Collecting Information About Computers

Cmdlets from **CimCmdlets** module are the most important cmdlets for general system management tasks. All critical subsystem settings are exposed through WMI. Furthermore, WMI treats data as objects that are in collections of one or more items. Because Windows PowerShell also works with objects and has a pipeline that allows you to treat single or multiple objects in the same way, generic WMI access allows you to perform some advanced tasks with very little work.

Listing Desktop Settings

We'll begin with a command that collects information about the desktops on the local computer.

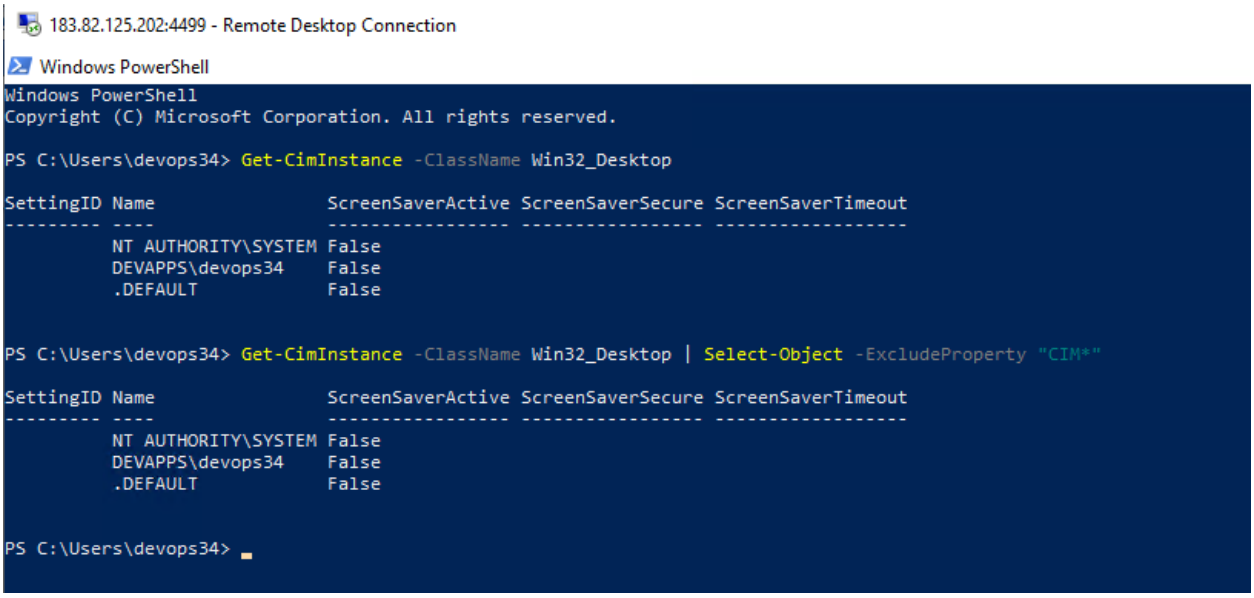
PowerShellCopy
```
Get-CimInstance -ClassName Win32_Desktop
```

Because most of these metadata properties have names that begin with **Cim**, you can filter the properties using `Select-Object`. Specify the **-ExcludeProperty** parameter with "Cim*" as the value. For example:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_Desktop | Select-Object -ExcludeProperty "CIM*"
```

To filter out the metadata, use a pipeline operator (|) to send the results of the `Get-CimInstance` command to `Select-Object -ExcludeProperty "CIM*"`.

Output :



Listing BIOS Information

The WMI **Win32_BIOS** class returns fairly compact and complete information about the system BIOS on the local computer:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_BIOS
```

