMM](#)
- [Configuring Storage Overview](#)
- [Configuring the Library Overview](#)

### Virtual Machines

- [Technical Documentation Download for System Center 2012 – Virtual Machine Manager](#)

### Overview of the Settings Navigation Pane

- [Technical Documentation Download for System Center 2012 – Virtual Machine Manager](#)

## Lesson 3

# Creating Business Unit Clouds

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## Questions and Answers

### What Is a Business Unit Cloud?

**Question:** What is a business unit cloud, and what are the advantages of using one?

**Answer:** A Business Unit Cloud provides cloud functionality to a specific Business Unit within the organization. Business Units Clouds provide unique infrastructure and applications to each Business Unit and control who has access to the Cloud and what functions they can perform within it.

## Additional Reading

### Configuring Cloud Resources

- [How to Create VIP Templates for Hardware Load Balancers](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** Name the components of the VMM architecture.

**Answer:** The components of the VMM architecture include the following:

- VMM Management Server
- VMM Database
- VMM Console
- VMM Library
- VMM Command Shell
- VMM Self-Service Portal

**Question:** List five key features of VMM.

**Answer:** Five key features of VMM are:

- Support for Hyper-V, VMware ESX and Citrix XenServer virtual machine hosts
- PRO
- Live migration
- Centralized Resource Management
- Delegated administration

**Question:** What destinations are available when you deploy a virtual machine?

**Answer:** Destinations available when deploying a virtual machine are:

- A Private Cloud
- A host
- The Library

**Question:** Explain the function of Run As accounts in VMM and provide an example of when they might be used.

**Answer:** A Run As account is a container for a set of stored credentials that can be used for processes in VMM where a user would enter a username and password, for example, when a user is configuring the connection between VMM and Operations Manager.

**Question:** List the different user roles that are available in VMM and their functions.

**Answer:** The user roles available in VMM and their functions are:

- Administrator. Members of the Administrator user role can perform all administrative actions on all objects that VMM manages.
- Delegated Administrator. Members of the Delegated Administrator user role can perform all administrative tasks within their assigned host groups, clouds, and library servers, except for adding XenServer and adding WSUS servers.
- Self-Service User. Members of the Self-Service User roles create, deploy, and manage their own virtual machines and services by using the VMM console or a Web portal.
- Read-Only Administrator. Read-Only Administrators can view status, job status, and properties of objects within their assigned host groups, clouds, and library servers. The user role also specifies the Run As accounts that the Read-Only Administrator can view.

# Lab Review Questions and Answers

## Lab: Configuring and Optimizing Business Unit Clouds

**Question:** When you create a Software Update Baseline in VMM, what servers can be updated with the baseline?

**Answer:** You can apply updates to host groups or individual hosts, library servers, Preboot Execution Environment (PXE) servers, WSUS server, and the VMM management server.

**Question:** After you have applied updates, does VMM automatically restart the servers?

**Answer:** You can configure to automatically restart the servers or you can ensure a manual restart of the servers by selecting the **Do not restart the servers after remediation** check box during remediation.

# Module 3

## Deploying Cloud Services

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## Lesson 1

# Overview of Service Templates

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## Question and Answer

### Components of a Service Template

**Question:** When you create a service template that includes a SQL Server, what requirement should be met?

**Answer:** You need a Sysprep version of SQL 2008 R2 to deploy a SQL Server as part of a service template.

## Additional Reading

### Preparing to Create a Service Template

- [Server Application Virtualization Overview](#)

### Components of a Service Template

- [Creating Service Templates in VMM](#)
- [How to Configure a Hardware Load Balancer for a Service Tier](#)
- [How to Configure NLB for a Service Tier](#)

## Lesson 2

# VMM Profiles

### **Contents:**

Additional Reading

6

## Additional Reading

### Requirements for Creating a SQL Server Profile

- [Preparing the Fabric in VMM](#)
- [What Is SysPrep?](#)
- [Considerations for Installing SQL Server Using SysPrep](#)

### Configuration Options in the SQL Server Profile

- [Creating Profiles in VMM](#)
- [How to Create a SQL Server Profile](#)

### Overview of Application Profiles

- [How to Create an Application Profile](#)

### Configuration Options in the Application Profiles

- [How to Create an Application Profile](#)

## Lesson 3

# Web Deploy Packages

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## Question and Answer

### Installing Web Deploy and Creating a Web Deploy Package

**Question:** After you have installed Microsoft Web Deploy, how can you create a Web Deploy package?

**Answer:** In IIS Manager, when you select the IIS Server in the Task pane, a new section called Deploy will be available. In the Deploy section, there are two options: Export Server Package and Import Server or Site Package. When selected, these actions are targeted at the server level and so include all websites that the server hosts.

