Monitoring and Operating a Private Cloud (20246)

Duration: 5 days

Who should attend?

The primary audience for this course includes cloud administrators who are responsible for monitoring and protecting the cloud infrastructure. It is also intended for solution architects who are responsible for designing cloud architectures and extending existing cloud solutions. The primary audience for this course is administrators who create service requests. The secondary audience includes datacenter administrators—who are responsible for providing provisioning for applications to include configuring and deploying—application/service business owners, and administrators who implement service requests. In addition, the secondary audience includes people who need to learn the required material in order to take the Microsoft exam 70-246: Monitoring and Operating a Cloud with Microsoft System Center.

Prerequisites

This course describes how to monitor and operate a cloud with System Center 2012 R2. Because this is an extensive technical domain that includes several individual products and technologies, it is strongly recommended administrators have prerequisite knowledge in the following areas:

1. **Windows Server 2012 experience**
2. **Active Directory Domain Services (AD DS) knowledge**
3. **Networking experience**
4. **Working knowledge of previous versions of System Center products**
5. **Knowledge of configuration of Microsoft SharePoint**
6. **Hyper-V knowledge**
7. **Microsoft Windows Azure**
8. **Knowledge of cloud and data center management processes**
9. **Storage Area Network (SAN) Knowledge**

Course Objectives

After completing this course students will be able to:

1. **Describe the Cloud Model**
2. **Configure and optimize a private cloud**
3. **Deploy Cloud Services**
4. **Monitor Cloud Services**
5. **Configure application performance monitoring in a cloud environment**
6. **Operate and extend service management in in a cloud environment**
7. **Automate incident creation, remediation, and change requests in a cloud environment**

8. Perform problem management in a cloud environment
9. Automate Self-Service Provisioning in a cloud environment
10. Operate a self-service multi-tenant cloud
11. Cloud high availability, protection and recovery in a cloud environment
12. Optimize the cloud infrastructure
13. Configure SLAs, dashboards, and widgets in a cloud environment

Follow On Courses

1. Configuring and Deploying a Private Cloud (20247)
2. Designing and Implementing a Server Infrastructure (20413)
3. Implementing an Advanced Server Infrastructure (20414)

Course Content

This course describes how to monitor and operate a cloud with Microsoft System Center 2012 R2. This course focuses on how to manage and administer a cloud environment, and it describes how you can monitor key infrastructure elements and applications that run within a cloud. It does not discuss planning and implementation, which is covered in 20247: Configuring and Deploying a Cloud with System Center.

Course Outline
Module 1: Introduction to the Cloud Model
This module explains the key business and technical requirements behind choosing a cloud model and the elements it contains. The module also shows how to use Microsoft System Center 2012 R2 to monitor and operate clouds, ensuring that it is configured correctly and running in a healthy state. Finally, you will use System Center to verify cloud infrastructure for the cloud environment.

Lessons

1. Overview of the Cloud Computing Model
2. Requirements for a Private Cloud
3. Requirements for a Public or Hybrid Cloud
4. Operating a Hybrid Cloud Infrastructure with System Center
5. Maintaining the Health of a Cloud
6. Integrating System Center Components

Lab: Verifying the Private Cloud Infrastructure

1. Verify the Infrastructure
2. Verifying System Center Components

Module 2: Configuring a Private Cloud Environment
This module examines how Microsoft System Center 2012 R2 - Virtual Machine Manager (VMM) plays a pivotal role in the private cloud. The module first provides an overview of Virtual Machine Manager, and will then show how it is used to manage a virtual environment. Additionally, this module explains how to create private clouds by using Virtual Machine Manager. In the lab, you will create a private cloud and then optimize it so that is ready for production use.

Lessons

1. Overview of System Center 2012 R2 Virtual Machine Manager
2. Managing the Virtual Environment with Virtual Machine Manager
3. Creating Clouds

Lab: Configuring and Optimizing a Microsoft Private Cloud

1. Configuring Network Resources
2. Creating a Cloud
3. Create a VM Network using Software Defined Networks Isolation
4. Creating the Contoso Cloud Tenant for StockTrader Production

Module 3: Deploying Cloud Services

This module reviews the key elements that form a service in VMM and how the service is deployed to the private cloud.