Listing Processor Information

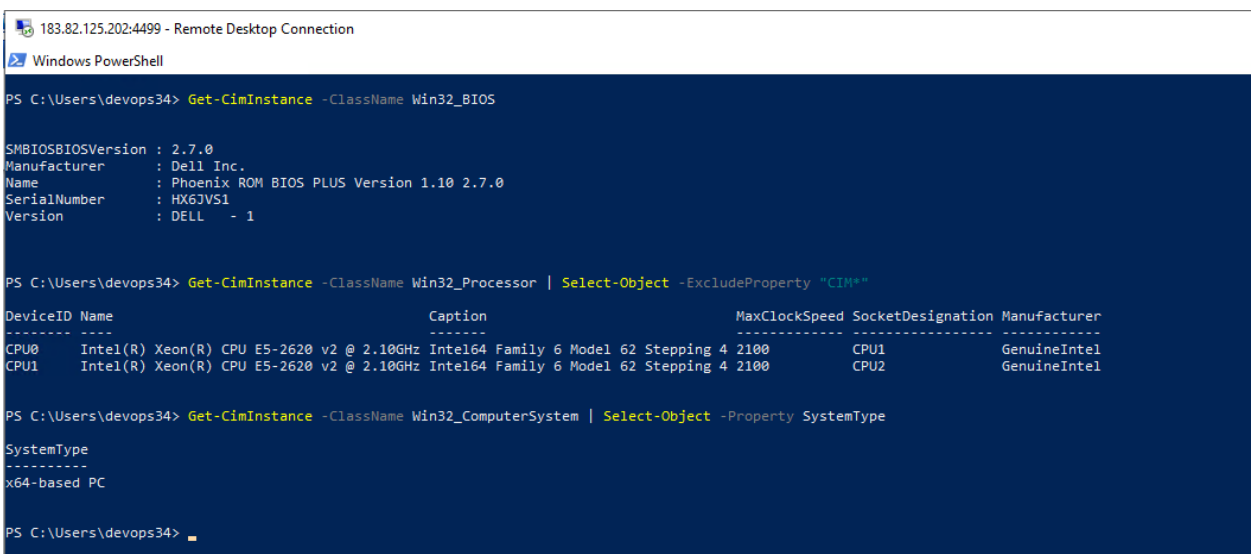
You can retrieve general processor information by using WMI's **Win32_Processor** class, although you will likely want to filter the information:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_Processor | Select-Object -ExcludeProperty "CIM*"
```

For a generic description string of the processor family, you can just return the **SystemType** property:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_ComputerSystem | Select-Object -Property SystemType
```

Output :



Listing Computer Manufacturer and Model

Computer model information is also available from **Win32_ComputerSystem**. The standard displayed output will not need any filtering to provide OEM data:

PowerShellCopy

```
Get-CimInstance -ClassName Win32_ComputerSystem
```

Your output from commands such as this, which return information directly from some hardware, is only as good as the data you have. Some information is not correctly configured by hardware manufacturers and may therefore be unavailable.

Listing Installed Hotfixes

You can list all installed hotfixes by using **Win32_QuickFixEngineering**:

PowerShellCopy

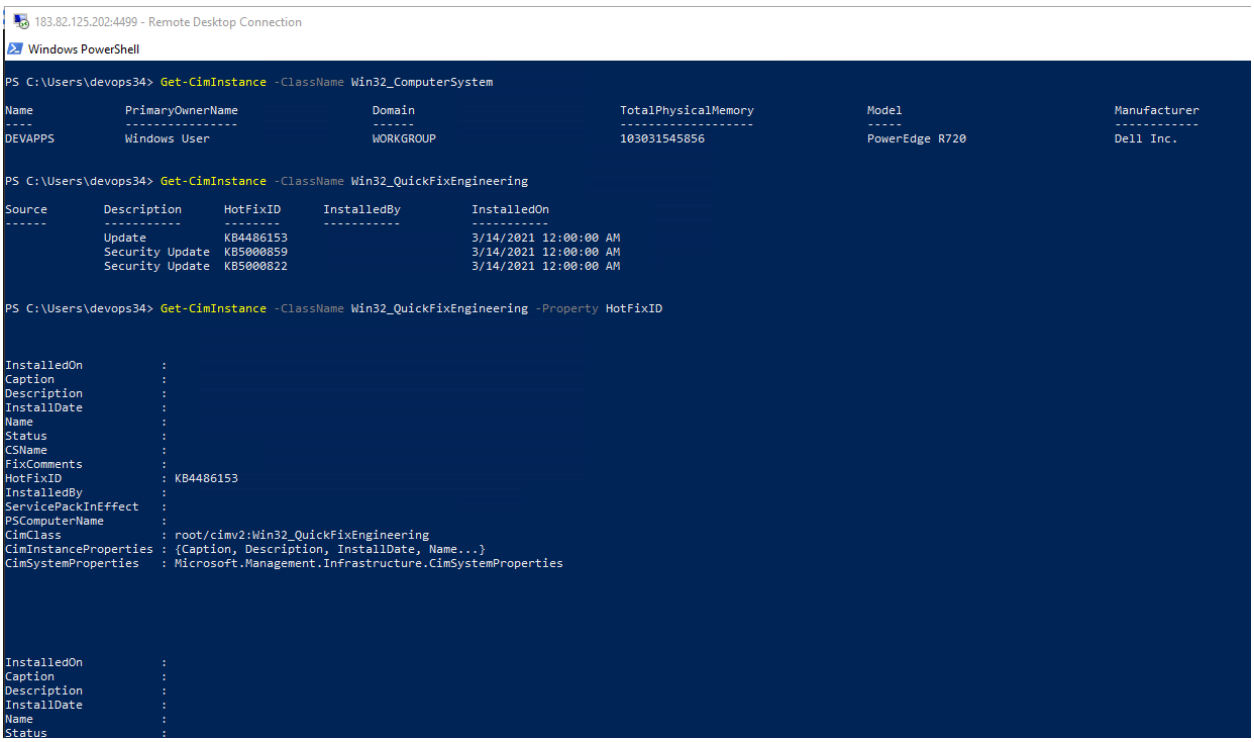
```
Get-CimInstance -ClassName Win32_QuickFixEngineering
```

For more succinct output, you may want to exclude some properties. Although you can use the `Get-CimInstance`'s **Property** parameter to choose only the **HotFixID**, doing so will actually return more information, because all the metadata is displayed by default:

PowerShellCopy

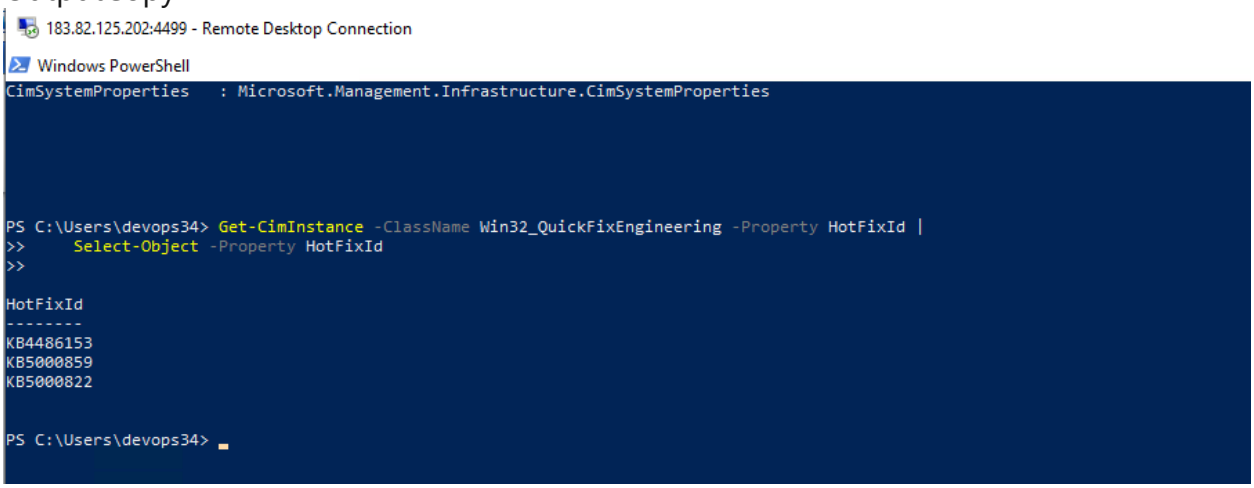
```
Get-CimInstance -ClassName Win32_QuickFixEngineering -Property HotFixID
```

