Automating Administration with Windows PowerShell

Duration: 5 Days      Course Code: M10961      Version: C

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.

Target Audience:

This course is intended for IT Professionals who are already experienced in general Windows Server and Windows Client administration, and who want to learn more about using Windows PowerShell for administration. No prior experience with any version of Windows PowerShell, or any scripting language, is assumed. This course is also suitable for IT Professionals already experienced in server administration, including Exchange Server, SharePoint Server, SQL Server, System Center, and others.

Objectives:

- After completing this course, students will be able to:
  - Work with variables, arrays, and hash tables.
  - 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 PSPProviders and PSDrives to work with other forms of storage.
  - Query system information by using WMI and CIM.
  - 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:

- Experience with Windows networking technologies and implementation.
- Experience with Windows Server administration, maintenance, and troubleshooting.
- Experience with Windows Client administration, maintenance, and troubleshooting.
- Students who attend this training can meet the prerequisites by obtaining equivalent knowledge and skills through practical experience as a Windows system administrator. No prerequisite courses are required.
Content:

Course Outline 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 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
- Active Directory administration cmdlets
- Network configuration cmdlets
- Other server administration cmdlets
- Passing the pipeline data
- Advanced considerations for pipeline data
- Using PSProviders
- Using PSDrives
- Understanding WMI and CIM
- Querying data by using WMI and CIM
- Making changes with WMI/CIM
- Using variables.
- Manipulating variables.
- Manipulating arrays and hash tables.
- Introduction to scripting
- Scripting constructs
- Importing data from files
- Accepting user input
- Overview of script documentation
- Troubleshooting and error handling
- Functions and modules
- Using basic Windows PowerShell remoting
- Using advanced Windows PowerShell remoting techniques
- Using PSSessions
- Using background jobs
- Using scheduled jobs
- Creating profile scripts
- Using advanced techniques

Lab : Configuring Windows PowerShell

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

Lab : Finding and running basic commands

- Finding 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.
- 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 pipeline

This module introduces the PSPowershell and PSDrive

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

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.
- 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 pipeline

- 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.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data.

Module 2: Cmdlets for Administration

This 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.

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

- 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.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data.

Module 10: Administering Remote Computers

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.

- Overview and background of Windows PowerShell.
- Understanding command syntax.
- Finding commands.
- Active Directory administration cmdlets.
- Network configuration cmdlets.
- Other server administration cmdlets.
- Passing the pipeline data.
- Advanced considerations for pipeline data.
- Use PSProviders.
- Use PSDrives.
Module 3: Working with the Windows PowerShell pipeline

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.

Lab : Using basic remoting

Enable remoting on the local computer.
Performing one-to-one remoting.
Performing one-to-many remoting.

Lab : Using PSSessions

Using implicit remoting.
Managing multiple computers.

Module 6: Querying system information by using WMI and CIM

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

Overview and background of Windows PowerShell
Understanding command syntax
Finding commands
Active Directory administration cmdlets
Network configuration cmdlets
Other server administration cmdlets
Passing the pipeline data
Advanced considerations for pipeline data
Using PSSessions
Using PSProviders
Understanding WMI and CIM
Querying data by using WMI and CIM
Making changes with WMI/CIM
Using variables.
Manipulating variables.
Manipulating arrays and hash tables.
Introduction to scripting
Scripting constructs
Importing data from files
Accepting user input
Overview of script documentation
Troubleshooting and error handling
Functions and modules
Using basic Windows PowerShell remoting techniques
Using advanced Windows PowerShell remoting techniques
Using PSSessions
Using background jobs
Using scheduled jobs
Creating profile scripts
Using advanced techniques

Lab : Windows Administration

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

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.
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 pipeline
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.

