Automating Administration with Windows PowerShell

Overview

This course provides students with the fundamental knowledge and skills to use Windows PowerShell for administering and automating administration of Windows servers. This course provides students the skills to identify and build the command they require to perform a specific task. In addition, students learn how to build scripts to accomplish advanced tasks such as automating repetitive tasks and generating reports. This course provides prerequisite skills supporting a broad range of Microsoft products, including Windows Server, Windows Client, Microsoft Exchange Server, Microsoft SharePoint Server, Microsoft SQL Server, System Center, and more. In keeping with that goal, this course will not focus on any one of those products, although Windows Server, which is the common platform for all of those products, will serve as the example for the techniques this course teaches.

Outcomes

After completing this course, students will gain the skills to:

- Describe the functionality of Windows PowerShell and use it to run and find basic commands.
- Identify and run cmdlets for server administration.
- Work with Windows PowerShell pipeline.
- Describe the techniques Windows PowerShell pipeline uses.
- Use PSProviders and PSDrives to work with other forms of storage.
- Query system information by using WMI and CIM.
- Work with variables, arrays, and hash tables.
- Write basic scripts in Windows PowerShell.
- Write advanced scripts in Windows PowerShell.
- Administer remote computers.Use background jobs and scheduled jobs.
- Use advanced Windows PowerShell techniques.

Audience

This course is intended for IT Professionals already experienced in general Windows Server and Windows Client administration or already experienced in administering and supporting Application servers and services including applications like Exchange, SharePoint, and SQL. It is broadly intended for students who want to use Windows PowerShell to automate administrative tasks from the command line, using any Microsoft or independent software vendor (ISV) product that supports Windows PowerShell manageability. This course is not intended to be a scripting or programming course, and includes only basic coverage of scripting and programming topics. Students are not expected to have prior scripting or programming experience, and are not expected to have prior Windows PowerShell experience

Skills Gained

After completing this course, students will be able to:

- Describe the functionality of Windows PowerShell and use it to run and find basic commands.
- Identify and run cmdlets for server administration.
- Work with Windows PowerShell pipeline.
- Describe the techniques Windows PowerShell pipeline uses.
- Use PSProviders and PSDrives to work with other forms of storage.
- Query system information by using WMI and CIM.
- Work with variables, arrays, and hash tables.

- Write basic scripts in Windows PowerShell.
- Write advanced scripts in Windows PowerShell.
- Administer remote computers.
- Use background jobs and scheduled jobs.
- Use advanced Windows PowerShell techniques.

Prerequisites

Important Course Information Important Course Information Requirements: Requirements:

- Before attending this course, students must have:
  - Previous Windows Server and Windows Client management knowledge and hands on experience.
  - Experience installing and configuring Windows Server into existing enterprise environments, or as standalone installations.
  - Knowledge and experience of network adapter configuration, basic Active Directory user administration, and basic disk configuration.
  - Knowledge and hands on experience specifically with Windows Server 2012/Windows Server 2012 R2 and Windows 8/Windows 8.1 would be of benefit but is not essential.

Before attending this course, students must have:

- Previous Windows Server and Windows Client management knowledge and hands on experience.
- Experience installing and configuring Windows Server into existing enterprise environments, or as standalone installations.
- Knowledge and experience of network adapter configuration, basic Active Directory user administration, and basic disk configuration.
- Knowledge and hands on experience specifically with Windows Server 2012/Windows Server 2012 R2 and Windows 8/Windows 8.1 would be of benefit but is not essential.

Knowledge and hands on experience specifically with Windows Server 2012/Windows Server 2012 R2 and Windows 8/Windows 8.1 would be of benefit but is not essential. Redeem Your Microsoft Training Vouchers (SATV): Redeem Your Microsoft Training Vouchers (SATV):

- This course is eligible for Microsoft Software Assurance Training Voucher (SATV) redemption.

Want to learn more about Microsoft SATVs?

Click to view our SATVs infographic.

Module 1: Getting started with Windows PowerShellThis module will introduce you to Windows PowerShell and provide an overview of the product's functionality. The module shows you how to open and configure the shell for use and how to run commands within the shell. The module also introduces the built-in Help system in Windows PowerShell.Lessons

- Overview and background of Windows PowerShell
- Understanding command syntax
- Finding commands

Lab : Configuring Windows PowerShell

- Configuring the Windows PowerShell console
- Configuring the Windows PowerShell ISE application

Lab : Finding and running basic commands

- Running commands
- Using the About files

After completing this module, students will be able to:

- Open and configure Windows PowerShell.

- Find and run Windows PowerShell commands.
- Run commands by using the correct command and parameter syntax.

Module 2: Cmdlets for administrationThis module introduces you to the cmdlets commonly used for administration. While you can search for cmdlets each time you need to accomplish a task, it is more efficient to have at least a basic understanding of the cmdlets available for system administration.Lessons

- Active Directory administration cmdlets
- Network configuration cmdlets
- Other server administration cmdlets

Lab : Windows Administration

- Creating and managing Active Directory objects
- Configuring network settings on Windows Server
- Creating a web site

- Identify and use cmdlets for Active Directory administration.
- Identify and use cmdlets for network configuration.
- Identify and use cmdlets for other server administration tasks.

