A Day in the Life of a Windows Sysadmin

Overview

This homework assignment builds on the Group Policy Objectives activities from the previous class. We will create domain-hardening GPOs and revisit some PowerShell fundamentals.

⚠ The Day 3 activities must be fully completed in order to complete this activity. If they are not, you will need to refer to your student guides and set up your domain OUs, users, and groups .

Lab Environment

For this week's homework, please use the Windows Server machine and Windows 10 machine inside your Azure Windows RDP Host machine.

Windows RDP Host Machine:

- Username: azadmin
- Password: p4ssw0rd*

Open the Hyper-V Manager in the Windows RDP Host machine to access the nested virtual machines:

Windows 10 Machine

- Username: sysadmin
- Password: cybersecurity

Windows Server Machine:

- Username: sysadmin
- Password: p4ssw0rd*

Note: The instructions for each task will tell you which machine to work in.

The following document contains a list of Windows issues that commonly occur during this unit. Familiarize yourself with these issues so you can fix them as needed:

- Understanding the Windows Unit Lab

Refer to your Unit 7 Student Guides if you have trouble with this homework.

Task 1: Create a GPO: Disable Local Link Multicast Name Resolution (LLMNR)

For this first task, you will investigate and mitigate one of the attack vectors that exists within a Windows domain.

- Read about LLMNR vulnerabilities in the the MITRE ATT&CK database.
    - MITRE is one of the world's leading organizations for threat intelligence in cybersecurity.
    - MITRE maintains the Common Vulnerabilities and Exposures database, which catalogs officially known exploits.
    - It also maintains this MITRE ATT&CK database, which catalogs attack methods and signatures of known hacking groups.

Local Link Multicast Name Resolution (LLMNR) is a vulnerability, so we will be disabling it on our Windows 10 machine (via the GC Computers OU).

A few notes about LLMNR:

- LLMNR is a protocol used as a backup (not an alternative) for DNS in Windows.
- When Windows cannot find a local address (e.g. the location of a file server), it uses LLMNR to send out a broadcast across the network asking if any device knows the address.
- LLMNR’s vulnerability is that it accepts any response as authentic, allowing attackers to poison or spoof LLMNR responses, forcing devices to authenticate to them.
- An LLMNR-enabled Windows machine may automatically trust responses from anyone in the network.

Turning off LLMNR for the GC Computers OU will prevent our Windows machine from trusting location responses from potential attackers.