Using PSDrives
Understanding WMI and CIM
Querying data by using WMI and CIM
Making changes with WMI/CIM
Using variables.
Manipulating variables.
Manipulating arrays and hash tables.
Introduction to scripting
Scripting constructs
Importing data from files
Accepting user input
Overview of script documentation
Troubleshooting and error handling
Functions and modules
Using basic Windows PowerShell remoting techniques
Using advanced Windows PowerShell remoting techniques
Using PSSessions
Using background jobs
Using scheduled jobs
Creating profile scripts
Using advanced techniques
Overview and background of Windows PowerShell
Understanding command syntax
Finding commands
Active Directory administration cmdlets
Network configuration cmdlets
Other server administration cmdlets
Passing the pipeline data
Advanced considerations for pipeline data
Using PSProviders
Using PSDrives
Understanding WMI and CIM
Querying data by using WMI and CIM
Making changes with WMI/CIM
Using variables.
Manipulating variables.
Manipulating arrays and hash tables.
Introduction to scripting
Scripting constructs
Importing data from files
Accepting user input
Overview of script documentation
Troubleshooting and error handling
Functions and modules
Using basic Windows PowerShell remoting
Using advanced Windows PowerShell remoting techniques
Using PSsessions
Using background jobs
Using scheduled jobs
Creating profile scripts
Using advanced techniques
Lab : Working with WMI and CIM
Querying information by using WMI
Querying information by using CIM
Invoking methods

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.
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 pipeline
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.

Lab : Using the pipeline
Selecting, sorting, and displaying data
Lab : Filtering objects
Filtering objects

Module 11: Using background jobs and scheduled jobs

This 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
Overview and background of Windows PowerShell
Understanding command syntax
Finding commands
Active Directory administration cmdlets
Network configuration cmdlets
Other server administration cmdlets
Passing the pipeline data
Advanced considerations for pipeline data
Using PSProviders
Using PSDrives
Understanding WMI and CIM
Querying data by using WMI and CIM
Making changes with WMI/CIM
Using variables.
Manipulating variables.
Manipulating arrays and hash tables.
Introduction to scripting
Scripting constructs
Importing data from files
Accepting user input
Overview of script documentation
Troubleshooting and error handling
Functions and modules
Using basic Windows PowerShell remoting

Lab : Working with background jobs and scheduled jobs

Module 3: Working with the Windows PowerShell pipeline
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.
Lab : Enumerating objects
- Enumerating objects

Lab : Sending output to a file
- Exporting user information to a file

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.
- 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 pipeline
  - 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.
  - Pass data by using the ByValue technique.
  - Describe the advanced techniques for passing pipeline data.
  - Use PSProviders.
  - Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data.
- Send output consisting of pipeline data.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.

Lab : Using background jobs and scheduled jobs

Module 7: 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
- Overview and background of Windows PowerShell
  - Understanding command syntax
  - Finding commands
  - Active Directory administration cmdlets
  - Network configuration cmdlets
  - Other server administration cmdlets
  - Passing the pipeline data
  - Advanced considerations for pipeline data
  - Using PSProviders
  - Using PSDrives
  - Understanding WMI and CIM
  - Querying data by using WMI and CIM
  - Making changes with WMI/CIM
  - Using variables.
  - Manipulating variables.
  - Manipulating arrays and hash tables.

Module 4: Understanding how the pipeline works
- Send output consisting of pipeline data.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Starting and managing jobs
- Creating a scheduled job

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.
- 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 pipeline
  - 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.
  - Pass data by using the ByValue technique.
  - Describe the advanced techniques for passing pipeline data.
  - Use PSProviders.
  - Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
This 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

- Overview and background of Windows PowerShell
- Understanding command syntax
- Finding commands
- Scripting constructs
- Active Directory administration cmdlets
- Network configuration cmdlets
- Other server administration cmdlets
- Passing the pipeline data
- Advanced considerations for pipeline data
- Using PSProviders
- Using PSDrives
- Understanding WMI and CIM
- Querying data by using WMI and CIM
- Making changes with WMI/CIM
- Using variables.
- Manipulating variables.
- Manipulating arrays and hash tables.
- Introduction to scripting
- Scripting constructs
- Importing data from files
- Accepting user input
- Overview of script documentation
- Troubleshooting and error handling
- Functions and modules
- Using basic Windows PowerShell remoting
- Using advanced Windows PowerShell remoting techniques
- Using PSSessions
- Using background jobs
- Using scheduled jobs
- Creating profile scripts
- Creating profile scripts
- Lab : Working with variables
- Working with variable types
- Using arrays
- Using hash tables
- 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.
  - 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 pipeline
- 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.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data.
- Module 12: Using advanced Windows PowerShell remoting techniques

