Module 5
Creating the Private Cloud Building Blocks

Module Overview

• Configuring Guest Operating System Profiles
• Configuring Hardware Profiles
• Configuring SQL Server Using SQL Server Profiles
• Configuring Application Profiles
• Configuring Virtual Machine Templates
• Configuring Service Provider Foundation
• Configuring User Roles
Lesson 1: Configuring Guest Operating System Profiles

- Overview of the Guest OS Profile
- Configuring General Settings for Guest OS Profiles
- Configuring Roles and Features Settings for Guest OS Profiles
- Configuring Networking Settings for Guest OS Profiles
- Configuring Scripts Settings for Guest OS Profiles
- Demonstration: Creating a Guest OS Profile

Overview of the Guest OS Profile
Configuring General Settings for Guest OS Profiles

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity Information</td>
<td>Specifies the computer name</td>
</tr>
<tr>
<td>Admin Password</td>
<td>Specifies credentials for the local Administrator account</td>
</tr>
<tr>
<td>Product Key</td>
<td>Specifies the product or volume license key</td>
</tr>
<tr>
<td>Time Zone</td>
<td>Specifies the time zone for the virtual machine</td>
</tr>
<tr>
<td>Operating System</td>
<td>Specifies the operating system that you will install on the virtual machine</td>
</tr>
</tbody>
</table>

Configuring Roles and Features Settings for Guest OS Profiles

**Roles**

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Application Server
- DNS Server
- Fax Server
- File Services
- Hyper-V
- Network Policy and Access Services
- Print and Document Services
- Remote Desktop Services
- Web Server (IIS)
- Windows Deployment Services
- Windows Server Update Services

**Features**

- .NET Framework 3.5.1 Features
- Background Intelligent Transfer Service (BITS)
- BitLocker Drive Encryption
- BranchCache
- Connection Manager Administration Kit
- Desktop Experience
- DirectAccess Management Console
- Failover Clustering
- Group Policy Management
- Ink and Handwriting Services
- Internet Printing Client
- Internet Storage Name Server
- LPR Port Monitor
- Message Queuing
- Multi-Web I/O
- Network Load Balancing
- Peer Name Resolution Protocol
- Quality Windows Audio Video Experience
Configuring Networking Settings for Guest OS Profiles

Networking settings include:
- Workgroup
- Domain
- Domain credentials

Configuring Scripts Settings for Guest OS Profiles

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer File</td>
<td>• Automates the mini-setup portion of a virtual machine that was prepared by using Sysprep</td>
</tr>
<tr>
<td>[GUIRunOnce] Commands</td>
<td>• Adds commands that must run during the virtual machine's first logon</td>
</tr>
</tbody>
</table>

Answer files must be stored on a Virtual Machine Manager library share to be accessible to the guest OS profile.
Demonstration: Creating a Guest OS Profile

In this demonstration you will see how to create a Guest OS Profile in VMM.
Lesson 2: Configuring Hardware Profiles

• Overview of the Hardware Profile
• Configuring Compatibility and General Settings for Hardware Profiles
• Configuring Bus Configuration Settings for Hardware Profiles
• Configuring Network Adapter Setting for Hardware Profiles
• Configuring Advanced Settings for Hardware Profiles
### Configuring Compatibility and General Settings for Hardware Profiles

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Capability Profiles</td>
<td>• Specifies a preconfigured capability profile</td>
</tr>
<tr>
<td>Processor</td>
<td>• Specifies the number of processors for a virtual machine to use</td>
</tr>
<tr>
<td>Memory</td>
<td>• Specifies the amount of static or dynamic memory to allocate to a virtual machine</td>
</tr>
<tr>
<td>Floppy Drive</td>
<td>• Specifies whether a floppy disk file is selected</td>
</tr>
<tr>
<td>COM 1 and COM 2</td>
<td>• Specifies the virtual COM port configurations</td>
</tr>
<tr>
<td>Video Adapter</td>
<td>• Selects between the standard video adapter and the Microsoft RemoteFX 3D video adapter</td>
</tr>
</tbody>
</table>