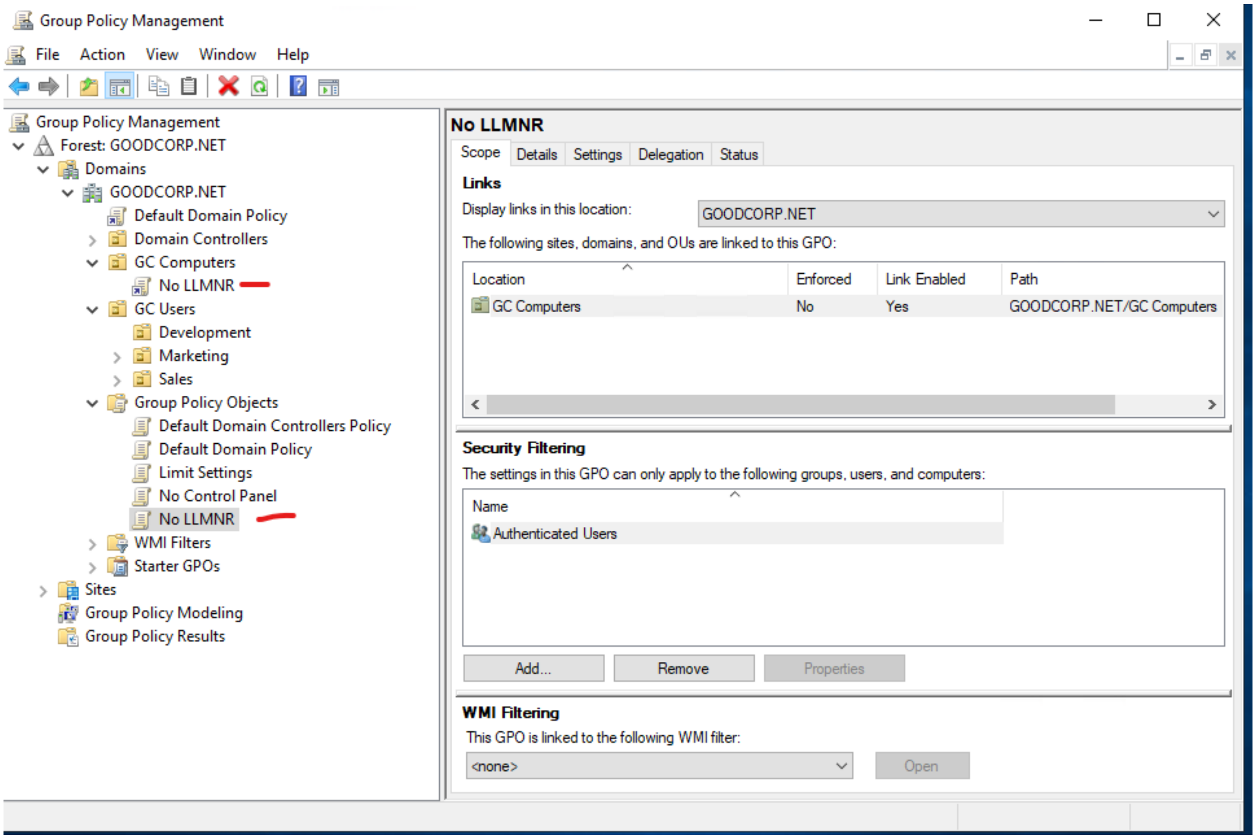
Instructions

Since this task deals with Active Directory Group Policy Objects, you'll be working in your nested **Windows Server** machine.

Create a Group Policy Object that prevents your domain-joined Windows machine from using LLMNR:

1. On the top-right of the Server Manager screen, open the Group Policy Management tool to create a new GPO.
2. Right-click **Group Policy Objects** and select **New**.
3. Name the Group Policy Object No LLMNR.
4. Right-click the new **No LLMNR** GPO listing and select **Edit** to open the Group Policy Management Editor and find policies.

5. In the Group Policy Management Editor, the policy you are looking for is at the following path: Computer Configuration\Policies\Administrative Templates\Network\DNS Client.
    - Find the policy called Turn Off Multicast Name Resolution.
    - Enable this policy.
6. Exit the Group Policy Management Editor and link the GPO to the GC Computers organizational unit you previously created.



No LLMNR

Links

Display links in this location: GOODCORP.NET

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
GC Computers	No	Yes	GOODCORP.NET/GC Computers

Security Filtering

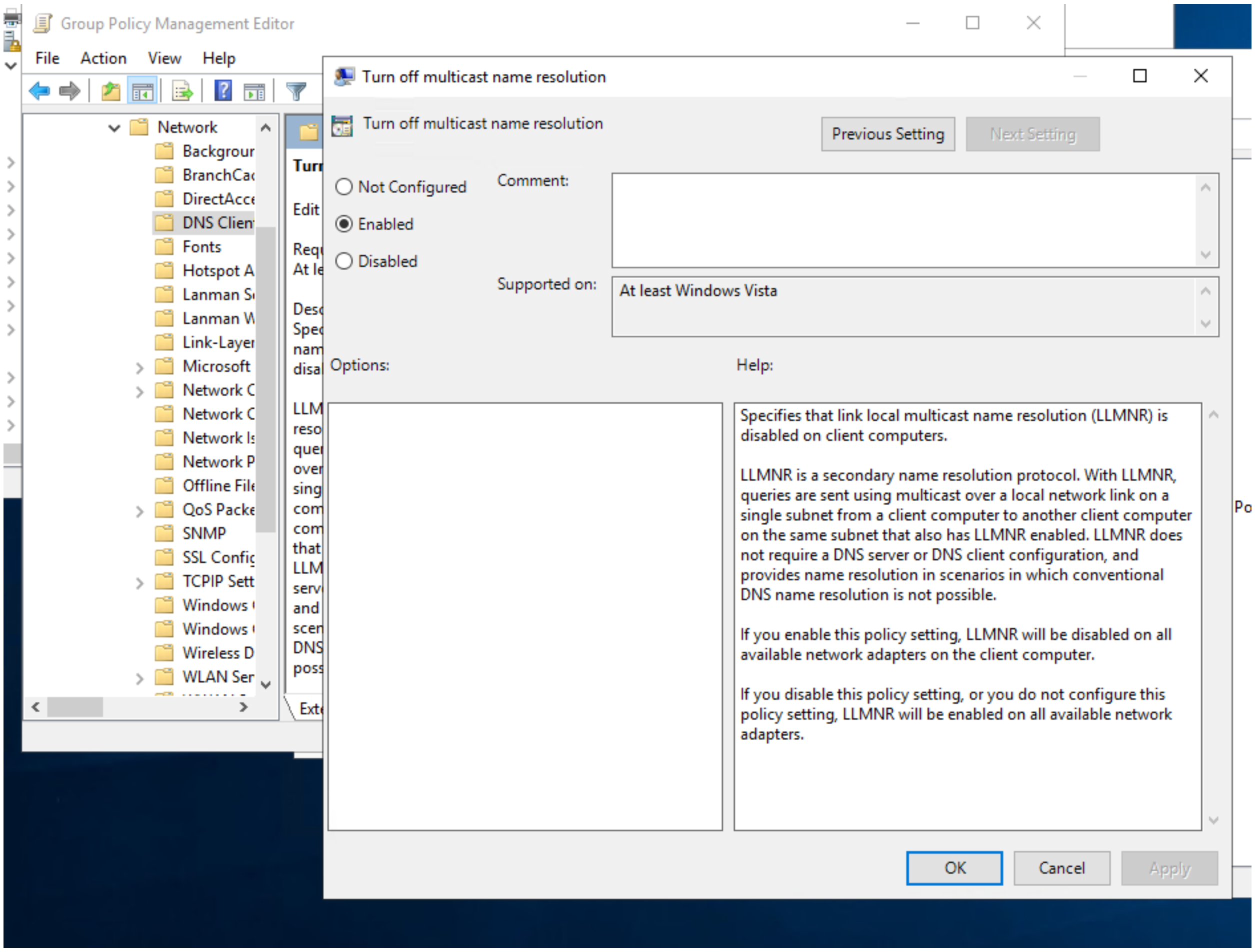
The settings in this GPO can only apply to the following groups, users, and computers:

Name
Authenticated Users

WMI Filtering

This GPO is linked to the following WMI filter:

<none>



Turn off multicast name resolution

○ Not Configured
● Enabled
○ Disabled

Comment:

Supported on: At least Windows Vista

Options:

Help:

Specifies that link local multicast name resolution (LLMNR) is disabled on client computers.

LLMNR is a secondary name resolution protocol. With LLMNR, queries are sent using multicast over a local network link on a single subnet from a client computer to another client computer on the same subnet that also has LLMNR enabled. LLMNR does not require a DNS server or DNS client configuration, and provides name resolution in scenarios in which conventional DNS name resolution is not possible.

If you enable this policy setting, LLMNR will be disabled on all available network adapters on the client computer.

If you disable this policy setting, or you do not configure this policy setting, LLMNR will be enabled on all available network adapters.

Task 2: Create a GPO: Account Lockout

For security and compliance reasons, the CIO needs us to implement an account lockout policy on our Windows workstation. An account lockout disables access to an account for a set period of time after a specific number of failed login attempts. This policy defends against brute-force attacks, in which attackers can enter a million passwords in just a few minutes.

Account lockouts have some important considerations. Read about these in the following documentation:

- Microsoft Security Guidance: Configuring Account Lockout
- You only need to read the "Account Lockout Tradeoffs" and "Baseline Selection" sections.

To summarize, an overly restrictive account lockout policy (such as locking an account for 10 hours after 2 failed attempts), can potentially keep an account locked forever if an attacker repeatedly attempts to access it in an automated way.