OutputCopy



The additional data is returned, because the **Property** parameter in `Get-CimInstance` restricts the properties returned from WMI class instances, not the object returned to PowerShell. To reduce the output, use `Select-Object`:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_QuickFixEngineering -Property HotFixId |
    Select-Object -Property HotFixId
```
OutputCopy



Listing Operating System Version Information

The **Win32_OperatingSystem** class properties include version and service pack information. You can explicitly select only these properties to get a version information summary from **Win32_OperatingSystem**:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_OperatingSystem |
  Select-Object -Property
BuildNumber,BuildType,OSType,ServicePackMajorVersion,ServicePackMinorVersion
```

You can also use wildcards with the `Select-Object`'s **Property** parameter. Because all the properties beginning with either **Build** or **ServicePack** are important to use here, we can shorten this to the following form:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_OperatingSystem | Select-Object -Property
Build*,OSType,ServicePack*
```
OutputCopy
```
BuildNumber             : 18362
BuildType               : Multiprocessor Free
OSType                  : 18
ServicePackMajorVersion : 0
ServicePackMinorVersion : 0
```

Listing Local Users and Owner

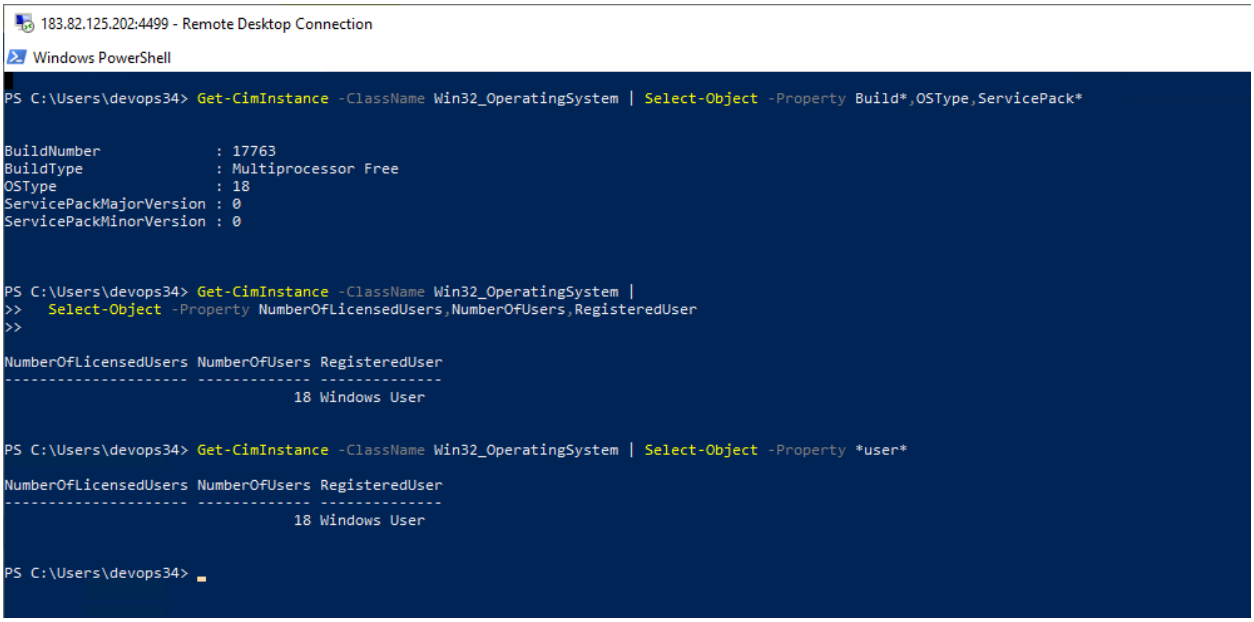
Local general user information — number of licensed users, current number of users, and owner name — can be found with a selection of **Win32_OperatingSystem** class properties. You can explicitly select the properties to display like this:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_OperatingSystem |
  Select-Object -Property NumberOfLicensedUsers,NumberOfUsers,RegisteredUser
```

