

# **Dell Command | PowerShell Provider**

## Version 2.6 User's Guide



## Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

<b>Chapter 1: Introduction to Dell Command   PowerShell Provider 2.6.....</b>	<b>5</b>
Document scope and intended audience.....	5
What's new in this release.....	5
<b>Chapter 2: System requirements and prerequisites for Dell Command   PowerShell Provider 2.6.....</b>	<b>7</b>
Supported Dell platforms.....	7
Prerequisites.....	7
Installing Windows PowerShell.....	7
Configuring Windows PowerShell.....	8
<b>Chapter 3: Download and installation steps for Dell Command   PowerShell Provider 2.6.....</b>	<b>9</b>
<b>Downloading Dell Command   PowerShell Provider 2.6.....</b>	<b>9</b>
Downloading the Dell Command   PowerShell Provider 2.6 module from the Dell support site.....	9
Downloading and installing the Dell Command   PowerShell Provider 2.6 module from Microsoft Gallery.....	9
Installing Dell Command   PowerShell Provider 2.6.....	10
Unblocking the DellCommandPowerShellProviderDell_<build number>.zip.....	10
Uninstalling Dell Command   PowerShell Provider 2.6.....	10
Upgrading Dell Command   PowerShell Provider 2.6.....	11
<b>Chapter 4: Getting started with Dell Command   PowerShell Provider 2.6.....</b>	<b>12</b>
Importing Dell Command   PowerShell Provider.....	12
Navigating using the Windows PowerShell console.....	13
Supported cmdlets in Dell Command   PowerShell Provider.....	13
Custom functions in Dell Command   PowerShell Provider.....	14
Parameters supported in Dell Command   PowerShell Provider.....	14
Configuring attributes using Dell Command   PowerShell Provider.....	15
Dell Command   PowerShell Provider drive.....	15
Format of the path.....	16
Password parameters.....	16
Features supported in Dell Command   PowerShell Provider.....	16
Using the AutoOn feature.....	16
Using the AdvanceBatteryChargeConfiguration feature.....	17
Using the PrimaryBattChargeCfg feature.....	18
Using the PeakShiftDayConfiguration feature.....	18
Using the Keyboard Backlight Color feature.....	19
Using the BootSequence feature.....	20
Using the BIOS password feature.....	22
Using the HardDisk Drive password feature.....	23
Using TpmSecurity feature.....	24
Desired State Configuration (DSC) for Dell Command   PowerShell Provider.....	25
Primary components of Desired State Configuration.....	25
Sample scripts.....	26

<b>Chapter 5: Setting up Dell Command   PowerShell Provider 2.6 in Windows Preinstallation Environment.....</b>	<b>28</b>
<b>Chapter 6: Accessing help for Dell Command   PowerShell Provider 2.6.....</b>	<b>29</b>
Accessing integrated help within Windows PowerShell console.....	29
<b>Chapter 7: Frequently asked questions for Dell Command   PowerShell Provider 2.6.....</b>	<b>30</b>
<b>Chapter 8: Troubleshooting scenarios for Dell Command   PowerShell Provider 2.6.....</b>	<b>32</b>
<b>Chapter 9: Accessing documents from the Dell EMC support site.....</b>	<b>33</b>

# Introduction to Dell Command | PowerShell Provider 2.6

The Dell Command | PowerShell Provider module enables BIOS configuration for Dell enterprise client systems through the Windows PowerShell interface. It works for local systems, remote systems, and Windows Preinstallation Environment (WinPE).

This document describes the supported attributes, and error reporting in Dell Command | PowerShell Provider.

## Topics:

- [Document scope and intended audience](#)
- [What's new in this release](#)


## Document scope and intended audience

Dell Command | PowerShell Provider documents are designed for IT professionals and system administrators that are familiar with Windows PowerShell environment. These documents help to simplify task automation and configuration management within a powerful scripting environment.

## What's new in this release

- Support for the following new BIOS attributes:
  - In the **Advanced Configuration** category:
    - PcieLinkSpeed
  - In the **Boot Configuration** category:
    - MicrosoftUefiCa
  - In the **Connection** category:
    - HttpsBootMode
    - WlanAntSwitch
    - WwanAntSwitch
    - GpsAntSwitch
  - In the **Integrated Devices** category:
    - TypeCDockVideo
    - TypeCDockAudio
    - TypeCDockLan
  - In the **Keyboard** category:
    - RgbPerKeyKbdLang
    - RgbPerKeyKbdColor
  - In the **Maintenance** category:
    - NodeInterleave
  - In the **Performance** category:
    - MultipleAtomCores
    - PcieResizableBar
    - TCCActOffset
  - In the **Pre Enabled** category:
    - CamVisionSen
  - In the **Secure Boot** category:

MSUefiCA

- In the **Security** category:  
LegacyInterfaceAccess
  - In the **System Configuration** category:
    - IntelGna
    - Usb4CmM
    - EmbUnmngNic
    - ProgramBtnConfig
    - ProgramBtn1
    - ProgramBtn2
    - ProgramBtn3
  - In the **System Management** category:
    - AutoRtcRecovery
    - VerticalIntegration
  - In the **Virtualization Support** category:
    - PreBootDma
    - KernelDma
  - Upgraded libxml2 open-source library to the latest version.
-  **NOTE:** For more information about the newly supported BIOS features, see <https://www.dell.com/support/kbdoc/en-us/000183090/dell-command-monitor-dell-command-configure-dell-command-power>.

# System requirements and prerequisites for Dell Command | PowerShell Provider 2.6

This section describes the supported software and prerequisites for using Dell Command | PowerShell Provider.

## Topics:

- [Supported Dell platforms](#)
- [Prerequisites](#)

## Supported Dell platforms

For information on supported Dell platforms see Dell Command | PowerShell Provider Release Notes available at [dell.com/support](https://dell.com/support).

## Prerequisites

Before installing Dell Command | PowerShell Provider, ensure that you have the following system configuration:

**Table 1. Supported software**

Supported software	Supported versions	Additional information
Operating systems	Windows 11 21H2, Windows 10, Windows Red Stone RS1, RS2, RS3, RS4, RS5, RS6, 19H1, 19H2, and 20H1	Windows 7 natively includes PowerShell 2.6. This can be upgraded to 3.0 to meet the software requirements for using Dell command   PowerShell Provider.
Windows Management Framework (WMF)	WMF 3.0, 4.0, 5.0, and 5.1	WMF 3.0, 4.0, 5.0, and 5.1 must be available.
Windows PowerShell	3.0 and later	See <a href="#">Installing Windows PowerShell</a> and <a href="#">Configuring Windows PowerShell</a> .
SMBIOS	2.4 and later	The target system is a Dell manufactured system with System Management Basic Input Output System (SMBIOS) version 2.4 or later. <b>NOTE:</b> To identify the SMBIOS version of the system, click <b>Start &gt; Run</b> , and run the <b>msinfo32.exe</b> file. Check for the SMBIOS version in <b>System Summary</b> page.
Microsoft Visual C+ + redistributable	2010, 2015, and 2019	2010, 2015, and 2019 must be available.

## Installing Windows PowerShell

Windows PowerShell is natively included with Windows 7 and later operating systems.

**NOTE:** Windows 7 natively includes PowerShell 2.4. This can be upgraded to 3.0 to meet the software requirements for using Dell command | PowerShell Provider.

## Configuring Windows PowerShell

- Ensure that you have Administrative privileges on the Dell business client system.
- By default Windows PowerShell has its ExecutionPolicy set to Restricted. To run the Dell Command | PowerShell Provider cmdlets and functions, ExecutionPolicy must be changed to RemoteSigned at a minimum. To apply the ExecutionPolicy, run Windows PowerShell with Administrator privileges, and run the following command within the PowerShell console:

```
Set-ExecutionPolicy RemoteSigned -force
```

**NOTE:** If there are more restrictive security requirements, set the ExecutionPolicy to AllSigned. Run the following command within the PowerShell console: `Set-ExecutionPolicy AllSigned -Force`.