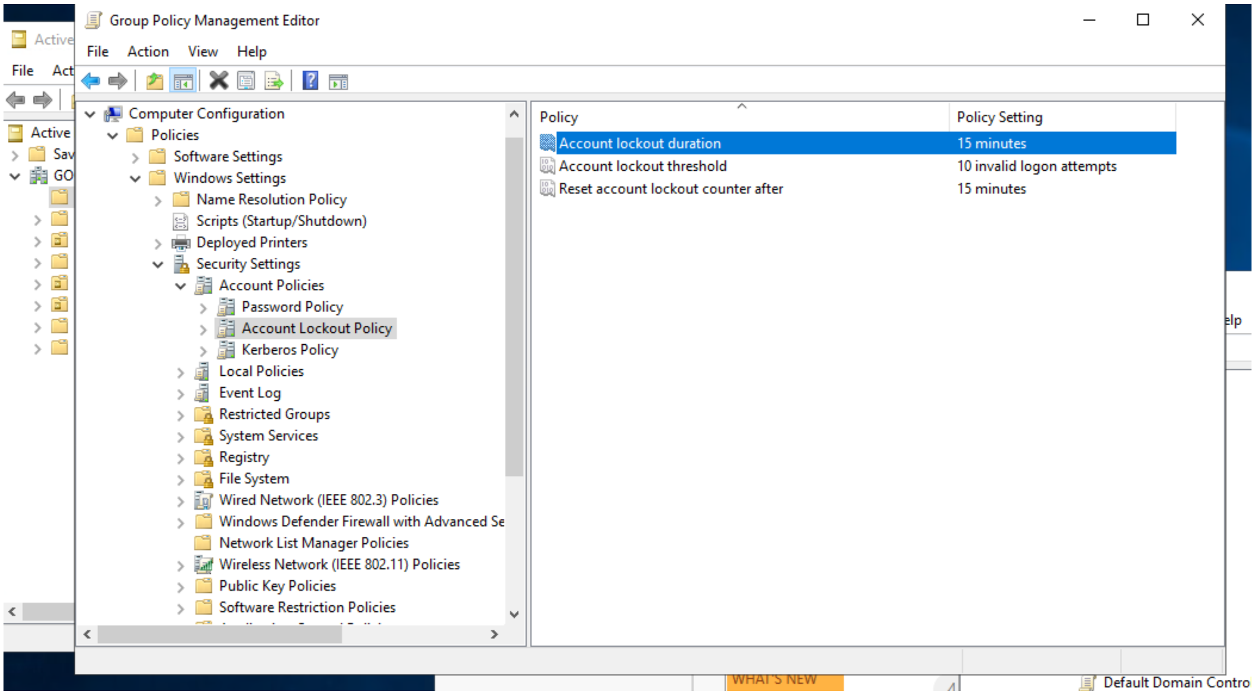
Instructions

You'll be working within your nested Windows Server machine again to create another Group Policy Object.

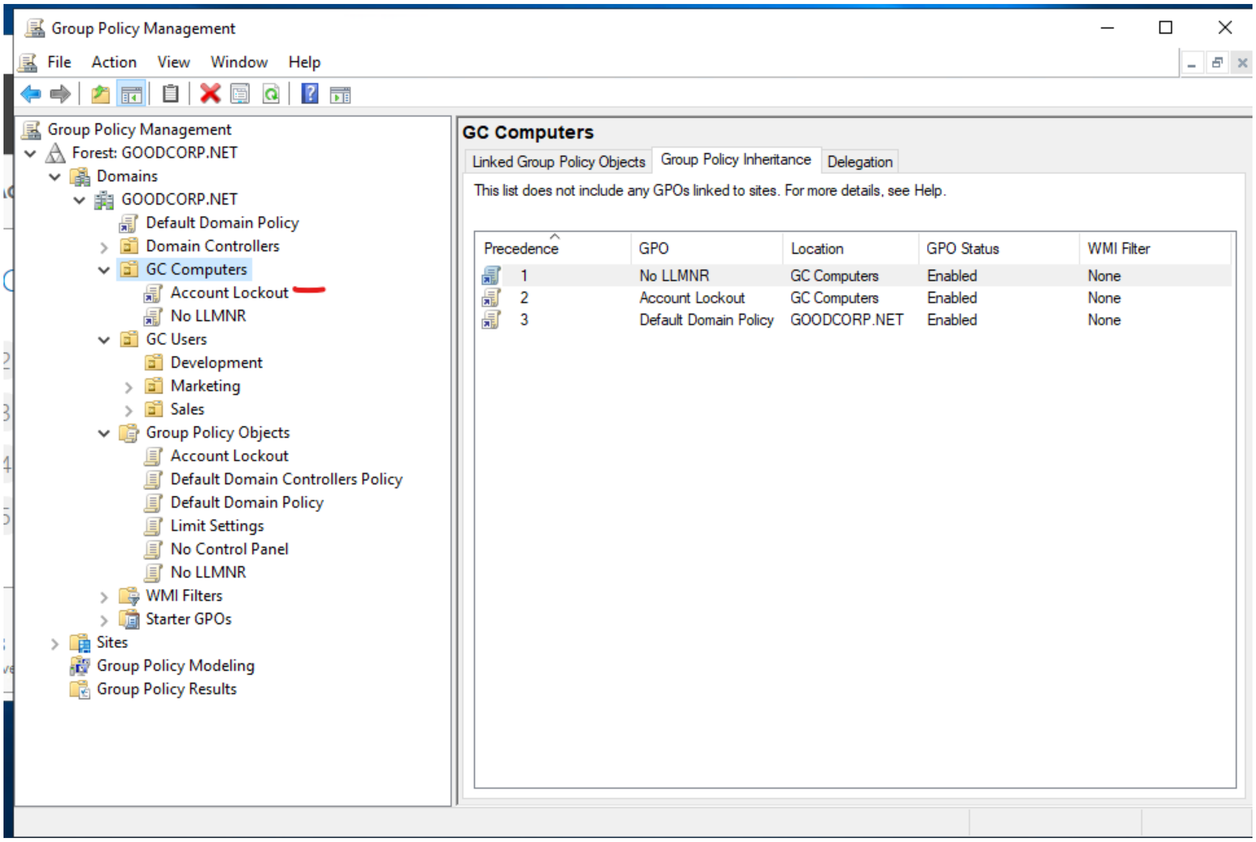
Create what you believe to be a reasonable account lockout Group Policy for the Windows 10 machine.

