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REQUEST FOR QUOTATION (RFQ)

NAME & ADDRESS OF FIRM:	DATE: 28 March 2014
	REFERENCE: RfQ14/00776

Dear Sir / Madam:

We kindly request you to submit your quotation for **Microsoft training courses for IT staffers from the Parliament of Moldova Secretariat**, as detailed in Annex 1 of this RFQ. When preparing your quotation, please be guided by the form attached hereto as Annex 2.

Quotations may be submitted on or before **11 April 2014, 16:30 (Moldova local time)** and via e-mail or courier mail to the address below:

United Nations Development Programme in Moldova
131, 31 August 1989 Street, MD-2012 Chisinau, Republic of Moldova
Attention:Registry Office/Procurement
tenders-Moldova@undp.org

Quotations shall be submitted in English or Romanian duly signed and stamped and shall be marked with the note **“RfQ14/00776: Standard Microsoft training courses for IT staffers from the Parliament of Moldova Secretariat”**.

Quotations submitted by email must be limited to a maximum of 5MB, virus-free and no more than 5 email transmissions. They must be free from any form of virus or corrupted contents, or the quotations shall be rejected.

It shall remain your responsibility to ensure that your quotation will reach the address above on or before the deadline. Quotations that are received by UNDP after the deadline indicated above, for whatever reason, shall not be considered for evaluation. If you are submitting your quotation by email, kindly ensure that they are signed and in the .pdf format, and free from any virus or corrupted files.

Please take note of the following requirements and conditions pertaining to the provision of the abovementioned services:

Exact Address of Delivery Location (identify all, if multiple)	Company’s and/or Parliament premises (to be agreed)
Preferred Currency of Quotation ¹	<input checked="" type="checkbox"/> United States Dollars <input type="checkbox"/> Euro <input checked="" type="checkbox"/> Moldovan Lei
Value Added Tax on Price Quotation	<input checked="" type="checkbox"/> Must be exclusive of VAT and other applicable indirect taxes
Deadline for the Submission of Quotation	11 April 2014, 16:30 (Moldova local time)
All documentation shall be in this language	<input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> Others: Romanian

¹Local vendors must comply with any applicable laws regarding doing business in other currencies. Conversion of currency into the UNDP preferred currency, if the offer is quoted differently from what is required, shall be based only on UN Operational Exchange Rate prevailing at the time of UNDP’s issuance of Purchase Order.

Documents to be submitted	<input checked="" type="checkbox"/> Duly Accomplished Form as provided in Annex 2, and in accordance with the list of requirements in Annex 1; <input checked="" type="checkbox"/> Company profile (short info up to 1 page); <input checked="" type="checkbox"/> Copy of Company's Registration Certificate; <input checked="" type="checkbox"/> Copy of relevant license(s), if any; <input checked="" type="checkbox"/> Company's list of key customers present and past, including workplace-based training; <input checked="" type="checkbox"/> Course outline - brief curricula presentation, description of methodology and list of course study materials. <input checked="" type="checkbox"/> CVs of the proposed tutors. <input checked="" type="checkbox"/> Description of training facilities
Period of Validity of Quotes starting the Submission Deadline Date	<input checked="" type="checkbox"/> 60 days <input type="checkbox"/> 90 days <input type="checkbox"/> 120 days <p>In exceptional circumstances, UNDP may request the Vendor to extend the validity of the Quotation beyond what has been initially indicated in this RFQ. The Proposal shall then confirm the extension in writing, without any modification whatsoever on the Quotation.</p>
Partial Quotes	<input checked="" type="checkbox"/> Not permitted
Payment Terms	<input checked="" type="checkbox"/> Others: in two instalments, mid-term and final payment.
Evaluation Criteria	<input checked="" type="checkbox"/> Technical responsiveness/Full compliance to requirements and lowest price; <input checked="" type="checkbox"/> Minimum 5 years of experience in the field; <input checked="" type="checkbox"/> Existence of adequate training space and relevant IT equipment for the delivery of proposed training courses <input checked="" type="checkbox"/> MS certified trainers with minimum 3 years of experience in the field; <input checked="" type="checkbox"/> Full acceptance of the PO/Contract General Terms and Conditions <input checked="" type="checkbox"/> The delivery of the training courses should start in maximum 10 working days upon signature of contract.
UNDP will award to:	<input checked="" type="checkbox"/> One and only one Supplier
Type of Contract to be Signed	<input checked="" type="checkbox"/> Institutional Contract
Conditions for Release of Payment	<input checked="" type="checkbox"/> Schedule to be agreed and set up in the contract
Annexes to this RFQ	<input checked="" type="checkbox"/> Specifications of the Services Required (Annex 1) <input checked="" type="checkbox"/> Form for Submission of Quotation (Annex 2) <input checked="" type="checkbox"/> Description of services (course outline) (Annex 3) <input checked="" type="checkbox"/> General Terms and Conditions / Special Conditions (Annex 4). <p>Non-acceptance of the terms of the General Terms and Conditions (GTC) shall be grounds for disqualification from this procurement process.</p>
Contact Person for Inquiries (Written inquiries only) ²	<p>Sergiu Galitchi, Project Manager sergiu.galitchi@undp.org</p> <p>Any delay in UNDP's response shall be not used as a reason for extending the deadline for submission, unless UNDP determines that such an extension is necessary and communicates a new deadline to the Proposers.</p>

Goods offered shall be reviewed based on completeness and compliance of the quotation with the minimum specifications described above and any other annexes providing details of UNDP requirements.

The quotation that complies with all of the specifications, requirements and offers the lowest price, as well as all other evaluation criteria indicated, shall be selected. Any offer that does not meet the requirements shall be rejected.

²This contact person and address is officially designated by UNDP. If inquiries are sent to other person/s or address/es, even if they are UNDP staff, UNDP shall have no obligation to respond nor can UNDP confirm that the query was received.

Any discrepancy between the unit price and the total price (obtained by multiplying the unit price and quantity) shall be re-computed by UNDP. The unit price shall prevail and the total price shall be corrected. If the supplier does not accept the final price based on UNDP's re-computation and correction of errors, its quotation will be rejected.

After UNDP has identified the lowest price offer, UNDP reserves the right to award the contract based only on the prices of the goods in the event that the transportation cost (freight and insurance) is found to be higher than UNDP's own estimated cost if sourced from its own freight forwarder and insurance provider.

At any time during the validity of the quotation, no price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted by UNDP after it has received the quotation. At the time of award of Contract or Purchase Order, UNDP reserves the right to vary (increase or decrease) the quantity of services and/or goods, by up to a maximum twenty five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.

Any Purchase Order that will be issued as a result of this RFQ shall be subject to the General Terms and Conditions attached hereto. The mere act of submission of a quotation implies that the vendor accepts without question the General Terms and Conditions of UNDP herein attached as Annex 3.

UNDP is not bound to accept any quotation, nor award a contract/Purchase Order, nor be responsible for any costs associated with a Supplier's preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.

Please be advised that UNDP's vendor protest procedure is intended to afford an opportunity to appeal for persons or firms not awarded a purchase order or contract in a competitive procurement process. In the event that you believe you have not been fairly treated, you can find detailed information about vendor protest procedures in the following link: <http://www.undp.org/procurement/protest.shtml>.

UNDP encourages every prospective Vendor to avoid and prevent conflicts of interest, by disclosing to UNDP if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ.

UNDP implements a zero tolerance on fraud and other proscribed practices, and is committed to identifying and addressing all such acts and practices against UNDP, as well as third parties involved in UNDP activities. UNDP expects its suppliers to adhere to the UN Supplier Code of Conduct found in this link: http://www.un.org/depts/ptd/pdf/conduct_english.pdf.

Thank you and we look forward to receiving your quotation.

Sincerely yours,



Narine Sahakyan,
Deputy Resident Representative

Technical Specifications

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
1A	2 persons	<p><i>Purpose:</i> Training course on Configuring and Troubleshooting Windows Server 2008 Active Directory Domain Services (MS 6425C)</p> <p><i>Participants:</i> Group classes for roughly 2 IT staffers from Parliament of Moldova Secretariat</p> <p><i>Length:</i> 5 day course, except Thursdays and Fridays</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Technology:</i> Windows Server 2008</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p> <p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will be able to configure AD DS in their Windows Server 2008 and Windows server 2008 R2 environments.</p> <p>For detailed Course outline please refer to Annex 3.</p>	24 May 2014
1B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	24 May 2014

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
2A	2 persons	<p><i>Purpose:</i> Training course on Configuring and Troubleshooting Identity and Access Solutions with Windows Server 2008 AD (MS6426C)</p> <p><i>Participants:</i> Group classes for roughly 2 IT staffers from Parliament of Moldova Secretariat.</p> <p><i>Length:</i> 3 day course, except Thursdays and Fridays</p> <p><i>Period:</i> starting as soon as possible, to be agreed.</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p> <p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will be able to configure AD Identity and</p>	06 June 2014

		Access (IDA) solutions in their Windows Server 2008 and Windows server 2008 R2 environments. For detailed Course outline please refer to Annex 3.	
2B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	06 June 2014

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
3A	3 persons	<p><i>Purpose:</i> Training course on Configuring, Managing & Troubleshooting MS Exchange Server 2010 SP2 (MS10135B)</p> <p><i>Participants:</i> Group classes for roughly 3 IT staffers from Parliament of Moldova Secretariat.</p> <p><i>Length:</i> 5 day course, except Thursdays and Fridays</p> <p><i>Period:</i> starting as soon as possible, to be agreed.</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p> <p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will have the knowledge and skills to configure and manage a Microsoft Exchange Server 2010 messaging environment, be able to configure Exchange Server 2010, optimize the Exchange server deployment.</p> <p>For detailed Course outline please refer to Annex 3.</p>	27 June 2014
3B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	27 June 2014

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
4A	2 persons	<p><i>Purpose:</i> Training course on Implementing and Maintaining SQL Server 2008 (MS6232B)</p> <p><i>Participants:</i> Group classes for roughly 2 IT staffers from Parliament of Moldova Secretariat.</p> <p><i>Length:</i> 5 day course, except Thursdays and Fridays</p> <p><i>Period:</i> starting as soon as possible, to be agreed.</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p>	18 July 2014

		<p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will be able to use SQL Server 2008 R2 product features and tools related to implementing a database server.</p> <p>For detailed Course outline please refer to Annex 3.</p>	
4B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	18 July 2014

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
5A	2 persons	<p><i>Purpose:</i> Training course on Configuring and Administering Microsoft SharePoint 2010 (M10174)</p> <p><i>Participants:</i> Group classes for roughly 2 IT staffers from Parliament of Moldova Secretariat.</p> <p><i>Length:</i> 5 day course, except Thursdays and Fridays</p> <p><i>Period:</i> starting as soon as possible, to be agreed.</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Technology:</i> Windows Server 2008</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p> <p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will be able to install, configure, and administer Microsoft SharePoint and also manage and monitor sites and users by using Microsoft SharePoint 2010. They will have the knowledge about new features and functionality introduced with SharePoint 2010 Sp1 as well as Offices 365's SharePoint Online.</p> <p>For detailed Course outline please refer to Annex 3.</p>	08 August 2014
5B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	08 August 2014

Items to be Supplied	Quantity	Description of Services	Latest Delivery Date*
6A	2 persons	<p><i>Purpose:</i> Training course on Implementing and Managing Microsoft Server Virtualization (M10215)</p> <p><i>Participants:</i> Group classes for roughly 2 IT staffers from Parliament of Moldova Secretariat.</p> <p><i>Length:</i> 5 day course, except Thursdays and Fridays</p> <p><i>Period:</i> starting as soon as possible, to be agreed.</p> <p><i>Languages:</i> Romanian or English</p> <p><i>Delivery Method:</i> Instructor-led (classroom)</p> <p><i>Location:</i> classes will be held at the Parliament and company's premises, upon agreement.</p> <p><i>Technology:</i> Windows Server 2008</p> <p><i>Evaluations:</i> the selected contractor shall conduct an initial assessment of trainees' proficiency.</p> <p>Upon completion of the course the participants will be subject to a test to assess progress and individual recommendations will be made. After completing this course students will have the knowledge and skills to deploy and manage a server virtualization environment using Microsoft technologies, be able to deploy and manage Hyper-V and Remote Desktop Services on Windows Server 2008 R2, to manage a server virtualization environment by using System Center products such as System Center Virtual Machine Manager (VMM) 2008, SCVMM 2008 R2, System Center Operations Manager 2007 R2, System Center Data Protection Manager 2007 R2, and System Center Configuration Manager 2007 R2.</p> <p>For detailed Course outline please refer to Annex 3.</p>	29 August 2014
6B		Course materials – in English, dMOC (digital Microsoft Official Curriculum).	29 August 2014

*) The proposed timeframe is tentative and the final schedule will be agreed upon contract signature.

