Lab 2.2.1.11 – Using Windows PowerShell

This lab has been updated for use on NETLAB+.
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Objectives

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

Step 1: Access PowerShell console.

a. Access the **WinClient** machine. Unlock the machine by clicking on the drop-down arrow for that specific machine's tab and select **Send CTRL+ALT+DEL**.

b. Login as the `administrator` using `cyberops` as the password.

c. Click on the **Search Windows** button. Search and select **powershell**.

d. Click **Search Windows** once more. Search and select **command prompt**.

Step 2: Explore Command Prompt and PowerShell commands.

a. Enter `dir` at the prompt in both the PowerShell and Command Prompt windows.

What are the outputs to the **dir** command?

It is showing current directory address as C:\Users\Administrator showing outputs as date format as MM/DD/YYYY Time HH:MM and Present file and date of saving them.

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

For Ping it was showing output as: Different attributes count, size, TTL, host-list, time out and IPV4, IPV6.

For ipconfig: It is showing windows IP configuration Ethernet adapater, Ethernet adapater Npcap and IPV4.

Step 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

CommandType     Name                                               Version    Source
-----------     ----                                               -------    ------
Alias           dir -> Get-ChildItem
```

What is the PowerShell command for **dir**? Get-Childitem

b. For more detailed information about cmdlets, navigate to https://technet.microsoft.com/en-us/library/ee332526.aspx with an internet accessible machine.

Step 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\Administrator> 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\Administrator> netstat -r
===========================================================================
Interface List
  8...00 50 56 82 da 48 ......vmxnet3 Ethernet Adapter
 10...02 00 4c 4f 4f 50 ......Npcap Loopback Adapter
  1...........................Software Loopback Interface 1
  4...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
  5...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #2
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
```

```
                          0.0.0.0      192.168.0.1      192.168.0.10    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   169.254.12.163    281
  169.254.181.151  255.255.255.255         On-link   169.254.12.163    281
  169.254.255.255  255.255.255.255         On-link   169.254.12.163    281
      192.168.0.0    255.255.255.0         On-link       192.168.0.10  281
      192.168.0.10 255.255.255.255         On-link       192.168.0.10  281
    192.168.0.255  255.255.255.255         On-link       192.168.0.10  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   169.254.12.163    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   169.254.12.163    281
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  1    331 ::1/128                  On-link
 10    281 fe80::/64               On-link
  8    271 fe80::/64               On-link
 10    281 fe80::563:b673:a53:ca3/128
                                   On-link
  8    281 fe80::a5b9:4eb7:1d5:818a/128
                                   On-link
  1    331 ff00::/8                 On-link
  3    281 ff00::/8                 On-link
 10    281 ff00::/8                 On-link
```

```
===========================================================================
Persistent Routes:
  None
```

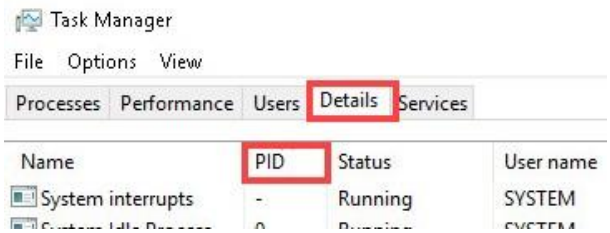
What is the IPv4 gateway?

The gateway of IPv4 is 192.168.0.10

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

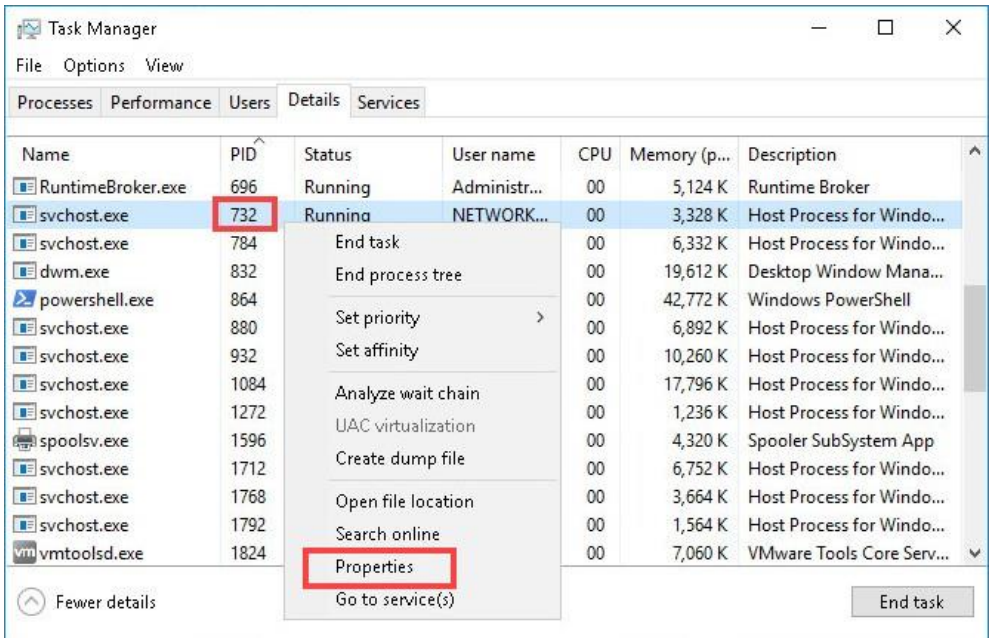
```
PS C:\Users\Administrator> netstat -abno

Active Connections

  Proto  Local Address          Foreign Address        State           PID
  TCP    0.0.0.0:135            0.0.0.0:0              LISTENING       732
  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>
```

d. Right-click on the task bard and select **Task Manager**. Navigate to the **Details** tab. Click the **PID** heading so the PID are in order.



e. Select one of the PIDs from the results of netstat -abno. PID 732 is used in this example

f. Locate the selected *PID* in the *Task Manager*. Right-click the selected **PID** in the *Task Manager* and select **Properties** 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?

PID 764 the main file is svchost.exe.the user name for the PID is NETWORK , address is **C:\Windows\system32**, size of memory is 43.4K and file version is 10.0.14393.0.

g. Close the **Properties** window and **Task Manager**.

Step 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\Administrator> 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?

The files in Recycle bin are deleted permanently by using -recycle bin.

Reflection

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.

PowerShell are used for the security purposes some commands of powershell are Get-ChildItem, Get-WindowsEvent, Get-Process, Test-Path.