1. Name the Group Policy Object Account Lockout. (creating in the group policy management)
2. You can use Microsoft's 10/15/15 recommendation if you'd like.
3. When editing policies for this new GPO, keep in mind that you're looking for *computer configuration* policies to apply to your GC Computers OU. Also, these policies involve Windows *security settings* and *accounts*. (look in the link above) computer config basic account lookup,)
4. Don't forget to link the GPO to your GC Computers organizational unit.

Hint: If you're confused about where to find the right policies, check the instructions in italics.



Policy	Policy Setting
Account lockout duration	15 minutes
Account lockout threshold	10 invalid logon attempts
Reset account lockout counter after	15 minutes



This list does not include any GPOs linked to sites. For more details, see Help.

Precedence	GPO	Location	GPO Status	WMI Filter
1	No LLMNR	GC Computers	Enabled	None
2	Account Lockout	GC Computers	Enabled	None
3	Default Domain Policy	GOODCORP.NET	Enabled	None

Task 3: Create a GPO: Enabling Verbose PowerShell Logging and Transcription

As mentioned in a previous lesson, PowerShell is often used as a living off the land hacker tool. This means:

- Once a hacker gains access to a Windows machine, they will leverage built-in tools, such as PowerShell and wmic, as much as possible to achieve their goals while trying to stay under the radar.

So why not just completely disable PowerShell?

- Many security tools and system administration management operations, such as workstation provisioning, require heavy use of PowerShell to set up machines.
- Best practices for enabling or disabling PowerShell are debated. This often leads to the solution of allowing only certain applications to run. These setups require a heavy amount of configuration using tools such as AppLocker.
- This is why we're going to use a PowerShell practice that is recommended regardless of whether PowerShell is enabled or disabled: enabling enhanced PowerShell logging and visibility through verbosity.

- This type of policy is important for tools like SIEM and for forensics operations, as it helps combat obfuscated PowerShell payloads.

Instructions

For this task, you'll be working in your **Windows Server** machine.

Create a Group Policy Object to enable PowerShell logging and transcription. This GPO will combine multiple policies into one, although they are all under the same policy collection.

1. Name the Group Policy Object PowerShell Logging. (create GPO)
    - Find the proper Windows Powershell policy in Group Policy Management Editor.
    - **Hint**: Check out the computer configuration, administrative templates, and Windows component directories.(figure out which policy to change)
2. Enable the Turn on Module Logging and do the following: (enable then add a wildcard)
    - Click **Show** next to **Module Names**.
    - Since we want to log *all* PowerShell modules, enter an asterisk * (wildcard) for the Module Name, then click **OK**.
3. Enable the Turn on PowerShell Script Block Logging policy.

This policy uses the following template to log what is executed in the script block:

