



## Course M50023-ILT

### Implementing System Center Data Protection Manager 2007

Five days, Instructor-Led

#### INTRODUCTION

This five-day instructor-led course provides students with the knowledge and skills to protect and recover data using System Center Data Protection Manager 2007 (DPM).

#### AUDIENCE

This course is intended for backup system administrators. Knowledge of operating systems and backup devices is assumed.

#### PREREQUISITES

Knowledge of operating systems and backup devices.

#### COURSE OUTLINE

##### MODULE 1: INTRODUCING DATA PROTECTION AND DISASTER RECOVERY

This module discusses disaster recovery basics, describes the System Center Data Protection Manager 2007 architecture, and discusses the planning process required to implement DPM-based disaster recovery and data protection in an enterprise environment.

During group discussion exercises that accompany this module, you will analyze a typical enterprise environment and develop a plan to implement comprehensive data protection.

##### Lessons

- Overview
- What is DPM?
- What Can DPM Protect?
- Examining Backup Solutions
- What You Will Learn
- DPM Backup Types
- Tape-Based Backup and Archive
- Disk-Based Protection and Recovery
- Combining Disk and Tape Backup Methods
- Determining Which Storage Method to Use
- Protecting Multiple Data Types
- Protecting Clustered Servers
- Managing Data Protection
- DPM Administrator Console
- DPM Reports and Notifications
- DPM Management Packs
- End-User Recovery
- Windows PowerShell Integration
- How Does DPM Work?
- Examining Disk-Based Protection
- Deploying Protection Agents
- Defining Protection Groups
- Creating Replicas
- Tracking Changes
- Examining Synchronization
- Synchronizing Replicas

Five days, Instructor-Led

- Performing Consistency Checks
- Initiating Consistency Checks
- How Consistency Checks Affect Network Performance
- Examining Recovery Points
- Creating Recovery Points
- Recovery Point Limitations
- Recovering Data
- Examining Tape-Based Protection
- Seamless Disk- and Tape-Based Recovery
- Recovery Goals for Protection on Tape
- Tape Data Consistency
- Managing Tape Catalog Retention
- Inventorying Tape Libraries
- Adding and Removing Tapes
- Optimizing DPM Server Performance
- Optimizing DPM Process Utilization
- Optimizing Synchronization
- Reducing Synchronization Impact on Network Performance
- Planning for Disaster Recovery
- Preparing for DPM Server Recovery
- No Preparation?
- Effective Preparation
- Selecting Enterprise Data to Protect
- Types of Data that Can Be Protected
- Protecting File Data on Servers and Workstations
- Protecting Exchange Server Storage Groups
- Protecting SQL Server Databases
- Protecting Windows SharePoint Services Data
- Protecting Virtual Server and Virtual Machines
- Protecting Clustered Resources
- Protecting Server System State
- Planning Protection Configurations
- Planning Protection Groups
- Selecting Protection Group Members
- Guidelines for Protection Groups
- Special Considerations for Protecting Data on Workstations
- Special Considerations for Protecting Data Over a WAN
- Importance of Protection Group Membership Decisions
- Selecting a Data Protection Method
- Defining Recovery Goals
- Allocating Space for Protection Groups
- Specifying Tape Library Details
- Compressing Data
- Encrypting data
- Choosing a Replica Creation Method
- Calculating Time Required for Replica Creation

Five days, Instructor-Led

- Automatic Replica Creation
- Manual Replica Creation
- Planning for DPM Deployment
- Planning DPM Server Configurations
- Selecting the Number of DPM Servers
- Locating DPM Servers
- Selecting the Instance of SQL Server
- Using a Remote SQL Server
- Recommendations for Remote SQL Server Security
- Planning the Storage Pool
- Calculating Capacity Requirements
- Estimating Daily Recovery Point Size
- Determining Retention Range Objectives
- Choosing Sources for Storage Capacity
- Planning the Disk Configuration
- Planning the Tape Library Configuration
- Planning for Security
- Security Considerations
- Configuring Antivirus Software
- Configuring Firewalls
- Configuring Security Permissions
- Using Domain Security Groups
- Granting Appropriate User Privileges
- Planning for End-User Recovery
- Configuring Active Directory Domain Services
- Installing DPM Recovery Point Client Software
- Planning for Notifications and E-mail Reports
- Review