## Additional Reading

### What Is Microsoft Web Deploy?

- [Web Deployment Tool Installation](#)

### Adding a Web Deploy Package to an Application Profile

- [How to Create an Application Profile](#)

## Lesson 4

# Overview of Server App-V

### Contents:

Additional Reading

11

## Additional Reading

### What Is Server App-V?

- [Microsoft Server Application Virtualization](#)
- [Server Application Virtualization Overview](#)

### Sequencing an Application

- [How to Sequence a New Server Application](#)

## Lesson 5

# Data-Tier Application Packages

### Contents:

Additional Reading

13

## Additional Reading

### What Is a Data-Tier Application Package?

- [Creating a DAC in Visual Studio](#)
- [Understanding Data-tier Applications](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** Name three components that you should configure in VMM before creating a service template.

**Answer:** The three components include networking components, private clouds, and virtual machine templates.

**Question:** What is the use of an answer file in a guest operating system profile?

**Answer:** For Windows XP, Windows Server 2000, or Windows Server 2003, you can use a Sysprep.inf file to specify additional settings for the operating system. For Windows Vista or Windows Server 2008, you can use an unattend.xml file. You must store the answer file in the VMM library share and select it by browsing to the relevant location and attaching it to the guest operating system profile.

**Question:** What is the use of SQL Server 2008 R2 Sysprep?

**Answer:** You can use SQL Server 2008 R2 Sysprep to install the SQL Server files and have the configuration applied along with the VMM SQL Server profile.

**Question:** Name the three types of applications that you can add to an application profile.

**Answer:** The three types of applications that you can add to an application profile are SQL Server DACs, virtual applications, and web applications.

**Question:** What is a DAC?

**Answer:** A DAC is an entity that contains all of the database and instance objects that are used by an application. It provides a single unit for authoring, managing, and deploying the data-tier objects instead of having to manage them separately.

## Lab Review Questions and Answers

### Lab: Importing and Deploying the StockTrader Application

**Question:** Where should you place the SQL Server DAC package before using it in an application profile?

**Answer:** You should store the SQL Server DAC package in the VMM Library.

**Question:** When you make changes to a service template in the Service Template Designer, what option can you use to confirm that the changes are valid?

**Answer:** Choose the **Save and Validate** option in the Service Template Designer.

**Question:** When you deploy a service by using App Controller, what view can you use to check the status of the deployment?

**Answer:** You should use the Jobs view to view the deployment job and status.

# Module 4

## Monitoring Private Cloud Services

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## Lesson 1

# Overview of System Center 2012 - Operations Manager

### Contents:

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## Question and Answer

### Operations Manager Architecture

**Question:** Name the three elements of a management pack.

**Answer:** The three elements of a management pack are Rules, Monitors and Tasks.

## Additional Reading

### Key Features of Operations Manager

- [Cloud and Datacenter Management](#)
- [Capabilities Overview](#)

### Operations Manager Architecture

- [Supported Configurations for System Center 2012 - Operations Manager](#)
- [Operations Manager Search Result on the Microsoft website](#)

### Securing Access to Operations Manager with User Roles

- [Implementing User Roles](#)

## Lesson 2

# Agent Deployment in Operations Manager

### Contents:

Additional Reading

6

## Additional Reading

### Installing Agents Manually

- [Supported Configurations for System Center 2012 - Operations Manager](#)

### Using AD DS to Configure Agents

- [Integrating Active Directory and Operations Manager](#)
- [Install Agent Using the Command Line](#)

## Lesson 3

# Configuring Custom Monitoring

### Contents:

Additional Reading

8

## Additional Reading

### Using Management Pack Templates

- [Management Pack Templates](#)
- [Authoring Tools](#)

## Lesson 4

# Monitoring the Network Infrastructure

### Contents:

Additional Reading

10

## Additional Reading

### Operations Manager Network Device Support and Extended Monitoring Capabilities

- [Network Devices Supported for Discovery by Operations Manager](#)
- [System Center Operations Manager 2012: Network Devices with Extended Monitoring Capability](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** What privileges does the Operator profile provide?

