Windows PowerShell Get-Help on Cmdlet 'Set-NetTCPSetting'

PS:\>Get-HELP Set-NetTCPSetting -Full

NAME

   Set-NetTCPSetting

SYNOPSIS

   Modifies a TCP setting.

SYNTAX

      Set-NetTCPSetting [-AsJob] [-AutoReusePortRangeNumberOfPorts <UInt16>] [-AutoReusePortRangeStartPort
<UInt16>] [-AutoTuningLevelLocal {Disabled | HighlyRestricted |

    Restricted | Normal | Experimental}] [-AutomaticUseCustom {Disabled | Enabled}] [-CimSession <CimSession[]>]
[-Confirm] [-CongestionProvider {Default | CTCP | DCTCP}]

        [-CwndRestart {False | True}] [-DelayedAckFrequency <Byte>] [-DelayedAckTimeoutMs <UInt32>]
[-DynamicPortRangeNumberOfPorts <UInt16>] [-DynamicPortRangeStartPort

    <UInt16>] [-EcnCapability {Disabled | Enabled}] [-ForceWS {Disabled | Enabled}] [-InitialCongestionWindowMss
<UInt32>] [-InitialRtoMs <UInt32>] -InputObject

    <CimInstance[]> [-MaxSynRetransmissions <Byte>] [-MemoryPressureProtection {Disabled | Enabled | Default}]
[-MinRtoMs <UInt32>] [-NonSackRttResiliency {Disabled |

    Enabled}] [-PassThru] [-ScalingHeuristics {Disabled | Enabled}] [-ThrottleLimit <Int32>] [-Timestamps {Disabled |
Enabled}] [-WhatIf] [<CommonParameters>]

Set-NetTCPSetting [[-SettingName] <String[]>] [-AsJob] [-AutoReusePortRangeNumberOfPorts <UInt16>] [-AutoReusePortRangeStartPort <UInt16>] [-AutoTuningLevelLocal

{Disabled | HighlyRestricted | Restricted | Normal | Experimental}] [-AutomaticUseCustom {Disabled | Enabled}] [-CimSession <CimSession[]>] [-Confirm]

[-CongestionProvider {Default | CTCP | DCTCP}] [-CwndRestart {False | True}] [-DelayedAckFrequency <Byte>] [-DelayedAckTimeoutMs <UInt32>]

[-DynamicPortRangeNumberOfPorts <UInt16>] [-DynamicPortRangeStartPort <UInt16>] [-EcnCapability {Disabled | Enabled}] [-ForceWS {Disabled | Enabled}]

[-InitialCongestionWindowMss <UInt32>] [-InitialRtoMs <UInt32>] [-MaxSynRetransmissions <Byte>] [-MemoryPressureProtection {Disabled | Enabled | Default}] [-MinRtoMs

<UInt32>] [-NonSackRttResiliency {Disabled | Enabled}] [-PassThru] [-ScalingHeuristics {Disabled | Enabled}] [-ThrottleLimit <Int32>] [-Timestamps {Disabled |

Enabled}] [-WhatIf] [<CommonParameters>]

DESCRIPTION

The Set-NetTCPSetting cmdlet modifies a TCP setting. TCP settings are optimized for different network conditions including latency and congestion. To apply a TCP

setting to a port number or destination IP address range, create a transport filter by using the New-NetTransportFilter cmdlet. Note: >1) You can modify custom and

non-custom settings on Windows server 2016 and 2019. >2) You can modify only custom settings. Internet and Datacenter settings cannot be modified on Windows 2012 or

earlier versions. >3) On Windows 10, the following parameters are read-only and cannot be modified:

> * MinRtoMs > * InitialCongestionWindowMss > * AutomaticUseCustom > * CongestionProvider > * CwndRestart > * DelayedAckTimeoutMs

PARAMETERS

-AsJob [<SwitchParameter>]

Runs the cmdlet as a background job. Use this parameter to run commands that take a long time to complete.

Required?   false

Position?   named

Default value   False

Accept pipeline input?   False

Accept wildcard characters? false

-AutoReusePortRangeNumberOfPorts <UInt16>

   Specifies the number of ports for the auto-reuse port range, which is a port range used for local ephemeral port selection by outbound TCP connections for which

   either SO_REUSE_UNICASTPORT has been set on the socket, or for which connect() has been called without calling bind() on the socket.