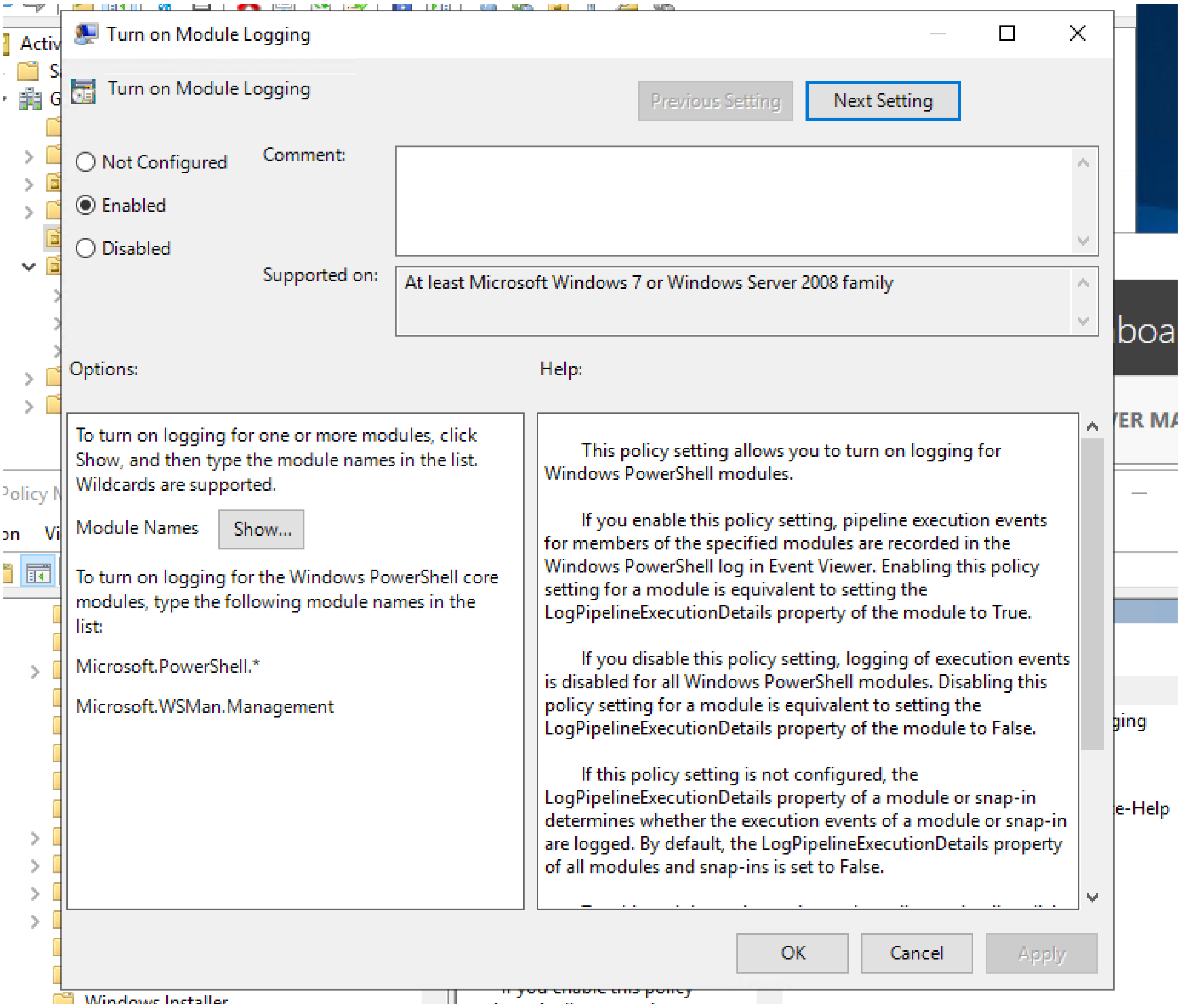
```
$collection =
foreach ($item in $collection) {
   <Everything here will get logged by this policy>
```

- }
- Make sure to check the Log script block invocation start/stop events: setting.

4. Enable the Turn on Script Execution policy and do the following: (equivelant chmod in linux - need to be able to enable execution)
    - Set **Execution Policy** to **Allow all scripts**.
    - **Note:** Do you remember the Set-ExecutionPolicy cmdlet we ran during the PowerShell exercises? This policy can enforce those settings as part of a GPO.
5. Enable the Turn on PowerShell Transcription policy and do the following:
    - Leave the **Transcript output directory** blank (this defaults to the user's ~\Documents directory).
        - **Note:** "Transcription" means that an exact copy of the the commands are created in an output directory.
    - Check the **Include invocation headers** option. This will add timestamps to the command transcriptions.
6. Leave the Set the default source path for Update-Help policy as **Not configured**.
7. Link this new PowerShell Logging GPO to the GC Computers OU.

Note that the next time you log into your Windows 10 machine, run gpupdate. Then launch a new PowerShell window and run a script. You see verbose PowerShell logs created in the Windows 10 machine directory for the user that ran the script: C:\Users\<user>\Documents.

Speaking of scripts, your next task is to create a script. **SEVERAL SCREENSHOTS BELOW**



Turn on Module Logging

Turn on Module Logging

○ Not Configured

● Enabled

○ Disabled

Comment:

Supported on: At least Microsoft Windows 7 or Windows Server 2008 family

Options:

To turn on logging for one or more modules, click Show, and then type the module names in the list. Wildcards are supported.

Module Names Show...