FORM FOR SUBMITTING SUPPLIER'S QUOTATION

(This Form must be submitted only using the Supplier's Official Letterhead/Stationery³)

We, the undersigned, hereby accept in full the UNDP General Terms and Conditions, and hereby offer to supply the items listed below in conformity with the specification and requirements of UNDP as per RFQ Reference No. RfQ14/00776:

TABLE 1: Offer to Provide Services Compliant with Technical Specifications and Requirements

Items to be Supplied	Description of Services	Quantity	Unit Price USD	Total Price per Item USD
1	1A Training course on Configuring and Troubleshooting Windows Server 2008 Active Directory Domain Services (MS 6425C)	1 Training		
	1B Course materials (digital Microsoft Official Curriculum (dMOC))	2 sets		
2	2A Training course on Configuring and Troubleshooting Identity and Access Solutions with Windows Server 2008 AD (MS6426C)	1 Training		
	2B Course materials (digital Microsoft Official Curriculum (dMOC))	2 sets		
3	3A Training course on Configuring, Managing & Troubleshooting MS Exchange Server 2010 SP2 (MS10135B)	1 Training		
	3B Course materials (digital Microsoft Official Curriculum (dMOC))	3 sets		
4	4A Training course on Implementing and Maintaining SQL Server 2008 (MS6232B)	1 Training		
	4B Course materials (digital Microsoft Official Curriculum (dMOC))	2 sets		
5	5A Training course on Configuring and Administering Microsoft SharePoint 2010 (M10174)	1 Training		
	5B Course materials (digital Microsoft Official Curriculum (dMOC))	2 sets		
6	6A Training course on Implementing and Managing Microsoft Server Virtualization (M10215)	1 Training		
	6B Course materials (digital Microsoft Official Curriculum (dMOC))	2 sets		
	Total Prices of Services			
	Add : Other Charges (if applicable)			
	Total Final and All-Inclusive Price Quotation			

³Official Letterhead/Stationery must indicate contact details – addresses, email, phone and fax numbers – for verification purposes

TABLE 2: Offer to Comply with Other Conditions and Related Requirements

Other Information pertaining to our Quotation are as follows :	Your Responses		
	<i>Yes, we will comply</i>	<i>No, we cannot comply</i>	<i>If you cannot comply, pls. indicate counter proposal</i>
Delivery Lead Time: 30 September 2014			
Validity of Quotation: 12 June 2014			
All Provisions of the UNDP General Terms and Conditions: Please see the Annex 4			

All other information that we have not provided automatically implies our full compliance with the requirements, terms and conditions of the RFQ.

[Name and Signature of the Supplier's Authorized Person]

[Designation]

[Date]

Description of services

1A. Training course on Configuring and Troubleshooting Windows Server 2008 Active Directory Domain Services (MS 6425C)

Course outline:

Module 1: Introducing Active Directory Domain Services

This module provides an overview of Active Directory components and concepts and steps through the basics of installing and configuring an Active Directory domain

Lessons

- Lesson 1: Overview of Active Directory, Identity, and Access
- Lesson 2: Active Directory Components and Concepts
- Lesson 3: Install Active Directory Domain Services

Lab : Install an AD DS DC to Create a Single Domain Forest

- Perform Post-Installation Configuration Tasks
- Install a New Windows Server 2008 Forest with the Windows Interface
- Raise Domain and Forest Functional Levels

After completing this module, students will be able to:

- Describe the functionality of AD DS in an enterprise in relation to identity and access.
- Describe the major components of AD DS.
- Install AD DS and configure it as a domain controller.

Module 2: Administering Active Directory Securely and Efficiently

This module explains how to work securely and efficiently in Active Directory using Administration Tools and some best practices as well as use of Windows PowerShell.

Lessons

- Work with Active Directory Administration Tools
- Custom Consoles and Least Privilege
- Find Objects in Active Directory
- Use Windows PowerShell to Administer Active Directory

Lab: Administer Active Directory Using Administrative Tools

- Perform Administrative Tasks by Using Administrative Tools
- Create a Custom Active Directory Administrative Console
- Perform Administrative Tasks with Least Privilege, Run As Administrator, and User Account Control

Lab: Find Objects in Active Directory

- Find Objects in Active Directory
- Use Saved Queries

Lab: Use Windows PowerShell to Administer Active Directory

- Use PowerShell Commands to Administer Active Directory

After completing this module, students will be able to:

- Describe and work with Active Directory administration tools.
- Describe the purpose and functionality of custom consoles and least privilege.
- Locate objects in Active Directory.
- Administer Active Directory by using Windows PowerShell.

Module 3: Managing Users and Service Accounts

This module explains how to create, manage and support user and Managed Service Accounts in Active Directory.

Lessons

- Create and Administer User Accounts
- Configure User Object Attributes
- Automate User Account Creation
- Create and Configure Managed Service Accounts

Lab: Create and Administer User Accounts

- Create User Accounts

- Administer User Accounts

Lab: Configure User Object Attributes

- Examine User Object Attributes
- Manage User Object Attributes
- Create Users from a Template

Lab : Automate User Account Creation

- Export and Import Users with CSVDE
- Import Users with LDIFDE
- Import Users by Using Windows PowerShell

Lab: Create and Administer Managed Service Accounts

- Create and Associate a Managed Service Account

After completing this module, students will be able to:

- Create and administer user accounts.
- Configure user object attributes.
- Automate user account creation.
- Create and configure managed service accounts.

Module 4: Managing Groups

This module explains how to create, modify, delete, and support group objects in Active Directory.

Lessons

- Overview of Groups
- Administer Groups
- Best Practices for Group Management

Lab: Administer Groups

- Implement Role-Based Management by Using Groups
- (Advanced Optional) Explore Group Membership Reporting Tools
- (Advanced Optional) Understand "Account Unknown" Permissions

Lab: Best Practices for Group Management

- Implement Best Practices for Group Management

After completing this module, students will be able to:

- Describe the role of groups in managing an enterprise.
- Administer groups with by using the built-in tools in Windows Server 2008
- Describe the best practices for managing groups.

Module 5: Managing Computer Accounts

This module explains how to create and configure computer accounts.

Lessons

- Create Computers and Join the Domain
- Administer Computer Objects and Accounts
- Perform an Offline Domain Join

Lab: Create Computers and Join the Domain

- Join a computer to the Domain with the Windows Interface
- Secure Computer Joins
- Manage Computer Account Creation

Lab : Administer Computer Objects and Accounts

- Administer Computer Objects Through Their Life Cycle
- Administer and Troubleshoot Computer Accounts

Lab: Perform an Offline Domain Join

- Perform an Offline Domain Join

After completing this module, students will be able to:

- Create computer accounts and join them to a domain.
- Administer computer objects and accounts by using the Windows Interface and command-line tools.
- Describe and perform the Offline Domain Join process.

Module 6: Implementing a Group Policy Infrastructure

This module explains what Group Policy is, how it works, and how best to implement Group Policy in your organization.

Lessons

- Understand Group Policy

- Implement GPOs
- Manage Group Policy Scope
- Group Policy Processing
- Troubleshoot Policy Application

Lab: Implement Group Policy

- Create, Edit, and Link GPOs
- Use Filtering and Commenting

Lab: Manage Group Policy Scope

- Configure GPO Scope with Links
- Configure GPO Scope with Filtering
- Configure Loopback Processing

Lab: Troubleshoot Policy Application

- Perform RSoP Analysis
- Use the Group Policy Modeling Wizard
- View Policy Events

After completing this module, students will be able to:

- Describe the components and technologies that comprise the Group Policy framework.
- Implement GPOs.
- Configure and understand a variety of policy setting types.
- Scope GPOs by using links, security groups, Windows Management Instrumentation filters, loopback processing, and preference targeting.
- Describe how GPOs are processed.
- Locate the event logs containing Group Policy–related events and troubleshoot Group Policy application.

Module 7: Managing User Desktop with Group Policy

This module explains how to manage and configure desktop environments using Administrative templates and Group Policy Preferences as well as how to deploy software using Group Policy Lessons

- Implement Administrative Templates
- Configure Group Policy Preferences
- Manage Software with GPSI

Lab: Manage Administrative Templates and Central Store

- Manage Administrative Templates

Lab: Manage Group Policy Preferences

- Configure Group Policy Preferences
- Verify Group Policy Preferences Application

Lab: Manage Software with GPSI

- Deploy Software with GPSI
- Upgrade Applications with GPSI

After completing this module, students will be able to:

- Describe Administrative Templates
- Understand and Configure Group Policy preferences
- Manage software by using GPSI

Module 8: Managing Enterprise Security and Configuration with Group Policy Settings

This module explains how to use Group Policy to manage a variety of components and features of Windows. It will also explain how to audit files and folders and how to restrict access to applications using application control policies.

Lessons

- Manage Group Membership by Using Group Policy Settings
- Manage Security Settings
- Auditing
- Software Restriction Policy and Applocker

Lab: Using Group Policy to Manage Group Membership

- Configure the Membership of Administrators by Using Restricted Group Policies

Lab : Manage Security Settings

- Manage Local Security Settings
- Create a Security Template

- Use the security Configuration Wizard

Lab : Audit File System Access

- Configure Permissions and Audit Settings
- Configure Audit Policy
- Examine Audit Results

Lab : Configure Application Control Policies

- Configure Application Control Policies

After completing this module, students will be able to:

Manage group membership by using Group Policy Settings

- Manage security settings
- Describe the purpose and functionality of auditing
- Describe the purpose of the Software Restriction Policy and Applocker

Module 9: Securing Administration

This module explains how to administer Active Directory Domain Services Securely.