**NOTE:** If using an ExecutionPolicy based process, run Set-ExecutionPolicy each time a Windows PowerShell console is opened.

- To run Dell Command | PowerShell Provider remotely, you must enable PS remoting on the remote system. To initiate remote commands, check system requirements and configuration requirements by running the following command:

```
PS C:> Get-Help About_Remote_Requirements
```



# Download and installation steps for Dell Command | PowerShell Provider 2.6

This section describes how to download, install, uninstall, and upgrade Dell Command | PowerShell Provider.

## Topics:

- [Downloading Dell Command | PowerShell Provider 2.6](#)
- [Installing Dell Command | PowerShell Provider 2.6](#)
- [Uninstalling Dell Command | PowerShell Provider 2.6](#)
- [Upgrading Dell Command | PowerShell Provider 2.6](#)

## Downloading Dell Command | PowerShell Provider 2.6

The Dell Command | PowerShell Provider module is available on Dell support site and at Microsoft Gallery.

- [Downloading Dell Command | PowerShell Provider 2.6 module from the Dell support site](#)
- [Downloading Dell Command | PowerShell Provider 2.6 module from Microsoft Gallery](#)

## Downloading the Dell Command | PowerShell Provider 2.6 module from the Dell support site

The Dell Command | PowerShell Provider 2.6 module is available as a .zip file at [www.dell.com/support](http://www.dell.com/support). Follow these steps to download the .zip file,

1. Go to **[www.dell.com/support](http://www.dell.com/support)**.
2. Click the **Support** tab, and under **Support by Product** option click **Drivers & Downloads**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.
4. If you do not know the service tag, and then click **Detect My Product** and follow the instructions on the screen. The **Product Support** page for your system type is displayed.
5. Click **Drivers & downloads**.
6. Expand the **Systems Management** category, and click the **Download** option for **DellCommandPowerShellProviderDell\_<build number>.zip** file.
7. Click **Save** to complete the download.

## Downloading and installing the Dell Command | PowerShell Provider 2.6 module from Microsoft Gallery

The Dell Command | PowerShell Provider 2.6 module is available at Microsoft Gallery.

### Prerequisites:

- Supported PowerShell version: 5.0 and later
  - PowerShell get package manager **nuget-anycpu.exe**.
1. Open Windows PowerShell with administrator privileges.
  2. To find the **Dell Command | PowerShell Provider** module, run the following command: `Find-Module DellBIOSProvider`.
  3. To install the module, run the following command based on the operating system:
    - For 32-bit operating system, `Install-Module DellBIOSProviderX86`.

- For 64-bit operating system, `Install-Module DellBIOSProvider`.

The latest version of Dell Command | PowerShell Provider available at Microsoft Gallery is installed.

4. To download the **nuget-anycpu.exe** file, enter **Y**.

## Installing Dell Command | PowerShell Provider 2.6

Follow these steps to install Dell Command | PowerShell Provider:

Prerequisite:

Delete any previously installed version of Dell Command | PowerShell Provider before installing the Dell Command | PowerShell Provider Dell. See [Uninstalling Dell Command | PowerShell Provider 2.6](#).

1. Unblock the downloaded **DellCommandPowerShellProviderDell\_<build number>.zip** file. See [Unblocking the DellCommandPowerShellProviderDell\\_<build number>.zip](#).
2. Extract the .zip file.
3. Create a module folder at **\${env:ProgramFiles}\WindowsPowerShell\Modules**. Alternatively, to create a module folder, run the following command in a Windows PowerShell console:

```
New-Item -Type Container -Force -path <folder path>
```

4. Copy the folders and files from the downloaded .zip file to Dell Command | PowerShell Provider module folder.
  - For 32-bit systems; copy the files from DellBIOSProviderX86 folder to **\${env:ProgramFiles}\WindowsPowerShell\Modules**
  - For 64-bit systems; copy the files from DellBIOSProvider folder to **\${env:ProgramFiles}\WindowsPowerShell\Modules**
5. After install, run the `Get-Module -ListAvailable` command to verify that the module is available along with the available exported commands.

## Unblocking the DellCommandPowerShellProviderDell\_<build number>.zip

If the **DellCommandPowerShellProviderDell\_<build number>.zip** file that is downloaded from the Dell support site is blocked on your system, unblock the zip file. To unblock the zip file,

1. Select the zip file, right-click, and then click **Properties**.
2. Click the **General** tab, and then select the **Unblock** option.
3. Click **Apply**.

Alternatively, run the following command within a Windows PowerShell console:

```
Unblock-File .\DellCommandPowerShellProviderDell_<build number>.zip
```

## Uninstalling Dell Command | PowerShell Provider 2.6

You can uninstall Dell Command | PowerShell Provider by manually deleting the **DellBIOSProvider** module folder and files from your system.

Alternatively, to uninstall Dell Command | PowerShell Provider, run the following command:

```
uninstall-Module -Name DellBIOSProvider
```


- i NOTE:** If more than one version of Dell Command | PowerShell Provider are installed on the system, then the above command deletes the versions in descending order. For example, if you have 1.0 and 1.1 installed in your system, the above command deletes the later version (1.1) first. Version 1.0 can be deleted by running this command again.

# Upgrading Dell Command | PowerShell Provider 2.6

If you have Dell Command | PowerShell Provider that are already installed in your system, then remove the Dell Command | PowerShell Provider folders and files before installing the later version of Dell Command | PowerShell Provider.

To upgrade Dell Command | PowerShell Provider, run the following command:

- For 32-bit systems; `update-Module -name DellBIOSProviderX86`
- For 64-bit systems; `update-Module -name DellBIOSProvider`

 **NOTE:** The above command only installs the latest version of Dell Command | PowerShell Provider available at Microsoft Gallery, and does not remove the existing version. You must manually uninstall the existing version from your system.

To uninstall the previous version, see [Uninstalling Dell Command | PowerShell Provider 2.6](#).

# Getting started with Dell Command | PowerShell Provider 2.6

This section describes on how to import the module, general navigation, supported cmdlets, and custom functions of Dell Command | PowerShell Provider.

## Topics:

- [Importing Dell Command | PowerShell Provider](#)
- [Navigating using the Windows PowerShell console](#)
- [Supported cmdlets in Dell Command | PowerShell Provider](#)
- [Custom functions in Dell Command | PowerShell Provider](#)
- [Parameters supported in Dell Command | PowerShell Provider](#)
- [Configuring attributes using Dell Command | PowerShell Provider](#)
- [Features supported in Dell Command | PowerShell Provider](#)
- [Desired State Configuration \(DSC\) for Dell Command | PowerShell Provider](#)

## Importing Dell Command | PowerShell Provider

Follow these steps to import Dell Command | PowerShell Provider.