**Answer:** This profile provides users access to alerts, views and tasks. Depending on the scope (covered after this section), users can also perform actions such as assigning alerts to operators.

**Question:** What does the Service Level Tracking feature of Operations Manager provide?

**Answer:** Operations Manager enables you to create service level tracking objects that can include your line-of-business applications and the underlying infrastructure. You can then apply a service level objective goal used to report availability of the application. Reports and dashboards within Operations Manager can incorporate this information, which provides an aid in providing service level agreement data.

**Question:** What are Distributed Applications?

**Answer:** A distributed application is an application that contains multiple components that span multiple devices.

**Question:** When would you use the MOMAgent.msi file?

**Answer:** You use the MOMAgent.msi file when you manually install the Operations Manager agent. This may be required due to firewall restrictions, for example, when traversing trust boundaries. The MOMAgent.msi file can also be used with the command-line which enables scripting of the agent installation.

# Lab Review Questions and Answers

## Lab: Monitoring Private Cloud Services

**Question:** You need to install an agent in a perimeter network that is protected by firewall. Which agent installation method should you use?

**Answer:** You should use the manual installation method by using the MOMAgent.msi package.

**Question:** You need to monitor a website and simulate users who are logging in to the site and performing typical actions within the web application. What should you do?

**Answer:** Create a web transaction monitor by using the Web Application Transaction Monitoring template.

**Question:** After you have manually installed an agent, it does not appear in the Operations Console Pending Management view. What should you do?

**Answer:** First, ensure that the **Review new manual agent installations in pending management view** option is enabled in the security settings in the Operations Console. Then, restart the **System Center Management** service on the computer where the agent was manually installed.

# Module 5

## Configuring Application Performance Monitoring

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## Lesson 1

# Application Performance Monitoring

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# Question and Answer

## Deploying the APM Template

**Question:** How will you determine if you need to restart IIS after deploying an APM template?

**Answer:** The Operations Manager management pack provides the IIS Restart/Recycle Required dashboard to determine if a restart of IIS is required. A warning alert in the dashboard indicates a requirement to use the included IIS restart or application pool recycle tasks.

## Additional Reading

### APM Application Types

- [.NET Application Performance Monitoring Template](#)

### Deploying the APM Template

- [How to Start Monitoring a New Application](#)

### Performance and Availability Checking Capabilities of APM

- [.NET Application Performance Monitoring Template](#)

### Basic APM Configuration

- [How to Configure Monitoring for .NET Applications](#)

## Lesson 2

# Advanced Monitoring in Application Performance Monitoring

### Contents:

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## Additional Reading

### Advanced Server-Side Monitoring

- [How to Add, Enable, and Disable Namespaces](#)
- [How to Add, Edit, and Remove Exception Tracking](#)
- [Using Exception Handlers to Define Critical Exceptions](#)
- [.NET Application Performance Monitoring Template](#)

### Advanced Client-Side Monitoring

- [How to Configure Monitoring for .NET Applications](#)
- [Client-Side Monitoring with Targeted Groups and Load Balancers](#)
- [.NET Application Performance Monitoring Template](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** What are the three views that are provided within the Application Monitoring management pack for each APM-monitored .NET Web Application?

**Answer:** The three views are server-side views, client-side views, and transaction views.

**Question:** A custom .NET exception that is raised by an application is not being reported by APM. Which area of server-side advanced configuration would you alter to include the custom exception handler?

**Answer:** To include the custom exception handler, provide the Exception Handler name, within the Exception Event Monitoring area, in the format `Namespace.Classname.MethodName`.

**Question:** Why are the load balancer settings included in the client-side monitoring configuration?

**Answer:** Load balancers can hide the user's IP address, and therefore, stop IP subnet exclusion from working properly. The load balancer settings include the client-side IP addresses for collection so that exception exclusion can effectively remove the exception data where stipulated.

**Question:** In addition to the Application Monitoring management pack, what other tools help with in-depth understanding of exception events that are raised within APM?

