

3.1.4 PowerShell Facts

PowerShell is a powerful scripting tool that you can use to automate system administration and application management tasks from the command line. Using PowerShell, you can manage the Windows operating system and applications that run on Windows by entering commands from the command line. By writing PowerShell scripts, you can perform management tasks involving a large number of operations much faster than if you were using the graphical user interface (GUI).

Some server management tasks can only be completed using PowerShell.

The following terms are used with PowerShell:

Term	Definition
Command Line	<p>The <i>command line</i> refers to the command line interface (CLI) used to interact with a computer. Commands are entered at the command prompt. The command line interface:</p> <ul style="list-style-type: none">Is text based.Uses a simple command construction, or <i>syntax</i>.Uses <i>flags</i>, or <i>switches</i>, to specify an option in the command.
Cmdlets	<p><i>Cmdlets</i> are commands that an administrator enters at the PowerShell prompt to perform system management tasks. The PowerShell command line interface uses simple command construction, typically in the form of:</p> <p>[verb]-[noun] -[adverb]</p> <p>For example:</p> <ul style="list-style-type: none">new, add, and install are used when creating a new entity.get is used to retrieve information about an existing entity.set is used to make a change to an existing entity.get-help <cmdlet_name> is used to get help with a particular cmdlet. <p>When using PowerShell cmdlets, keep in mind the following:</p> <ul style="list-style-type: none">The cmdlets are usually not case sensitive.If you are using PowerShell to turn on features, use the same case indicated in the cmdlet help.PowerShell cmdlets are designed to be lightweight, easy to recognize, and easy to use.If you type a PowerShell verb followed by a hyphen (for example, new -) and press the TAB key, you can cycle through the available options. This feature is called <i>tab-complete</i>.Installing new services and features on a Windows server may also install additional PowerShell modules that contain cmdlets required to manage the newly-added services and features. <p>If you write a script that requires the cmdlets from a module that hasn't been added to PowerShell, you can add the cmdlets by manually importing the module. This is done using the following cmdlet: Import-Module <module_name></p>
Providers	<p>Windows PowerShell <i>providers</i> allow you to access data stores, such as the registry and certificate store, in a way similar to accessing the file system.</p>

Windows Server 2012 R2 and Windows Server 2016 include the PowerShell Desired State Configuration (DSC) feature, which allows administrators to manage the configuration and environment of computers and devices connected through a cloud infrastructure. With DSC, the administrator uses declarative scripting to specify and manage configuration. DSC resources include the following:

- Management Object Format (MOF) files are used to specify management tasks to be performed. Administrators can create MOF files in a variety of ways, including PowerShell declarative syntax extensions or third-party tools. PowerShell has built-in resources to facilitate MOF creation. These resources include:
 - WindowsFeature** identifies the role, such as Web server.
 - File** identifies and manages files and directories.
 - Group** identifies and manages local Windows groups.
- The keyword **configuration** is used to create MOF files.
- DSC supports push or pull operations.
- DSC Local Configuration Manager runs on target nodes and calls the necessary configuration resources.