A more succinct version using wildcards is:

PowerShellCopy
```
Get-CimInstance -ClassName Win32_OperatingSystem | Select-Object -Property *user*
```

Output Copy:



Getting Available Disk Space

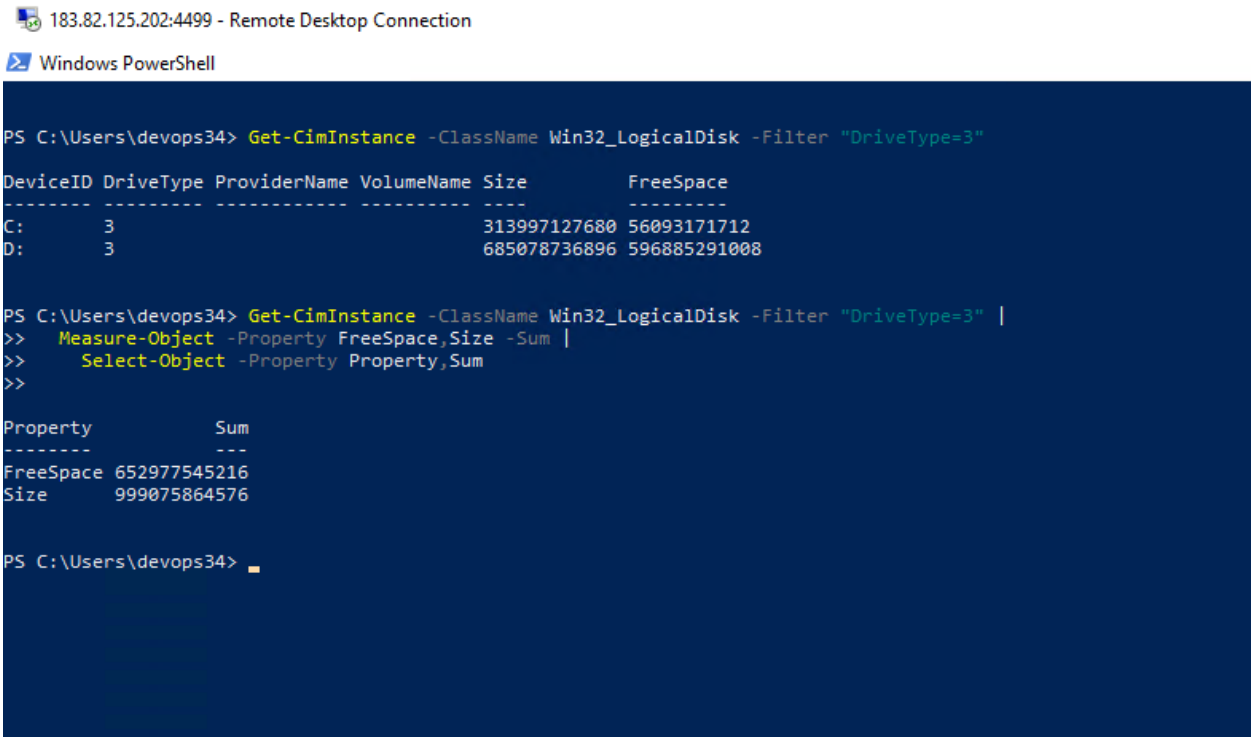
To see the disk space and free space for local drives, you can use the Win32_LogicalDisk WMI class. You need to see only instances with a DriveType of 3 — the value WMI uses for fixed hard disks.

