Lab - Using Windows PowerShell

Objectives

The objective of the lab is to explore some of the functions of PowerShell.

Part 1: Access PowerShell console.

Part 2: Explore Command Prompt and PowerShell commands.

Part 3: Explore cmdlets.

Part 4: Explore the netstat command using PowerShell.

Part 5: Empty recycle bin using PowerShell.

Background / Scenario

PowerShell is a powerful automation tool. It is both a command console and a scripting language. In this lab, you will use the console to execute some of the commands that are available in both the command prompt and PowerShell. PowerShell also has functions that can create scripts to automate tasks and work together with the Windows Operating System.

Required Resources

- 1 Windows PC with PowerShell installed and internet access

Instructions

Part 1: Access PowerShell console.

a. Click **Start**. Search and select **powershell**.

b. Click **Start**. Search and select **command prompt**.

Part 2: Explore Command Prompt and PowerShell commands.

a. Enter **dir** at the prompt in both windows.
What are the outputs to the **dir** command?

b. Try another command that you have used in the command prompt, such as **ping**, **cd**, and **ipconfig**.
What are the results?

Part 3: Explore cmdlets.

a. PowerShell commands, cmdlets, are constructed in the form of *verb-noun* string. To identify the PowerShell command to list the subdirectories and files in a directory, enter **Get-Alias dir** at the PowerShell prompt.

```
PS C:\Users\CyberOpsUser> Get-Alias dir

CommandTypeNameVersionSource
```

```
----------------------------
Aliasdir -> Get-ChildItem
```

What is the PowerShell command for **dir**?

b. For more detailed information about cmdlets, perform an internet search for **Microsoft powershell cmdlets**.

c. Close the Command Prompt window when done.

Part 4: Explore the netstat command using PowerShell.

a. At the PowerShell prompt, enter **netstat -h** to see the options available for the **netstat** command.

```
PS C:\Users\CyberOpsUser> netstat -h

Displays protocol statistics and current TCP/IP network connections.

NETSTAT [-a] [-b] [-e] [-f] [-n] [-o] [-p proto] [-r] [-s] [-x] [-t] [interval]
 -a Displays all connections and listening ports.
  -b Displays the executable involved in creating each connection or listening port.
In some cases well-known executables host multiple independent components, and in
these cases the sequence of components involved in creating the connection or
listening port is displayed. In this case the executable name is in [] at the bottom,
on top is the component it called, and so forth until TCP/IP was reached. Note that
this option can be time-consuming and will fail unless you have sufficient
permissions.
<some output omitted>
```