**Answer:** Application Advisor and Application Diagnostics help with in-depth understanding of exception events that are raised within APM.

## Lab Review Questions and Answers

### Lab: Configuring Application Performance Monitoring

**Question:** Which Application Monitoring management pack view will you use to check compatibility of a web application before including it in client-side monitoring?

**Answer:** The ASP.NET Web Application Inventory view provides a task to initiate a Check Client-Side Monitoring Compatibility task against the chosen web application.

**Question:** When would you use the **Configure client IP address filter** feature in APM?

**Answer:** You would use the **Configure client IP address filter** feature to define any IP subnets that should not have client-side monitoring enabled.

# Module 6

## Operating and Extending Service Management in the Private Cloud

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## Lesson 1

# Overview of Service Manager

### Contents:

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## Additional Reading

### Key Features of Service Manager

- [Service Manager 2012](#)

### Service Manager Architecture

- [System Center 2012 - Service Manager Parts](#)

## Lesson 2

# Configuring Security and User Roles

### Contents:

Additional Reading

5

## Additional Reading

### Configuring User Roles

- [Appendix A - List of User Role Profiles in System Center 2012 - Service Manager](#)

### Configuring Run As Accounts

- [Managing Run As Accounts in System Center 2012 - Service Manager](#)

### Configuring Windows PowerShell Security

- [Set-ExecutionPolicy](#)
- [List of the Service Manager Cmdlets](#)

## Lesson 3

# Configuring Work Items

### Contents:

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## Additional Reading

### Configuring Change Requests

- [Managing Changes and Activities in System Center 2012 - Service Manager](#)

### Configuring Incidents

- [Managing Changes and Activities in System Center 2012 - Service Manager](#)

### Configuring Problems

- [Managing Incidents and Problems in System Center 2012 - Service Manager](#)

### Configuring Release Records

- [Managing Release Records in System Center 2012 - Service Manager](#)
- [Sample Scenario: Managing Release Records](#)

## Lesson 4

# Configuring Incident Queues

### Contents:

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## Additional Reading

### What Is an Incident Queue?

- [Using Groups, Queues, and Lists in System Center 2012 - Service Manager](#)

## Lesson 5

# Configuring Service Offerings

### Contents:

Additional Reading

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## Additional Reading

### Request Offerings

- [Request Offering Wizard Overview](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** When you create a change request, what do you use the Security Release template for?

**Answer:** The Security Release template is used to manage the security update lifecycle in an IT environment.

**Question:** What is a queue used for in Service Manager?

**Answer:** Queues in Service Manager provide a method of grouping work items based on criteria of a specific work item type. You can create queues to group work items; a queue can only contain one type of work item.

**Question:** You have created a request offering but it is not being displayed on the Self-Service portal. What should you check?

**Answer:** You should confirm that the status of the request offering is set to Published by editing the properties of the request offering in the All Request Offerings view.

## Lab Review Questions and Answers

### Lab: Planning and Completing Configuration Manager 2012 Client Deployment

**Question:** What does the Operations Manager Alert connector in Service Manager facilitate?

**Answer:** It enables automatic Incident creation in Service Manager based on alerts from Operations Manager.

**Question:** Why are templates useful when creating change requests?

**Answer:** Templates populate change requests with typical activities relating to the template chosen.

**Question:** How do you activate a release record?

**Answer:** You need to select the release record and use the Run task from the Tasks pane.

# Module 7

## **Automating Incident Creation, Remediation, and Change Requests**

### **Contents:**

Lesson 1: Overview of System Center Orchestrator 2012	2
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## Lesson 1

# Overview of System Center Orchestrator 2012

### Contents:

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# Question and Answer

## Overview of Orchestrator Components

**Question:** If the management server becomes unavailable, which Orchestrator component would fail to function?

**Answer:** The Runbook Designer would fail to function. The Runbook Designer requires the management server to be available to function.

## Additional Reading

### Overview of Orchestrator Components

- [Orchestrator Architecture](#)

### Overview of Orchestrator Integration Packs

- [Standard Activities](#)
- [Integration Packs for System Center 2012 - Orchestrator](#)

## Lesson 2

# Integrating Orchestrator with Operations Manager and Service Manager

### Contents:

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## Question and Answer

### Workflow Controls in Orchestrator

**Question:** When a standard activity and a monitoring activity are used as a Runbook starting point, what is the key difference between these activities during workflow processing?

