
## *Windows PowerShell Get-Help on Cmdlet 'Restart-Computer'*

***PS:\>Get-HELP Restart-Computer -Full***

NAME

Restart-Computer

SYNOPSIS

Restarts the operating system on local and remote computers.

SYNTAX

Restart-Computer [[-ComputerName] <System.String[]>] [[-Credential] <System.Management.Automation.PSCredential>] [-AsJob] [-DcomAuthentication {Default | None |

Connect | Call | Packet | PacketIntegrity | PacketPrivacy | Unchanged}] [-Force] [-Impersonation {Default | Anonymous | Identify | Impersonate | Delegate}]

[-ThrottleLimit <System.Int32>] [-Confirm] [-WhatIf] [<CommonParameters>]

Restart-Computer [[-ComputerName] <System.String[]>] [[-Credential] <System.Management.Automation.PSCredential>] [-DcomAuthentication {Default | None | Connect | Call

| Packet | PacketIntegrity | PacketPrivacy | Unchanged}] [-Delay <System.Int16>] [-For {Wmi | WinRM | PowerShell}] [-Force] [-Impersonation {Default | Anonymous |

Identify | Impersonate | Delegate}] [-Protocol {DCOM | WSMan}] [-Timeout <System.Int32>] [-Wait] [-WsmanAuthentication {Basic | CredSSP | Default | Digest | Kerberos

| Negotiate}] [-Confirm] [-WhatIf] [<CommonParameters>]

DESCRIPTION

The `Restart-Computer` cmdlet restarts the operating system on the local and remote computers.

You can use the parameters of `Restart-Computer` to run the restart operations as a background job, to specify the authentication levels and alternate credentials, to

limit the operations that run at the same time, and to force an immediate restart.

Starting in Windows PowerShell 3.0, you can wait for the restart to complete before you run the next command. Specify a waiting time-out and query interval, and wait

for particular services to be available on the restarted computer. This feature makes it practical to use `Restart-Computer` in scripts and functions.

You can use the WS-Management (WSMan) protocol to restart the computer, in case Distributed Component Object Model (DCOM) calls are blocked, such as by an enterprise

firewall. For more information, see WS-Management Protocol (/windows/desktop/WinRM/ws-management-protocol).

This cmdlet requires Windows PowerShell remoting only when you use the AsJob parameter in a command.

PARAMETERS

-AsJob <System.Management.Automation.SwitchParameter>

Indicates that `Restart-Computer` runs as a background job.

To use this parameter, the local and remote computers must be configured for remoting. On Windows Vista and later versions of the Windows operating system, you

must open PowerShell by using the Run as Administrator option. For more information, see about_Remote_Requirements

(../Microsoft.PowerShell.Core/About/about_Remote_Requirements.md).

When you specify the AsJob parameter, the command immediately returns an object that represents the background

job. You can continue to work in the session while

the job finishes. The job is created on the local computer and the results from remote computers are automatically returned to the local computer. To manage the

job, use the Job cmdlets. To get the job results, use the `Receive-Job` cmdlet.

For more information about Windows PowerShell background jobs, see about_Jobs (../Microsoft.PowerShell.Core/About/about_Jobs.md)and about_Remote_Jobs

(../Microsoft.PowerShell.Core/About/about_Remote_Jobs.md).

Required? false

Position? named

Default value False

Accept pipeline input? False

Accept wildcard characters? false

-ComputerName <System.String[]>

Specifies one computer name or a comma-separated array of computer names. `Restart-Computer` accepts ComputerName objects from the pipeline or variables.

Type the NetBIOS name, an IP address, or a fully qualified domain name of a remote computer. To specify the local computer, type the computer name, a dot `.`, or

localhost.

This parameter doesn't rely on PowerShell remoting. You can use the ComputerName parameter even if your computer isn't configured to run remote commands.

If the ComputerName parameter isn't specified, `Restart-Computer` restarts the local computer.

Required? false

Position? 0

Default value None

Accept pipeline input? True (ByPropertyName, ByValue)

Accept wildcard characters? false

-Credential <System.Management.Automation.PSCredential>

Specifies a user account that has permission to do this action. The default is the current user.

Type a user name, such as User01 or Domain01\User01 , or enter a PSCredential object generated by the `Get-Credential` cmdlet. If you type a user name, you're

prompted to enter the password.

Credentials are stored in a PSCredential (/dotnet/api/system.management.automation.pscredential)object and the password is stored as a SecureString

(/dotnet/api/system.security.securestring).

> [!NOTE] > For more information about SecureString data protection, see > How secure is SecureString?

(/dotnet/api/system.security.securestring#how-secure-is-securestring).