1. Open the Windows PowerShell console with administrator privileges.
2. Run the following command:

For 32-bit systems; `Import-Module DellBIOSProviderX86 -Verbose`

For 64-bit systems; `Import-Module DellBIOSProvider -Verbose`

```
PS C:\Users\Administrator> Import-Module DellBIOSProvider -verbose
VERBOSE: Loading module from path 'C:\Program Files\WindowsPowerShell\Modules\DellBIOSProvider\DellBIOSProvider.psd1'.
VERBOSE: Loading module from path 'C:\Program Files\WindowsPowerShell\Modules\DellBIOSProvider\DellBIOSProvider.psm1'.
VERBOSE: Exporting function 'Set-DellListBootdevice'.
VERBOSE: Exporting function 'Get-DellBiosSettings'.
VERBOSE: Exporting function 'Clear-DellAdminPassword'.
VERBOSE: Exporting function 'Set-DellAutoOnForSelectDays'.
VERBOSE: Exporting function 'Get-DellBIOSPasswordPath'.
VERBOSE: Exporting function 'Write-DellBIOSPassword'.
VERBOSE: Exporting function 'Read-DellBIOSPassword'.
VERBOSE: Importing function 'Clear-DellAdminPassword'.
VERBOSE: Importing function 'Get-DellBIOSPasswordPath'.
VERBOSE: Importing function 'Get-DellBiosSettings'.
VERBOSE: Importing function 'Read-DellBIOSPassword'.
VERBOSE: Importing function 'Set-DellListBootdevice'.
VERBOSE: Importing function 'Set-DellAutoOnForSelectDays'.
VERBOSE: Importing function 'Write-DellBIOSPassword'.
VERBOSE: Loading module from path 'C:\Program Files\WindowsPowerShell\Modules\DellBIOSProvider\DellBIOSProvider.dll'.
VERBOSE: Starting PS provider DellSmbiosProv
VERBOSE: .NET Version: 4.0.30319.42000
VERBOSE: Performing InitializeDefaultDrives operation on the 'DellSmbiosProv' provider.
VERBOSE: Performing operation New-PSDrive for the provider DellSmbiosProv.
VERBOSE: Category 'BIOSSetupAdvancedMode' does not contain any supported attributes.
VERBOSE: Category 'AdvancedConfigurations' does not contain any supported attributes.
VERBOSE: Category 'SupportAssistSystemResolution' does not contain any supported attributes.
VERBOSE: To get more help about the Dell Command PowerShell provider, type Get-Help DellBIOSProvider.
VERBOSE: Exporting function 'Clear-DellAdminPassword'.
VERBOSE: Exporting function 'Get-DellBIOSPasswordPath'.
VERBOSE: Exporting function 'Get-DellBiosSettings'.
VERBOSE: Exporting function 'Read-DellBIOSPassword'.
VERBOSE: Exporting function 'Set-DellListBootdevice'.
VERBOSE: Exporting function 'Set-DellAutoOnForSelectDays'.
VERBOSE: Exporting function 'Write-DellBIOSPassword'.
VERBOSE: Importing function 'Clear-DellAdminPassword'.
VERBOSE: Importing function 'Get-DellBIOSPasswordPath'.
VERBOSE: Importing function 'Get-DellBiosSettings'.
VERBOSE: Importing function 'Read-DellBIOSPassword'.
VERBOSE: Importing function 'Set-DellListBootdevice'.
VERBOSE: Importing function 'Set-DellAutoOnForSelectDays'.
VERBOSE: Importing function 'Write-DellBIOSPassword'.
PS C:\Users\Administrator>
```

Figure 1. Importing module along with custom functions

To verify the import, run the following cmdlet within PowerShell console, and look for DellSMBIOS.

```
Get-PSDrive
```

**NOTE:** To remove Dell Command | PowerShell Provider from the console, run the following command within the Windows PowerShell console:

For 32-bit systems; `Remove-Module DellBiosProviderX86 -Verbose`

For 64-bit systems; `Remove-Module DellBIOSProvider -Verbose`

## Navigating using the Windows PowerShell console

After importing the module, navigate to DellSMBIOS drive. Run `Get-ChildItem` cmdlet to view the list of available categories.

```
PS C:\Users\Administrator> cd dellsmbios:
PS DellSmbios:\> dir

Category          Desc
-----
SystemInformation Displays information that uniquely identifies the system.
MemoryInformation Displays non-editable information about memory.
ProcessorInformation Displays non-editable information about processor(s).
BatteryInformation Displays each battery with the percent charged information.
BootSequence      Displays the attributes to configure the system boot settings.
AdvancedBootOptions Displays the attributes to configure advanced boot settings.
BIOSSetupAdvancedMode Displays the attributes to configure various BIOS setup advanced mode settings.
SystemConfiguration Displays the attributes to configure devices that are integrated on the system board.
StealthModeControl Displays the attributes to configure stealth mode settings.
MiscellaneousDevices Displays the attributes to configure various miscellaneous onboard devices.
USBConfiguration  Displays the attributes to configure USB settings. NOTE: USB keyboard and mouse always...
Video             Displays the attributes to configure video settings.
Security          Displays the attributes to configure the security features of the system.
TPMSecurity       Displays the attributes to configure TPM device settings.
SecureBoot        Displays the attributes to configure secure boot settings.
IntelSoftwareGuardExtensions Displays the attributes to configure Intel Software Guard Extensions settings.
Performance       Displays the attributes to configure performance related settings.
PowerManagement  Displays the attributes to configure power management settings.
POSTBehavior      Displays the attributes to configure system's behavior after POST.
Manageability     Displays the attributes to configure various manageability settings.
VirtualizationSupport Displays the attributes to configure virtualization settings.
Wireless          Displays the attributes to configure wireless devices.
Maintenance       Displays the attributes to configure maintenance related settings.
SystemLogs        Displays the attributes to configure system logs settings.
AdvancedConfigurations Displays the attributes to configure various advanced settings.
SupportAssistSystemResolution Displays the attributes to configure various Support Assist settings.
PreEnabled        Displays the attributes to configure various Pre-enabled settings.

PS DellSmbios:\> cd .\Performance
PS DellSmbios:\Performance> dir

Attribute ShortDesc          CurrentValue
-----
CpuCore    Active Processor Cores    Cores1
Speedstep  Intel SpeedStep           Disabled
CStatesCtrl C-States Control         Disabled
TurboMode  Intel TurboBoost          Enabled
LogicProc  Intel Hyper-Threading Technology Disabled

PS DellSmbios:\Performance>
```

Figure 2. Accessing categories and attributes

To access the attributes in each category, set location to the desired category and then run `Get-Childitem` cmdlet.

## Supported cmdlets in Dell Command | PowerShell Provider

The following are the supported cmdlets in Dell Command | PowerShell Provider:

**NOTE:** Press **Tab** To complete the Dell Command | PowerShell Provider cmdlet in the Windows PowerShell console.

Table 2. Supported cmdlets

Cmdlet	Alias	Description
Get-Location	pwd	Displays the current path/location within the DellSMBIOS drive.
Set-Location	cd	Sets the working location to a specified path/location within the DellSMBIOS drive.
Get-Item	gi	Displays the item at the specified location within the DellSMBIOS drive.

**Table 2. Supported cmdlets (continued)**

Cmdlet	Alias	Description
Get-ChildItem	dir	Displays the child items at the specified location within the DellSMBIOS drive.
Set-Item	si	Sets the value of the item.
Find-Module	fimo	Finds available modules from the online PowerShell Gallery.
Get-Module	gmo	Gets the list modules that have been imported or that can be imported into the current session.
Install-Module	inmo	Installs the specified module from the PowerShell Gallery.
Import-Module	ipmo	Adds or imports the module to the current session.
Remove-Module	rmo	Removes the imported module from the PowerShell console.
Remove-PSDrive	rdr	Removes the Windows PowerShell drive.

## Custom functions in Dell Command | PowerShell Provider

Dell Command | PowerShell Provider offers the following custom functions:

**Table 3. Custom functions**

Cmdlets	Description
Clear-DellAdminPassword	Erases the Admin password in BIOS.
Get-DellBiosSettings	Retrieves all BIOS settings that are applicable to the system.
Get-DellBIOSPasswordPath	Retrieves the Dell BIOS password path.
Load-DellBIOSProvider	Loads the Dell BIOS provider in a current session.
Read-DellBIOSPassword	Reads the Dell BIOS password from secure string storage.
Set-Dell1stBootdevice	Sets a desired boot device first in the boot sequence. The substring name, instead of the name of the boot device can also be specified.
Set-DellAutoOnForSelectDays	Sets the Auto-on to select days, and enables or disables the individual days to automatically power at the system on a specified time.
Write-DellBIOSPassword	Writes the Dell BIOS password to the system from secure string storage.

