The Power of Remoting

# Use PowerShell to Inventory a Network

Using only PowerShell create an inventory of our test network. Use CIM and remoting as appropriate to answer the following questions.

## Setup

SSH to the lab:  
Computer: **cit361-lab.citwdd.net**  
Port: **443**  
User: Your mailbox portion of your BYU-I email address. If your BYU-I email is [lin87690@byui.edu](mailto:lin87690@byui.edu) you would use **lin87690** for your username  
Password: Your I-Number (If you changed your password earlier in the semester you will need to use that one)

## Hints:

* You can get a list of the CIM Classes with the command Get-CIMClass, search the CIMClasses for relevant information.
* You can see what properties a CIM class returns by looking at the CimClassProperties property
  + E.g. (Get-CimClass Win32\_PingStatus).CimClassProperties
* Create an array of names and possibly CIMSessions to make your work go faster.
* Use Select-Object to return only the information you want.
  + You can create a calculated column by creating a hashtable with an item for name and expression that defines the column you would like to create.
  + E.g. Get-ChildItem returns a Length property in bytes, if you would like output that shows KB you could do something like this:
  + Get-ChildItem|Select Name,@{Name=’Size’;Expression={$\_.length/kb}}
  + Or this for a prettier MB
  + dir|Select Name,@{Name=’Size’;Expression={"$([math]::round($\_.length/1mb,2)) MB"}}

# Inventory Requirements

Answer the questions/fill in the tables below with the appropriate information. If you don’t like typing, figure out how to make the table in PowerShell then copy and paste the results where the table is. Add rows as necessary.

1. What is the name of the computer your logged in to? Horace
2. Discover the names of the computers on the domain (hint: Get-AdComputer -filter \*) List them here: DC, Gilliam, Halt, Horace, Eric, Slaygore
3. Are there other computers on the network? See if you can use powershell to ping each address on the network and see what addresses are active. Use the ARP table to see what you found.arp -a (arp -a)

Write your solution here: Foreach($a in (arp -a) | Select-Object -skip 3) {$ip = $a.Trim().Split(" ")[0]; $canconnect = Test-connection -quiet $ip; "$ip - $canconnect"}

What addresses are active? 192.168.1.1, 192.168.1.2, 192.168.1.6, 192.168.1.101, 192.168.1.103, 192.168.1.105, 192.168.1.155

1. What version of PowerShell is running on each computer? (Hint: $PSVersionTable)

Invoke-Command -ComputerName $computers -ScriptBlock {$PSVersionTable.PSVersion; $PSVersionTable.PSEdition; $PSVersi

onTable.CLRVersion}

|  |  |  |  |
| --- | --- | --- | --- |
| Computer | PSVersion | Edition | CLRVersion |
| DC | 5.1 | Desktop | 4.0 |
| Gillam | 4.0 | Unknown? | 4.0 |
| Halt | 5.1 | Desktop | 4.0 |
| Horace | 5.1 | Desktop | 4.0 |
| Eric | 7.02 | Core |  |
| Slaygore | 5.1 | Desktop | 4.0 |

1. Which operating system is running on each computer? (hint: get-CimInstance)

get-ciminstance Win32\_OperatingSystem -ComputerName $computers | select Version, OSArchitecture, name

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Computer | OS | Version | Build | Architecture |
| Dc | Windows server 2016 | 10 | 14393 | 64-bit |
| Gilliam | Windows server 2019 | 10 | 9600 | 64-bit |
| Halt | Windows 10 education | 10 | 18363 | 64-bit |
| Horace | Windows 8 enterprise | 6.3 | 19043 | 64-bit |
| Eric | Ubuntu Linux | 4.15 | 147 | X64 |
| Slaygore | Windows 10 education | 10 | 14393 | 64-bit |

1. What is the MAC address for each computer? (Hint Get-NetAdapter)

Invoke-Command -ComputerName $computers -ScriptBlock {Get-NetAdapter}

|  |  |  |
| --- | --- | --- |
| Computer | Network Adapter | MacAddress |
| Gilliam | Ethernet0 | 00-50-56-B8-68-98 |
| Dc | Ethernet0 | 00-50-56-B8-42-C4 |
| Slaygore | Ethernet0 | 00-50-56-B8-E6-F2 |
| Horace | Ethernet0 | 00-50-56-B8-B9-BD |
| Halt | Ethernet0 | 00-50-56-B8-94-45 |
| Eric | Ens160 | 00:50:56:b8:3e:51 |