PowerShellCopy
```
Get-CimInstance -ClassName Win32_LogicalDisk -Filter "DriveType=3"
```

PowerShellCopy

```
Get-CimInstance -ClassName Win32_LogicalDisk -Filter "DriveType=3" |
  Measure-Object -Property FreeSpace,Size -Sum |
    Select-Object -Property Property,Sum
```

OutputCopy



Getting Logon Session Information

You can get general information about logon sessions associated with users through the **Win32_LogonSession** WMI class:

PowerShellCopy

```
Get-CimInstance -ClassName Win32_LogonSession
```

Getting the User Logged on to a Computer

You can display the user logged on to a particular computer system using Win32_ComputerSystem. This command returns only the user logged on to the system desktop:

PowerShellCopy

```
Get-CimInstance -ClassName Win32_ComputerSystem -Property UserName
```

Output :

183.82.125.202:4499 - Remote Desktop Connection

Windows PowerShell

```
PS C:\Users\devops34> Get-CimInstance -ClassName Win32_LogonSession

LogonId  Name LogonType StartTime           Status AuthenticationPackage
-------  ---- --------- ---------           ------ --------------------
2132282       10        9/6/2022 5:01:28 PM        NTLM
50814414      3         9/7/2022 9:18:57 AM        NTLM


PS C:\Users\devops34> Get-CimInstance -ClassName Win32_ComputerSystem -Property UserName



AdminPasswordStatus         :
BootupState                 :
ChassisBootupState          :
KeyboardPasswordStatus      :
PowerOnPasswordStatus       :
PowerSupplyState            :
PowerState                  :
FrontPanelResetStatus       :
ThermalState                :
Status                      :
Name                        : DEVAPPS
PowerManagementCapabilities :
PowerManagementSupported    :
Caption                     :
Description                 :
InstallDate                 :
CreationClassName           :
NameFormat                  :
PrimaryOwnerContact         :
PrimaryOwnerName            :
Roles                       :
InitialLoadInfo             :
LastLoadInfo                :
ResetCapability             :
AutomaticManagedPagefile    :
AutomaticResetBootOption    :
AutomaticResetCapability    :
BootOptionOnLimit           :
BootOptionOnWatchDog        :
BootROMSupported            :
BootStatus                  :
ChassisSKUNumber            :
CurrentTimeZone             :
```