To turn on logging for the Windows PowerShell core modules, type the following module names in the list:

Microsoft.PowerShell.*

Microsoft.WSMan.Management

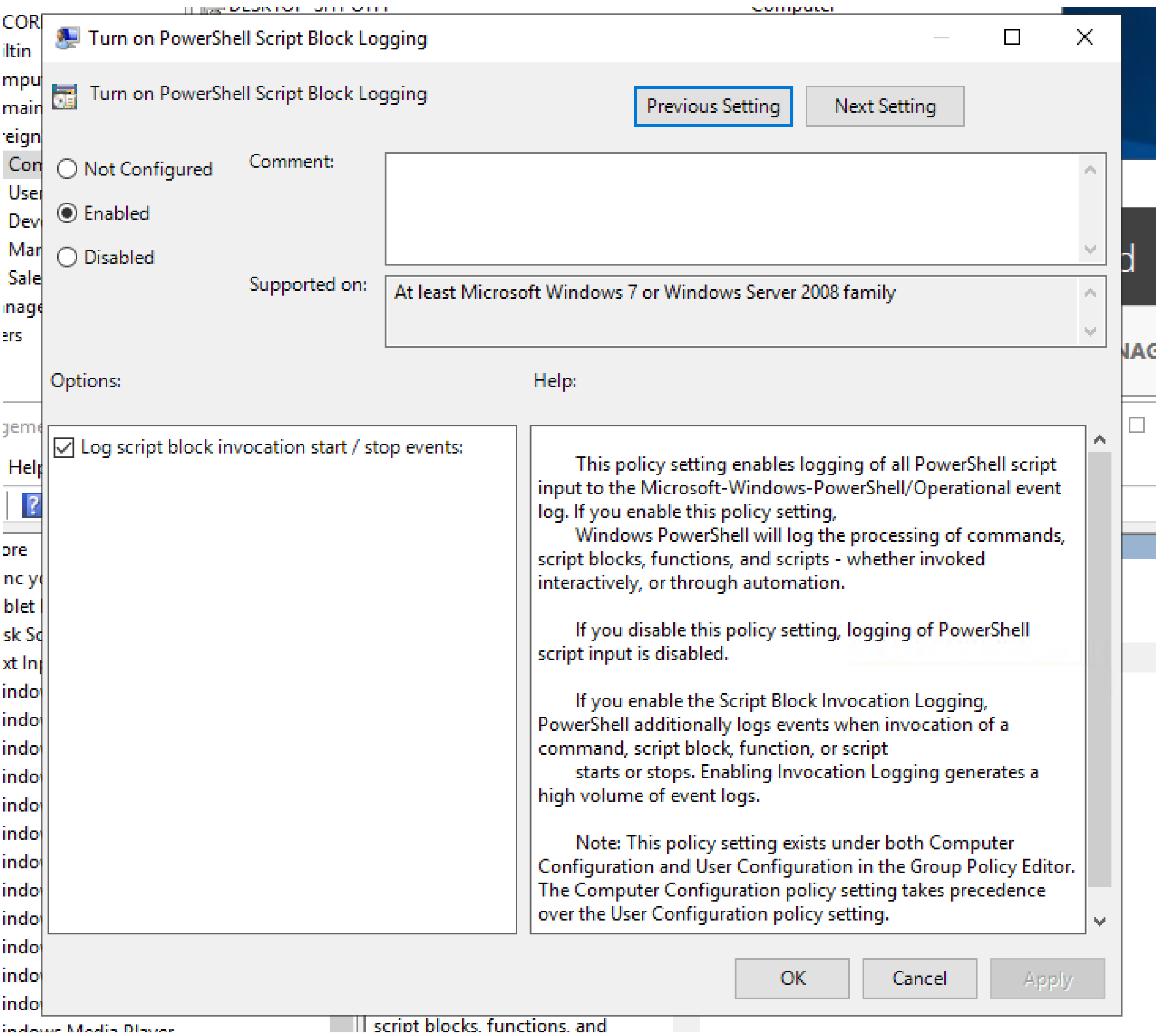
Help:

This policy setting allows you to turn on logging for Windows PowerShell modules.

If you enable this policy setting, pipeline execution events for members of the specified modules are recorded in the Windows PowerShell log in Event Viewer. Enabling this policy setting for a module is equivalent to setting the LogPipelineExecutionDetails property of the module to True.

If you disable this policy setting, logging of execution events is disabled for all Windows PowerShell modules. Disabling this policy setting for a module is equivalent to setting the LogPipelineExecutionDetails property of the module to False.

If this policy setting is not configured, the LogPipelineExecutionDetails property of a module or snap-in determines whether the execution events of a module or snap-in are logged. By default, the LogPipelineExecutionDetails property of all modules and snap-ins is set to False.