Lessons

- Delegate Administrative Permissions
- Audit Active Directory Administration

Lab : Delegate Administration

- Delegate Permission to Create and Support User Accounts
- View Delegated Permissions
- Remove and Reset Permissions

Lab : Audit Active Directory Changes

- Audit Changes to Active Directory Using Default Audit Policy
- Audit Changes to Active Directory Using Directory Service Changes Auditing

After completing this module, students will be able to:

- Delegate administrative permissions.
- Audit Active Directory administration.

Module 10: Improving the Security of Authentication in an AD DS Domain

This module explains the domain-side components of authentication, including the policies that specify password requirements and the auditing of authentication-related activities.

Lessons

- Configure Password and Lockout Policies
- Audit Authentication
- Configure Read-Only Domain Controllers

Lab : Configure Password and Account Lockout Policies

- Configure the Domain's Password and Lockout Policies
- Configure a Fine-Grained Password Policy

Lab : Audit Authentication

- Audit Authentication

Lab : Configure Read-Only Domain Controllers

- Exercise 1: Install an RODC
- Exercise 2: Configure Password Replication Policy
- Exercise 3: Manage Credential Caching

After completing this module, students will be able to:

- Configure password and lockout policies.
- Audit authentication.
- Configure read-only domain controllers.

Module 11: Configuring Domain Name System

This module explains how to implement DNS to support name resolution both within your AD DS domain and outside your domain and your intranet.

Lessons

- Install and Configure DNS in an AD DS Domain
- Integration of AD DS, DNS, and Windows
- Advanced DNS Configuration and Administration

Lab : Installing the DNS Service

- Add the DNS Server Role
- Configure Forward Lookup Zones and Resource Records

Lab : Advanced Configuration of DNS

- Enable Scavenging of DNS Zones
- Explore Domain Controller Location
- Configure Name Resolution for External Domains

After completing this module, students will be able to:

- Install and configure DNS in an AD DS domain.
- Describe the integration of AD DS, DNS, and Windows.
- Describe advanced DNS configuration and administration tasks.

Module 12: Administering AD DS Domain Controllers

This module explains how to add Windows Server 2008 domain controllers to a forest or domain, how to prepare a Microsoft Windows Server 2003 forest or domain for its first Windows Server 2008 DC, how to manage the roles performed by DCs, and how to migrate the replication of SYSVOL from the File Replication Service (FRS) used in previous versions of Windows to the Distributed File System Replication (DFS-R) mechanism that provides more robust and manageable replication.

Lessons

- Domain Controller Installation Options
- Install a Server Core Domain Controller
- Manage Operations Masters
- Configure Global Catalog
- Configure DFS-R Replication of SYSVOL

Lab : Install Domain Controllers

- Create an Additional DC with the Active Directory Domain Services Installation Wizard
- Add a Domain Controller from the Command Line
- Create a Domain Controller from Installation Media

Lab : Install a Server Core Domain Controller

- Perform Post-Installation Configuration on Server Core
- Create a Domain Controller with Server Core

Lab : Transfer Operations Masters Roles

- Identify Operations Masters
- Transfer Operations Masters Roles

Lab : Configure the Global Catalog and Universal Group Membership Caching

- Configure a Global Catalog
- Configure Universal Group Membership Caching

Lab : Configure DFS-R Replication of SYSVOL

- Observe the Replication of SYSVOL
- Prepare to Migrate to DFS-R
- Migrate SYSVOL Replication to DFS-R
- Verify DFS-R Replication of SYSVOL

After completing this module, students will be able to:

- Identify the domain controller installation options.
- Install a Server Core DC.
- Manage operations masters.
- Configure Global Catalog
- Configure DFS-R replication of SYSVOL.

Module 13: Managing Sites and Active Directory Replication

This module explains how to create a distributed directory service that supports domain controllers in portions of your network that are separated by expensive, slow, or unreliable links and how to configure replication amongst those servers.

Lessons

- Configure Sites and Subnets
- Configure Replication

Lab : Configure Sites and Subnets

- Configure the Default Site
- Create Additional Sites
- Move Domain Controllers into Sites

Lab : Configure Replication

- Create a Connection Object

- Create Site Links
- Designate a Preferred Bridgehead Server
- Configure Intersite Replication

After completing this module, students will be able to:

- Configure sites and subnets.
- Configure replication.

Module 14: Directory Service Continuity

This module explains about the technologies and tools that are available to help ensure the health and longevity of the directory service. You will explore tools that help you monitor performance in real time, and you will learn to log performance over time so that you can keep an eye on performance trends in order to spot potential problems.

Lessons

- Monitor Active Directory
- Manage the Active Directory Database
- Active Directory Recycle Bin
- Back Up and Restore AD DS and Domain Controllers

Lab : Monitor Active Directory Events and Performance

- Monitor AD DS with Performance Monitor
- Work with Data Collector Sets

Lab : Manage the Active Directory Database

- Perform Database Maintenance
- Work with Snapshots and Recover a Deleted User

Lab : Using Active Directory Recycle Bin

- Enable Active Directory Recycle Bin
- Restore Deleted Objects with Active Directory Recycle Bin

Lab : Back Up and Restore Active Directory

- Back Up Active Directory
- Restore Active Directory and a Deleted OU

After completing this module, students will be able to:

- Monitor Active Directory.
- Manage the Active Directory database.
- Describe the purpose of the Active Directory Recycle Bin.
- Backup and restore AD DS and domain controllers.

Module 15: Managing Multiple Domains and Forests

This module explains how to raise the domain and forest functionality levels within your environment, how to design the optimal AD DS infrastructure for your enterprise, how to migrate objects between domains and forests, and how to enable authentication and resources access across multiple domains and forests.

Lessons

- Configure Domain and Forest Functional Levels
- Manage Multiple Domains and Trust Relationships
- Move Objects between Domains and Forests

Lab : Administer Trust Relationships

- Configure Name Resolution between Contoso.com and Tailspintoys.com
- Create a Forest Trust

After completing this module, students will be able to:

- Configure domain and forest functional levels.
- Manage multiple domains and trust relationships.
- Move objects between domains and forests.

2A. Training course on Configuring and Troubleshooting Identity and Access Solutions with Windows Server 2008 AD (MS6426C)

Course outline:

Module 1: Exploring Identity and Access Solutions

This module introduces Identity and Access Management (IDA Management) solutions. You will learn the fundamental IDA components and Windows Server 2008 and Windows Server 2008 R2 IDA technologies. This module also provides an overview of Microsoft Forefront technologies that further enhance IDA solutions.

Lessons

- Overview of Identity and Access Techniques
- Active Directory Identity and Access Solutions Server Roles
- Additional Identity and Access Management Tools and Solutions

Lab : Identifying IDA Roles to Meet Business Requirements

- Exploring How Active Directory Server Roles Provide IDA Management Solutions

After completing this module, students will be able to:

- Describe IDA techniques
- Describe Windows Server 2008 IDA server roles
- Describe additional IDA tools and solutions

Module 2: Deploying and Configuring Active Directory Certificate Services

This module explains the concepts of public key infrastructure (PKI) and certification authority (CA). You will learn how to deploy a CA hierarchy and install AD CS. This module also describes how to configure AD CS and how to resolve common AD CS issues.

Lessons

- Overview of Public Key Infrastructure
- Overview of Certification Authorities
- Deploying Certification Authorities
- Configuring Certification Authorities
- Troubleshooting Active Directory Certificate Services

Lab : Deploying and Configuring Active Directory Certificate Services

- Deploying an Standalone Root CA
- Deploying and Configuring an Enterprise Subordinate CA

After completing this module, students will be able to:

- Describe Public Key Infrastructure
- Describe Certification Authorities
- Deploy Certification Authorities
- Configure Certification Authorities
- Resolve common Active Directory Certificate Services issues

Module 3: Deploying and Configuring Certificates

This module describes the deployment of certificates by using AD CS. In addition, the module elaborates on managing enrollment to deploy certificates, certificate revocation, and configuration of certificate template and certificate recovery.

Lessons

- Managing Certificate Templates
- Deploying Certificates and Managing Enrollment
- Managing Certificate Revocation
- Configuring Certificate Recovery

Lab : Deploying Certificates and Managing Enrolment

- Configuring Certificate Templates
- Configuring Auto enrollment
- Managing Certificate Revocation
- Configuring Key Recovery

After completing this module, students will be able to:

- Manage certificate templates
- Deploy certificates and manage enrollment
- Manage certificate revocation
- Configure certificate recovery

Module 4: Deploying and Configuring Active Directory Lightweight Directory Services

This module explains the concept of AD LDS. You will learn how to install AD LDS, configure AD LDS instances and partitions, and configure AD LDS replication. This module also describes how to resolve common AD LDS issues.

Lessons

- Overview of Active Directory Lightweight Directory Services
- Deploying and Configuring Active Directory Lightweight Directory Services
- Configuring AD LDS Instances and Partitions
- Configuring Active Directory Lightweight Directory Services Replication
- Troubleshooting Active Directory Lightweight Directory Services

Lab : Deploying and Configuring Active Directory Lightweight Directory Services

- Configuring AD LDS Instances and Partitions
- Configuring AD LDS Replication
- Identifying AD LDS Solution Tools and Troubleshooting Steps

After completing this module, students will be able to:

- Describe Active Directory Lightweight Directory Services
- Deploy and configure Active Directory Lightweight Directory Services
- Configure Active Directory Lightweight Directory Services instances and partitions
- Configure Active Directory Lightweight Directory Services replication
- Resolve common Active Directory Lightweight Directory Services issues

Module 5: Deploying and Configuring Active Directory Federation Services

This module presents the concept of AD FS 2.0 and its deployment scenarios. You will learn how to deploy AD FS 2.0 and implement AD FS claims. This module also describes how to resolve common AD FS issues.

Lessons

- Overview of Active Directory Federation Services 2.0
- Deploying Active Directory Federation Services
- Configuring Active Directory Federation Services Partner Organizations and Claims
- Troubleshooting Active Directory Federation Services

Lab : Deploying and Configuring Active Directory Federation Services

- Installing the PKI Infrastructure and Preparing for Federated Collaboration with ADFS 2.0
- Installing and Configuring Active Directory Federation Services (ADFS) 2.0
- Configuring AD FS 2.0 for Internal Users to Access an Internal Claim Aware Application
- Configuring AD FS 2.0 for Internal Users to Access a Partner Claim Aware Application

After completing this module, students will be able to:

- Describe Active Directory Federation Services
- Deploy Active Directory Federation Services
- Configure Active Directory Federation Services partner organizations and claims
- Resolve common Active Directory Federation Services issues

Module 6: Deploying and Configuring Active Directory Rights Management Services

This module explains the concept of AD RMS. You will learn how to install and configure AD RMS server components, administer AD RMS rights policy templates, and implement AD RMS trust policies. This module also describes how to resolve common AD RMS issues.

