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Microsoft
Solutions Partner

Microsoft Cloud
Training Services

AZ-040T00: Automating Administration with PowerShell Course

Course Duration: 40 Hours (5 Days)

Overview

The AZ-040T00: Automating Administration with PowerShell course is designed for IT professionals who want to learn how to automate administrative tasks using PowerShell across various Microsoft products. The course covers fundamental concepts starting with the basics of Windows PowerShell, its Command syntax, and how to find commands and get help. Learners will gain hands-on experience through labs that simulate real-world scenarios. The curriculum progresses through managing local systems, working with the PowerShell pipeline, using PS Providers and PS Drives, querying information with CIM and WMI, and handling Variables, arrays, and hash tables. Scripting with PowerShell is a key focus, offering insights into Script constructs, Data import, user input, troubleshooting, and creating functions and modules. Advanced topics include Administering remote computers, Managing Azure resources, and Controlling Microsoft 365 services all through PowerShell. The course also teaches how to utilize Background and scheduled jobs for task automation. Completing the AZ-040 course equips learners with the skills to efficiently manage and automate a wide range of administrative tasks, enhancing their IT proficiency and productivity.

Audience Profile

The AZ-040T00 course empowers IT professionals to automate administration using PowerShell, enhancing efficiency and proficiency.

- System Administrators and Engineers
- IT Professionals with a focus on Windows Server management
- DevOps Engineers who implement automation and configuration management
- Network Administrators seeking to automate network tasks
- Security Analysts aiming to streamline security protocols
- Cloud Administrators managing Azure or Microsoft 365 environments
- Support Technicians automating repetitive tasks
- Database Administrators using PowerShell for database management
- Professionals responsible for Active Directory management and automation
- Technical Consultants providing IT solutions and infrastructure automation
- Software Developers needing to integrate PowerShell in their workflows
- Anyone seeking to learn scripting and automation in a Windows environment

Course Syllabus

Module 1: Getting started with Windows PowerShell

This module will introduce you to Windows PowerShell and provide an overview of the product's functionality. The module explains how to open and configure Windows PowerShell. It also explains how to run commands and use the built-in Help system in Windows PowerShell.

Lessons

- Windows PowerShell overview
- Understanding Windows PowerShell command syntax
- **Lab:** Configuring the Windows PowerShell console application
- **Lab:** Configuring the Windows PowerShell ISE application
- **Lab:** Finding and running Windows PowerShell commands
- **Lab:** Using Help and About files

After completing this module, students will be able to:

- Open and configure Windows PowerShell.
- Discover, learn, and run Windows PowerShell commands.
- Find Windows PowerShell commands for performing specific tasks

Module 2: Windows PowerShell for local systems administration

This module introduces you to the different types of cmdlets commonly used for system 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 these cmdlets. This module also explains how to install and start using Windows PowerShell in Windows 10.

Lessons

- Active Directory Domain Services administration cmdlets
- Network configuration cmdlets
- Server administration cmdlets
- Windows PowerShell in Windows 10
- **Lab:** Creating a website
- **Lab:** Configuring network settings on Windows Server
- **Lab:** Creating and managing Active Directory objects

After completing this module, students will be able to:

- Identify and use cmdlets for AD DS administration.
- Identify and use cmdlets for network configuration.
- Identify and use cmdlets for server administration tasks.
- Install and use Windows PowerShell in Windows 10.

Module 3: Working with the Windows PowerShell pipeline

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

Lessons

- Understand the pipeline
- Select, sort, and measure objects
- Filter objects out of the pipeline
- Enumerate objects in the pipeline
- Send and pass pipeline data as output
- **Lab:** Selecting, sorting, and displaying data
- **Lab:** Filtering objects
- **Lab:** Enumerating objects
- **Lab:** Converting objects

After completing this module, students will be able to:

- 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: Using PS Providers and PS Drives

This module introduces the PS Providers and PS Drives adapters. A PS Provider is basically a Windows PowerShell adapter that makes some form of storage resemble a disk drive. A Posidrive 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 PS Providers
- Using PS Drives
- **Lab:** Create a new Active Directory group
- **Lab:** Creating a registry key for your future scripts
- **Lab:** Creating files and folders on a remote computer

After completing this module, students will be able to:

- Use PS Providers.
- Use PS Drives.