## Parameters supported in Dell Command | PowerShell Provider

**Table 4. Parameters**

Parameters	Description	Applicable For
Password	Provides the password that is set in the plain text.	All configurable attributes
PasswordSecure	Provides the password that is set in a secure text.	All configurable attributes

**Table 4. Parameters (continued)**

Parameters	Description	Applicable For
StartTime	Specifies the time when system starts consuming battery power.	PeakShiftDayConfiguration
Endtime	Specifies the time when the system stops consuming battery power and starts consuming AC power, if available.	PeakShiftDayConfiguration
ChargeStartTime	Specifies the time when the system starts charging battery while consuming AC power, if available.	PeakShiftDayConfiguration
BeginningOfDay	Configures the AdvanceBatteryCharge start time in 24 hours format.	AdvanceBatteryChargeConfiguration
WorkPeriod	Configures the duration of charging.	AdvanceBatteryChargeConfiguration
AdminPassword	Specifies that admin password must be provided while setting HDD password if administrator has restricted the changes to HDD password.	HDDPassword
ATAMaximumSecurity Mode	Specifies the ATA Maximum Security Mode.	HDDPassword

## Configuring attributes using Dell Command | PowerShell Provider

To configure system BIOS settings using Dell Command | PowerShell Provider attributes:

1. Set-location to DellSMBIOS: drive. See [Dell Command | PowerShell Provider drive](#).
2. Verify the current state of the attribute by running the following command: `Get-Item -Path <path to the attribute>`. See [Format of the path](#).  
The command displays the **Current Value**, **Possible Values** and **Description** of the attribute you want to configure.
3. To set the attribute, run the following command: `Set-Item -Path <path to the attribute> <possible value> -Password <password>`. See [Password parameters](#).


Example: To enable the Numlock attribute when password is set, run the following command:

```
Set-Item -Path .\POSTBehavior\Numlock Enabled -Password <password>
```

## Dell Command | PowerShell Provider drive

A Windows PowerShell drive is a repository location that you can access like a file system drive in Windows PowerShell. Dell Command | PowerShell Provider has only one drive. DellSMBIOS: The DellBIOSProvider module exposes the BIOS attributes in the DellSMBIOS: drive. The DellSMBIOS: drive has the following two levels:

- Categories—These are high-level containers that group the attributes of BIOS.
- Attributes—These are part of the categories. Each attribute represents a BIOS setting.


 **NOTE:** Creation of a new drive is not supported for DellBIOSProvider.

## Format of the path

Path is a complete location of a file. In Dell Command | PowerShell Provider, the path can be mentioned in the following format: **DellSMBIOS:\<Category>\<Attribute>.**

Example:

```
DellSMBIOS:\POSTBehavior\Numlock
```

 **NOTE:** A path can be a path to a category or a path to an attribute.

## Password parameters

Dell Command | PowerShell Provider allows you to provide a password either in plain text or in secure text.

**-Password:** Provide the password that is set in the plain text.

Format:

```
Set-Item -Path <path to the attribute> <possible value> -Password <password>
```

Example:

```
Set-Item -Path DellSMBIOS:\POSTBehavior\Numlock "Enabled" -Password <Plain text password>
```

**-PasswordSecure:** Provide the password that is set in a secure text.

Format:

```
Set-Item -Path <path to the attribute> <possible value> -PasswordSecure <password>
```

Example:


```
Set-Item -Path DellSMBIOS:\POSTBehavior\Numlock "Enabled" -PasswordSecure <Secure text password>
```

## Features supported in Dell Command | PowerShell Provider

This section describes the usage of various attributes/features in Dell Command | PowerShell Provider.

### Using the AutoOn feature

This feature allows you to configure the days when the system has to turn on automatically from hibernate or power off state at the time specified in **AutoOnHr** and **AutoOnMn**.

 **NOTE:** AutoOn capabilities work only for a system running on AC power. This feature does not work if the system is running on battery power.

Select one of the following options:

- **Disabled** — To disable the AutoOn capabilities.
- **Everyday** — To enable the AutoOn capabilities for every day.
- **Weekdays** — To enable the AutoOn capabilities on weekdays (Monday to Friday).
- **SelectDays** — To enable or disable the AutoOn capabilities on selected days. If you select this option, the following attributes are available in the PowerManagement category:
  - **AutoOnMon** — To enable or disable the AutoOn capabilities on Mondays.
  - **AutoOnTue** — To enable or disable the AutoOn capabilities on Tuesdays.
  - **AutoOnWed** — To enable or disable the AutoOn capabilities on Wednesdays.



- **AutoOnThu** — To enable or disable the AutoOn capabilities on Thursdays.
- **AutoOnFri** — To enable or disable the AutoOn capabilities on Fridays.
- **AutoOnSat** — To enable or disable the AutoOn capabilities on Saturdays.
- **AutoOnSun** — To enable or disable the AutoOn capabilities on Sundays.

You can enable or disable individual days by setting AutoOnSun -enabled, and AutoOnMon -disabled, etc.

Configure **AutoOnHr** and **AutoOnMn** attributes in order to set the time for the AutoOn function.

- **AutoOnHr** — To set the hour at which you want the system to turn on automatically, provide the value ranging from 0-23. To set the time 11:59 p.m., provide the value as 23.
- **AutoOnMn** — To set the minute at which you want the system to turn on automatically, provide the value ranging from 0-59. To set the time 11:59 p.m., provide the value as 59.

Example: To turn on the system automatically on weekdays.

```
Command: Set-Item -Path DellSmbios:\PowerManagement\AutoOn "Weekdays"
```

Example: To turn on the system automatically on Fridays.


```
Command: Set-Item -Path DellSmbios:\PowerManagement\AutoOnFri "Enabled"
```

Example: To turn on the system automatically on Sundays at 11:59 p.m..

```
Command: Set-Item -Path DellSmbios:\PowerManagement\AutoOnSun "Enabled"
Set-Item -Path DellSmbios:\PowerManagement\AutoOnHr "23"
Set-Item -Path DellSmbios:\PowerManagement\AutoOnMn "59"
```

## Using the AdvanceBatteryChargeConfiguration feature

This feature allows you to configure AdvBatteryChargeCfg and AdvancedBatteryChargeConfiguration options in the PowerManagement category. Advanced Battery charge mode uses a standard charging algorithm and other methods during nonworking hours to maximize battery health. During working hours, ExpressCharge is used to charge the batteries faster. You can configure the days and the Work Period during which you want the battery to charge.

 **NOTE:** The configuration applies to all batteries: Primary, Slice, and Module Bay.


You can enable or disable Advanced Battery charge mode:

- **Enabled** — Enables AdvBatteryChargeCfg.
- **Disabled** — Disables AdvBatteryChargeCfg. If disabled, battery charging mode is based on Primary Battery Charge Configuration, Battery Slice Charge Configuration, Primary Battery Custom Charge Start, and Primary Battery Custom Charge End.

To configure the AdvanceBatteryCharge time period, provide the following values:

- **BeginningOfDay** — Configures the AdvanceBatteryCharge start time in 24 hours format. The value of hour must be in the range 0–23 and minute must be 0, 15, 30, or 45.
- **WorkPeriod** — Configures the duration of charging.

For example, to set AdvancedBatteryChargeConfiguration from 7:15 a.m. to 2:30 p.m., set **BeginningOfDay** as 7:15 and set **WorkPeriod** as 7:15.

 **NOTE:** To set 12 a.m., provide the hour value as 00.

Example: To enable AdvBatteryChargeCfg.

```
Command: Set-Item AdvBatteryChargeCfg "Enabled"
```

Example: To set the charge time from 11 a.m. to 2 p.m. on Saturdays.

```
Command: Set-Item AdvancedBatteryChargeConfiguration -value Saturday -Beginningofday
"11:00" -Workperiod "3:00"
```

Example: To set BeginningOfDay value only. Workperiod value for Monday remains unchanged.

```
Set-Item AdvancedBatteryChargeConfiguration -value Monday -Beginningofday "09:00"
```

## Using the PrimaryBattChargeCfg feature

This feature allows you to configure the primary battery charging option in the PowerManagement category. The selected charging mode applies to all batteries installed in the system. Select one of the following modes:

- Auto—Battery settings are adaptively optimized based on your typical battery usage pattern.
- Standard—Charges the battery at a standard rate.
- Express—Charges the battery faster using the express charging algorithm, Dell's fast charging technology.
- Adaptive—Charges the battery in Express Charge mode using the express charging algorithm, Dell's fast charging technology.
- PrimACUse—Charges the battery while plugged-in, preferred for the users who operate their system while plugged in to an external power source.
- Custom—The battery charging starts and stops based on the settings specified in Primary Battery Custom Charge Start and Primary Battery Custom Charge End.
  - CustomChargeStart—Sets the percent value ranging from 50 to 95 at which the custom battery charging should start.
  - CustomChargeStop—Sets the percent value ranging from 55 to 100 at which the custom battery charging should stop.