   If you specify 0, the auto-reuse feature is disabled and ephemeral ports are drawn instead from the dynamic port range as specified by DynamicPortRangeStartPort

   and DynamicPortRangeNumberOfPorts , even if SO_REUSE_UNICASTPORT is set on a socket.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-AutoReusePortRangeStartPort <UInt16>

   Specifies the starting port for the auto-reuse port range.

   This parameter sets the starting port to send and receive TCP traffic, which is a port range used for local ephemeral port selection by outbound TCP connections

   for which either SO_REUSE_UNICASTPORT has been set on the socket, or for which connect() has been called without calling bind() on the socket.

   If you specify 0, the auto-reuse feature is disabled and ephemeral ports are drawn instead from the dynamic port range as specified by DynamicPortRangeStartPort

   and DynamicPortRangeNumberOfPorts , even if SO_REUSE_UNICASTPORT is set on a socket.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

  -AutoTuningLevelLocal <AutoTuningLevelLocal>

   Specifies a TCP auto-tuning level for the host computer. TCP auto-tuning can improve throughput on high throughput, high latency networks. The acceptable values

   for this parameter are:

    - Disabled. Sets the TCP receive window to the default value. - HighlyRestricted. Sets the TCP receive window to grow beyond the default value, but very

     conservatively. - Restricted. Sets the TCP receive window to grow beyond the default value, but less conservatively than HighlyRestricted. - Normal. Sets the

     TCP receive window to grow to accommodate almost all scenarios. - Experimental. Sets the TCP receive window to grow to accommodate extreme scenarios.

   Required?   false

   Position?   named

   Default value   None

   Accept pipeline input?   False

   Accept wildcard characters? false

  -AutomaticUseCustom <AutomaticUseCustom>

   Specifies whether the automatic profile assigns a custom template, either Datacenter Custom or Internet Custom, to a connection. The acceptable values for this

   parameter are:

   - Enabled

   - Disabled

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-CimSession <CimSession[]>

Runs the cmdlet in a remote session or on a remote computer. Enter a computer name or a session object, such as the

output of a New-CimSession

(https://go.microsoft.com/fwlink/p/?LinkId=227967)   or

[Get-CimSession](https://go.microsoft.com/fwlink/p/?LinkId=227966)cmdlet. The default is the current session

on the local computer.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-Confirm [<SwitchParameter>]

Prompts you for confirmation before running the cmdlet.

Required?   false

Position?   named

Default value   False

Accept pipeline input?   False

Accept wildcard characters? false

-CongestionProvider <CongestionProvider>

Specifies the congestion provider property that TCP uses. The acceptable values for this parameter are:

- CTCP. Compound TCP increases the receive window and amount of data sent. CTCP can improve throughput on

higher latency connections. - DCTCP. Data Center TCP

adjusts the TCP window based on network congestion feedback based on Explicit Congestion Notification (ECN) signaling. DCTCP may improve throughput on low latency

links. - Default. Servers use DCTCP by default. Client computers use NewReno. For information about NewReno, see RFC 3782 (http://www.ietf.org/rfc/rfc3782.txt).

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-CwndRestart <CwndRestart>

Specifies whether to enable congestion window restart. Congestion window restart can avoid slow start to optimize throughput on low latency networks. For more

information about congestion window restart, see RFC 2581 (http://www.ietf.org/rfc/rfc2581.txt). The acceptable values for this parameter are:

- True. TCP uses congestion window restart. - False. TCP uses the default setting of the connection.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-DelayedAckFrequency <Byte>

Specifies the number of acknowledgments (ACKs) received before the computer sends a response.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-DelayedAckTimeoutMs <UInt32>

Specifies the time to wait, in milliseconds, before the computer sends an ACK if the computer receives fewer than delayed acknowledgment frequency of packets. Use

the DelayedAckFrequency parameter to specify the delayed ACK frequency value. Reducing the time to wait can increase throughput on low latency networks by

accelerating growth in TCP window size. The acceptable values for this parameter are: increments of 10, from 10 through 600.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-DynamicPortRangeNumberOfPorts <UInt16>

Specifies the number of ports for the dynamic port range that starts from the port that you specify for the DynamicPortRangeStartPort parameter.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-DynamicPortRangeStartPort <UInt16>

Specifies the starting port for the dynamic port range. This parameter sets the starting port to send and receive TCP traffic. The acceptable values for this

parameter are: 1 through 65535.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-EcnCapability <EcnCapability>

Specifies whether to enable ECN capability. The acceptable values for this parameter are:

- Enabled. Uses ECN capability. - Disabled. Does not use ECN capability.