**Answer:** Use of a standard activity causes the Runbook to run once to completion; however, a monitoring activity causes the Runbook to continue running while it looks for a new trigger to run.

## Additional Reading

### Integrating Orchestrator with Operations Manager

- [System Center Integration Pack for System Center 2012 Operations Manager](#)

### Integrating Orchestrator with Service Manager

- [System Center Service Manager Activities](#)

### Activity Collections in Orchestrator

- [System Center Orchestrator 2012 SDK](#)

### Configuring Runbooks in Orchestrator

- [Using Runbooks in System Center 2012 – Orchestrator](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** Name the core components of Orchestrator.

**Answer:** The core components of Orchestrator are management server, Runbook Server, database, Runbook Designer, Orchestration Console, Orchestrator Web Service, and Deployment Manager.

**Question:** How do you integrate Orchestrator with Service Manager?

**Answer:** You need to deploy and register the SC 2012 Service Manager Integration pack and configure the connection to Service Manager.

**Question:** What workflow control helps you determine how long an activity took to complete execution?

**Answer:** The embedded loops workflow has an exit-based attribute that defines how long the embedded loop has been looping.

## Lab Review Questions and Answers

### Lab: Automating Incident Creation, Remediation, and Change Requests

**Question:** What is the use of monitoring activities in Orchestrator?

**Answer:** Monitoring activities run on a continuous basis and initiate a Runbook when specific criteria is met.

**Question:** When you are creating a group in Service Manager, what function does the Dynamic Members feature enable?

**Answer:** The Dynamic Members option enables the group to update its members automatically based on classes such as Active Directory®.

**Question:** When you are editing an activity in Orchestrator, what is the use of the Published Data feature?

**Answer:** Published data in Orchestrator helps you use data that is gathered from one activity and use it in another activity. This is used to form decision-making functions in Orchestrator, such as updating a log file or sending an email.

**Question:** When you are linking activities in Orchestrator, what does the Subscribe feature do?

**Answer:** The Subscribe feature enables an activity to use data that has been published to the Data Bus from another linked activity.

# Module 8

## Problem Management in the Private Cloud

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## Lesson 1

# Overview of Problem Management

### Contents:

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## Question and Answer

### Creating Problem Records in Service Manager

**Question:** Name the three processes in problem management.

**Answer:** The three processes in problem management include problem identification and recording, problem classification, and problem investigation and diagnosis.

## Additional Reading

### What Is Problem Management?

- [Microsoft Operations Framework -- MOF 4.0](#)

### Creating Problem Records in Service Manager

- [Managing Problems](#)

## Lesson 2

# Creating Custom Rules

### Contents:

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## Question and Answer

### Types of Rules in Operations Manager

**Question:** Provide an example of when you would use a probe-based rule.

**Answer:** You can use a probe-based rule to run scripts that are based on a schedule. For example, you can use a script to archive backup log files after a successful backup has completed.

## Additional Reading

### Targeting Rules and Monitors at Application Components and Computers

- [Selecting a target](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** When you are researching a problem, which two steps should you perform to diagnose the cause?

**Answer:** You should re-create the problem in a development environment and apply possible fixes. You should also document any tests that have been applied so that when a resolution is found, you can reconfigure the resolution steps in more detail.

**Question:** You are creating a rule that you want to apply to some SQL Server computers. What is the best way of targeting the rule?

**Answer:** You should target the rule at the SQL Role in a disabled state. You should then use a group that contains just the SQL Server computers to override the rule, thereby, enabling it for the SQL Servers only.

**Question:** What is the difference between alert severity and alert priority?

**Answer:** You can use alert severity to determine the criticality of the alert. However, you can use alert priority to determine the impact to the business.

**Question:** List the three types of collection rules that you can create in Operations Manager.

**Answer:** The three types of collection rules are SNMP Performance, WMI Performance, and Windows Performance.

## Lab Review Questions and Answers

### Lab: Planning and Completing Configuration Manager 2012 Client Deployment

**Question:** When you create a problem record in Service Manager, how do you associate related incidents to the problem record?

**Answer:** You can add the incidents by using the **Related Items** tab in the problem record or you can use the **Create Problem** option in the Tasks pane while selecting the incidents.