### Configuring Bus Configuration Settings for Hardware Profiles

#### For Generation 1 VMs

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE Devices</td>
<td>• Used by the initial bootable hard disk device.</td>
</tr>
<tr>
<td></td>
<td>• Allows up to four devices to be connected.</td>
</tr>
<tr>
<td>SCSI Adapter 0</td>
<td>• Added by default, and allows you to connect up to 64 devices.</td>
</tr>
<tr>
<td></td>
<td>• Can add up to four SCSI adapters.</td>
</tr>
</tbody>
</table>

Virtual DVD drives can only be attached to IDE devices.
Configuring Network Adapter Setting for Hardware Profiles

Network adapter types include:

Legacy network adapter - provides the best overall compatibility, but with greater overhead. Synthetic network adapter - provides the best performance.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
</table>
| Connectivity| • Not connected  
              • Connected to a VM network                   |
| IP Address  | • Dynamic IP  
              • Static IP (from a static IP pool)           |
| MAC address | • Dynamic  
              • Static                                         |
| Port profile| • Classification                                   |

Configuring Advanced Settings for Hardware Profiles

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>• Specifies that a virtual machine is intended to be highly available, and will only be deployed on a failover cluster</td>
</tr>
<tr>
<td>Firmware</td>
<td>• Specifies the start-up order of boot devices</td>
</tr>
<tr>
<td>CPU Priority</td>
<td>• Specifies the virtual machine CPU priority when host CPU usage is high</td>
</tr>
<tr>
<td>Virtual NUMA</td>
<td>• Specifies the virtual Non-Uniform Memory Address settings</td>
</tr>
<tr>
<td>Memory Weight</td>
<td>• Specifies the virtual machine memory priority when allocating memory to multiple virtual machines that are running on a host</td>
</tr>
</tbody>
</table>
Lesson 3: Configuring SQL Server Using SQL Server Profiles

- Using VMM to Configure a SQL Server Instillation
- Preparing and Deploying a SQL Server Image
- Creating a SQL Server Profile
- Configuring VM and Service Templates to Complete the SQL Server Deployment

Using VMM to Configure a SQL Server Instillation

The process for installing and configuring a SQL Server instance includes:

1. Prepare a SQL Server image using Sysprep
2. Create a SQL Server profile
3. Create a VM template
4. Create a service template
5. Deploy the service
Preparing and Deploying a SQL Server Image

SQL Server Setup provides Sysprep image preparation and completion wizards

Creating a SQL Server Profile
Configuring VM and Service Templates to Complete the SQL Server Deployment

**The VM template specifies:**
- The source VHD
- Hardware and operating system specifications
- SQL Server installation settings

**The service template specifies:**
- The service configuration
- The VM template to use for the service

Lesson 4: Configuring Application Profiles

- Application Profile Overview
- Creating an Application Profile
- Deploying an Application Profile
Application Profile Overview

Application profiles provide the instructions for installing applications to support a VMM-managed service

Application profiles support the following application types:

- SQL Server DACs
- Server App-V applications
- Web applications
- Scripts

Creating an Application Profile
Deploying an Application Profile

You deploy application profiles as part of a service

Options for specifying an application profile deployment include:

- Use a VM template
- Edit the properties of a service tier

Lesson 5: Configuring Virtual Machine Templates

- Virtual Machine Templates Overview
- Methods for Creating Virtual Machine Templates
- Configuring Virtual Machine Templates
Virtual Machine Templates Overview

A virtual machine template provides an efficient way to deploy new virtual machines and services

VM templates allow you to:

- Configure hardware, operating systems, applications, and SQL Server specifications
- Use them to create new templates
- Provide a consistent method for self-service users to deploy new virtual machines and services

Methods for Creating Virtual Machine Templates

Methods for creating VM templates include:

- Create from an existing virtual hard disk stored in the Virtual Machine Manager library
- Create from an existing VMM template stored in the Virtual Machine Manager library
- Create from an existing virtual machine that is deployed on a host
- Create from an existing virtual machine that is deployed on a host
Configuring Virtual Machine Templates

Existing VM template or virtual hard disk

- Select Source
- VM Template Identity
- Configure Hardware
- Configure Operating System
- Configure Applications
- Configure SQL Server
- Summary

Existing VM deployed on a host

- Select Source
- VM Template Identity
- Configure Hardware
- Configure Operating System
- Select Library Server
- Select Path
- Summary

Lesson 6: Configuring Service Provider Foundation

- Service Provider Foundation Overview
- Key concepts and components
- Installing and Configuring the Service Provider Foundation
Service Provider Foundation Overview

- The Service Provider Foundation enables you to build multi-tenant self-service with:
  - Usage monitoring
  - Usage Billing
  - Usage Metering
  - Management Stamps
  - Security tightly coupled with Windows and Internet Information Services (IIS)

Key concepts and components

The Service Provider Foundation provides the tools required to integrate infrastructure management with the self-service portals to support tenants and distribute workloads across multiple datacenters. These include:
  - Management Stamps
  - Web Services
  - Usage Metering
  - Multi-tenancy
  - Security
  - Data storage
Lesson 7: Configuring User Roles

- Overview of User Roles
- Considerations for Implementing Self-Service User Roles
- What is Quota?
- Creating an Application Administrator (Self-Service User) User Role
Overview of User Roles

User roles determine the management operations that users can perform, and which objects they can manage.

<table>
<thead>
<tr>
<th>User Role Profile</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>• Can perform all administrative tasks in VMM</td>
</tr>
<tr>
<td></td>
<td>• Created by default</td>
</tr>
<tr>
<td>Fabric Administrator (Delegated Administrator)</td>
<td>• Can perform all administrative tasks within the assigned scope</td>
</tr>
<tr>
<td></td>
<td>• Cannot modify VMM settings or members of the Administrator user role</td>
</tr>
<tr>
<td>Read-Only Administrator</td>
<td>• Can only view properties, status, and job status of objects within the assigned scope</td>
</tr>
<tr>
<td>Application Administrator (Self-Service User)</td>
<td>• Can create, deploy, and manage their own virtual machines and services within a specified private cloud</td>
</tr>
</tbody>
</table>

Considerations for Implementing Self-Service User Roles

Consider the following for Self-Service User roles:

- Control access to library resources such as hardware profiles, guest OS profiles, application profiles, SQL Server profiles, and templates
- Self-service users only have access to owned objects or objects that are specifically shared
- Can use the VMM console or the VMM command shell
- Cannot view host groups, hosts, library servers, or network and storage settings
- Must choose which user role to log on as, if the user is a member of multiple user roles
What is Quota?

Quotas specify resource limits for a role, or for members of a role

Creating an Application Administrator (Self-Service User) User Role

The **Create User Role Wizard** pages
Lab: Creating the Private Cloud Building Blocks

- Exercise 1: Configuring Profiles
- Exercise 2: Configuring Virtual Machine Templates
- Exercise 3: Configuring a Service Template
- Exercise 4: Configuring User Roles

Logon Information

**Virtual Machines**: 20247D-LON-DC1, 20247D-LON-SQ1, 20247D-LON-VM1
**User Name**: Contoso\Administrator
**Password**: Pa$$w0rd

Estimated Time: 30 minutes
Lab Scenario

Now that you have completed the private cloud infrastructure configuration, you need to build the core VMM components that are necessary for delivering new virtual machines and services to that infrastructure.

These components include profiles and templates that you will use as the building blocks for the deployed services.

The StockTrader application team has also asked you to provide the necessary profiles, templates, and configuration to deploy a service containing the SQL Server that they need for a new web application.

Lab Review

• 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?

• 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?
## Module Review and Takeaways

- Review Question(s)
- Real-world Issues and Scenarios
- Tools