Required? false

Position? 1

Default value Current user

Accept pipeline input? False

Accept wildcard characters? false

-DcomAuthentication <System.Management.AuthenticationLevel>

Specifies the authentication level that is used for the WMI connection. `Restart-Computer` uses WMI.

Valid values are:

- Call : Call-level COM authentication - Connect : Connect-level COM authentication - Default : Windows Authentication - None :

No COM authentication - Packet : Packet-level COM authentication. - PacketIntegrity : Packet Integrity-level COM authentication - PacketPrivacy :

Packet Privacy-level COM authentication. - Unchanged : The authentication level is the same as the previous command.

For more information, see AuthenticationLevel Enumeration (/dotnet/api/system.management.authenticationlevel).

This parameter is introduced in Windows PowerShell 3.0.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Delay <System.Int16>

Specifies the frequency of queries, in seconds. PowerShell queries the service specified by the For parameter to determine whether the service is available after

the computer is restarted.

This parameter is valid only together with the Wait and For parameters.

This parameter was introduced in Windows PowerShell 3.0.

If the Delay parameter isn't specified, `Restart-Computer` uses a five second delay.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-For <Microsoft.PowerShell.Commands.WaitForServiceTypes>

Specifies the behavior of PowerShell as it waits for the specified service or feature to become available after the computer restarts. This parameter is only

valid with the Wait parameter.

The acceptable values for this parameter are:

- Default : Waits for PowerShell to restart. - PowerShell : Can run commands in a PowerShell remote session on the computer. - WMI : Receives a reply to a

Win32_ComputerSystem query for the computer. - WinRM : Can establish a remote session to the computer by using WS-Management.

This parameter was introduced in Windows PowerShell 3.0.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Force <System.Management.Automation.SwitchParameter>

Forces an immediate restart of the computer.

Required? false

Position? named

Default value False

Accept pipeline input? False

Accept wildcard characters? false

-Impersonation <System.Management.ImpersonationLevel>

Specifies the impersonation level that this cmdlet uses to call WMI. `Restart-Computer` uses WMI. The acceptable values for this parameter are:

- Default : Default impersonation. Despite the name, this isn't the default value. - Anonymous : Hides the identity of the caller. - Identify : Allows objects to

query the credentials of the caller. - Impersonate : Allows objects to use the credentials of the caller.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Protocol <System.String>

Specifies which protocol to use to restart the computers. The valid values are WSMan and DCOM .

This parameter is introduced in Windows PowerShell 3.0.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-ThrottleLimit <System.Int32>

Specifies the maximum number of concurrent connections that can be established to run this command. The throttle limit applies only to the current command, not to

the session or to the computer.

If the ThrottleLimit parameter isn't specified or a value of 0 is used, `Restart-Computer` uses a maximum of 32 concurrent connections.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Timeout <System.Int32>

Specifies the duration of the wait, in seconds. When the timeout elapses, `Restart-Computer` returns to the command prompt, even if the computers aren't restarted.

The Timeout parameter is only valid with the Wait parameter. Timeout overrides the Wait parameter's indefinite waiting period.

This parameter was introduced in Windows PowerShell 3.0.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Wait <System.Management.Automation.SwitchParameter>

`Restart-Computer` suppresses the PowerShell prompt and blocks the pipeline until the computers have restarted. You can use this parameter in a script to restart

computers and then continue to process when the restart is finished.

The Wait parameter waits indefinitely for the computers to restart. You can use Timeout to adjust the timing and the For and Delay parameters to wait for

particular services to become available on the restarted computers.

The Wait parameter isn't valid when you're restarting the local computer. If the value of the ComputerName parameter contains the names of remote computers and

the local computer, `Restart-Computer` generates a non-terminating error for Wait on the local computer, but waits for the remote computers to restart.

This parameter was introduced in Windows PowerShell 3.0.

Required? false

Position? named

Default value False

Accept pipeline input? False

Accept wildcard characters? false

-WsmanAuthentication <System.String>

Specifies the mechanism that is used to authenticate the user credentials. This parameter was introduced in Windows PowerShell 3.0.

The acceptable values for this parameter are: Basic , CredSSP , Default , Digest , Kerberos , and Negotiate .

For more information, see AuthenticationMechanism (/dotnet/api/system.management.automation.runspaces.authenticationmechanism).

> [!WARNING] > Credential Security Service Provider (CredSSP) authentication, in which the user credentials are > passed to a remote computer to be authenticated,

is designed for commands that require > authentication on more than one resource, such as accessing a remote network share. This mechanism > increases the

security risk of the remote operation. If the remote computer is compromised, the > credentials that are passed to it can be used to control the network session.