This 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

- Overview and background of Windows PowerShell
- Understanding command syntax
- Finding commands
- Scripting constructs
- Active Directory administration cmdlets
- Network configuration cmdlets
- Other server administration cmdlets
- Passing the pipeline data
- Advanced considerations for pipeline data
- Using PSProviders
- Using PSDrives
- Understanding WMI and CIM
- Querying data by using WMI and CIM
- Making changes with WMI/CIM
- Using variables.
- Manipulating variables.
- Manipulating arrays and hash tables.
- Introduction to scripting
- Scripting constructs
- Importing data from files
- Accepting user input
- Overview of script documentation
- Troubleshooting and error handling
- Functions and modules
- Using basic Windows PowerShell remoting
- Using advanced Windows PowerShell remoting techniques
- Using PSSessions
- Using background jobs
- Using scheduled jobs
- Creating profile scripts
- Creating profile scripts
- Lab : Working with variables
- Working with variable types
- Using arrays
- Using hash tables
- 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.
  - 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 pipeline
- 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.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data.
constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data

Module 8: Basic scripting

This 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

- Overview and background of Windows PowerShell
- Understanding command syntax
- Finding commands
- Active Directory administration cmdlets
- Network configuration cmdlets
- Other server administration cmdlets
- Passing the pipeline data
- Advanced considerations for pipeline data
- Using PSProviders
- Using PSDrives
- Understanding WMI and CIM
- Querying data by using WMI and CIM
- Making changes with WMI/CIM
- Using variables.
- Manipulating variables.
- Manipulating arrays and hash tables.
- Introduction to scripting
- Scripting constructs
- Importing data from files
- Accepting user input
- Overview of script documentation
- Troubleshooting and error handling
- Functions and modules
- Using basic Windows PowerShell remoting
- Using advanced Windows PowerShell remoting techniques
- Using PSSessions
- Using background jobs
- Using scheduled jobs
- Creating profile scripts
- Using advanced techniques

Lab : Basic scripting

TBA
TBA
TBA

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.
- 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 pipeline
- 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.
- Pass data by using the ByValue technique.
- Describe the advanced techniques for passing pipeline data.
- Use PSProviders.
- Use PSDrives.
- 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.
- Assign a value to variables.
- Describe how to manipulate variables.
- Describe how to manipulate arrays and hash tables.
- Run a Windows PowerShell script.
- Use Windows PowerShell scripting constructs.
- Import data from a file.
- Accept user input for a script.
- Explain script documentation.
- Implement error handling for a script.
- Explain functions and modules.
- Describe remoting architecture and security.
- Use advanced remoting techniques.
- Create and manage persistent remoting sessions.
- Create and manage background jobs.
- Create and manage scheduled jobs.
- Create and manage profile scripts.
- Use advanced techniques to work with data
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

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.
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 pipeline
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.
Pass data by using the ByVal technique.
Describe the advanced techniques for passing pipeline data.
Use PSPredrives.
Use PSDrives.
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.
Assign a value to variables.
Describe how to manipulate variables.
Describe how to manipulate arrays and hash tables.
Run a Windows PowerShell script.
Use Windows PowerShell scripting constructs.
Import data from a file.
Accept user input for a script.
Explain script documentation.
Implement error handling for a script.
Explain functions and modules.
Describe remoting architecture and security.
Use advanced remoting techniques.
Create and manage persistent remoting sessions.
Create and manage background jobs.
Create and manage scheduled jobs.
Create and manage profile scripts.
Use advanced techniques to work with data.
Module 9: Advanced scripting

This module introduces you to more advanced techniques that you can use in scripts. These techniques include gathering user input, reading input from files, documenting scripts with help information and error handling.

Additional Information:

To help you prepare for this exam, Microsoft recommends that you have hands-on experience with the product and that you use the specified training resources. These training resources do not necessarily cover all topics listed in the “Skills measured” section.

Further Information:

For more information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931
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