Lessons

- Overview of Active Directory Rights Management Services
- Deploying and Configuring Active Directory Rights Management Services
- Configuring AD RMS Rights Policy Templates and Exclusion Policies
- Configuring Active Directory Rights Management Services Trust Policies
- Troubleshooting Active Directory Rights Management Services

Lab : Deploying and Configuring Active Directory Rights Management Services

- Installing and Configuring AD RMS
- Configuring AD RMS Templates
- Configuring AD RMS Trust Policies
- Testing AD RMS Functionality
- Generating AD RMS Reports

After completing this module, students will be able to:

- Describe Active Directory Rights Management Services

- Deploy and configure Active Directory Rights Management Services
- Configure Active Directory Rights Management Services rights policy templates and exclusion policies
- Configure Active Directory Rights Management Services trust policies
- Resolve common Active Directory Rights Management Services issues

Module 7: Maintaining Windows Server 2008 Active Directory Identity and Access Solutions

This module explains the maintenance of AD CS, AD LDS, AD FS 2.0, and AD RMS.

Lessons

- Maintaining Active Directory Certificate Services
- Maintaining Active Directory Lightweight Directory Services
- Maintaining Active Directory Federation Services
- Maintaining Active Directory Rights Management Services

Lab : Maintaining Windows Server 2008 Active Directory Identity and Access Solutions

- Configuring CA Event Auditing
- Backing up Active Directory Certificate Services
- Backing up and Restoring an Active Directory Lightweight Directory Services Instance
- Configuring AD RMS Logging

After completing this module, students will be able to:

- Maintain Active Directory Certificate Services
- Maintain Active Directory Lightweight Directory Services
- Maintain Active Directory Federation Services
- Maintain Active Directory Rights Management Services

3A . Training course on Configuring, Managing & Troubleshooting MS Exchange Server 2010 SP2 (MS10135B)

Course outline:

Module 1: Deploying Microsoft Exchange Server 2010

- Overview of Exchange Server 2010 Requirements
- Installing Exchange Server 2010 Server Roles
- Completing an Exchange Server 2010 Installation

Lab 1-1: Installing Exchange Server 2010

- Evaluating Requirements for an Exchange Server Installation
- Preparing for an Exchange Server 2010 Installation
- Installing Exchange Server 2010

Lab 1-2: Verifying an Exchange Server 2010 Installation

- Verifying an Exchange Server 2010 Installation

Module 2: Configuring Mailbox Servers

- Overview of Exchange Server 2010 Administrative Tools
- Configuring Mailbox Server Roles
- Configuring Public Folders

Lab 2-1: Configuring Mailbox Servers

- Configuring Mailbox Databases
- Configuring Public Folders

Module 3: Managing Recipient Objects

- Managing Mailboxes
- Managing Other Recipients
- Configuring Email Address Policies
- Configuring Address Lists and Address Book Policies
- Performing Bulk Recipient Management Tasks

Lab 3-1: Managing Exchange Recipients

- Managing Recipients
- Configuring Email Address Policies
- Configuring Address Lists and Address Book Policies
- Performing Bulk Recipient Management Tasks

Module 4: Managing Client Access

- Configuring the Client Access Server Role
- Configuring Client Access Services for Outlook Clients
- Configuring Outlook Web App
- Configuring Mobile Messaging

Lab 4-1: Configuring Client Access Servers for Outlook Anywhere Access

- Configuring Client Access Servers
- Configuring Outlook Anywhere

Lab 4-2: Configuring Client Access Servers for Outlook Web App and Exchange ActiveSync

- Configuring Outlook Web App
- Configuring Exchange ActiveSync

Module 5: Managing Message Transport

- Overview of Message Transport
- Configuring Message Transport

Lab 5-1: Managing Message Transport

- Configuring Internet Message Transport
- Troubleshooting Message Transport
- Troubleshooting Internet Message Delivery

Module 6: Implementing Messaging Security

- Deploying Edge Transport Servers
- Deploying an Antivirus Solution
- Configuring an Anti-Spam Solution
- Configuring Secure SMTP Messaging

Lab 6-1: Configuring Edge Transport Servers and Forefront Protection 2010 for Exchange Server

- Configuring Edge Transport Servers
- Configuring Forefront Protection 2010 for Exchange Server

Lab 6-2: Implementing Anti-Spam Solutions

- Configuring an Anti-Spam Solution on Edge Transport Servers

Module 7: Implementing High Availability

- Overview of High Availability Options
- Configuring Highly Available Mailbox Databases
- Deploying Highly Available Non-Mailbox Servers
- Deploying High Availability with Site Resilience

Lab 7-1: Implementing High Availability

- Deploying a DAG
- Deploying Highly Available Hub Transport and Client Access Servers
- Testing the High Availability Configuration

Module 8: Implementing Backup and Recovery

- Planning Backup and Recovery
- Backing Up Exchange Server 2010
- Restoring Exchange Server 2010

Lab 8-1: Implementing Backup and Recovery

- Backing Up Exchange Server 2010
- Restoring Exchange Server Data
- Restoring Exchange Servers (optional)

Module 9: Configuring Messaging Policy and Compliance

- Introducing Messaging Policy and Compliance
- Configuring Transport Rules
- Configuring Journaling and Multi-Mailbox Search
- Configuring Personal Archives
- Configuring Messaging Records Management

Lab 9-1: Configuring Transport Rules, Journal Rules, and Multi-Mailbox Search

- Configuring Transport Rules
- Configuring Journal Rules and Multi-Mailbox Search

Lab 9-2: Configuring Personal Archives and Retention Policies

- Configuring Personal Archives
- Configuring Retention Policies

Module 10: Securing Microsoft Exchange Server 2010

- Configuring Role Based Access Control
- Configuring Audit Logging
- Configuring Secure Internet Access

Lab 10-1: Securing Exchange Server 2010

- Configuring Exchange Server Permissions
- Configure Audit Logging
- Configuring a Reverse Proxy for Exchange Server Access

Module 11: Maintaining Microsoft Exchange Server 2010

- Monitoring Exchange Server 2010
- Maintaining Exchange Server 2010
- Troubleshooting Exchange Server 2010

Lab 11-1: Maintaining Exchange Server 2010

- Monitoring Exchange Server 2010
- Troubleshooting Database Availability
- Troubleshooting Client Access Servers

Module 12: Upgrading from Exchange Server 2003 or Exchange Server 2007 to Exchange Server 2010

- Overview of Upgrading to Exchange Server 2010
- Upgrading from Exchange Server 2003 to Exchange Server 2010
- Upgrading from Exchange Server 2007 to Exchange Server 2010

Module 13: Implementing Exchange Online with Office 365

- Introduction to Exchange Online
- Deploying Exchange Online
- Implementing Federated Delegation

4A. Training course on Implementing and Maintaining SQL Server 2008 (MS6232B)

Course outline:

Module 1: Introduction to SQL Server and its Toolset. This module introduces you to the entire SQL Server platform and its major tools. This module also covers editions, versions, basics of network listeners, and concepts of services and service accounts.

Lessons

- Introduction to SQL Server Platform
- Working with SQL Server Tools
- Configuring SQL Server Services

Lab : Introduction to SQL Server and its Toolset

- Verifying SQL Server Component Installation
- Altering Service Accounts for New Instance
- Enabling Named Pipes Protocol for Both Instances
- Creating Aliases for AdventureWorks and Proseware
- Ensuring SQL Browser is Disabled and Configure a Fixed TCP/IP Port

After completing this module, students will be able to:

- Describe the SQL Server Platform.
- Work with SQL Server Tools.
- Configure SQL Server Services.

Module 2: Working with Data Types. This module describes the data types supported by SQL Server and how to work with them.

Lessons

- Using Data Types
- Working with Character Data
- Converting Data Types

- Working with Specialized Data Types

Lab : Working with Data Types

- Choosing Appropriate Data Types
- Writing Queries With Data Type Conversions
- Designing and Creating Alias Data Types

After completing this module, students will be able to:

- Work with data types.
- Work with character data.
- Convert between data types.
- Use specialized data types.

Module 3: Designing and Implementing Tables. This module describes the design and implementation of tables.

Lessons

- Designing Tables
- Working with Schemas
- Creating and Altering Tables

Lab : Designing and Implementing Tables

- Improving the Design of Tables
- Creating a Schema
- Creating the Tables

After completing this module, students will be able to:

- Design tables.
- Work with schemas.
- Create and alter tables.

Module 4: Designing and Implementing Views. This module describes the design and implementation of views.

Lessons

- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

Lab : Designing and Implementing Views

- Designing, Implementing and Testing the WebStock Views
- Designing and Implementing the Contacts View
- Modifying the AvailableModels View

After completing this module, students will be able to:

- Explain the role of views in database development.
- Implement views.
- Describe the performance related impacts of views.

Module 5: Planning for SQL Server Indexing. This module describes the concept of an index and discusses selectivity, density, and statistics. It covers appropriate data type choices and choices around composite index structures.

Lessons

- Core Indexing Concepts
- Data Types and Indexes
- Single Column and Composite Indexes

Lab : Planning for SQL Server Indexing

- Exploring Existing Index Statistics
- Designing Column Orders for Indexes

After completing this module, students will be able to:

- Explain core indexing concepts.
- Describe the effectiveness of each data type common used in indexes.
- Plan for single column and composite indexes.

Module 6: Implementing Table Structures in SQL Server. This module covers clustered indexes and heaps.

Lessons

- SQL Server Table Structures
- Working with Clustered Indexes

- Designing Effective Clustered Indexes
- Lab : Implementing Table Structures in SQL Server
- Creating Tables as Heaps
 - Creating Tables with Clustered Indexes
 - Comparing the Performance of Clustered Indexes vs. Heaps

After completing this module, students will be able to:

- Explain how tables can be structured in SQL Server databases.
- Work with clustered indexes.
- Design effective clustered indexes

Module 7: Reading SQL Server Execution Plans

This module introduces the concept of reading execution plans.

Lessons

- Execution Plan Core Concepts
- Common Execution Plan Elements
- Working with Execution Plans

Lab : Reading SQL Server Execution Plans

- Actual vs. Estimated Plans
- Identify Common Plan Elements
- Query Cost Comparison

After completing this module, students will be able to:

- Explain the core concepts related to the use of execution plans.
- Describe the role of the most common execution plan elements.
- Work with execution plans.

Module 8: Improving Performance through Nonclustered Indexes. This module explains nonclustered indexes, covering indexes and included columns.

Lessons

- Designing Effective Nonclustered Indexes
- Implementing Nonclustered Indexes
- Using the Database Engine Tuning Advisor

Lab : Improving Performance through Nonclustered Indexes

- Reviewing Nonclustered Index Usage
- Improving Nonclustered Index Designs
- Using SQL Server Profiler and Database Engine Tuning Advisor
- Nonclustered Index Design

After completing this module, students will be able to:

- Design effective nonclustered indexes.
- Implement nonclustered indexes.
- Use the Database Engine Tuning Advisor to design indexes.

Module 9: Designing and Implementing Stored Procedures. This module describes the design and implementation of stored procedures.

Lessons

- Introduction to Stored Procedures
- Working With Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

Lab : Designing and Implementing Stored Procedures

- Creating Stored Procedures
- Creating a Parameterized Stored Procedure
- Altering the Execution Context of Stored Procedures

After completing this module, students will be able to:

- Describe the role of stored procedures and the potential benefits of using them.
- Work with stored procedures.
- Implement parameterized stored procedures.
- Control the execution context of a stored procedure.

Module 10: Merging Data and Passing Tables. This module covers table types, table valued parameters and the MERGE statement as used in stored procedures.