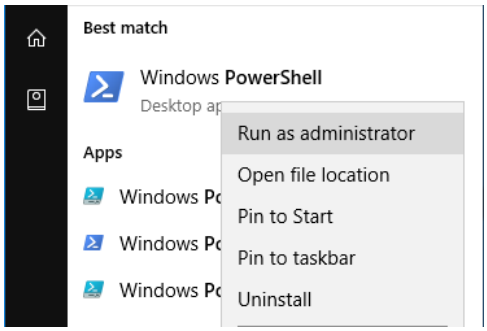
b. To display the routing table with the active routes, enter **netstat -r** at the prompt.

```
PS C:\Users\CyberOpsUser> netstat -r
===========================================================================
Interface List
  3...08 00 27 a0 c3 53 ......Intel(R) PRO/1000 MT Desktop Adapter
 10...08 00 27 26 c1 78 ......Intel(R) PRO/1000 MT Desktop Adapter #2
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination Netmask Gateway Interface  Metric
0.0.0.0 0.0.0.0 192.168.1.1 192.168.1.5     25
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
      169.254.0.0      255.255.0.0         On-link   169.254.181.151    281
  169.254.181.151  255.255.255.255         On-link   169.254.181.151    281
  169.254.255.255  255.255.255.255         On-link   169.254.181.151    281
      192.168.1.0    255.255.255.0         On-link       192.168.1.5    281
      192.168.1.5  255.255.255.255         On-link       192.168.1.5    281
    192.168.1.255  255.255.255.255         On-link       192.168.1.5    281
```

```
          224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
          224.0.0.0        240.0.0.0         On-link       192.168.1.5    281
          224.0.0.0        240.0.0.0         On-link   169.254.181.151    281
    255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
    255.255.255.255  255.255.255.255         On-link       192.168.1.5    281
    255.255.255.255  255.255.255.255         On-link   169.254.181.151    281
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  1    331 ::1/128                  On-link
  3    281 fe80::/64                On-link
 10    281 fe80::/64                On-link
 10    281 fe80::408b:14a4:7b64:b597/128
                                    On-link
  3    281 fe80::dd67:9e98:9ce0:51e/128
                                    On-link
  1    331 ff00::/8                 On-link
  3    281 ff00::/8                 On-link
 10    281 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```

What is the IPv4 gateway?

c. Open and run a second PowerShell with elevated privileges. Click **Start**. Search for PowerShell and right-click **Windows PowerShell** and select **Run as administrator**. Click **Yes** to allow this app to make changes to your device.



d. The netstat command can also display the processes associated with the active TCP connections. Enter the **netstat -abno** at the prompt.

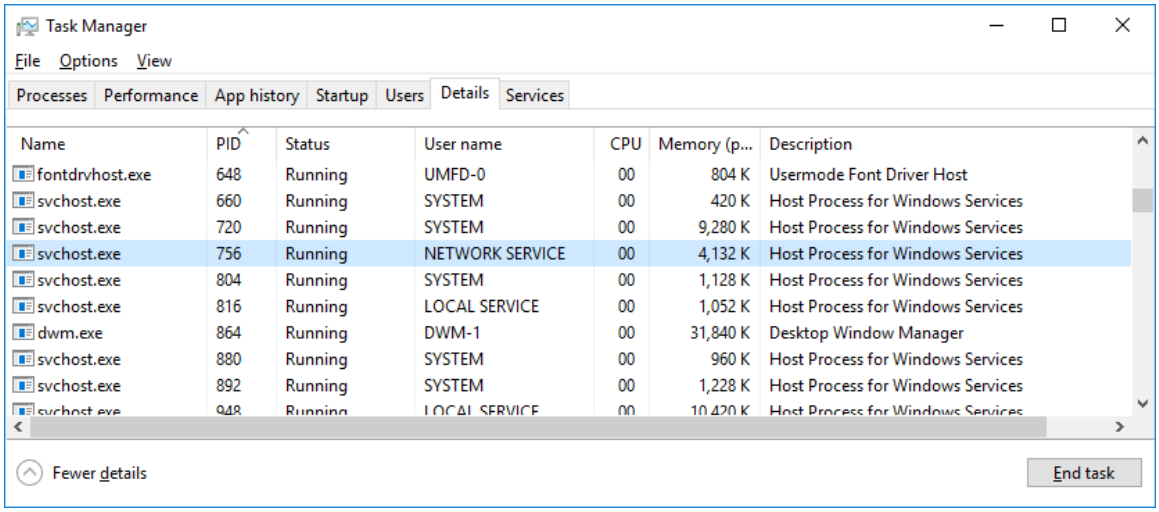
```
PS C:\Windows\system32> netstat -abno

Active Connections
```

```
  Proto  Local Address          Foreign Address        State           PID
  TCP    0.0.0.0:135            0.0.0.0:0              LISTENING       756
  RpcSs
 [svchost.exe]
  TCP    0.0.0.0:445            0.0.0.0:0              LISTENING       4
 Can not obtain ownership information
  TCP    0.0.0.0:49664          0.0.0.0:0              LISTENING       444
 Can not obtain ownership information
  TCP    0.0.0.0:49665          0.0.0.0:0              LISTENING       440
  Schedule
 [svchost.exe]
  TCP    0.0.0.0:49666          0.0.0.0:0              LISTENING       304
  EventLog
 [svchost.exe]
  TCP    0.0.0.0:49667          0.0.0.0:0              LISTENING       1856
 [spoolsv.exe]
  TCP    0.0.0.0:49668          0.0.0.0:0              LISTENING       544
<some output omitted>
```

e. Open the Task Manager. Navigate to the **Details** tab. Click the **PID** heading so the PID are in order.

f. Select one of the PIDs from the results of netstat -abno. PID 756 is used in this example.

g. Locate the selected PID in the Task Manager. Right-click the selected PID in the Task Manager to open the **Properties** dialog box for more information.



What information can you get from the Details tab and the Properties dialog box for your selected PID?

Part 5: Empty recycle bin using PowerShell.

PowerShell commands can simplify management of a large computer network. For example, if you wanted to implement a new security solution on all servers in the network you could use a PowerShell command or script to implement and verify that the services are running. You can also run PowerShell commands to simplify actions that would take multiple steps to execute using Windows graphical desktop tools.

a. Open the Recycle Bin. Verify that there are items that can be deleted permanently from your PC. If not, restore those files.

b. If there are no files in the Recycle Bin, create a few files, such as text file using Notepad, and place them into the Recycle Bin.

c. In a PowerShell console, enter **clear-recyclebin** at the prompt.

```
PS C:\Users\CyberOpsUser> clear-recyclebin


Confirm
Are you sure you want to perform this action?
Performing the operation "Clear-RecycleBin" on target "All of the contents of the
Recycle Bin".
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S] Suspend  [?] Help (default is
"Y"): y
```

What happened to the files in the Recycle Bin?

Reflection Question

PowerShell was developed for task automation and configuration management. Using the internet, research commands that you could use to simplify your tasks as a security analyst. Record your findings.