**Question:** When you create a rule in Operations Manager that should apply to all SQL Servers, what target should you use?

**Answer:** You should target the **SQL Role** class.

**Question:** When you configure the alert settings for a rule in Operations Manager, when will you use the alert suppression option?

**Answer:** You can use the alert suppression feature in Operations Manager to suppress duplicate alerts based on a number of fields that each alert populates. When a match occurs for an alert that has already been generated with this criteria, the subsequent alert will not be generated; instead, the repeat count is increased.

# Module 9

## Automating Self-Service Provisioning

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## Lesson 1

# Installing and Configuring the System Center Cloud Services Process Pack

### Contents:

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# Questions and Answers

## Cloud Services User Roles

**Question:** To approve virtual machine requests, you must be a member of which user role?

**Answer:** To approve virtual machine requests, you must be a member of the Tenant Administrator user role.

## System Center Cloud Services Process Pack Configurations

**Question:** What action should you take before configuring the System Center Cloud Services Process Pack?

**Answer:** Before configuring the System Center Cloud Services Process Pack, you should ensure that the relevant VMM resources such as logical networks, virtual machine templates, and storage have been configured appropriately in VMM.

## Additional Reading

### What Is the System Center Cloud Services Process Pack?

- [System Center Cloud Services Process Pack](#)

## Lesson 2

# Cloud Services Configuration Items

### **Contents:**

Question and Answer

6

## Question and Answer

### Overview of System Center Cloud Services Process Pack Configuration Items

**Question:** When Service Manager Self-Service users in New York request virtual machines, you need to make sure that requests are provisioned by the New York VMM server. What should you configure in the System Center Cloud Services Process Pack?

**Answer:** You should use the Configure VMM Resources task to add a Placement Tag that denotes the New York VMM server. The placement tag is then associated with the New York cloud resources subscription to ensure that all virtual machine requests from New York are provisioned from the New York VMM server.

# Module Reviews and Takeaways

## Review Questions

**Question:** What is a Service Offering?

**Answer:** A service offering is a number of request offerings grouped together.

**Question:** What are catalog groups used for?

**Answer:** Catalog groups are groups of catalog items such as service offerings and request offerings that are used to provide access to these items in the service catalog.

**Question:** Name three of the VMM configuration items that are available in Service Manager after the Cloud Services Process Pack has been installed, and after the connector to VMM is configured in Service Manager.

**Answer:** Any three of the following are available:

- Logical Networks
- Service Templates
- Storage Classifications
- VIP Templates
- Virtual Machine Templates
- Virtual Machines

# Lab Review Questions and Answers

## Lab: Automating Self-Service Provisioning

**Question:** What request types can be offered by using the Cloud Services Process Pack?

**Answer:** The request types that can be offered are:

- Tenant
- Cloud Resources Subscription
- Virtual Machine
- Service

**Question:** What general properties should be configured after you have installed the Cloud Services Process Pack?

**Answer:** The properties that should be configured are:

- Tenant ID Prefix
- Cloud Resources Subscription ID Prefix
- Tenant Administrators User Role
- Cloud Resources Subscription User Role
- Tenant Reviewers
- Activity Implementer

**Question:** After you submit a request for cloud resources, what action should you perform next?

**Answer:** You should assign the cloud resources to the subscription by using the Assign Cloud Resources task in the Service Manager Console.

# Module 10

## Private Cloud Protection and Recovery

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## Lesson 1

# Protecting Data in the Private Cloud

### Contents:

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## Question and Answer

### Creating Protection Groups

**Question:** When creating a protection group in DPM, which option allows you to reduce network bandwidth when protecting data?

**Answer:** The **Enable on-the-wire compression** option.

## Additional Reading

### Key Features of Data Protection Manager

- [What's New in System Center 2012 - Data Protection Manager](#)

### Data Types that Data Protection Manager Can Protect

- [Protection for multiple data types](#)

### Creating Protection Groups

- [End User Recovery in DPM 2010](#)
- [How to use the End User Recovery functionality of Data Protection Manager in Windows XP](#)
- [Shadow Copy Client: Accessing Shadow Copies on Windows Server 2003](#)

## Lesson 2

# Recovering Data in the Private Cloud

### Contents:

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6

## Question and Answer

### Recovery Processes that Users Can Perform

**Question:** You need to perform a recovery of a file in DPM. You need to ensure that the existing file (if present) is overwritten. Where would you enable this option?