Module 5: Querying management information by using CIM and WMI

This 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

- Understand CIM and WMI
- Query data by using CIM and WMI
- Make changes by using CIM and WMI
- **Lab:** Querying information by using WMI
- **Lab:** Querying information by using CIM
- **Lab:** Invoking methods

After completing this module, students will be able to:

- Differentiate between Common Information Model and Windows Management Instrumentation.
- Query management information by using CIM and WMI.
- Invoke methods by using CIM and WMI.

Module 6: Working with variables, arrays, and hash tables

This module provides you the skills and knowledge required to use variables, arrays, and hash tables in Windows PowerShell.

Lessons

- Use variables
- Manipulate variables
- **Lab:** Using hash tables
- **Lab:** Using arrays
- **Lab:** Working with variable types

After completing this module, students will be able to:

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

Module 7: Windows PowerShell scripting

This module explains 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 with Windows PowerShell
- Script constructs
- Import data from files
- Accept user input
- Troubleshooting and error handling
- Functions and modules
- **Lab:** Signing a script
- **Lab:** Processing an array with a For Each loop
- **Lab:** Processing items by using If statements
- **Lab:** Creating users based on a CSV file
- **Lab:** Querying disk information from remote computers
- **Lab:** Updating the script to use alternate credentials

After completing this module, students will be able to:

- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Obtain user input.
- Troubleshoot scripts and understand error actions.
- Create functions and modules

Module 8: Administering remote computers with Windows PowerShell

This 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

- Use basic Windows PowerShell remoting
- Use advanced Windows PowerShell remoting techniques
- Use PS Sessions
- **Lab:** Managing multiple computers
- **Lab:** Using implicit remoting
- **Lab:** Performing one-to-many remoting
- **Lab:** Performing one-to-one remoting
- **Lab:** Enabling remoting on the local computer

After completing this module, students will be able to:

- Describe remoting architecture and security.
- Use advanced remoting techniques.

- Create and manage persistent remoting sessions.

Module 9: Managing Azure resources with PowerShell

This module provides information about Azure PowerShell. It also introduces Azure Cloud Shell. It explains how to manage Azure VMs with PowerShell. The module also describes how you can manage storage and Azure subscriptions with Azure PowerShell

Lessons

- Azure PowerShell
- Introduce Azure Cloud Shell
- Manage Azure VMs with PowerShell
- Manage storage and subscriptions
- **Lab:** Installing Azure PowerShell module
- **Lab:** Installing Cloud Shell
- **Lab:** Managing Azure resources with Azure PowerShell

After completing this module, students will be able to:

- Use Azure Cloud Shell.
- Manage Azure VMs with PowerShell.
- Manage storage and subscriptions.

Module 10: Managing Microsoft 365 services with PowerShell

This module describes how to use PowerShell to manage Microsoft 365 user accounts, licenses, and groups, Exchange Online, SharePoint Online, and Microsoft Teams.

Lessons

- Manage Microsoft 365 user accounts, licenses, and groups with PowerShell
- Manage Exchange Online with PowerShell
- Manage SharePoint Online with PowerShell
- Manage Microsoft Teams with PowerShell
- **Lab:** Managing Exchange Online resources with Windows PowerShell
- **Lab:** Managing SharePoint Online with Windows PowerShell
- **Lab:** Managing Microsoft 365 user and group objects with Windows PowerShell
- **Lab:** Connecting to Microsoft 365 with Windows PowerShell

After completing this module, students will be able to:

- Manage Microsoft 365 user accounts, licenses, and groups with PowerShell.
- Manage Exchange Online with PowerShell.
- Manage SharePoint Online with PowerShell.

- Manage Microsoft Teams with PowerShell.

Module 11: Using background jobs and scheduled jobs

This module describes how to use background jobs and scheduled jobs. It also explains how to create schedules jobs and retrieve job results.

Lessons

- Use background jobs
- Use scheduled jobs
- **Lab:** Starting and managing jobs
- **Lab:** Creating a scheduled job

After completing this module, students will be able to:

- Create and use background jobs.
- Create and use schedules jobs