Required? false

Position? named

Default value None

Accept pipeline input? False

Accept wildcard characters? false

-Confirm <System.Management.Automation.SwitchParameter>

Prompts you for confirmation before running `Restart-Computer`.

Required? false

Position? named

Default value False

Accept pipeline input? False

Accept wildcard characters? false

-WhatIf <System.Management.Automation.SwitchParameter>

Shows what would happen if the `Restart-Computer` runs. The `Restart-Computer` cmdlet isn't run.

Required? false

Position? named

Default value False

Accept pipeline input? False

Accept wildcard characters? false

<CommonParameters>

This cmdlet supports the common parameters: Verbose, Debug,

ErrorAction, ErrorVariable, WarningAction, WarningVariable,

OutBuffer, PipelineVariable, and OutVariable. For more information, see

about_CommonParameters (https:/go.microsoft.com/fwlink/?LinkID=113216).

INPUTS

System.String

You can pipe a string that contains a computer name to this cmdlet.

OUTPUTS

None

By default, this cmdlet returns no output.

System.Management.Automation.RemotingJob

When you use the AsJob parameter, this cmdlet returns a job object.

NOTES

- `Restart-Computer` only work on computers running Windows and requires WinRM and WMI to shutdown a system, including the local system. - `Restart-Computer` uses the Win32Shutdown method (/windows/desktop/CIMWin32Prov/win32shutdown-method-in-class-win32-operatingsystem)of the Windows Management

Instrumentation (WMI)

Win32_OperatingSystem (/windows/desktop/CIMWin32Prov/win32-operatingsystem)class. This method requires the SeShutdownPrivilege privilege be enabled for the user

account used to restart the machine.

In Windows PowerShell 2.0, the AsJob parameter doesn't work reliably when you are restarting or stopping remote computers. In Windows PowerShell 3.0, the

implementation is changed to resolve this problem.

---------- Example 1: Restart the local computer ----------

Restart-Computer

---------- Example 2: Restart multiple computers ----------

Restart-Computer -ComputerName Server01, Server02, localhost

------- Example 3: Restart computers as a background job -------

$Job = Restart-Computer -ComputerName "Server01", "Server02" -AsJob
$Job | Receive-Job

`Restart-Computer` uses the ComputerName parameter to specify Server01 and Server02 . The AsJob parameter runs the command as a background job. The job object is

stored in the `$Job` variable. `$Job` is sent down the pipeline to the `Receive-Job` cmdlet that gets the results.

---------- Example 4: Restart a remote computer ----------

Restart-Computer -ComputerName Server01 -Impersonation Anonymous -DcomAuthentication PacketIntegrity

`Restart-Computer` uses the ComputerName parameter to specify Server01 . The Impersonation parameter specifies Anonymous to hide the requester's identity. The

DcomAuthentication parameter specifies PacketIntegrity as the connection's authentication level.

- Example 5: Force restart of computers listed in a text file -

```
$Names = Get-Content -Path C:\Domain01.txt
$Creds = Get-Credential
Restart-Computer -ComputerName $Names -Credential $Creds -Force -ThrottleLimit 10
```

`Get-Content` uses the Path parameter to get a list of computer names from a text file, Domain01.txt . The computer names are stored in the variable `$Names`.

`Get-Credential` prompts you for a username and password and stores the values in the variable `$Creds`. `Restart-Computer` uses the ComputerName and Credential

parameters with their variables. The Force parameter causes an immediate restart of each computer. The ThrottleLimit parameter limits the command to 10 concurrent

connections.

- Example 6: Restart a remote computer and wait for PowerShell -

```
Restart-Computer -ComputerName Server01 -Wait -For PowerShell -Timeout 300 -Delay 2
```

`Restart-Computer` uses the ComputerName parameter to specify Server01 . The Wait parameter waits for the restart to finish. The For specifies that PowerShell can run

commands on the remote computer. The Timeout parameter specifies a five-minute wait. The Delay parameter queries the remote computer every two seconds to determine

whether it's restarted.

-- Example 7: Restart a computer by using the WSMan Protocol --

```
Restart-Computer -ComputerName Server01 -Protocol WSMan -WsmanAuthentication Kerberos
```

`Restart-Computer` uses the ComputerName parameter to specify the remote computer, Server01 . The Protocol parameter specifies to use the WSMan protocol. The

WsmanAuthentication parameter specifies the authentication method as Kerberos .

RELATED LINKS

https://learn.microsoft.com/powershell/module/microsoft.powershell.management/restart-computer?view=powershell-5.1&WT.mc_id=ps-gethelp

About Windows Remote Management

Get-Credential

WS-Management Protocol