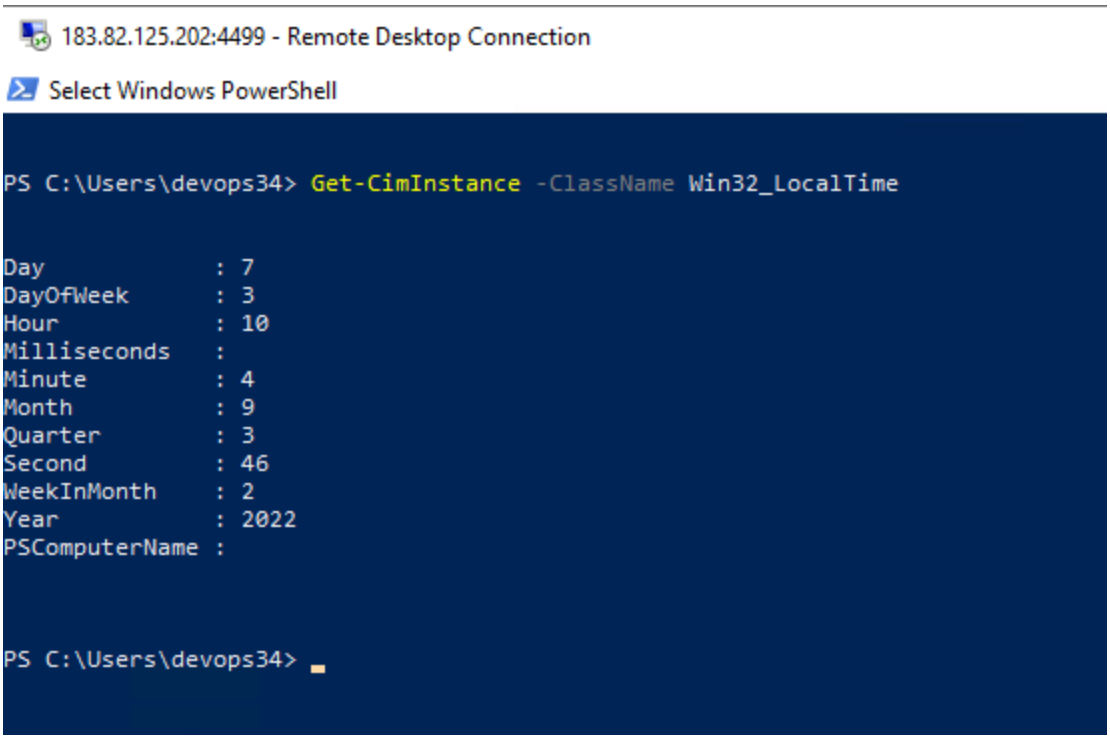
Getting Local Time from a Computer

You can retrieve the current local time on a specific computer by using the **Win32_LocalTime** WMI class.

PowerShellCopy

```
Get-CimInstance -ClassName Win32_LocalTime
```

OutputCopy



Getting Local Time from a Computer

You can retrieve the current local time on a specific computer by using the **Win32_LocalTime** WMI class.

PowerShellCopy

```
Get-CimInstance -ClassName Win32_LocalTime
```

OutputCopy

183.82.125.202:4499 - Remote Desktop Connection

Windows PowerShell

```
PS C:\Users\devops34> Get-CimInstance -ClassName Win32_Service |
>>     Select-Object -Property Status,Name,DisplayName
>>

Status  Name                                       DisplayName
------  ----                                       -----------
OK      AdobeARMservice                            Adobe Acrobat Update Service
OK      AJRouter                                   AllJoyn Router Service
OK      ALG                                        Application Layer Gateway Service
OK      AppHostSvc                                 Application Host Helper Service
OK      AppIDSvc                                   Application Identity
OK      Appinfo                                    Application Information
OK      AppMgmt                                    Application Management
OK      AppReadiness                               App Readiness
OK      AppVClient                                 Microsoft App-V Client
OK      AppXSvc                                    AppX Deployment Service (AppXSVC)
OK      aspnet_state                               ASP.NET State Service
OK      AudioEndpointBuilder                       Windows Audio Endpoint Builder
OK      Audiosrv                                   Windows Audio
OK      AxInstSV                                   ActiveX Installer (AxInstSV)
OK      AzureAttestService                         AzureAttestService
OK      BFE                                        Base Filtering Engine
OK      BITS                                       Background Intelligent Transfer Service
OK      BrokerInfrastructure                       Background Tasks Infrastructure Service
OK      BTAGService                                Bluetooth Audio Gateway Service
OK      BthAvctpSvc                                AVCTP service
OK      bthserv                                    Bluetooth Support Service
OK      camsvc                                     Capability Access Manager Service
OK      CDPSvc                                     Connected Devices Platform Service
OK      CertPropSvc                                Certificate Propagation
OK      ClipSVC                                    Client License Service (ClipSVC)
OK      COMSysApp                                  COM+ System Application
OK      CoreMessagingRegistrar                     CoreMessaging
OK      CryptSvc                                   Cryptographic Services
OK      CscService                                 Offline Files
OK      DcomLaunch                                 DCOM Server Process Launcher
OK      defragsvc                                  Optimize drives
OK      DeviceAssociationService                   Device Association Service
OK      DeviceInstall                              Device Install Service
OK      DevQueryBroker                             DevQuery Background Discovery Broker
OK      Dhcp                                       DHCP Client
OK      diagnosticshub.standardcollector.service   Microsoft (R) Diagnostics Hub Standard Collector Service
OK      DiagTrack                                  Connected User Experiences and Telemetry
OK      DmEnrollmentSvc                            Device Management Enrollment Service
OK      dmwappushservice                           Device Management Wireless Application Protocol (WAP) Push message Routing Service
OK      Dnscache                                   DNS Client
```