#### Lab 1: Planning for DPM Implementation

#### Lab 2: Planning for Data Recovery Resources

---

### MODULE 2: INSTALLING AND CONFIGURING DPM 2007

This module discusses system requirements for the DPM 2007 server, explains how to specify non-default settings when installing the operating system before installing DPM, provides step-by-step instructions for installing DPM servers and protection agents on enterprise systems, and discusses troubleshooting techniques for resolving issues you may encounter.

During lab exercises that accompany this module, you will install DPM prerequisite software, install a DPM server, perform initial required configuration tasks, and perform selected tasks to enable optional DPM features and functions.

#### Lessons

- Overview
- Examining System Requirements
- Hardware Requirements
- Server Hardware Requirements
- Storage Requirements

Five days, Instructor-Led

- Software Requirements
- DPM Server Operating System Requirements
- DPM Server Software Requirements
- Protected Server Requirements
- Installing DPM 2007 on a Server
- Installation Considerations
- Step by Step Guide to Installing DPM 2007
- Step-by-Step Guide to Upgrading from DPM 2007 Pre-Release to RTM
- Troubleshooting DPM 2007 Setup Issues
- Installation Issues
- Upgrade Issues
- Uninstallation Issues
- Completing Configuration Tasks
- Opening the DPM Administrator Console
- Navigation Bar
- Menu Bar
- Console Panes
- Information Icon
- Performing Required Configuration Tasks
- Adding Disks to the Storage Pool
- Configuring Tape Libraries
- Installing Protection Agents
- What is a Protection Agent?
- Cross-Domain and Cross-Forest Support
- Configuring Windows Firewall on the DPM Server
- Installing Protection Agents
- Installing Protection Agents behind a Firewall
- Installing Protection Agents using Server Images
- Installing Protection Agents Using Systems Management Server
- Installing Protection Agents with a PowerShell Script
- Troubleshooting Protection Agent Installation
- Potential Issues
- Creating Protection Groups
- Protecting Data with Protection Groups
- Data Sources and Protection Levels
- Protection Group Considerations
- Creating Custom Volumes for Protection Groups
- Potential Issues with Standard Volumes
- Optimizing Performance with Custom Volumes
- Creating Custom Volumes
- Additional Considerations for Using Custom Volumes
- Step-by-Step Guide to Creating Protection Groups
- Starting the Wizard
- Selecting Protection Group Members
- Selecting Protection Methods
- Specifying Short-Term Protection Goals

Five days, Instructor-Led

- Allocating Space for Protection Groups
- Selecting Long-Term Protection Goals
- Selecting Library and Tape Details
- Choosing a Replica Creation Method
- Completing Protection Group Creation
- Completing Custom Volume Preparation
- Creating a Protection Group in DPM Management Shell
- Performing Optional Configuration Tasks
- Optimizing Performance
- Enabling On-the-Wire Compression
- Enabling Server Throttling
- Staggering Synchronization Jobs
- Scheduling Consistency Checks
- Modifying the Express Full Backup Schedule
- Enabling End-User Recovery
- Extending the Active Directory Schema for End User Recovery
- Step-by-Step Guide to Extending Active Directory for End User Recovery
- Installing Shadow Copy Client Software
- Subscribing to Alerts and Notifications
- Configuring SMTP Servers
- Publishing DPM Alerts
- Installing the DPM Management Shell
- Review

#### **Lab 1: Installing and Configuring DPM 2007**

#### **Lab 2: Configuring DPM 2007**

#### **Lab 3: Working with End-User Recovery**

#### **Lab 4: Subscribing to Alerts and Notifications**

---

### MODULE 3: EXTENDING DPM PROTECTION TO ENTERPRISE APPLICATIONS

This module explains how to extend data protection to Exchange Servers, SQL Servers, SharePoint and Clustered servers, and Virtual Server Hosts and Virtual Machines by installing protection agents and configuring protection groups.