**Answer:** You should select the **Overwrite** option from the from the **Existing version recovery behavior** options.

# Module Reviews and Takeaways

## Review Questions

**Question:** When you configure a protection group in DPM, what are the two methods that you can use to create the replica?

**Answer:** You can have DPM automatically create the replica over the network, or you can manually copy the data for the replica and then transfer it back to the DPM server by using a removable storage device such as an external hard disk.

**Question:** When you use the DPM Self Service Recovery Configuration Tool for SQL Server, what can you do with the **Specify Recovery Targets** option in the DPM Role Configuration Wizard?

**Answer:** With this option you can specify if members of the role should be allowed to restore the databases to a different SQL Server instance. You can further restrict the SQL Server instances and file paths to which the recovered database can be recovered. When you configure end user recovery in DPM, what are the three tasks that you must perform?

**Question:** When you automate data recovery in the private cloud, what System Center 2012 components do you use, and for what purpose are they used?

**Answer:** The System Center 2012 components that you use to automate data recovery are:

- Service Manager, which you use to publish data recovery requests for end users of the Self-Service portal.
- Orchestrator, which you use to detect new data recovery requests and to orchestrate the recovery in DPM.
- DPM, which you use to recover the data.
- Operations Manager, which you use to monitor the data recovery process.

## Tools

Tool	Use for	Where to find it
Storage Calculators for System Center Data Protection Manager 2010	Calculating the DPM storage requirements for Exchange, Hyper-V, and SharePoint servers	<a href="http://go.microsoft.com/fwlink/?LinkId=253426">http://go.microsoft.com/fwlink/?LinkId=253426</a>

## Lab Review Questions and Answers

### Lab: Planning and Completing Configuration Manager 2012 Client Deployment

**Question:** When you manually install a DPM protection agent, what should you do in the DPM Administrator console?

**Answer:** You should use the **Attach** option to attach the agent to the DPM server.

**Question:** What is Self Service Recovery used for in DPM?

**Answer:** Self Service Recovery in DPM gives SQL Server Administrators the ability to recover databases that they own.

**Question:** What views in Operations Manager can you use to verify the health of protection groups in DPM?

**Answer:** The Protection groups state view in Operations Manager is used to view the health state of DPM protection groups. You can also use the Workload based Data Sources state views to determine the health state of particular data sources such as SQL Server.

# Module 11

## Configuring Compliance in the Private Cloud

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## Lesson 1

# Overview of the Process Pack for IT GRC

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## Additional Reading

### Overview of the Process Pack for IT GRC

- [System Center 2012 IT GRC Process Pack for Service Manager](#)

## Lesson 2

# Installing and Configuring the Process Pack for IT GRC

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## Additional Reading

### Installing and Configuring the Process Pack for IT GRC

- [IT Compliance Management Series](#)

## Lesson 4

# Maintaining Compliance through VMM Security Baselines and System Center Advisor

### Contents:

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## Question and Answer

### Using VMM to Perform Software Update Compliance

**Question:** Is it possible to associate a VMM software update compliance baseline to a virtual machine?

**Answer:** No, you can only compliance check infrastructure resources.

## Additional Reading

### System Center Advisor

- [What is System Center Advisor](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** Name the three processes that you should follow when managing compliance and provide a brief description of each.

**Answer:** The three processes you should follow when you manage compliance are:

- Governance. Actions that are put in place after completing a risk assessment during which the risks are identified.
- Risk Management. The process of identifying risks through risk assessment.
- Compliance. The process of validating the mitigation of identified risks.

**Question:** When you add a manual control activity to a compliance program, what do you need to do to ensure that the compliance reports include the output from manual control activity?

**Answer:** You need to add the test result of the activity such as Compliant or NonCompliant.

**Question:** Name the three types of IT GRC Compliance Management Program Exceptions and provide a brief description of each.

**Answer:** The three types of IT GRC Compliance Management Program Exceptions are:

- Control activity scope exceptions. You can use these for the exclusion of specific control activities when applying compliance scoring.
- IT GRC program exceptions. You can use these for the exclusion of specific computers from an IT GRC program.
- IT GRC policy exceptions. You can use these for the exclusion of control activities that are not applicable to the organization.