Displaying Service Status

To view the status of all services on a specific computer, you can locally use the `Get-Service` cmdlet. For remote systems, you can use the **Win32_Service** WMI class. If you also use `Select-Object` to filter the results to **Status**, **Name**, and **DisplayName**, the output format will be almost identical to that from `Get-Service`:

PowerShellCopy

```
Get-CimInstance -ClassName Win32_Service |
    Select-Object -Property Status,Name,DisplayName
```

To allow the complete display of names for the occasional services with extremely long names, you may want to use `Format-Table` with the **AutoSize** and **Wrap** parameters, to optimize column width and allow long names to wrap instead of being truncated:

PowerShellCopy

```
Get-CimInstance -ClassName Win32_Service |
    Format-Table -Property Status,Name,DisplayName -AutoSize -Wrap
```

183.82.125.202:4499 - Remote Desktop Connection

Select Windows PowerShell

```
PS C:\Users\devops34> Get-CimInstance -ClassName Win32_Service |
>>     Format-Table -Property Status,Name,DisplayName -AutoSize -Wrap
>>

Status  Name                                    DisplayName
------  ----                                    -----------
OK      AdobeARMservice                         Adobe Acrobat Update Service
OK      AJRouter                                AllJoyn Router Service
OK      ALG                                     Application Layer Gateway Service
OK      AppHostSvc                              Application Host Helper Service
OK      AppIDSvc                                Application Identity
OK      Appinfo                                 Application Information
OK      AppMgmt                                 Application Management
OK      AppReadiness                            App Readiness
OK      AppVClient                              Microsoft App-V Client
OK      AppXSvc                                 AppX Deployment Service (AppXSVC)
OK      aspnet_state                            ASP.NET State Service
OK      AudioEndpointBuilder                    Windows Audio Endpoint Builder
OK      Audiosrv                                Windows Audio
OK      AxInstSV                                ActiveX Installer (AxInstSV)
OK      AzureAttestService                      AzureAttestService
OK      BFE                                     Base Filtering Engine
OK      BITS                                    Background Intelligent Transfer Service
OK      BrokerInfrastructure                    Background Tasks Infrastructure Service
OK      BTAGService                             Bluetooth Audio Gateway Service
OK      BthAvctpSvc                             AVCTP service
OK      bthserv                                 Bluetooth Support Service
OK      camsvc                                  Capability Access Manager Service
OK      CDPSvc                                  Connected Devices Platform Service
OK      CertPropSvc                             Certificate Propagation
OK      ClipSVC                                 Client License Service (ClipSVC)
OK      COMSysApp                               COM+ System Application
OK      CoreMessagingRegistrar                  CoreMessaging
OK      CryptSvc                                Cryptographic Services
OK      CscService                              Offline Files
OK      DcomLaunch                              DCOM Server Process Launcher
OK      defragsvc                               Optimize drives
OK      DeviceAssociationService                Device Association Service
OK      DeviceInstall                           Device Install Service
OK      DevQueryBroker                          DevQuery Background Discovery Broker
OK      Dhcp                                    DHCP Client
OK      diagnosticshub.standardcollector.service Microsoft (R) Diagnostics Hub Standard Collector Service
OK      DiagTrack                               Connected User Experiences and Telemetry
OK      DmEnrollmentSvc                         Device Management Enrollment Service
OK      dmwappushservice                        Device Management Wireless Application Protocol (WAP) Push message Routing Service
OK      Dnscache                                DNS Client
OK      DoSvc                                   Delivery Optimization
```