During lab exercises that accompany this module, you will install protection agents on an Exchange Server, a SQL Server, a SharePoint server, and a Virtual Server Host, create protection groups on the DPM server, and monitor data collection.

#### Lessons

- Overview
- General Requirements
- Planning Protection Groups
- Designing Protection Groups for Exchange and SQL Servers
- Managing Protected Servers
- Performing General Server Maintenance
- Using Windows Maintenance Tools
- Applying Operating System Updates
- Running Antivirus Software

Five days, Instructor-Led

- End User Recovery Only Supported for File Servers
- Considerations for Protecting File Servers
- Changing the Path of an Encrypted Data Source
- Renaming a File Server
- Changing the Time Zone of File Servers
- Protecting Exchange Servers
- Considerations for Protecting Exchange Servers
- Understanding Exchange Storage Groups
- Installing Protection Agents on Exchange Servers
- Creating Exchange Server Protection Groups
- Starting the Create New Protection Group Wizard
- Selecting Protection Group Members
- Selecting Protection Methods
- Specifying Short-Term Protection Goals
- Specifying Exchange Protection Options
- Allocating Disk Space
- Selecting Long-Term Protection Goals
- Choosing a Replica Creation Method
- Completing Protection Group Creation
- Protecting SQL Servers
- Considerations for Protecting SQL Servers
- Adding Databases
- Changing Database File Paths
- Renaming Databases
- Co-existing with Other Backup Applications
- Performance Optimizations for Slow Networks
- End-user Recovery is Not Supported
- Installing Protection Agents on SQL Servers
- Creating SQL Server Protection Groups
- Starting the Create New Protection Group Wizard
- Selecting Data to Protect
- Selecting Protection Methods
- Specifying Short-Term Protection Goals
- Allocating Disk Space
- Specifying Long-Term Protection Policies
- Protecting SharePoint Server Farms
- DPM 2007 Support for SharePoint Versions
- Considerations for Protecting SharePoint Servers
- SharePoint Writer Must be Registered and Started
- Upgrading Windows SharePoint Services
- Adding Databases to a Windows SharePoint Services Farm
- Recovering SharePoint Databases
- SharePoint System Architecture
- Web Servers
- Content Database Servers
- Configuration Database

Five days, Instructor-Led

- Web Server Topology
- SharePoint Farm Layout
- Installing Protection Agents on Windows SharePoint Farms
- Registering and Starting the WSS Writer Service
- Installing the Protection Agent
- Providing SharePoint Credentials to the Protection Agent
- Creating SharePoint Protection Groups
- Protecting Virtual Machines
- DPM 2007 Support for Virtual Hosts and Virtual Machines
- Typical Protection for Virtual Machines
- Better Protection for Virtual Machines with DPM
- Application Awareness
- Ease of Use and Management
- Using DPM 2007 to Protect Virtual Server Hosts and Virtual Machines
- Considerations for Virtual Machine Protection
- Adding Virtual Machines
- Changing Virtual Machine File Paths
- Protecting Application Data on Virtual Machines
- Performance Optimizations for Slow Networks
- Installing DPM Protection Agents on Virtual Servers
- Creating Virtual Machine Protection Groups
- Review

#### **Lab 1: Protecting Exchange Data**

#### **Lab 2: Protecting a SQL Database**

#### **Lab 3: Protecting a SharePoint Database (Optional)**

---

### MODULE 4: EXAMINING PROTECTED DATA BACKUP AND RECOVERY

This module provides step-by-step instructions to prepare for recovery of DPM servers, backup protected computer system states, and recover and restore system states and protected data for the DPM Server, Exchange Servers, SQL Servers, and Virtual Server Machines. Topics also explain how to synchronize the DPM Server with data protected data in the storage pool.

