



## **Automating Windows Server 2008 Administration with Windows PowerShell (MS6434)**

**Duration: 3 days**

### **Description**

This course provides students with the knowledge and skills to utilize Windows PowerShell for administering and automating administration of Windows Server 2008. The course focuses on cmdlets, script structure and flow control, language syntax, and implementation details of scripting administrative tasks using COM, WMI, and .NET foundations.

### **Audience**

This course is intended for Windows administrators interested in automating Windows Server 2008 administration tasks, as well as those people looking for a full-featured interactive command-line environment for Windows operating systems. Windows end users or developers who need to understand what is involved in Windows administration or command-line environments may also find this course helpful.

### **Prerequisites**

Before attending this course, students should have completed Course 6430: Planning and Administering Windows Server 2008 Servers, or have equivalent knowledge of administrative tasks.

In addition, it is recommended, but not required, that students have completed Course 2433: Microsoft Visual Basic Scripting Edition and Microsoft Windows Script Host Essentials, or have equivalent knowledge of scripting and automation in Windows.

### **Topics**

#### **MODULE 1: INTRODUCTION TO MICROSOFT WINDOWS POWERSHELL**

This module explains how to check your system for prerequisites for Windows PowerShell, use Server Manager to install Windows PowerShell architecture, confirm installation, and use Windows PowerShell commands to customize the Windows PowerShell environment.

##### *Lessons*

- Introduction to Windows PowerShell
- Installing Windows PowerShell in Windows Server 2008

*Lab 1: Implementing Windows PowerShell*

- Installing Windows PowerShell
- Customizing Windows PowerShell

#### **MODULE 2: OVERVIEW OF MICROSOFT WINDOWS POWERSHELL**

This module explains basic concepts in Windows PowerShell, including objects, variables, cmdlets, and pipelines. It describes how to invoke available cmdlets and aliases, assign aliases. The module also includes demonstrations of tab expansion and basic operators.

##### *Lessons*

- Overview of Objects
- Working with Cmdlets
- Tab Expansion, Aliases, and History

## Automating Windows Server 2008 Administration with Windows PowerShell (MS6434)

- Using Variables and Types

*Lab 1: Working with Windows PowerShell Cmdlets, Aliases, Objects, and Variables*

- Learning Cmdlets and Defining Aliases
- Holding the Output of a Cmdlet

### MODULE 3: BUILDING PIPELINES FOR ASSEMBLY-LINE STYLE PROCESSING

This module explains how to use a pipeline to connect the output of one cmdlet to the input of another, reorder objects, and filter objects based on specific properties. Arrays and their uses are also discussed.

*Lessons*

- Using Pipelines
- Using Arrays
- Filtering and Iterating Through the Pipeline
- Reordering Objects in a Pipeline

*Lab 1: Implementing Pipelines in Windows PowerShell*

- Evaluating Process Properties Using the Get-Member Cmdlet
- Calculating Process Memory Usage
- Using Associative Array Variables
- Sorting and Selecting Elements from a Resultant Set of Data
- Define arrays of data and hold cmdlet and pipeline results in an array
- Filter objects that are flowing through a pipeline by using cmdlets such as Where-Object
- Reorder objects and choose specific properties to filter objects that are coming down a pipeline by using the Sort-Object cmdlet and Select-Object cmdlets

### MODULE 4: MANAGING PROCESSES AND FORMATTING CMDLET OUTPUT

This module explains how to choose a format in which to present data that is appropriate to the data set, format specific process properties, such as memory usage or CPU time, and use custom formatting. It also describes how you can view, start, and stop processes and services.

*Lessons*

- Managing Windows Processes with Microsoft Windows PowerShell
- Formatting Cmdlet Output

*Lab 1: Output Formatting and Process Control with Windows PowerShell*

- Implementing Basic Formatting Control
- Formatting with the -f Operator
- Implementing Advanced Formatting

### MODULE 5: INTRODUCTION TO SCRIPTING WITH MICROSOFT WINDOWS POWERSHELL

This module explains how to write and modify scripts to perform a sequence of cmdlets. Security and working with credentials are also discussed.