**NOTE:** CustomChargeStart percent must be less than CustomChargeStop percent, and the minimum difference between the two can be no less than 5 percent.

Example: To retrieve the current mode of the PrimaryBattChargeCfg attribute.

```
Get-ChildItem -Path DellSmbios:\PowerManagement\PrimaryBattChargeCfg
```

If the status retrieved as Custom, then to know the percent when charging starts and ends, retrieve CustomChargeStart and CustomChargeStop attributes.

Example: To set the battery charging mode as standard.

```
Set-Item -Path DellSmbios:\PowerManagement\PrimaryBattChargeCfg "Standard"
```

Example: To set the battery charge mode as custom and then to specify the start time and duration when the battery should be charged.

```
Set-Item -Path DellSmbios:\PowerManagement\PrimaryBattChargeCfg "Custom"
```

- Sets the PrimaryBattChargeCfg attribute to charge battery based on user settings specified in CustomChargeStart and CustomChargeStop attributes. If the value 'Custom' is chosen,
  - Charging starts based on the battery percent defined in CustomChargeStart.
  - Charging ends based on the battery percent defined in CustomChargeStop.
- Set-Item -Path DellSmbios:\PowerManagement\CustomChargeStart "65" command can be used to start battery charging at 65%.
- Set-Item -Path DellSmbios:\PowerManagement\CustomChargeStop "95" command can be used to stop battery charging at 95%.
- Possible values for the CustomChargeStart attribute ranges from 50 to 95 percent and for the CustomChargeStop percent ranges from 55 to 100 percent.

## Using the PeakShiftDayConfiguration feature

This feature allows you to configure the PeakShiftDayConfiguration option in the PowerManagement category. Peak Shift configuration minimizes AC power consumption during the peak power usage period of the day. During the Peak Shift period, AC power will not be consumed, and the system runs on battery if the battery charge is more than the set battery threshold value. After the Peak Shift period, the system runs on AC power, if available, without charging the battery. The system functions normally using AC power, and recharges the battery after the specified Charge Start Time.

PeakShiftCfg—Enables or disables the peak shift configuration.

- Enabled—Enables the peak shift configuration on specific days for a specific period specified using Peak Shift Start Time, Peak Shift End Time, and Peak Shift Charge Start Time.
- Disabled—Disables the peak shift configuration feature.

If enabled, configure the following:

**NOTE:** The configuration applies to all batteries: Primary, Slice, and Module Bay.

- **StartTime**—Specifies the time when system starts consuming battery power. The system continues consuming the battery power until either the peakshift battery threshold is reached, or peakshift end time is reached.
- **EndTime**—Specifies the time when system stops consuming battery power and starts consuming AC power, if available. However, the system does not charge battery.
- **ChargeStartTime**—Specifies the time when the system starts charging the battery while consuming AC power, if available.

**NOTE:** Peak Shift Start Time must be less than or equal to Peak Shift End Time, and Peak Shift End Time must be less than or equal to Peak Shift Charge Start Time.

Example: To retrieve the PeakShiftDayConfiguration current settings. The StartTime, EndTime, and ChargeStartTime are displayed for all days.

```
Get-Item -Path DellSmbios:\PowerManagement\PeakShiftDayConfiguration
```

Example: To set the PeakShift StartTime, EndTime, and ChargeStartTime for Sunday.

```
Set-Item -Path DellSmbios:\PowerManagement\PeakShiftDayConfiguration Sunday -StartTime "12:45" -EndTime "14:30" -ChargeStartTime "16:15"
```

Example: To change StartTime value for Monday. EndTime and ChargeStartTime values remain unchanged for Monday.

```
Set-Item -Path DellSmbios:\PowerManagement\PeakShiftDayConfiguration Monday -StartTime "09:00"
```

## Using the Keyboard Backlight Color feature

This feature allows you to configure the supported colors for the keyboard backlight on rugged systems. There are six available colors: four predefined colors (white, red, green, blue), and two user configurable colors (custom1 and custom2). You can configure custom1 and custom2 colors using **KeyboardBacklightCustom1Color** and **KeyboardBacklightCustom2Color** attributes.

### KeyboardBacklightEnabledColors

Possible values: White, Red, Green, Blue, Custom1, Custom2, and NoColor.

Displays or enables the supported colors for the keyboard backlight in the rugged systems. Multiple colors out of the six colors can be set as enabled colors. After enabling colors, you can switch among the enabled colors by pressing Fn+C keys. Enabled color can be set as NoColor which means no color is selected.

#### **NOTE:**

- If value "NoColor" is provided, keyboard backlight color switching by pressing Fn+C keys is not possible.
- The value "NoColor" cannot be combined with any other color.

Example: To set the list of enabled colors as red, green, custom1, and custom2 for KeyboardBacklightEnabledColors attribute.

```
Set-Item -Path DellSmbios:\SystemConfiguration\KeyboardBacklightEnabledColors "Red,Green,Custom1,Custom2" -PasswordSecure <Secure Text Password>
```

Provide the secure password, if set, using the secure password parameter.

Example: To set the enabled colors as NoColor for KeyboardBacklightEnabledColors attribute.

```
Set-Item -Path DellSmbios:\SystemConfiguration\KeyboardBacklightEnabledColors "NoColor"
```

Provide the secure password, if set, using the secure password parameter.

### KeyboardBacklightActiveColor

Possible values: White, Red, Green, Blue, Custom1, and Custom2

Displays or sets an active color for the keyboard backlight in the rugged systems. Any one out of the six colors can be chosen as an active color at a time.

Example: To set the Custom2 color as an active color for KeyboardBacklightActiveColor attribute.

```
Set-Item -Path DellSmbios:\SystemConfiguration\KeyboardBacklightActiveColor "Custom2" -
PasswordSecure <Secure Text Password>
```

Provide the secure password, if set, using the secure password parameter.

## KeyboardBacklightCustom1Color

Configures the custom1color by specifying the Red, Green, and Blue (R:G:B) values. The color can be selected using RGB components by mentioning it in 'R:G:B' format. Each color component value ranges from 0 to 255.

Example: Retrieves the RGB value in R:G:B format of Custom1 color for keyboard backlight.

```
Get-ChildItem -Path DellSmbios:\SystemConfiguration\KeyboardBacklightCustom1Color
```

## KeyboardBacklightCustom2Color

Configures the custom2color by specifying the Red, Green, and Blue (R:G:B) values. The color can be selected using RGB components by mentioning it in 'R:G:B' format. Each color component value ranges from 0 to 255.

Example: To set the red as 234, green as 35 and blue as 56 for Custom1 color using KeyboardBacklightCustom1Color attribute. Provide the secure password, if set, using the secure password parameter.

```
Set-Item -Path DellSmbios:\SystemConfiguration\KeyboardBacklightCustom2Color "234:35:56"
-PasswordSecure <Secure Text Password>
```

Provide the secure password, if set, using the secure password parameter.


## Using the BootSequence feature

This feature allows you to configure the order of the devices from which the system tries to start up using the BootSequence option in the BootSequence category.