## Lab Review Questions and Answers

### Lab: Configuring Compliance in the Private Cloud

**Question:** What are the three main components of an IT GRC Control Management Program?

**Answer:** Authority Documents, Control Objectives, and Control Activities.

**Question:** What exception type should you use when you want to exclude servers from a program?

**Answer:** You should use the IT GRC program exception.

**Question:** You need to create an update baseline in VMM that incorporates all security updates. What can you do to simplify this?

**Answer:** You can use the Sample baseline for Security Updates and add the servers to be checked in the Assignment Scope for the baseline.

# Module 12

## Configuring SLAs, Dashboards, and Widgets

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## Lesson 1

# Service Level Tracking

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# Questions and Answers

## Deploying Service Level Tracking to Microsoft SharePoint

**Question:** What metrics are important to your business?

**Answer:** Answers may vary.

**Question:** Who in your organization would benefit most from scorecards and dashboards?

**Answer:** Answers may vary, and could include the following:

- Line Managers
- IT Manager
- External Stakeholders such as Business Users

**Question:** If you wanted to measure time in state, which SLO should you use?

**Answer:** To measure time in state, you should use a Monitor-based SLO.

## Additional Reading

### Service Level Tracking Reporting

- [Operations Manager Report Authoring Guide](#)

## Lesson 6

# Overview of PerformancePoint

### **Contents:**

Additional Reading

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## Additional Reading

### PerformancePoint Dashboard Designer

- [Up to Speed with PerformancePoint Dashboard Designer](#)

# Module Reviews and Takeaways

## Review Questions

**Question:** What is the best tool for measuring an SLA?

**Answer:** Service Level Tracking is the most appropriate tool for measuring an SLA.

**Question:** How do you measure response time for the help desk?

**Answer:** Create a service level management metric to measure response time for the help desk.

**Question:** What is the best approach to display real time status?

**Answer:** The best approach to display real-time status is to create a Visio diagram.

## Common Issues and Troubleshooting Tips

Issue	Troubleshooting tip
SLTs are not displaying data	Ensure that you have targeted the SLT correctly, and remember to check the class structure.
OLAP Cubes are missing or not populated	Ensure that the jobs have run correctly.
Unable to connect to OLAP data source through PerformancePoint	Check that the secure store service is configured correctly.

## Tools

Tool	Use for	Where to find it
SQL Server Management Studio	Querying data in the Operations Manager and Service Manager data warehouse	Program Files
Business Intelligence Development Studio	Used for creating custom SSRS Reports	Program Files
Service Level Tracking Designer	Used for creating Service Level Objectives	Operations Manager Authoring workspace
PerformancePoint designer	Used to create dashboards and scorecards in SharePoint	SharePoint Pages

## Real-World Issues and Scenarios

Your key private cloud users have been complaining about a lack of visibility into the performance of their key line of business (LOB) services. Visibility can be gained by:

- Using SLTs in Operations Manager to measure the SLA performance of the service.
- Using Visio to create diagrams for the application layout and then publishing these back to SharePoint.
- Creating service level management targets in Service Manager and then using PerformancePoint to publish this data back to key users.
- Reviewing trend performance in SSRS and then publishing this data back to key users.

## Best Practices

When you are building dashboards and widgets, keep in mind the following best practices. Before you begin, you should:

- Fully understand the reporting requirements of the project.
- Ensure that the correct data is delivered to the correct audience.
- Always start with a distributed application diagram (DAD).
- Target SLTs at the DAD model.
- Ensure that these models are used for logging incidents and changes.

## Lab Review Questions and Answers

### Lab: Configuring SLAs, Dashboards, and Widgets

**Question:** What type of SLT would you create to measure CPU performance?

**Answer:** You would create a Performance SLT to measure CPU performance.

**Question:** What controls the build of the OLAP cubes in Service Manager?

**Answer:** Jobs control the build of the OLAP cubes in Service Manager.

**Question:** How can you publish real-time state information?

**Answer:** You can publish real-time state information by using Visio and embedding the diagrams in SharePoint in web parts.

**Question:** What tool in SharePoint can you use to create custom dashboards?

**Answer:** You can create custom dashboards with PerformancePoint by using KPIs.