Lessons

- Using the MERGE Statement
- Implementing Table Types
- Using Table Types as Parameters

Lab : Merging Data and Passing Tables

- Creating a Table Type
- Using a Table Type Parameter
- Using a Table Type with MERGE

After completing this module, students will be able to:

- Use the MERGE statement.
- Implement table types.
- Use TABLE types as parameters.

Module 11: Creating Highly Concurrent SQL Server Applications. This module covers transactions, isolation levels, and designing for concurrency.

Lessons

- Introduction to Transactions
- Introduction to Locks
- Management of Locking
- Transaction Isolation Levels

Lab : Creating Highly Concurrent SQL Server Applications

- Detecting Deadlocks
- Investigating Transaction Isolation Levels

After completing this module, students will be able to:

- Describe the role of transactions.
- Explain the role of locks.
- Manage locking.
- Work with transaction isolation levels.

Module 12: Handling Errors in T-SQL Code. This module describes structured exception handling and gives solid examples of its use within the design of stored procedures.

Lessons

- Designing T-SQL Error Handling
- Implementing T-SQL Error Handling
- Implementing Structured Exception Handling

Lab : Handling Errors in T-SQL Code

- Replacing @@ERROR Based Error Handling With Structured Exception Handling
- Adding Deadlock Retry Logic to the Stored Procedure

After completing this module, students will be able to:

- Design T-SQL error handling.
- Implement T-SQL error handling.
- Implement structured exception handling.

Module 13: Designing and Implementing User-Defined Functions. This module describes the design and implementation of functions, both scalar and table-valued.

Lessons

- Designing and Implementing Scalar Functions
- Designing and Implementing Table-valued Functions
- Implementation Considerations for Functions
- Alternatives To Functions

Lab : Designing and Implementing User-Defined Functions

- Formatting Phone Numbers
- Modifying an Existing Function
- Resolving a Function-related Performance Issue

After completing this module, students will be able to:

- Design and implement scalar functions.
- Design and implement table-valued functions.
- Describe implementation considerations for functions.
- Describe alternatives to functions.

Module 14: Ensuring Data Integrity through Constraints. This module describes the design and implementation of constraints.

Lessons

- Enforcing Data Integrity
- Implementing Domain Integrity
- Implementing Entity and Referential Integrity

Lab : Ensuring Data Integrity through Constraints

- Designing Constraint
- Testing the Constraints

After completing this module, students will be able to:

- Explain the available options for enforcing data integrity and the levels at which they should be applied.
- Describe how domain integrity can be maintained.
- Describe how entity and referential integrity can be maintained.

Module 15: Responding to Data Manipulation via Triggers. This module describes the design and implementation of triggers.

Lessons

- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts

Lab : Responding to Data Manipulation via Triggers

- Creating the Audit Trigger
- Improving the Audit Trigger

After completing this module, students will be able to:

- Design DML triggers.
- Implement DML triggers.
- Explain advanced DML trigger concepts.

Module 16: Implementing Managed Code in SQL Server. This module describes the implementation of and target use-cases for SQL CLR integration.

Lessons

- Introduction to SQL CLR Integration
- Importing and Configuring Assemblies
- Implementing SQL CLR Integration

Lab : Implementing Managed Code in SQL Server

- Assessing Proposed CLR Code
- Implementing a CLR Assembly
- Implementing a CLR User-defined Aggregate and User-defined Type

After completing this module, students will be able to:

- Explain the importance of SQL Server CLR Integration.
- Import and configure assemblies.
- Implement objects that have been created within .NET assemblies.

Module 17: Storing XML Data in SQL Server. This module covers the XML data type, schema collections, typed and untyped columns and appropriate use cases for XML in SQL Server.

Lessons

- Introduction to XML and XML Schemas
- Storing XML Data and Schemas in SQL Server
- Implementing the XML Data Type

Lab : Storing XML Data in SQL Server

- Appropriate Usage of XML Data Storage in SQL Server
- Investigating the Storage of XML Data in Variables
- Investigating the Use of XML Schema Collections
- Investigating the Creation of Database Columns Based on XML

After completing this module, students will be able to:

- Describe XML and XML schemas.
- Store XML data and associated XML schemas in SQL Server.
- Implement the XML data type within SQL Server

Module 18: Querying XML Data in SQL Server. This module covers the basics of FOR XML and XPath Queries.

Lessons

- Using the T-SQL FOR XML Statement
- Getting Started with XQuery
- Shredding XML

Lab : Querying XML Data in SQL Server

- Learning to Query SQL Server Data as XML
- Writing a Stored Procedure Returning XML
- Writing a Stored Procedure that Updates Using XML

After completing this module, students will be able to:

- Use the T-SQL FOR XML statement.
- Work with basic XQuery queries.
- Shred XML to a relational form.

Module 19: Working with SQL Server Spatial Data. This module describes spatial data and how this data can be implemented within SQL Server.

Lessons

- Introduction to Spatial Data
- Working with SQL Server Spatial Data Types
- Using Spatial Data in Applications

Lab : Working with SQL Server Spatial Data

- Familiarity With Geometry Data Type
- Adding Spatial Data to an Existing Table
- Business Application of Spatial Data

After completing this module, students will be able to:

- Describe the importance of spatial data and the industry standards related to it.
- Explain how to store spatial data in SQL Server.
- Perform calculations on and query SQL Server spatial data.

Module 20: Working with Full-Text Indexes and Queries. This module covers full text indexes and queries.

Lessons

- Introduction to Full-Text Indexing
- Implementing Full-Text Indexes in SQL Server
- Working with Full-Text Queries

Lab : Working with Full-Text Indexes and Queries

- Implementing a Full-Text Index
- Implementing a Stoplist
- Creating a Stored Procedure to Implement a Full-Text Search

After completing this module, students will be able to:

- Describe why user interfaces in existing applications are not sufficient for end user search needs.
- Implement full-text indexes in SQL Server.
- Query SQL Server using full-text queries.

5A. Training course on Configuring and Administering Microsoft SharePoint 2010 (M10174)

Course outline:

Module 1: Introducing Microsoft SharePoint 2010. This module provides an overview of SharePoint 2010 and SharePoint Online. It will prepare students for the installation of the first server in a SharePoint 2010 farm and give details on SharePoint 2010 Sp1 and SharePoint Online.

Lessons

- Evaluating the Features of Microsoft SharePoint 2010
- Preparing for SharePoint 2010
- Installing SharePoint 2010
- Advanced Installation of SharePoint 2010

Lab : Installing SharePoint 2010

- Exercise 1: Creating Active Directory Accounts for SharePoint
- Exercise 2: Installing SharePoint Server Prerequisites
- Exercise 3: Installing SharePoint Server
- Exercise 4: Configuring the SharePoint Installation
- Exercise 4: Configuring the SharePoint Installation

- Exercise 6 (Optional): Installing a Language Pack

After completing this module, students will be able to:

- Evaluate the Features of SharePoint 2010
- Prepare for SharePoint 2010
- Install SharePoint 2010
- Perform an Advanced Installation of SharePoint 2010

Module 2: Creating a SharePoint 2010 Intranet. This module covers creating a SharePoint 2010 Intranet and shows students how to configure and administer the fundamental components of a SharePoint farm, including its configuration, logical structure, user-facing features, and underlying engine.

Lessons

- Performing Initial Farm Configuration
- Configuring the SharePoint Logical Structure
- Exploring the SharePoint Web Application and Physical Architecture

Lab : Creating a SharePoint 2010 Intranet

- Exercise 1: Creating a Web Application
- Exercise 2: Creating a Site Collection
- Exercise 3: Creating a Site Collection in a New Content Database

After completing this module, students will be able to:

- Perform Initial Farm Configuration
- Configure the SharePoint Logical Structure
- Explore the SharePoint Web Application and Physical Architecture

Module 3: Administering and Automating SharePoint. This module covers Administering and Automating SharePoint. It covers how to apply the full range of options for administering and automating SharePoint—Central Administration, STSADM, and PowerShell. The module also introduces students to the logs.

Lessons

- Configuring Central Administration
- Administering SharePoint from the Command Line
- Automating SharePoint Operations with Windows PowerShell

Lab : Automating SharePoint with Windows PowerShell

- Exercise 1: Adding SharePoint Functionality to Windows PowerShell
- Exercise 2: Delegating the Ability to Use Windows PowerShell to Manage SharePoint
- Exercise 3: Reporting Web and Site Collection Properties
- Exercise 4: Creating Site Collections Using Windows PowerShell
- Exercise 5: Creating and Updating Items

After completing this module, students will be able to:

- Configure Central Administration
- Administer SharePoint from the Command Line
- Automate SharePoint Operations with Windows PowerShell

Module 4: Configuring Content Management. This module covers Configuring Content Management. It explains to students how to manage content (lists, libraries, items and documents).

Lessons

- Optimizing Content Storage and Access
- Managing Site Content Types and Site Columns
- Configuring the Managed Metadata Service

Lab : Lab A: Configuring List Throttling and Remote BLOB Storage

- Exercise 1: Configuring List Throttling
- Exercise 2: Enabling FILESTREAM and Provisioning the RBS Data Store
- Exercise 3: Installing RBS on All SharePoint Web and Application Servers
- Exercise 4: Configuring the BLOB Size Threshold for RBS

Lab : Lab B: Configuring Managed Metadata

- Exercise 1: Configuring and Implementing Managed Metadata

After completing this module, students will be able to:

- Optimize Content Storage and Access
- Manage Site Content Types and Site Columns
- Configure the Managed Metadata Service

Module 5: Configuring Authentication

This module describes the process of how to administer authentication to SharePoint Web applications.

Lessons

- Understanding Classic SharePoint Authentication Providers
- Understanding Federated Authentication

Lab : Lab A: Configuring Custom Authentication

- Exercise 1: Creating and Configuring an ASP.NET Membership Database
- Exercise 2: Creating a Web Application that Uses Claims-Based Authentication

Lab : Lab B: Configuring Secure Store

- Exercise 1: Creating User Accounts for Access to External Data
- Exercise 2: Configuring Secure Store Services
- Exercise 3: Configuring Secure Store Unattended Accounts

After completing this module, students will be able to:

- Describe Microsoft SharePointServer 2010 authentication.
- Describe SharePoint Server 2010 federated authentication.

Module 6: Securing Content. This module details how to manage security of SharePoint content within a Web application.

Lessons

- Administering SharePoint Groups
- Implementing SharePoint Roles and Role Assignments
- Securing and Auditing SharePoint Content
- Configuring Security for SharePoint Content

Lab : Configuring Security for SharePoint Content

- Exercise 1: Managing SharePoint Groups
- Exercise 2: Creating Custom Permission Levels
- Exercise 3: Managing Permissions and Inheritance
- Exercise 4: Creating a Web Application Policy

After completing this module, students will be able to:

- Administer SharePoint Groups
- Implement SharePoint Roles and Role Assignments
- Secure and Auditing SharePoint Content
- Configure Security for SharePoint Content

Module 7: Managing SharePoint Customizations. This module enables students to manage customizations to the SharePoint environment.