BootList—determines the boot mode of the system. Select one of the following:

- **Uefi** — To enable booting to Unified Extensible Firmware Interface (UEFI) capable operating systems. Following are the supported UEFI devices:
  - **hdd**—hard disk
  - **cdrom**—CD-ROM
  - **hsbhdd**—USB hard disk
  - **usbdev**—USB device
  - **embnicipv4** —embedded NIC IPV4
  - **embnicipv6**—embedded NIC IPV6
  - **fibrechanel** —Fibre Channel
  - **Embnic**—embedded NIC
  - **fibrechannelex** —FibreEx Channel
  - **infiniband**—Infiniband device
  - **vendor**—vendor device
  - **i1394**—I1394 device
  - **i2o**—I20 device
  - **uart**—UART device
  - **lun**—LUN device
  - **vlan**—VLAN device
  - **nvme**—NVMe device
  - **uri**—URI device
  - **ufs**—UFS device
  - **sd**—SD device
  - **bluetooth**—Bluetooth device

- **wifi**—Wi-Fi device
- **emmc**—eMMC device
- **Legacy** (the default) — To ensure compatibility with operating systems that do not support UEFI. Following are the supported legacy devices:
  - **floppy** —floppy disk
  - **hdd**—hard disk
  - **cdrom**—CD-ROM
  - **pcmcia**—PCMCIA Device
  - **usbdev**—USB Device
  - **nic** —NIC
  - **usbfloppy**—USB floppy disk
  - **usbhdd** —USB hard disk
  - **usbcdrom** —USB CD-ROM
  - **Embnic**—embedded NIC
  - **usbzip**—USB ZIP
  - **usbdevzip**—USB device ZIP
  - **bev**—BEV device

 **NOTE:** Legacy boot mode is not allowed when secure boot is enabled or legacy option ROM is disabled.


**BootSequence**—Specifies the order in which a system searches for devices when trying to find an operating system to boot. The Boot Sequence option allows users to customize the boot order and boot ability of boot devices. The UEFI BIOS allows the selection of UEFI boot paths or Legacy boot devices.

To configure the sequence of the boot devices, verify the current status of the boot order with name, shortform, and device number. Then, provide the sequence to change the boot order. For example, see the following table:

**Table 5. Example of the current sequence of the boot devices**

DeviceName	Device Number	ShortForm	IsActive
USB Storage Device	14	usbdev	Active
Diskette Drive	12	floppy	Active
Internal HDD	13	hdd	Active
CD/DVD/CD-RW Drive	15	cdrom	Active
Onboard NIC	16	embnic	Active

Then, to set the Internal HDD as first, USB Storage Device as second, and Onboard NIC as third; provide BootSequence as 13, 14, 16.

 **NOTE:** The device numbers that are not mentioned will be moved down the order.

Example: To see the current boot order with name, device number, and status.

```
Get-ChildItem -Path DellSmbios:\BootSequence | Select -expand CurrentValue
```

Example: To change the boot sequence based on the device number.

```
Set-Item -Path DellSmbios:\BootSequence "2,3,4"
```

Example: To change the current boot mode to UEFI.

```
Set-Item -Path DellSmbios:\BootSequence BootList "Uefi"
```

Example: To change the boot sequence based on the shortform.

```
Set-Item -Path DellSmbios:\BootSequence "cdrom,hdd,embnicipv6"
```

## Using the BIOS password feature

This feature allows you to set, change, or clear Admin password and System password.

### Verifying the status of Admin or System passwords

To verify the status whether the Admin or System passwords are set on the system, use the following attributes:

- `IsAdminPasswordSet`—Displays if admin password is set on the system.
- `IsSystemPasswordSet`—Displays if system password is set on the system.

### Setting Admin or System passwords

To set the password, run the command in the following format:

Example: To set the Admin password:

```
Set-Item -Path DellSmbios:\Security\AdminPassword <new Admin password>
```

Example: To set the System password:

```
Set-Item -Path DellSmbios:\Security\SystemPassword <new System password>
```

### Changing Admin or System passwords


To change the existing password, run the command in the following format:

Example: To change the Admin password:

```
Set-Item -Path DellSmbios:\Security\AdminPassword <new Admin password> -Password  
<existing Admin password>
```

Example: To change the System password:

```
Set-Item -Path DellSmbios:\Security\SystemPassword <new Admin password> -Password  
<existing System password>
```

 **NOTE:** If both Admin and System passwords exist, then to change the system password, provide either Admin or System password.

### Clearing Admin and System passwords


To clear the Admin or System passwords, run the command in the following format:

Example: To clear the Admin password:

```
Set-Item -Path DellSmbios:\Security\AdminPassword "" -Password <existing Admin password>
```

Example: To clear the System password:

```
Set-Item -Path DellSmbios:\Security\SystemPassword "" -Password <existing System  
password>
```

 **NOTE:**

- To clear the system password where both Admin and System passwords exist, you must provide either the Admin or System password.
- If the System password and/or HDD password are set, the Admin password cannot be set.
- If the Admin password is set in the system, and you want to configure BIOS tokens/features, you must provide the Admin password.

- If the Admin and system passwords are set in the system, and you want to configure BIOS tokens/features, you must provide the Admin password.
- If the Admin and system passwords are set in the system, and if you want to configure BIOS tokens/features as well as change system password, you must provide either the System or the Admin password.

## Generic disclaimer

Powershell PSReadline module saves every console command that you enter to a text file. So it is recommended to use "Get-Credential" commandlet to handle the password securely.

1. \$cred = Get-Credential
2. Enter your username and password, for example, AdminPWD and Dell\_123\$, when the dialog box is displayed.
3. \$BSTR = [System.Runtime.InteropServices.Marshal]::SecureStringToBSTR(\$cred.Password)
4. \$plainpwd=[System.Runtime.InteropServices.Marshal]::PtrToStringAuto(\$BSTR)
5. Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM\_BIOSService | Invoke-CimMethod MethodName SetBIOSAttributes -Arguments @{AttributeName=@"AdminPwd";AttributeValue=@" \$plainpwd"}}
6. si .\NumLockLed disabled -password \$plainpwd

## Using the HardDisk Drive password feature

This feature allows you to set, change, and clear the Hard Disk Drive (HDD) password. To configure BIOS attributes/features, provide the HDD password, if set.

### HDDInfo

Displays the details of each HDD. The following information is displayed:

- **HDD Name**—The name of the HDD.
- **Present**—Whether the HDD is physically present.
- **PwdProtected**—Whether a password exists for the HDD.
- **PendingRestart**—Whether a reboot is pending to set the password.
- **AdminOnlyChange**—Whether the changes to the password can be made only by an administrator.
- **SecureEraseSupported**—Whether HDD Secure Erase is supported.
- **SecureEraseEnabled**—Whether HDD Secure Erase is enabled.

Configure the following:

- AdminPassword—Specify the Admin password while setting HDD password if administrator has restricted the changes to the HDD password.
- ATAMaximumSecurityMode—Provide the value as '0' if you want HDD to be configured in ATA High Security Mode, or '1' if you want the HDD to be configured in ATA maximum Security Mode (Secure Erase).

## Setting the HDD password

To set the password, run the command in the following format:

Example: To set the HDD password in maximum security mode.

```
Set-Item -Path DellSmbios:\Security\HDDPassword <New password> -ATAMaximumSecurityMode "1"
```

## Changing the HDD password

To change the existing password, run the command in the following format:

Example: To change the HDD password:

```
Set-Item -Path DellSmbios:\Security\HDDPassword <new HDD password> -Password <existing HDD password>
```

Example: To change the HDD password from the current value to a new value.


```
Set-Item -Path DellSmbios:\Security\HDDPassowrd <New HDD password> -Password <Plain text password> -AdminPassword <Admin password>
```

## Clearing the HDD password

To clear the password, run the command in the following format:

Example: To clear the HDD password.


```
Set-Item -Path DellSmbios:\Security\HDDPassword "" -PasswordSecure <Secure text password>
```

 **NOTE:** Restart the system to apply the changes.

## Using TpmSecurity feature


This feature allows you to control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system. The TpmSecurity setting is a master switch for all the rest of the TPM fields. System restart is required after changing the TpmSecurity setting.

- **Enabled**—BIOS turns on the TPM during POST, and the TPM can be used by the operating system.
- **Disabled**—BIOS does not turn on the TPM during POST, and the TPM will be nonfunctional and invisible to the operating system.