#### Lessons

- Overview
- Preparing for Disaster Recovery
- Disaster Recovery Review
- Backing Up Protected Computer System States
- DPM Server Components that Require Backup
- DPM Database and Report Database
- Replicas
- DPM Config folder
- ScriptingConfig.xml and Other Scripts
- Backing up the DPM Server
- Backing Up DPM from a Secondary DPM Server
- Backing up DPM Databases to Tape from the Primary DPM Server
- Backing up with Third-Party Software

Five days, Instructor-Led

- Recovering Protected Computers
- Recovering System State to Protected Computers
- Recovering System State Files
- Restoring System State Files
- Recovering Protected Computers to New Hardware
- Recovering Protected Computers from a Secondary DPM Server
- Recovering DPM Servers
- Recovering DPM Databases
- Recovering DPM Replicas
- Performing a Bare Metal Recovery of a DPM Server
- Synchronizing DPM Databases with DpmSync
- Using Pre-backup and Post-backup Scripts
- Recovering Protected Exchange Data
- Choosing Exchange Data Recovery Methods
- Recovering Storage Groups
- Recovering a Storage Group to its Original Location
- Recovering a Storage Group to a Network Folder
- Recovering Mailboxes
- Recovering a Protected Mailbox
- Recovering Protected SQL Data
- Choosing SQL Server Recovery Methods
- Recover Database to Original Location
- Recover Databases to Alternate Locations on the Same Server
- Recover Databases to an Alternate Server
- Recover Database Files to Tape
- Recovering a SQL Database to its Original Location
- Recovering a Renamed Copy of a SQL Database
- Recovering a SQL Database to a Network Folder
- Recovering a Copy of the SQL Database to Tape
- Recovering Protected Virtual Machines
- Choosing a Virtual Machine Recovery Method
- Recovering Virtual Machines to Original Locations
- Recovering Virtual Machines to Alternate Locations
- Recovering a Virtual Machine to its Original Location
- Recovering a Virtual Machine to a Network Folder
- Review

#### **Lab 1: Protecting and Restoring a DPM Server**

#### **Lab 2: Restoring Exchange Data**

#### **Lab 3: Restoring a SQL Database**

#### **Lab 4: Restoring a SharePoint Database (Optional)**

---

#### MODULE 5: TROUBLESHOOTING DPM 2007

This module provides an overview of techniques for troubleshooting DPM environments to resolve DPM Server and protection agent installation issues. Topics also explain how to use the Windows PowerShell-based DPM Management Shell to manage and maintain DPM environments.

During lab exercises that accompany this module, you will use DPM tools and utilities to perform typical maintenance and repair tasks.

#### Lessons

- Overview
- Troubleshooting DPM Installation and Upgrade
- Analyzing Issues
- Reviewing Error Details in DPM Setup
- Reviewing Installation Logs
- Resolving DPM Installation Issues
- An Installation of a Prerequisite Failed
- Non-DPM Applications are Interrupted by DPM Installation
- Disks are Missing
- Errors Occur When Running from a UNC Path
- Tape Libraries Malfunction or Display Incorrectly
- End-user Recovery Permissions Update Failed
- Resolving DPM 2007 Pre-release to RTM Upgrade Issues
- DMP V2 Beta 2 to DPM 2007 Upgrade Failure
- Protection Agent Upgrade Failure
- Resolving DPM 2007 Uninstallation Issues
- Uninstalling DPM 2007
- Removing or Retaining Recovery Points
- Uninstalling Prerequisite Software
- Uninstalling Protection Agents
- Uninstalling DPM-Specific User Settings
- Watson Errors during DPM Uninstallation
- Repairing DPM 2007
- Troubleshooting Protection Agent Installation
- Analyzing and Resolving Protection Agent Installation Failures
- DPM Protection Agent Will Not Install on a Computer
- Resolving Issues Indicated by Error Messages
- Using Alerts to Maintain and Monitor DPM
- Understanding Alerts
- Alert Severity
- Alert Status
- Dynamic Nature of Alerts
- Relationship Between Alerts and Jobs
- Resolving Alerts
- Using DPM Help to Obtain Information about Alerts
- Monitoring Alerts
- Troubleshooting with the DPM Management Shell
- Review