*Lessons*

- Writing Windows PowerShell Scripts
- Script Parameters
- Security in Windows PowerShell
- Customizing Windows PowerShell with Profiles

*Lab 1: Implementing Scripts in Windows PowerShell*

- Writing and Running a Script
- Customizing Profiles

## Automating Windows Server 2008 Administration with Windows PowerShell (MS6434)

### MODULE 6: IMPLEMENTING FLOW CONTROL AND FUNCTIONS

This module explains how to move scripts into functions and add functions to profiles. Flow of execution based on a common input, iterating in general and iterating through an array or collection are also discussed.

#### Lessons

- Controlling the Flow of Execution Within Scripts
- Iteration Flow Control
- Developing and Using Functions

#### Lab 1: Implementing Functions and Flow Control in Windows PowerShell

- Adding Flow Control in a Script
- Creating Functions

### MODULE 7: WORKING WITH FILES, THE REGISTRY, AND CERTIFICATE STORES

This module explains how to write scripts that perform specific tasks, such as searching files for particular text and modifying all matching files, or searching the event logs for events that match specific criteria. It also describes how to access data stores, the file store, the registry, certificate stores, and other stores, use wildcards and regular expressions, and import and export aliases and objects.

#### Lessons

- Using Data Stores
- Using Providers
- Filtering and Selecting with Regular Expressions
- Implementing Event Log Management
- Persisting Objects in Files

#### Lab 1: Working with Files, the Registry, and Certificate Stores

- Searching for Certain Files
- Modifying Registry Entries
- Generating Reports
- Generating Reports on the Security Log
- Comparing Files

### MODULE 8: MANAGING THE WINDOWS OPERATING SYSTEM USING MICROSOFT WINDOWS POWERSHELL AND WMI

This module explains how to use WMI to access system features, enumerate, defragment, and mount disk volumes in Windows PowerShell. Listing and configuring volume shadow copies, listing and creating shared folders with WMI, and configuring Terminal Services and IIS properties are also discussed.

#### Lessons

- Introduction to WMI and WMI Objects
- Managing Disks and Disk Volumes Using Windows PowerShell with WMI
- Managing Shadow Copies Using Windows PowerShell with WMI
- Managing Shared Folders with Windows PowerShell
- Managing Terminal Services with WMI
- Managing IIS 7.0 with WMI
- Using WMI Type Accelerators

#### Lab 1: Managing the Windows Operating System with Windows PowerShell and WMI

- Using WMI Classes in Windows PowerShell
- Using WMI Type Accelerators

## Automating Windows Server 2008 Administration with Windows PowerShell (MS6434)

- Managing Disk Volumes in Windows PowerShell
- Defragmenting Disk Volumes Using Windows PowerShell
- Managing IIS 7.0 Properties Using WMI

### MODULE 9: ADMINISTERING ACTIVE DIRECTORY WITH MICROSOFT WINDOWS POWERSHELL

This module explains how to write scripts to perform Active Directory administration tasks such as changing the domain functional level, moving FSMO roles, and creating and modifying objects such as groups and user accounts. Managing relationships between user accounts and groups is also demonstrated.

#### Lessons

- Administering Domains and Forests Using .NET Objects
- Managing User Accounts and Groups Using ADSI
- Managing Relationships Between Users and Groups
- Web Administration Using IIS 7.0

#### Lab 1: Administering Active Directory with Windows PowerShell

- Managing Active Directory Domain and Forest Properties
- Maintaining Active Directory with ADSI
- Maintaining Relationships in Active Directory with ADSI
- Managing IIS 7.0 with the .NET Web.Administration.ServerManager Class

### MODULE 10: ADMINISTERING GROUP POLICY IN MICROSOFT WINDOWS POWERSHELL USING COM

This module explains how to write scripts to perform Active Directory administration tasks such as changing the domain functional level, moving FSMO roles, and creating and modifying objects such as groups and user accounts. Managing relationships between user accounts and groups is also demonstrated.

#### Lessons

- Managing GPOs Using the GPMC COM Interface
- Managing Group Policy Objects
- Reporting Group Policy

#### Lab 1: Administering Group Policy in Microsoft Windows PowerShell

- Retrieving a GPO by Using a COM Object
- Copying Group Policy Settings
- Backing Up and Restoring a GPO
- Generating Group Policy Reports