 **NOTE:** Disabling this option does not change any settings that you may have made to the TPM, nor does it delete or change any information or keys you may have stored there. It simply turns off the TPM so that it cannot be used. When you re-enable this option, TPM works exactly as it did before it was disabled.


TpmActivation: Activates and enables the TPM normal state for TPM use. TPM Activation is a setting which is available when the **TpmSecurity** is enabled.

- **Enabled**—Activates the TPM.
- **Disabled**—Displays the current activation state of the TPM.

 **NOTE:** Disabled is a read-only possible value. TpmActivation can be disabled only from the BIOS setup screen.


Example: To enable TpmSecurity.

```
Set-Item -Path DellSmbios:\TpmSecurity\TpmSecurity "Enabled" -Password <Plain text password>
```

 **NOTE:** Restart is required after changing TpmSecurity setting.

Example: To enable TPM Activation. TPM Activation can be enabled only if the Tpmsecurity is enabled.

```
Set-Item -Path DellSmbios:\TpmSecurity\TPMActivation "Enabled" -Password <Plain text password>
```

 **NOTE:** Admin password must be provided and TpmSecurity should have been enabled to enable the TpmActivation.



# Desired State Configuration (DSC) for Dell Command | PowerShell Provider


Desired State Configuration (DSC) is a management framework provided by Windows PowerShell that allows administrators to monitor configuration drift, manage registry settings, groups, user accounts, and environment variables, through a seamless way of scripting.


Dell Command | PowerShell Provider uses the DSC functionality to provide a solution that monitors the BIOS configuration on Dell client systems and maintains the Dell BIOS settings that have drifted away from the desired state configuration. Dell Command | PowerShell Provider provides a set of custom resources aligned to each category of BIOS settings and offers the user a declarative framework to use properties (attributes) defined in the resources.

## Prerequisite

Prerequisites for the client and server systems:

- PowerShell 5.0

 **NOTE:** The WinRM service should be started in both client and server systems.

 **NOTE:** To initiate remote command, check system and configuration requirements in details by executing the following cmdlet:

```
get-help about_Remote_Requirements
```

## Primary components of Desired State Configuration

Desired State Configuration is a declarative framework used for configuration, deployment, and management of systems. It consists of three primary components:

- **Configuration**—Configuration defines the type of function that is used in DSC through declarative scripts. This function can be called using the keyword 'Configuration' with suitable identifier. DSC configuration enforces the defined BIOS settings on the client systems. The Local Configuration Manager (LCM) ensures that systems are configured according to the Configuration declaration.
- **Resources**—Dell Command | PowerShell Provider provides the user a set of custom resources that can be leveraged to enforce required Dell BIOS settings on the Dell client systems. The resources are classified into 22 categories. For the list of the supported categories, run

```
Get-Help About_DellBIOSProvider_DscResources
```

Each category contains properties (BIOS attributes names) that are available in the resources folder **DSCResources** available at `${env:ProgramFiles}\WindowsPowerShell\Modules\DellBIOSProvider`.

To discover deployed Dell's DSC resources, run:

```
Get-DscResource *DCPP*
```

For more information on attributes, refer the Reference Guide available at [Dell.com/DellClientCommandSuiteManuals](http://Dell.com/DellClientCommandSuiteManuals).

The Dell Command | PowerShell Provider resources can verify the configuration drift, get current value settings, and set desired value on Dell client systems. This workflow is similar to the flow of 'Test-' and 'Set-' of standard DSC configurations.

When you define BIOS configurations using scripts, the resources declared for Dell Command | PowerShell Provider are used to monitor drift and maintain the configuration. Declared resources must be present both on server and client systems for successful authoring, staging, and enactment.

- **Node**—Node is a target system on which you want to enforce the configuration. Node can either be an IP address or a system name.

Dell Command | PowerShell Provider resources work seamlessly in both Push and Pull modes. In Push mode you author a configuration, stage it to generate the Managed Object Format (MOF), and enact it on target nodes. In Pull mode the server is only a medium to author and enact the configuration onto nodes. The Local Configuration Manager (LCM) agent on the target nodes, ensures that systems are configured according to the configuration declaration. In Pull mode, the server is defined as a

Pull Server. The Pull Server has web services running which initiates a handshake between the server and the client systems. The server contains the MOF at a standard location, and whenever there is a change in the checksum associated with the MOF file, the client machine(s) pulls the configuration from the server and enforces it on the client systems. In Pull mode the LCM of the client system(s) is set to Pull mode. These settings of the LCM are called meta – configuration.

Desired State Configuration Logs can be viewed using Windows Event Viewer. Configuration drifts on Dell client systems are recorded in this event log at Applications and Service Logs -> DellClientBIOS PowerShell.

To check the syntax and properties accepted by a Dell Command | PowerShell Provider DSC resource, run the cmdlet in the following format:

```
Get-DSCResource <DSC resource name> -syntax
```

Folder structure—The install module has the following folder structure:

```
$env: psmodulepath (folder)
|- DellBIOSProvider (folder)
   |- < DellBIOSProvider.psd1> (file, required)
   |- DSCResources (folder)
      |- DCPP_POSTBehavior (folder)
      |- DCPP_PowerManagement (folder)
      ...
```

## Sample scripts

This section provides some exemplary sample scripts that depict the typical usage of Desired State Configuration using the functionality of Dell Command | PowerShell Provider for enforcing BIOS settings of the supported attributes. The scripts authored for Desired State Configuration should be saved in .ps1 format.

### NOTE:

- Category property is mandatory field for each resource.
- BlockDefinition is a mandatory property only for the Powermanagement category. BlockDefinition must be unique for each resource block in the Powermanagement category.

## Enforcing simple configuration for category POSTBehavior

Enforcing 'Keypad' attribute as 'EnabledByNumlock' on Node '200.200.200.2'

```
Configuration POSTBehaviorConfiguration
{
    Import-DscResource -ModuleName DellBIOSProvider

    Node 200.200.200.2 {
        POSTBehavior POSTBehaviorSettings    #resource name
        {
            Category = "POSTBehavior"
            Keypad = "EnabledByNumlock"
        }
    }
}
```

## Configuring AdvancedBatteryChargeConfiguration in category Powermanagement

```
Configuration PowerManagementConfiguration
{
    Import-DscResource -ModuleName DellBIOSProvider

    Node 200.200.200.2 {
        PowerManagement PowerManagementSettingsTuesday    #resource name
        {
            Category = "PowerManagement"
            BlockDefinition="1"
            AdvancedBatteryChargeConfiguration = "Tuesday"
        }
    }
}
```

```

        BeginningOfDay = "10:30"
        WorkPeriod = "15:45"
    }

    PowerManagement PowerManagementSettingsSunday    #resource name
    {
        Category = "PowerManagement"
        BlockDefinition="2"
        AdvancedBatteryChargeConfiguration = "Sunday"
        BeginningOfDay = "13:30"
        WorkPeriod = "15:45"
    }
}

```

## Configuring PeakShiftDayConfiguration in category Powermanagement

```

Configuration PowerManagementConfigurationPeak
{
    Import-DscResource -ModuleName DellBIOSProvider

    Node localhost {
        PowerManagement PowerManagementSettingsSaturday    #resource name
        {
            Category = "PowerManagement"
            BlockDefinition="1"
            PeakShiftDayConfiguration = "Saturday"
            StartTime = "10:30"
            EndTime = "12:30"
            ChargeStartTime = "13:30"
        }

        PowerManagement PowerManagementSettingsWednesday    #resource name
        {
            Category = "PowerManagement"
            BlockDefinition="2"
            PeakShiftDayConfiguration = "Wednesday"
            StartTime = "12:30"
            EndTime = "15:30"
            ChargeStartTime = "16:45"
        }
    }
}

```

## Enforcing simple configuration for category POSTBehavior when BIOS password is set

**NOTE:** When the BIOS password is set on the client system, the password must be provided through the 'Password' property.

```

Configuration POSTBehaviorConfiguration
{
    Import-DscResource -ModuleName DellBIOSProvider

    Node clientMachine01 {
        POSTBehavior POSTBehaviorSettings    #resource name
        {
            Category = "POSTBehavior"
            Keypad = "EnabledByNumlock"
            Password = "biospassword"
        }
    }
}

```

**NOTE:** For more sample scripts, see the `DellBIOSProvider > DSC_SampleScripts` folder.

# Setting up Dell Command | PowerShell Provider 2.6 in Windows Preinstallation Environment

Windows Preinstallation Environment (WinPE) provides a stand-alone environment that is used to prepare a system for Windows installation. For client systems that do not have an operating system that is installed, you can create a bootable image that contains Dell Command | PowerShell Provider to run the commands on WinPE.