1. List the disk volumes on each computer with capacity, free space and %free, do not include DVD’s

Get-CimInstance Win32\_LogicalDisk -ComputerName $computers|ft PSComputerName, DeviceID, VolumeName, size, freespace, @{label='free%';expression={($\_.freespace/$\_.size)\*100}}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Computer | Drive Letter | Volume Name | Size | FreeSpace | Free% |
| DC | C: |  | 300069941248 | 271101657088 | 90% |
| Gillam | C: |  | 58686697472 | 42173874176 | 71% |
| Horace | C: |  | 127651667968 | 80879575040 | 63% |
| Halt | C: |  | 33750511616 | 4070457344 | 12% |
| Slaygore | C: |  | 42423283712 | 31739523072 | 74% |
| Eric | 0,1 | 0, 1 | 84000000000 | 1090519040 | 84% |

1. How many services are on each computer/how many are running?

|  |  |  |
| --- | --- | --- |
| Computer | Service Count | Running Count |
| Slaygore | 115 | 46 |
| DC | 211 | 77 |
| Halt | 238 | 81 |
| Gilliam | 178 | 64 |
| Horace | 364 | 139 |
| Eric | 42 | 27 |

1. Who manufactured the BIOS for the computers? What version is the BIOS? (Since these are VMs you only need to do this for one computer)

|  |  |  |
| --- | --- | --- |
| Computer | Manufacturer | Version |
| DC (and others) | Intel | Phoenix BIOS 4.0 release 6.0 |

1. What IPv4 addresses are on each computer? (hint: Get-NetIpaddress)

|  |  |
| --- | --- |
| Computer | IPAddress |
| DC | 192.168.1.2 |
| Slaygore | 192.168.1.6 |
| Gillam | 192.168.1.155 |
| Horace | 192.168.1.10 |
| Halt | 192.168.1.101 |
| Eric | 192.168.1.105 |

1. How much physical memory is in each computer?

Get-CimInstance CIM\_ComputerSystem -ComputerName $computers | ft name, totalphy

sicalmemory, @{label='mem';expression={$\_.totalphysicalmemory/1mb}}

|  |  |
| --- | --- |
| Computer | Memory in MB |
| Slaygore | 4095.49 |
| Dc | 16383.49 |
| Halt | 4095.49 |
| Horace | 17559.49 |
| Gilliam | 6143.49 |
| Eric | 5.82 |

1. How many processors are in each computer?

Get-CimInstance Win32\_Processor -ComputerName $computers | Group-Object PSCompu

tername

|  |  |
| --- | --- |
| Computer | # of Processors |
| Halt | 1 |
| Slaygore | 2 |
| Gilliam | 2 |
| Horace | 2 |
| dc | 4 |
| Eric | 3 |

1. Are all the computers in the same timezone?

Get-CimInstance win32\_timezone -ComputerName $computers -ErrorAction SilentlyContinue

|  |  |
| --- | --- |
| Computer | Timezone |
| DC | Pacific Time |
| Gilliam | Dublin, Edinburgh, Lisbon, London |
| Horace | Mountain Time |
| Halt | Pacific Time |
| Slaygore | Mountain time |
| Eric | Denver |

1. List the file shares on each computer

Invoke-Command -ComputerName $computers -ScriptBlock {Get-SmbShare}|ft PSComputerName, Name

|  |  |
| --- | --- |
| Computer | Share name |
| DC | ADMIN$  C$  IPC$  man...  NET...  SYSVOL |
| Gillam | ADMIN$  C$  IPC$ |
| Horace | ADMIN$  C$  IPC$ |
| Halt | ADMIN$  C$  IPC$ |
| Slaygore | ADMIN$  C$  IPC$ |
| Eric | ADMIN$  C$  IPC$ |

1. Choose one other feature or setting you want to know.  
   Describe the feature and results below.

|  |  |
| --- | --- |
| Computer | Execution Policy |
| DC | RemoteSigned |
| Gillam | Restricted |
| Horace | RemoteSigned |
| Slaygore | Unrestricted |
| Halt | Restricted |
| Eric | Unrestricted |