Lessons

1. Overview of Service Templates
2. VMM Profiles
3. Web Deploy Packages
4. Overview of Server App-V
5. Data-Tier Application Packages
6. Deploying Services through App Controller

Lab: Importing and Deploying the Stock Trader Application

1. Deploying a Single Tier Service
2. Configuring Prerequisites
3. Preparing the Stock Trader Service Template
4. Deploying the Service Template

Module 4: Monitoring Cloud Based Applications

When you provide services in a cloud, performance and availability of the service must be monitored and maintained. Monitoring of the service should be proactive and should provide detailed information, including alert notifications and reports to let you know when potential issues are about to occur in the environment that the service is running in. When issues do occur, you should have the ability to automatically take action and remediate where appropriate, which helps keep the service available and provides the performance and usability that end users expect. This module shows how Operations Manager is used to monitor the services deployed in a cloud.

Lessons

1. Overview of System Center 2012 R2 Operations Manager
2. Agent Deployment in Operations Manager
3. Configuring Custom Monitoring
4. Monitoring the Network Infrastructure
5. Monitoring Distributed Applications

Lab: Monitoring Private Cloud Services

1. Deploying an Agent
2. Configuring Custom Monitoring
3. Creating a Distributed Application Model
4. Detecting and Recovering From a Failure

Module 5: Configuring Application Performance Monitoring
This module explains how to configure APM to monitor the performance and availability of a .NET application. Additionally, it discusses how Operations Manager 2012 R2 detects and reports failure of these monitors with its alerting and diagnostics tools.

Lessons

1. **Application Performance Monitoring**
2. **Advanced Monitoring in APM**
3. **Viewing Application Performance Data in Operations Manager**

Lab: Configuring Application Performance Monitoring

1. **Configuring Basic Monitoring in Application Performance Monitoring**
2. **Customizing the Performance Thresholds**
3. **Validating Monitoring**
4. **Creating a Distributed Application Model for the DinnerNow Application**

Module 6: Operating and Extending Service Management in the Private Cloud
This module covers the core features of Service Manager and the security model that supports it. It also covers how to map critical IT processes to Service Manager, and how to use the features of Service Manager to administer these processes. Additionally, the module describes methods to create and manage change requests, incidents, and release records.

Lessons

1. **Overview of Service Manager**
2. **Configuring Security and User Roles**
3. **Configuring Work Items**
4. **Configuring Incident Queues**
5. **Configuring Service Offerings for a Cloud**

Lab: Operating and Extending Service Management in a Cloud

1. **Configuring Security Roles**
2. **Configuring Notifications**
3. **Publish an Incident Service Offering**
4. **Raising an Incident**
5. **Creating a Change Request**
6. **Creating a Release Record**

Module 7: Automating Incident Creation, Remediation, and Change Requests
This module describes Orchestrator, reviews the integration features that are available through the installation of the System Center Integration Packs, and explains the processes to follow in setting up automation between Operations Manager and Service Manager.

Lessons

1. **Overview of System Center 2012 R2 Orchestrator**
2. **Integrating Orchestrator with Operations Manager and Service Manager**

Lab: Automating Incident Creation, Remediation and Change Requests

1. Configuring the Incident Template
2. Configuring Incidents that affect the Stock Trader Service
3. Automatic Incident remediation and Change Requests

Module 8: Problem Management in the Private Cloud

This module explains how a defined set of processes can help reduce the time to resolve problems. It also reviews how incidents and problems are managed within Service Manager. Additionally, this module explains how the integration of Microsoft System Center 2012 R2 Service Manager, System Center 2012 R2 Orchestrator, and System Center 2012 R2 Operations Manager can provide an automated method of generating problem records in Service Manager.