Module 3: Working with the Windows PowerShell pipelineThis module introduces the pipeline feature of Windows PowerShell. Although the pipeline feature is included in several command-line shells such as the command prompt in the Windows operating system, the pipeline feature in Windows PowerShell provides more complex, more flexible, and more capable functionalities compared to other shells. This module provides you with the skills and knowledge that will help you use the shell more effectively and efficiently.Lessons

- Understanding the pipeline
- Selecting, sorting, and measuring objects
- Filtering objects out of the pipeline
- Enumerating objects in the pipeline
- Sending pipeline data as output

Lab : Using the pipeline

- Selecting, sorting, and displaying data

Lab : Filtering objects

- Filtering objects

Lab : Enumerating objects

- Enumerating objects

Lab : Sending output to a file

- Exporting user information to a file

- Describe the purpose of the Windows PowerShell pipeline.
- Select, sort, and measure objects in the pipeline.
- Filter objects out of the pipeline.
- Enumerate objects in the pipeline.
- Send output consisting of pipeline data.

Module 4: Understanding how the pipeline worksThis module shows you how Windows PowerShell passes

objects from one command to another in the pipeline. The shell provides two techniques that you can use. Knowing how these techniques work, and which one will be used in a given scenario, lets you construct more useful and complex command lines.Lessons

- Passing the pipeline data
- Advanced considerations for pipeline data

Lab : Working with pipeline parameter binding

- Predicting pipeline behaviour

- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.

Module 5: Using PSProviders and PSDrivesThis module introduces the PSProviders and PSDrives adapters. A PSProvider is basically a Windows PowerShell adapter that makes some form of storage resemble a disk drive. A PSDrive is an actual connection to a form of storage. You can use these two adapters to work with various forms of storage by using the same commands and techniques that you use to manage the file system.Lessons

- Using PSProviders
- Using PSDrives

Lab : Using PSProviders and PSDrives

- Creating files and folders on a remote computer
- Creating a registry key for your future scripts
- Create a new Active Directory group

- Use PSProviders.
- Use PSDrives.

Module 6: Querying system information by using WMI and CIMThis module introduces you to two parallel technologies: Windows Management Instrumentation (WMI) and Common Information Model (CIM). Both these technologies provide local and remote access to a repository of management information including access to robust information available from the operating system, computer hardware, and installed software.Lessons

- Understanding WMI and CIM
- Querying data by using WMI and CIM
- Making changes with WMI/CIM

Lab : Working with WMI and CIM

- Querying information by using WMI
- Querying information by using CIM
- Invoking methods

- Explain the differences between Common Information Model (CIM) and Windows Management Instrumentation (WMI).
- Query management information by using CIM and WMI.
- Invoke methods by using CIM and WMI.

Module 7: Working with variables, arrays, and hash tablesThis module provides you the skills and knowledge required to use variables, arrays, and hash tables in Windows PowerShell.Lessons

- Using variables.
- Manipulating variables.

- Manipulating arrays and hash tables.

Lab : Working with variables

- Working with variable types
- Using arrays
- Using hash tables

- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.

Module 8: Basic scriptingThis module shows you how to package a Windows PowerShell command in a script. Scripts allow you to perform repetitive tasks and more complex tasks than cannot be accomplished in a single command.Lessons

- Introduction to scripting
- Scripting constructs
- Importing data from files

Lab : Basic scripting

- Setting a script
- Processing an array with a ForEach loop
- Processing items by using If statements
- Creating a random password
- Creating users based on a CSV file

- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.

Module 9: Advanced scriptingThis module introduces you to more advanced techniques that you can use in scripts. These techniques includes gathering user input, reading input from files, documenting scripts with help information and error handling. Lessons

- Accepting user input
- Overview of script documentation
- Troubleshooting and error handling
- Functions and modules

Lab : Accepting data from users

- Querying disk information from remote computers
- Updating the script to use alternate credentials
- Documenting a script

Lab : Implementing functions and modules

- Creating a logging function
- Adding error handling to a script
- Converting a function to a module

- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.

- Explain functions and modules.

Module 10: Administering Remote ComputersThis module introduces you to the Windows PowerShell remoting technology that enables you to connect to one or more remote computers and instruct them to run commands on your behalf. Lessons

- Using basic Windows PowerShell remoting
- Using advanced Windows PowerShell remoting techniques
- Using PSSessions

Lab : Using basic remoting

- Enabling remoting on the local computer
- Performing one-to-one remoting
- Performing one-to-many remoting

Lab : Using PSSessions

- Using implicit remoting
- Managing multiple computers

- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.

Module 11: Using background jobs and scheduled jobsThis module provides information about the job features of Windows PowerShell. Jobs are an extension point in Windows PowerShell, and there are many different kinds of jobs. Each kind of job can work slightly differently, and has different capabilities. Lessons

- Using background jobs
- Using scheduled jobs

Lab : Using background jobs and scheduled jobs

- Starting and managing jobs
- Creating a scheduled job

- Create and manage background jobs.
- Create and manage scheduled jobs.

Module 12: Using advanced Windows PowerShell techniquesThis module covers several advanced Windows PowerShell techniques and features. Many of these techniques and features extend functionality that you have learned about in previous modules. Some of these techniques are new and provide additional capabilities.Lessons

- Creating profile scripts
- Using advanced techniques

Lab : Practicing advanced techniques

- Creating a profile script
- Verifying the validity of an IP address
- Reporting disk information
- Configuring NTFS permissions
- Creating user accounts with passwords from a CSV file

Lab : Practicing script development (optional)

- TBA

- Create and manage profile scripts.
- Use advanced techniques to work with data.

Visit on Website >>

Need more information? Why not call one of our professional training advisors on **0800 40 848 40** or email us at **training@coursemonster.com**

The training course outline shown above is a standardised version representing all the dates available and may vary from the course you attend. You will be sent the supplier's course outline when you enquire about a specific date.