Lessons

- Customizing Microsoft SharePoint
- Deploying and Managing Features and Solutions
- Configuring Sandboxed Solutions

Lab : Lab A: Administering Features and Solutions

- Exercise 1: Administering Features
- Exercise 2: Administering Solutions

Lab : Lab B: Administering Sandboxed Solutions

- Exercise 1: Administering SandBoxed Solutions
- Exercise 2: Modifying SandBoxed Solutions Timer Jobs
- Exercise 3: Configuring Sandbox Points

After completing this module, students will be able to:

- Customize SharePoint installations to suit your organizational needs.
- Deploy and manage SharePoint features and solutions.
- Configure sandboxed solutions.

Module 8: Configuring and Securing SharePoint Services and Service Applications. This module shows students how to manage the SharePoint service as a whole, as well as individual services and service applications.

Lessons

- Securing the Enterprise SharePoint Service
- Securing and Isolating Web Applications
- Services and Service Applications

Lab : Lab A: Administering SharePoint Services

- Exercise 1: Administering SharePoint Services
- Exercise 2: Administering SharePoint Windows Services

Lab : Lab B: Configuring Application Security

- Exercise 1: Configuring Web Application and Application Pool Security
- Exercise 2: Configuring Secure Sockets Layer Security

Lab : Lab C: Configuring Service Applications

- Exercise 1: Creating a Service Application

After completing this module, students will be able to:

- Secure your enterprise-level SharePoint service.
- Secure Web applications.
- Configure SharePoint services and service applications.

Module 9: User Profiles and Social Networking. This module describes how to manage user profiles, My Sites, and social content.

Lessons

- Configuring User Profiles
- Implementing SharePoint 2010 Social Networking Features

Lab : Lab A: Configuring User Profiles

- Exercise 1: Creating a User Profile Service Application
- Exercise 2: Configuring User Profiles
- Exercise 3: Configuring Profile Import from External Data Sources

Lab : Lab B: Administering My Sites

- Exercise 1: Configuring My Sites
- Exercise 2: Creating Your My Site and Profile
- Exercise 3: Configuring Social Networking Features

After completing this module, students will be able to:

- Configure user profiles.
- Implement SharePoint 2010 social networking features.

Module 10: Administering and Configuring SharePoint Search. This module discusses how to administer and configure SharePoint Search.

Lessons

- Configuring Search
- Refining Search

Lab : Lab A: Configuring Search

- Exercise 1: Creating Content for Search
- Exercise 2: Creating an Enterprise Search Center Site
- Exercise 3: Creating and Configuring a Content Source
- Exercise 4: Configuring File Types
- Exercise 5: Configuring Search Settings
- Exercise 6: Configuring Managed Properties
- Exercise 7: Creating and Configuring a Search Scope

Lab : Lab B: Tuning SharePoint Search

- Exercise 1: Creating Keywords and Best Bets
- Exercise 2: Configuring a Thesaurus
- Exercise 3: Configuring Noise Words

After completing this module, students will be able to:

- Configure the search features of SharePoint Server 2010.
- Refine searches in SharePoint 2010.

Module 11: Implementing Productivity Service Applications. This module enables students to configure specific service applications.

Lessons

- Implementing Business Connectivity Services
- Configuring Excel Services
- Understanding PerformancePoint Services
- Implementing InfoPath Forms Services
- Implementing Visio Services Features
- Implementing Access Services
- Implementing Office Web Apps

Lab : Implementing Office Web Apps

- Exercise 1: Installing and Configuring Office Web Apps
- Exercise 2: Configuring and Testing the Office Web Apps in a Document Library

After completing this module, students will be able to:

- Describe business connectivity services.
- Configure Excel services.
- Describe PerformancePoint Services.
- Configure InfoPath services.
- Implement Visio services.
- Implement Access services.
- Install Office Web Apps.

Module 12: Installing and Upgrading to SharePoint 2010 This module teaches students how to install and upgrade to SharePoint 2010 in a variety of scenarios, and to keep SharePoint 2010 current.

Lessons

- Installing SharePoint Servers and Farms
- Upgrading to SharePoint 2010
- Evaluating Installations and Upgrades
- Configuring SharePoint Operational Settings
- Updating SharePoint

Lab : Lab A: Preparing SharePoint 2007 for Upgrade to SharePoint 2010

- Exercise 1: Performing SQL Server Database Maintenance
- Exercise 2: Moving a Site Collection Between Content Databases
- Exercise 3: Preparing SQL Server Databases for Upgrade
- Exercise 4: Preparing SharePoint 2007 for Upgrade

Lab : Lab B: Upgrading SharePoint 2007 to SharePoint 2010

- Exercise 1: Upgrading SharePoint 2007 to SharePoint 2010
- Exercise 2: Upgrading Content Databases
- Exercise 3: Implementing a Visual Upgrade

After completing this module, students will be able to:

- Install SharePoint servers and farms.
- Upgrade SharePoint 2007 to SharePoint 2010.
- Plan SharePoint installations and upgrades.
- Configure operational settings in SharePoint 2010.
- Update SharePoint.

Module 13: Implementing Business Continuity

This module enables students to configure business continuity for SharePoint.

Lessons

- Protecting and Recovering Content
- Working with Backup and Restore for Disaster Recovery
- Implementing High Availability Solutions

Lab : Lab A: Implementing a Backup Strategy

- Exercise 1: Backing Up SharePoint Using Central Administration
- Exercise 2: Investigating SharePoint Backup Logs and Files
- Exercise 3: Automating SharePoint Backup Using Windows PowerShell

Lab : Lab B: Implementing a Restore Strategy

- Exercise 1: Restoring a Web Application Using Central Administration
- Exercise 2: Investigating SharePoint Restore Logs and Files
- Exercise 3: Performing a Partial Restore

After completing this module, students will be able to:

- Describe how to protect content and recover content.
- Perform backup and restore operations to mitigate against disasters.
- Implement high availability solutions with SharePoint Server.

Module 14: Monitoring and Optimizing SharePoint Performance. This module shows students how to monitor SharePoint performance, health, and usage, and to identify and remediate performance and health problems.

Lessons

- Monitoring Logs

- Configuring SharePoint Health Analyzer
- Configuring Usage Reports and Web Analytics
- Monitoring and Optimizing SharePoint Performance

Lab : Lab A: Configuring SharePoint Monitoring

- Exercise 1: Configuring SharePoint Diagnostic Logging

Lab : Lab B: Analyzing SharePoint Health

- Exercise 1: Configuring Health Analyzer Rules
- Exercise 2: Reviewing and Repairing Health Analyzer Problems

Lab : Lab C: Reporting SharePoint Usage

- Exercise 1: Configuring SharePoint Usage Data Collection
- Exercise 2: Creating Reports from the Logging Database

After completing this module, students will be able to:

- Use monitoring logs to establish a baseline for performance monitoring.
- Configure SharePoint Health Analyzer.
- Configure both usage reports and Web analytics.
- Monitor your SharePoint servers' performance and optimize them.

Module 15: SharePoint Online and Office 365 This module covers implementing and administering Office 365 and SharePoint Online.

Lessons

- Introducing Office 365 and SharePoint Online
- Setting Up Office 365
- Administering SharePoint Online

After completing this module, students will be able to:

- Describe the components of Office 365 and compare the functionality of SharePoint Online to that of a SharePoint on-premise farm.
- Create and configure an Office 365 subscription.
- Secure SharePoint Online and integrate it with on-premise systems.

6A. Training course on Implementing and Managing Microsoft Server Virtualization (M10215)

Course outline:

Module 1: Evaluating and Planning for Virtualization. Describe virtualization as it relates to server, desktop, and application environments. Students also will learn how to plan for critical decision points related to hardware requirements, storage, availability, and security.

Lessons

- Overview of Microsoft Virtualization
- Overview of Microsoft Virtualization
- Evaluating the Current Environment for Virtualization
- Evaluating the Current Environment for Virtualization

Lab : Evaluating the Network Environment for Virtualization

- Planning for the Hyper-V Server Role
- Assessing the Computing Environment by Using the MAP Toolkit

After completing this module, students will be able to:

- Describe the challenges that traditional network environments face, which organizations can address by using virtualization technologies.
- Describe virtualization technology.
- Identify options available for server virtualization.
- Identify options available for desktop and presentation virtualization.
- Identify options available for application virtualization.
- Determine the most appropriate virtualization solution based upon organizational requirements.
- Describe management tasks for a virtual environment.
- Describe the components that make up the Microsoft System Center solution.
- Describe how you can use System Center Virtual Machine Manager to manage virtual environments.
- Describe how you can use System Center Data Protection Manager to backup and recover a virtual environment.

- Describe how you can use System Center Operations Manager to monitor and respond to performance issues that relate to the virtual environment.
- Describe how you can use System Center Operations Manager to manage and maintain both physical and virtual systems.
- Describe management tasks for a virtual environment.
- Describe the components that make up the Microsoft System Center solution.
- Describe how you can use System Center Virtual Machine Manager to manage virtual environments.
- Describe how you can use System Center Data Protection Manager to backup and recover a virtual environment.
- Describe how you can use System Center Operations Manager to monitor and respond to performance issues that relate to the virtual environment.
- Describe how you can use System Center Operations Manager to manage and maintain both physical and virtual systems.
- Describe the Hyper-V Server Role.
- Describe requirements and limits for the Hyper-V Server Role.
- Describe planning considerations for Hyper-V disks and storage.
- Describe options for storage configuration in Hyper-V.
- Describe options for providing high availability for Hyper-V.

Module 2: Installing and Configuring the Hyper-V Server Role. After completing this module, you will be able to install the Hyper-V server role, and configure host and virtual network settings.

Lessons

- Installing the Hyper-V Server Role
- Configuring Hyper-V Settings and Virtual Networks

Lab : Installing and Configuring the Hyper-V Server Role

- Installing the Hyper-V Role
- Determining Virtual Network Configuration Settings Based On Organizational Requirements
- Configuring Virtual Network Settings Using Virtual Network Manager
In this exercise, you will: Configure virtual networks based on the design in Exercise 2
- Installing Remote Management Tools

After completing this module, students will be able to:

- Describe the prerequisites for installing Hyper-V.
- Describe the process for installing Hyper-V on a Windows Server 2008 R2 host.
- Identify the management tools that you can use to manage the Hyper-V server role.
- Install and configure Hyper-V management for remote administration.
- Installing the Hyper-V Server Role on a Server Core Installation of Windows Server 2008 R2.
- Modify the default folders for virtual machines and virtual hard disks.
- Configure Hyper-V user settings.
- Determine when to use external, internal, or private virtual machine networks.
- Use Virtual Network Manager to configure virtual networks.
- Configure Hyper-V to support VLANs.

Module 3: Creating and Configuring Virtual Hard Disks and Virtual Machines. After completing this module, you will be able to determine and configure the most appropriate virtual hard disk(s) to use in a virtual machine. Students also will be able to create and configure virtual machines.

Lessons

- Creating and Configuring Virtual Hard Disks
- Creating and Configuring Virtual Machines
- Managing Virtual Machine Snapshots
- Working with the Virtual Machine Connection Application

Lab : Creating Virtual Hard Disks and Virtual Machines

- Creating Appropriate Virtual Hard Disks, Based On Organizational Requirements
- Creating New Virtual Machines Using the Virtual Machine Wizard
- Modifying Virtual Machine Settings
- Creating and Modifying Virtual Machine Snapshots

After completing this module, students will be able to:

- Describe storage options for virtual machines.
- Prepare the host computer to attach physical disks to a virtual machine.