Lessons

1. Overview of Problem Management
2. Creating Custom Rules

Lab: Automating Problem Management in the Private Cloud

1. Manually Creating a Problem Record
2. Creating a Custom Event Rule in Operations Manager
3. Configuring Automated Problem Record Creation

Module 9: Automating Self-Service Provisioning

The process of managing public or private clouds involves many processes, activities, and functions. To provide services through a public or private cloud, you should perform many data center activities, such as provisioning the virtual machines, network, and storage. Once the service is deployed, you need to manage and maintain it, which involves a different set of processes and activities. This module introduces the Microsoft System Center 2012 Cloud Services Process Pack that delivers many of the functions and processes that are required to deliver services to a private cloud.

Additionally, this module explains how to install and configure the System Center Cloud Services Process Pack, including integrating it with other System Center 2012 R2 components.

Lessons

1. Installing and Configuring the System Center Cloud Services Process Pack
2. Cloud Services Configuration Items
3. Cloud Services Request Items

Lab: Automating Self-Service Provisioning

1. Completing the Prerequisites for the System Center Cloud Services Process Pack
2. Installing the System Center Cloud Services Process Pack
3. Configuring the System Center Cloud Services Process Pack
4. Deploying a Virtual Machine for Stock Trader by Using the Cloud Services Process Pack

Module 10: Operating a Self-Service, Multi-tenant Cloud with Windows Azure Pack

In this module you will learn how the Windows Azure Pack can be used to provide a self-service portal for tenants and administrators, and a multi-tenant framework for onboarding users. You will also learn how to provision web site, virtual machine and service bus clouds as well as looking at providing database services and automation.

Lessons

1. **Windows Azure Pack Key Concepts**
2. **Administer Windows Azure Pack**
3. **Windows Azure Pack Providers**

Module 11: High Availability, Protection, and Recovery for the Cloud

This module explains how to manage a highly available cloud Infrastructure using SQL Server 2012 Always-On, Hyper-V Replica and Azure Cloud Recovery. This module also details how to use Microsoft System Center 2012 R2 - Data Protection Manager (DPM) to provide data protection for a cloud.

Lessons

1. **High Availability for a Cloud**
2. **Protecting Data in the Private Cloud**
3. **Recovering Data in the Private Cloud**

Lab: Cloud Protection and Recovery

1. **Configuring Manual Protection and Recovery of Key Service Data**
2. **Configuring Automatic Protection and Recovery of Key Service Data**
3. **Monitoring Protection Status**

Module 12: Optimizing Your Cloud Infrastructure

It is important that your cloud infrastructure is managed and maintained at all times to ensure it is operating at optimum levels. To facilitate this you should ensure that the cloud infrastructure is kept current with the most recent security and application updates. Virtual Machines hosted in the cloud infrastructure should also be kept up to date. In this module you will learn how Virtual Machine Manager can be used to keep your cloud infrastructure up to date.

Lessons

1. **Using Virtual Machine Manager to Keep the Cloud infrastructure Up-To-Date**
2. **Using Configuration Manager to Keep Virtual Machines Up-To-Date**
3. **Using System Center Advisor to Optimize Cloud infrastructure**
4. **Using Pro-Tips to Optimize Cloud infrastructure**

Lab: Optimizing Your Cloud Infrastructure

1. **Configuring Update Baselines**
2. **Configuring Pro-Tips**

Module 13: Configuring SLAs, Dashboards, and Widgets

As an IT operations toolset, Microsoft System Center 2012 R2 produces and collects a vast array of data. The challenge for IT organizations as a whole is to gather this information and present it in a meaningful way to the relevant stakeholders. This module explains the various available methodologies within System Center to collect, measure, and scorecard the performance and availability of the private cloud infrastructure.

Lessons

- **Service Level Tracking**
  1. **Configuring and Deploying Widgets and Dashboards**

2. **Publishing Real-Time State with Microsoft Visio Snap-in**
3. **System Center Analytics**
4. **Using Excel and SSRS to View Data**
5. **Configuring Service Reporting**

Lab: Configuring SLAs, Dashboards, and Widgets

1. **Configuring Service Level Tracking**
2. **Configuring Service Level Management for a cloud**
3. **Configuring Microsoft Excel Analytics**