1. From the Microsoft website, download and install Windows ADK on the client system.

 **NOTE:** While installing select only **Deployment Tools** and **Windows Preinstallation Environment**.

2. Create the WinPE Image, adding PowerShell support to WinPE. See <https://technet.microsoft.com/en-us/library/dn605289.aspx>.
3. Copy Dell Command | PowerShell Provider folders and files into your WinPE bootable device (CD/USB).
4. Copy msvc100.dll, msxcr100.dll from VC2019; and msxcp140.dll, msxcr140.dll, vccorlib140.dll from VC2019 inside the Dell Command | PowerShell Provider module.
5. Boot to WinPE and open the Windows PowerShell console.
6. Navigate to the directory where Dell Command | PowerShell Provider folders and files have been copied based on the client's WinPE architecture.
7. Import the module. See [Importing Dell Command | PowerShell Provider](#).

On a successful import, the following message is displayed: To get more help about the Dell Command PowerShell provider, run the following command based on the operating system: For 64 bit — `Get-Help DellBIOSProvider` and For 32 bit — `Get-Help DellBIOSProviderX86`. Now, you can access DellSMBIOS drive to manage your Attributes. For more information, see <https://www.dell.com/support/article/en-us/sln313406/installing-the-dell-smbios-powershell-provider-in-windows-pe?lang=en>

# Accessing help for Dell Command | PowerShell Provider 2.6

Dell Command | PowerShell offers cmdlet-based integrated help. This section describes various cmdlets that you can use to access various help topics.

## Topics:

- [Accessing integrated help within Windows PowerShell console](#)

## Accessing integrated help within Windows PowerShell console

Dell Command | PowerShell Provider provides integrated help for its custom features. To access this integrated help within the Windows PowerShell console, use the following commands:

- `Get-Help Get-ChildItem -Path <path to attribute> Full`

Example: `Get-Help Get-ChildItem -Path DellSMBIOS: \PowerManagement\AutoOn -Full`

Displays information such as Name, Synopsis, Syntax, Description, Related links, Remarks, etc.

- `Get-Help Set-Item -Path <path to attribute> Full`

Example: `Get-Help Set-Item -Path DellSMBIOS:  
\PowerManagement\AdvanceBatteryChargeConfiguration -Full`

Displays information such as Name, Synopsis, Syntax, Description, Related links, Remarks, etc.

You can get more detailed information on the cmdlet and function and how to use it by using the **Full**, **Detailed**, and **Examples** parameters with Get-Help.

- `Get-Help About_DellBIOSProvider`
- `Get-Help About_DellBIOSProvider_DscResources`

Displays a conceptual help about Dell Command | PowerShell Provider.

# Frequently asked questions for Dell Command | PowerShell Provider 2.6

## What is PowerShell Gallery?

PowerShell Gallery is a public repository that is hosted by Microsoft. You can download and install Dell Command | PowerShell Provider from here. See [Downloading Dell Command | PowerShell Provider module from Microsoft Gallery](#).

## How can I confirm if the Dell Command | PowerShell Provider module is installed in my system?

After downloading, run the following cmdlet within the Windows PowerShell console:

```
Get-Module -ListAvailable
```

If you find DellBIOSProvider, you have successfully installed Dell Command | PowerShell Provider module in your system. Then you can import the module get started. See [Importing Dell Command | PowerShell Provider](#).

## What are the prerequisites for downloading the module from a PowerShell Gallery?

- Supported PowerShell version: 5.0 and later.
- PowerShell get package manager: **nuget-anycpu.exe**.

## Can I import Dell Command | PowerShell Provider module from a shared location?

Yes, Dell Command | PowerShell Provider can be imported from a shared location by enabling this feature:

1. Go to **C:\Windows\System32\WindowsPowerShell\v1.0**.
2. Edit the **powershell\_ise.exe.config** file as shown below:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <startup useLegacyV2RuntimeActivationPolicy="true">
    <supportedRuntime version="v4.0" />
  </startup>
  <runtime>
    <loadFromRemoteSources enabled="true"/>
  </runtime>
</configuration>
```

## How can I get possible values for a particular attribute?

To get the possible values for a particular attribute, run the following command:

```
Get-Item -Path <path to attribute> | Select PossibleValues
```

## What can I do using Dell Command | PowerShell Provider?

You can configure the BIOS settings of your system using Dell Command | PowerShell Provider. See [Introduction](#).

## Can I use Dell Command | PowerShell Provider in non-Windows Dell client systems?

No, Dell Command | PowerShell Provider can be used only on systems running Windows PowerShell console, and therefore cannot be used on a non-Windows Dell client system.

## How can I get the list of all supported attributes?

Run the following command, after you have imported the module, to get the list of all supported attributes:

```
Get-DellBiosSettings
```

## From where can I download Dell Command | PowerShell Provider?

You can download Dell Command | PowerShell Provider from the Dell support site or from Microsoft Gallery. See [Downloading Dell Command | PowerShell Provider](#).

## How can I clear TPM?

The TPM feature can be cleared only from the BIOS setup screen. In the BIOS setup screen, click **Security**, and then click **TPMSecurity**. Select the **Clear** option and restart the system to apply the changes.

## How can I disable the SecureBoot feature?

The SecureBoot feature can be disabled only from the BIOS setup screen. In the BIOS setup screen, click **Secure Boot**, and then click **Secure Boot Enable**. Select the **Disabled** option to disable the SecureBoot feature.

# Troubleshooting scenarios for Dell Command | PowerShell Provider 2.6

**Issue:** DellBIOSProvider cannot be loaded because running script is disabled on this system.

**Resolution:** By default, Windows PowerShell has its ExecutionPolicy set to Restricted. To run the Dell Command | PowerShell Provider cmdlets and functions, PowerShell execution policy must be changed to RemoteSigned at a minimum. To apply the ExecutionPolicy, run the Windows PowerShell with Administrator privileges, and run the following command within the PowerShell console: `Set-ExecutionPolicy RemoteSigned -force`.

**Issue:** Unable to import DellBIOSProvider module.

**Resolution:**

- Verify if the downloaded package is saved along the PowerShell default module path that PowerShell supports.
- Verify if supported architecture that is X86/X64 is being used.
- Verify if Microsoft Visual C++ redistributable 2010 and 2015 is installed on the system.

**Issue:** Set-Item cmdlets displays an error.

**Resolution:**

- Verify if the attribute is read-only.
- Verify if that particular attribute has any limitation or dependency in setting the value. For example, you cannot set PeakShiftDayConfiguration StartTime greater than EndTime or ChargeStartTime.

**Issue:** System password not accepted.

**Resolution:** Verify if both Admin and System passwords are set. If yes, provide Administrator password to validate.

**Issue:** Unable to see current value for some custom BIOS attributes.

**Resolution:** Some custom BIOS attributes such as PeakShiftDayConfiguration have many values or parameters. To view the entire current value, use the following command:

```
Get-Item PeakShiftDayConfiguration | select -ExpandProperty Currentvalue
```



# Accessing documents from the Dell EMC support site

You can access the required documents by selecting your product.

1. Go to [www.dell.com/manuals](http://www.dell.com/manuals).
2. Click **Browse all products**, click **Software**, and then click [Client Systems Management](#).
3. To view the documents, click the required product name and version number.