- Configure storage based on Internet Small Computer System Interface (iSCSI).
- Describe the types of virtual hard disks.
- Describe the use and benefits of pass-through disks.
- Create a new virtual hard disk using the new Virtual Hard Disk Wizard.
- Edit and inspect virtual hard disks.
- Describe considerations for creating new virtual machines.
- Create a new virtual machine using the new Virtual Machine Wizard.
- Configure virtual machine settings.
- Describe the Hyper-V integration services.
- Import and export virtual machines.
- Describe the file formats that you use for virtual machines.
- Migrate legacy virtual machines to Hyper-V.
- Describe what a virtual machine snapshot is and how you use it. Be sure to include information on the file format.
- Describe considerations for using snapshots, including storage sizing and requirements.
- Creating and managing virtual machine snapshots.
- This lesson will begin by describing a snapshot and the scenarios in which you use snapshots in the enterprise environment.
- This lesson also describes the concept of a virtual machine snapshot. -This lesson focuses on the management aspects of applying, and deleting, and reverting snapshots. This lesson will also discuss how to configure the snapshot storage location.
- Describe the Virtual Machine Connection Tool.
- List the considerations for using the virtual machine connection tool.
- Discuss connecting to remote virtual machines from a domain and to a virtual machine in a remote domain.

Module 4: Integrating System Center Virtual Machine Manager with Microsoft Hyper-V Server 2008

R2After completing this module, students will be able to plan for, and deploy, System Center Virtual Machine Manager with their Hyper-V solution.

Lessons

- Planning for Integration of System Center Virtual Machine Manager
- Installing the VMM Server and Administrator Console
- Managing Hosts and Host Groups

Lab : Planning and Deploying VMM 2008 R2

- Planning for the Implementation of SCVMM 2008 R2, Based Upon Organizational Requirements
- Installing and Configuring SCVMM Server and Administration Console Components

After completing this module, students will be able to:

- Creating and Managing Host Groups
- Describe the VMM.
- Describe VMM 2008 R2 components.
- Describe system requirements for installing VMM 2008 R2 components.
- Plan for the management of hosts and host groups.
- Plan for the implementation of the VMM database.
- Plan for the implementation of the VMM Library.
- Describe considerations for installing the VMM Server and Administrator console, including domain requirements, account requirements, and other requirements.
- Describe the process for installing the VMM Server.
- Use the VMM Configuration Analyzer to identify configuration issues.
- Describe the installation and features of the VMM administrator console.
- Describe common post-installation tasks.
- Describe the Windows PowerShell – VMM command shell.
- Describe reasons for using host groups.
- Create and modify the properties of host groups.
- Describe the types of hosts that you can add to VMM 2008.
- Configure default virtual machine paths.
- Describe the process for adding hosts in an Active Directory directory service domain.
- Describe the process for adding hosts located in a perimeter network.

- Describe the management options for a host.

Module 5: Creating and Deploying Virtual Machines Using System Center Virtual Machine Manager 2008 R2 After completing this module, students will be able to use VMM 2008 R2 to create and deploy virtual machines.

Lessons

- Creating a New Virtual Machine Using VMM 2008 R2
- Converting a Physical Server to a Virtual Machine
- Converting and Migrating Virtual Machines

Lab : Creating and Deploying Virtual Machines

- Creating a New Virtual Machine
- Deploying a New Virtual Machine from the VMM Library
- Converting a VMware-Based Virtual Machine to a Hyper-V Based Virtual Machine

After completing this module, students will be able to:

- Describe supported operating systems and hardware capabilities for virtual machines.
- Identify sources that you can use for new virtual machines.
- Describe placement options when creating a new virtual machine.
- Describe how you use ratings to determine appropriate placement.
- Describe how to customize placement ratings for a specific virtual machine.
- Deploy stored virtual machines from a VMM Library.
- Describe considerations and methods for determining physical-to-virtual (P2V) machine conversion candidates.
- Describe requirements for physical source computers.
- Perform a P2V conversion.
- Identify the difference between converting and migrating a virtual machine.
- Describe requirements for performing a V2V conversion.
- Describe the options you have when performing a V2V conversion.
- Describe the considerations and the process for migrating a virtual machine.
- Describe scenarios for cloning an existing virtual machine.
- Describe considerations for cloning a virtual machine.
- Describe the process and decision points for cloning a virtual machine.

Module 6: Managing Virtual Machines Using Virtual Machine Manager 2008 This module explains how to perform various management tasks on virtual machines stored within the VMM infrastructure.

Lessons

- Overview of VMM Management Tasks
- Creating and Managing Checkpoints

Lab : Managing Virtual Machines Using VMM 2008 R2

- Modifying Virtual Machine Properties
- Managing Virtual Machine Checkpoints

After completing this module, students will be able to:

- Describe common actions for operating and managing virtual machines.
- Perform actions used to operate a virtual machine.
- Perform actions used to deploy, migrate, and store virtual machines.
- Perform actions used to manage configurations, disks, and checkpoints.
- Describe virtual machine property options.
- Perform actions to configure virtual machine property options.
- Describe considerations for using checkpoints.
- Create and modify a VMM checkpoint.
- Manage VMM checkpoints.

Module 7: Configuring and Managing the VMM Library. This module explains how to configure and manage resources in the VMM Library.

Lessons

- Overview of the VMM Library
- Managing Profiles and Templates
- Designing Fault Tolerance for the VMM Library

Lab : Configuring and Managing the VMM Library

- Adding a Library Server and Library Resources
- Creating a Hardware Profile
- Creating a Guest Operating-System Profile
- Creating a Virtual Machine Template
- Configuring highly available file servers for Virtual Machine Library Using DFS

After completing this module, students will be able to:

- Describe what the VMM Library is and the types of resources that are stored within the library.
- Add a Library Server and assign library groups.
- Add library shares to a library server.
- Add file-based resources to the library.
- Describe hardware profiles and benefits of their usage.
- Describe guest operating system profiles and benefits of their usage.
- Show how to create a hardware and guest operating-system profile.
- Describe the benefits for creating and using virtual machine templates.
- Describe the components that make up a virtual machine template.
- Create a virtual machine template.
- Describe options for providing fault tolerance for the VMM Library.
- Compare and evaluate the differences between the options.
- List the considerations for supporting highly available Library Servers.

Module 8: Configuring User Roles and the Virtual Machine Manager Self-Service Portal. This module explains how to configure and manage user roles and the Virtual Machine Manager Self-Service Portal.

Lessons

- Configuring User Roles
- Installing and Configuring the VMM Self-Service Portal

Lab : Configuring the VMM Self-Service Portal

- Preparing the Host Group and User Role Requirements
- Implementing the Self-Service Portal

After completing this module, students will be able to:

- Describe the concept of role-based security in VMM 2008 R2.
- Describe the role types that are available in VMM 2008 R2.
- Describe the objects that you can delegate by using Role-based security.
- Describe the process for creating a user role in VMM 2008.
- Create user roles in VMM 2008 R2.
- Determine the most appropriate role-based security configuration based upon organizational requirements.
- Describe considerations for implementing the VMM Self-Service Portal.
- Describe the overall process for implementing the Self-Service Portal.
- Describe system requirements for the VMM Self-Service Portal.
- Install the SCVMM Self-Service Portal.
- Configure user access to the SCVMM Self-Service Portal.
- Describe security best practices for the SCVMM Self-Service Portal.

Module 9: Implementing High Availability for Server Virtualization. This module explains how to configure high availability for server virtualization.

Lessons

- Overview of Failover Clustering
- Implementing Failover Clustering with Hyper-V
- Implementing High Availability with VMM 2008 R2

Lab : Implementing High Availability for Server Virtualization

- Installing and Configuring the Failover Clustering Feature
- Configuring Live Migration
- Integrating Failover Clustering with VMM 2008 R2

After completing this module, students will be able to:

- Describe options for providing high availability for virtualization.
- Describe what a Failover Cluster is and how it provides high availability for virtual machines.
- Describe new Failover Cluster functionality available in Windows Server 2008 R2.
- Describe considerations for a Failover Cluster design.
- Determine appropriate Quorum configurations for Failover Clusters.

- Describe how Failover Clusters work with Hyper-V.
- Describe best practices for implementing Failover clustering with Hyper-V.
- Describe requirements for using Hyper-V with failover clustering.
- Describe the overall process for implementing Hyper-V and failover clustering.
- Implement failover clustering with Hyper-V.
- Describe Live Migration.
- Describe the overall process for implementing Live Migration.
- Perform Live Migration using Hyper-V.
- Describe planning considerations for implementing high availability with SCVMM 2008 R2.
- Describe the overall process for configuring host clusters to support high availability.
- Describe how to manage host clusters.
- Implement clustering using VMM 2008.

Module 10: Maintaining Software Updates Using the Offline Virtual Machine Servicing Tool. This module explains how to maintain software updates using the Offline Virtual Machine Servicing Tool.

Lessons

- Overview of the Offline Virtual Machine Servicing Tool
- Configuring WSUS and the Offline Virtual Machine Servicing Tool

Lab : Maintaining Software Updates Using the Offline Virtual Machine Servicing Tool

- Configuring Infrastructure Prerequisites to Support the Offline Virtual Machine Servicing Tool
- Installing and Configuring the Offline Virtual Machine Servicing Tool

After completing this module, students will be able to:

- Describe methods for maintaining software updates.
- Describe how the Offline Virtual Machine Servicing Tool works.
- Describe infrastructure requirements for the Offline Virtual Machine Servicing Tool.
- Describe tasks required to prepare the virtual machines for offline software-update management.
- Describe the process for configuration WSUS to support virtual machine servicing.
- Configure WSUS to support virtual machine servicing.
- Describe the process for installing and configuring the Offline Virtual Machine Servicing Tool.
- Install and configure the Offline Virtual Machine Servicing Tool.

Module 11: Monitoring and Reporting Virtualization. This module explains how to use the monitoring tools included with VMM 2008 and integrate System Center Operations Manager to provide extended monitoring, reporting, and troubleshooting capabilities.

Lessons

- Monitoring Jobs in VMM 2008 R2
- Integrating System Center Operations Manager with VMM 2008 R2
- Configuring Performance and Resource Optimization

Lab : Integrating System Center Operations Manager with VMM 2008

- Configuring System Center Operations Manager for VMM 2008 Integration
- Configuring PRO

After completing this module, students will be able to:

- Describe the VMM jobs feature.
- Describe the methods used to view job status.
- Cancel and restart jobs.
- Filter job status.
- Track changes using Jobs view.
- Perform management tasks related to job status in VMM.
- Identify reporting needs for specific virtual environment scenarios.
- Describe features provided by integrating System Center Operations Manager.
- Describe prerequisites for integrating Operations Manager.
- Describe the process for integrating Operations Manager with VMM 2008 R2.
- Enable reporting in VMM 2008 R2.
- Describe Performance and Resource Optimization (PRO).
- Plan for the implementation of PRO.
- Enable PRO integration.
- View and implement PRO Tips.

Module 12: Backup and Restore Strategies for Virtual Machines. This module explains how to configure and manage resources in the VMM Library.