If you specify a value of Disabled, UseECT0, or UseEct1 for the EcnMarking parameter of the Set-NetIPInterface cmdlet, the current parameter has no effect.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-ForceWS <ForceWS>

Specifies whether to force window scaling for retransmission. The acceptable values for this parameter are:

- Enabled. Requires window scaling for retransmission. - Disabled. Does not require window scaling for retransmission.

The default value is Disabled.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-InitialCongestionWindowMss <UInt32>

Specifies the initial size of the congestion window. Provide a value to multiply by the maximum segment size (MSS). The acceptable values for this parameter are:

even numbers from 2 through 64.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-InitialRtoMs <UInt32>

Specifies the period, in milliseconds, before connect, or SYN, retransmit. The acceptable values for this parameter are: increments of 10, from 300 ms through

3000 ms.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-InputObject <CimInstance[]>

Specifies the input object that is used in a pipeline command.

Required?   true

Position?   named

Default value   None

Accept pipeline input?   True (ByValue)

Accept wildcard characters? false

-MaxSynRetransmissions <Byte>

Specifies the maximum number of times the computer sends SYN packets without receiving a response.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-MemoryPressureProtection <MemoryPressureProtection>

Specifies whether to use memory pressure protection. TCP memory pressure protection helps ensure that a computer continues normal operation when low on memory due

to denial of service attacks. The acceptable values for this parameter are:

- Enabled. When low on memory, during an attack, close existing TCP connections and drop incoming SYN requests. - Disabled. Do not use memory pressure

protection. - Default. Use the computer default value for memory pressure protection.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-MinRtoMs <UInt32>

Specifies a value, in milliseconds, for the TCP retransmission to time out. The acceptable values for this parameter are: increments of 10, from 20 ms through 300

ms.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-NonSackRttResiliency <NonSackRttResiliency>

Specifies whether to enable round trip time resiliency for clients that do not support selective acknowledgment. The acceptable values for this parameter are:

- Enabled

- Disabled

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-PassThru [<SwitchParameter>]

Returns an object representing the item with which you are working. By default, this cmdlet does not generate any output.

Required?   false

Position?   named

Default value   False

Accept pipeline input?   False

Accept wildcard characters? false

-ScalingHeuristics <ScalingHeuristics>

Specifies whether to enable scaling heuristics. The acceptable values for this parameter are:

- Enabled

- Disabled

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-SettingName <String[]>

Specifies an array of setting names. You can specify only Custom for this parameter.

Required?   false

Position?   0

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-ThrottleLimit <Int32>

Specifies the maximum number of concurrent operations that can be established to run the cmdlet. If this parameter is omitted or a value of `0` is entered, then

Windows PowerShellr calculates an optimum throttle limit for the cmdlet based on the number of CIM cmdlets that are running on the computer. The throttle limit

applies only to the current cmdlet, not to the session or to the computer.

Required?   false

Position?   named

Default value   None

Accept pipeline input?   False

Accept wildcard characters? false

-Timestamps <Timestamps>

Specifies whether to enable timestamps. Timestamps facilitate round trip measurement, and can help protect against wrapped sequence numbers on high throughput

links. For more information about TCP timestamps, see RFC 1323 (http://www.ietf.org/rfc/rfc1323.txt). The acceptable values for this parameter are:

- Enabled

- Disabled

    Required?   false

    Position?   named

    Default value   None

    Accept pipeline input?   False

    Accept wildcard characters? false

-WhatIf [<SwitchParameter>]

    Shows what would happen if the cmdlet runs. The cmdlet is not 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

  Microsoft.Management.Infrastructure.CimInstance#root\StandardCimv2\MSFT_NetTCPSetting

    The `Microsoft.Management.Infrastructure.CimInstance` object is a wrapper class that displays Windows Management

Instrumentation (WMI) objects. The path after the

    pound sign (`#`) provides the namespace and class name for the underlying WMI object.

OUTPUTS

  None

NOTES

----------- Example 1: Change the custom TCP setting -----------

PS C:\>Set-NetTCPSetting -SettingName "InternetCustom" -CongestionProvider CTCP -InitialCongestionWindowMss 6

This command changes the custom TCP setting to have a value of 6 for the initial congestion window and use compound TCP.

RELATED LINKS

Online Version: https://learn.microsoft.com/powershell/module/nettcpip/set-nettcpsetting?view=windowsserver2022-ps&wt.mc_id=ps-gethelp

Get-NetTCPSetting

Get-NetTransportFilter

Get-NetUDPSetting

New-NetTransportFilter

Remove-NetTransportFilter

Set-NetUDPSetting