Lessons

- Overview of Backup and Restore Options for Virtual Machines and the VMM Database
- Implementing Data Protection Manager for Backing Up the VMM Infrastructure

Lab : Using Data Protection Manager to Back Up the VMM 2008 Infrastructure

After completing this module, students will be able to:

- Describe options for backing up virtual machines.
- Use the SCVMM Administrator console to back up the VMM database.
- Describe the process and tools used to restore the VMM database.
- Describe the features of Data Protection Manager 2007 SP1.
- Describe the prerequisites for installing and implementing Data Protection Manager 2007 SP1.
- Describe the process for installing and configuring Data Protection Manager 2007 SP1.
- Describe the process for configuring backup processes for SCVMM 2008 and Data Protection Manager 2007 SP1.

Module 13: Desktop Virtualization Using Remote Desktop Services. This module explains how to describe and implement the core role services included in the Remote Desktop Services server Role.

Lessons

- Overview of Remote Desktop Services
- Implementing the Remote Desktop Session Host
- Implementing Remote Desktop Connection Broker
- Implementing the Remote Desktop Connection Virtualization Host

Lab : Implementing Remote Desktop Services

- Installing the Remote Desktop Session Host
- Installing and configuring the Remote Desktop Session Host
- Installing the Remote Desktop Connection Broker
- Configuring the Remote Desktop Connection Broker
- Installing and Configuring the Remote Desktop Virtualization Host
- Deploying an Application Using RemoteApp

After completing this module, students will be able to:

- Describe the benefits of Remote Desktop Services.
- Describe the Role Services included with the Remote Desktop Services sever role.
- Describe updates to the client experience with Remote Desktop Services.
- Describe RD Licensing.
- Describe the prerequisites for installing and implementing the RD Session Host.
- Describe common configuration and management tasks for the RD Session Host.
- Describe how to secure an RD Session Host.
- What is the RDS Broker Role?
- Describe the prerequisites for installing and implementing the RDS Connection Broker.
- Describe common configuration and management tasks for the RDS Connection Broker.
- Deploying RemoteApp to a Windows 7 Client Start menu.
- Describe the virtual desktop infrastructure concept and how the Remote Desktop Virtualization host works.
- Describe the prerequisites for installing and implementing the RD Virtualization Host.

Module 14: Extending Remote Desktop Services Outside the Organization. This module explains how to implement and configure the Remote Desktop Gateway and Remote Desktop Web Access.

Lessons

- Configuring the Remote Desktop Gateway
- Configuring Remote Desktop Web Access

Lab : Integrating Remote Desktop Web Access into the Desktop Virtualization Infrastructure

- Installing Remote Desktop Gateway
- Installing Remote Desktop Web Access
- Configuring Remote Desktop Web Access
- Integrating RemoteApp and Desktop Connection with Remote Desktop Web Access

After completing this module, students will be able to:

- Describe how the Remote Desktop Gateway works.
- Describe how to secure the Remote Desktop Gateway.
- Use Authorization Policies with Remote Desktop gateway.
- Describe how to configure the Remote Desktop Gateway.

- Describe how to use network access protocol (NAP) remediation with Remote Desktop Gateway.
- Use certificates for Remote Desktop Gateway.
- Describe the prerequisites for installing and implementing Remote Desktop Web Access.
- Describe how to implement RemoteApp and Desktop connection with RD Web Access.
- Describe how to secure Remote Desktop Web Access.
- Configure Single Sign-on for Remote Desktop Web Access.
- Integrate RemoteApp and Remote Desktop Web Access.

General Terms and Conditions

1. ACCEPTANCE OF THE PURCHASE ORDER

This Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this Purchase Order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the Parties under which the rights and obligations of the Parties shall be governed solely by the terms and conditions of this Purchase Order, including these General Conditions. No additional or inconsistent provisions proposed by the Supplier shall bind UNDP unless agreed to in writing by a duly authorized official of UNDP.

2. PAYMENT

- 2.1 UNDP shall, on fulfillment of the Delivery Terms, unless otherwise provided in this Purchase Order, make payment within 30 days of receipt of the Supplier's invoice for the goods and copies of the shipping documents specified in this Purchase Order.
- 2.2 Payment against the invoice referred to above will reflect any discount shown under the payment terms of this Purchase Order, provided payment is made within the period required by such payment terms.
- 2.3 Unless authorized by UNDP, the Supplier shall submit one invoice in respect of this Purchase Order, and such invoice must indicate the Purchase Order's identification number.
- 2.4 The prices shown in this Purchase Order may not be increased except by express written agreement of UNDP.

3. TAX EXEMPTION

- 3.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. In the event any governmental authority refuses to recognize UNDP's exemption from such taxes, duties or charges, the Supplier shall immediately consult with UNDP to determine a mutually acceptable procedure.
- 3.2 Accordingly, the Supplier authorizes UNDP to deduct from the Supplier's invoice any amount representing such taxes, duties or charges, unless the Supplier has consulted with UNDP before the payment thereof and UNDP has, in each instance, specifically authorized the Supplier to pay such taxes, duties or charges under protest. In that event, the Supplier shall provide UNDP with written evidence that payment of such taxes, duties or charges has been made and appropriately authorized.

4. RISK OF LOSS

Risk of loss, damage to or destruction of the goods shall be governed in accordance with Incoterms 2010, unless otherwise agreed upon by the Parties on the front side of this Purchase Order.

5. EXPORT LICENCES

Notwithstanding any INCOTERM 2010 used in this Purchase Order, the Supplier shall obtain any export licences required for the goods.

6. FITNESS OF GOODS/PACKAGING

The Supplier warrants that the goods, including packaging, conform to the specifications for the goods ordered under this Purchase Order and are fit for the purposes for which such goods are ordinarily used and for purposes expressly made known to the Supplier by UNDP, and are free from defects in workmanship and materials. The Supplier also warrants that the goods are contained or packaged adequately to protect the goods.

7. INSPECTION

- 7.1 UNDP shall have a reasonable time after delivery of the goods to inspect them and to reject and refuse acceptance of goods not conforming to this Purchase Order; payment for goods pursuant to this Purchase Order shall not be deemed an acceptance of the goods.
- 7.2 Inspection prior to shipment does not relieve the Supplier from any of its contractual obligations.

8. INTELLECTUAL PROPERTY INFRINGEMENT

The Supplier warrants that the use or supply by UNDP of the goods sold under this Purchase Order does not infringe any patent, design, trade-name or trade-mark. In addition, the Supplier shall, pursuant to this warranty, indemnify, defend and hold UNDP and the United Nations harmless from any actions or claims brought against UNDP or the United Nations pertaining to the alleged infringement of a patent, design, trade-name or trade-mark arising in connection with the goods sold under this Purchase Order.

9. RIGHTS OF UNDP

In case of failure by the Supplier to fulfil its obligations under the terms and conditions of this Purchase Order, including but not limited to failure to obtain necessary export licences, or to make delivery of all or part of the goods by the agreed delivery date or dates, UNDP may, after giving the Supplier reasonable notice to perform and without prejudice to any other rights or remedies, exercise one or more of the following rights:

- 9.1 Procure all or part of the goods from other sources, in which event UNDP may hold the Supplier responsible for any excess cost occasioned thereby.
- 9.2 Refuse to accept delivery of all or part of the goods.
- 9.3 Cancel this Purchase Order without any liability for termination charges or any other liability of any kind of UNDP.

10. LATE DELIVERY

Without limiting any other rights or obligations of the parties hereunder, if the Supplier will be unable to deliver the goods by the delivery date(s) stipulated in this Purchase Order, the Supplier shall (i) immediately consult with UNDP to determine the most expeditious means for delivering the goods and (ii) use an expedited means of delivery, at the Supplier's cost (unless the delay is due to Force Majeure), if reasonably so requested by UNDP.

11. ASSIGNMENT AND INSOLVENCY

- 11.1. The Supplier shall not, except after obtaining the written consent of UNDP, assign, transfer, pledge or make other disposition of this Purchase Order, or any part thereof, or any of the Supplier's rights or obligations under this Purchase Order.
- 11.2. Should the Supplier become insolvent or should control of the Supplier change by virtue of insolvency, UNDP may, without prejudice to any other rights or remedies, immediately terminate this Purchase Order by giving the Supplier written notice of termination.

12. USE OF UNDP OR UNITED NATIONS NAME OR EMBLEM

The Supplier shall not use the name, emblem or official seal of UNDP or the United Nations for any purpose.

13. PROHIBITION ON ADVERTISING

The Supplier shall not advertise or otherwise make public that it is furnishing goods or services to UNDP without specific permission of UNDP in each instance.

14. CHILD LABOUR

The Supplier represents and warrants that neither it nor any of its affiliates is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

15. MINES

The Supplier represents and warrants that neither it nor any of its affiliates is actively and directly engaged in patent activities, development, assembly, production, trade or manufacture of mines or in such activities in respect of components primarily utilized in the manufacture of Mines. The term "Mines" means those devices defined in Article 2, Paragraphs 1, 4 and 5 of Protocol II annexed to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects of 1980.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

16. SETTLEMENT OF DISPUTES

16.1 **Amicable Settlement.** The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Purchase Order or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then obtaining, or according to such other procedure as may be agreed between the Parties.

16.2 **Arbitration.** Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Purchase Order or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Section within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining, including its provisions on applicable law. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

17. PRIVILEGES AND IMMUNITIES

Nothing in or related to these General Terms and Conditions or this Purchase Order shall be deemed a waiver of any of the privileges and immunities of the United Nations, including its subsidiary organs.

18. SEXUAL EXPLOITATION:

18.1 The Contractor shall take all appropriate measures to prevent sexual exploitation or abuse of anyone by it or by any of its employees or any other persons who may be engaged by the Contractor to perform any services under the Contract. For these purposes, sexual activity with any person less than eighteen years of age, regardless of any laws relating to consent, shall constitute the sexual exploitation and abuse of such person. In addition, the Contractor shall refrain from, and shall take all appropriate measures to prohibit its employees or other persons engaged by it from, exchanging any money, goods, services, offers of employment or other things of value, for sexual favors or activities, or from engaging in any sexual activities that are exploitive or degrading to any person. The Contractor acknowledges and agrees that the provisions hereof constitute an essential term of the Contract and that any breach of this representation and warranty shall entitle UNDP to terminate the Contract immediately upon notice to the Contractor, without any liability for termination charges or any other liability of any kind.

18.2 UNDP shall not apply the foregoing standard relating to age in any case in which the Contractor's personnel or any other person who may be engaged by the Contractor to perform any services under the Contract is married to the person less than the age of eighteen years with whom sexual activity has occurred and in which such marriage is recognized as valid under the laws of the country of citizenship of such Contractor's personnel or such other person who may be engaged by the Contractor to perform any services under the Contract.

19. OFFICIALS NOT TO BENEFIT:

The Contractor warrants that no official of UNDP or the United Nations has received or will be offered by the Contractor any direct or indirect benefit arising from this Contract or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of this Contract.

20. AUTHORITY TO MODIFY:

Pursuant to the Financial Regulations and Rules of UNDP, only the UNDP Authorized Official possess the authority to agree on behalf of UNDP to any modification of or change in this Agreement, to a waiver of any of its provisions or to any additional contractual relationship of any kind with the Contractor. Accordingly, no modification or change in this Contract shall be valid and enforceable against UNDP unless provided by an amendment to this Agreement signed by the Contractor and jointly by the UNDP Authorized Official.