Turn on PowerShell Script Block Logging

○ Not Configured

● Enabled

○ Disabled

Supported on: At least Microsoft Windows 7 or Windows Server 2008 family

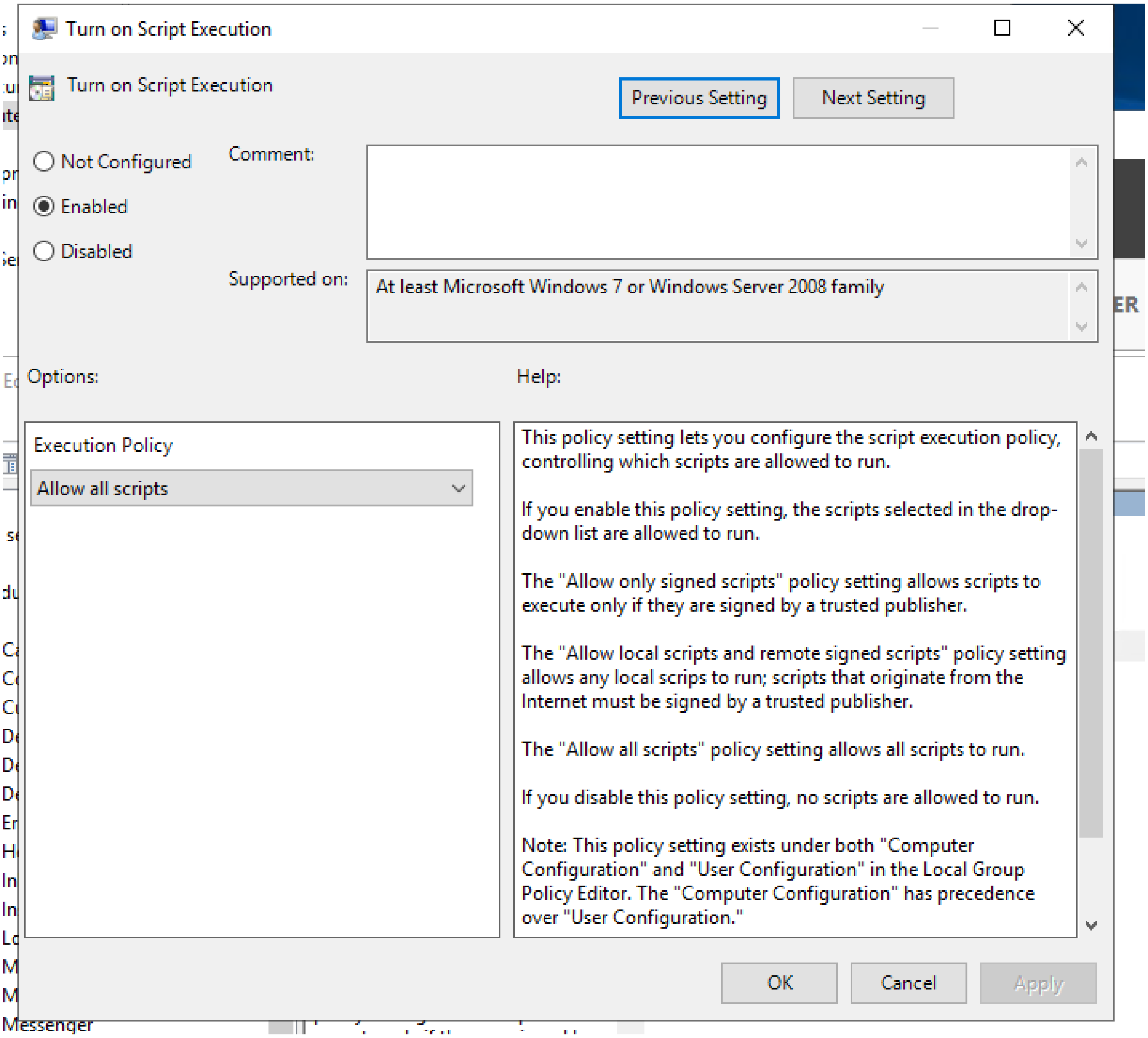
☑ Log script block invocation start / stop events:

This policy setting enables logging of all PowerShell script input to the Microsoft-Windows-PowerShell/Operational event log. If you enable this policy setting,
Windows PowerShell will log the processing of commands, script blocks, functions, and scripts - whether invoked interactively, or through automation.

If you disable this policy setting, logging of PowerShell script input is disabled.

If you enable the Script Block Invocation Logging, PowerShell additionally logs events when invocation of a command, script block, function, or script
starts or stops. Enabling Invocation Logging generates a high volume of event logs.

Note: This policy setting exists under both Computer Configuration and User Configuration in the Group Policy Editor. The Computer Configuration policy setting takes precedence over the User Configuration policy setting.



○ Not Configured
● Enabled
○ Disabled

Comment:

Supported on: At least Microsoft Windows 7 or Windows Server 2008 family

Options:

Execution Policy: Allow all scripts

Help:

This policy setting lets you configure the script execution policy, controlling which scripts are allowed to run.

If you enable this policy setting, the scripts selected in the drop-down list are allowed to run.

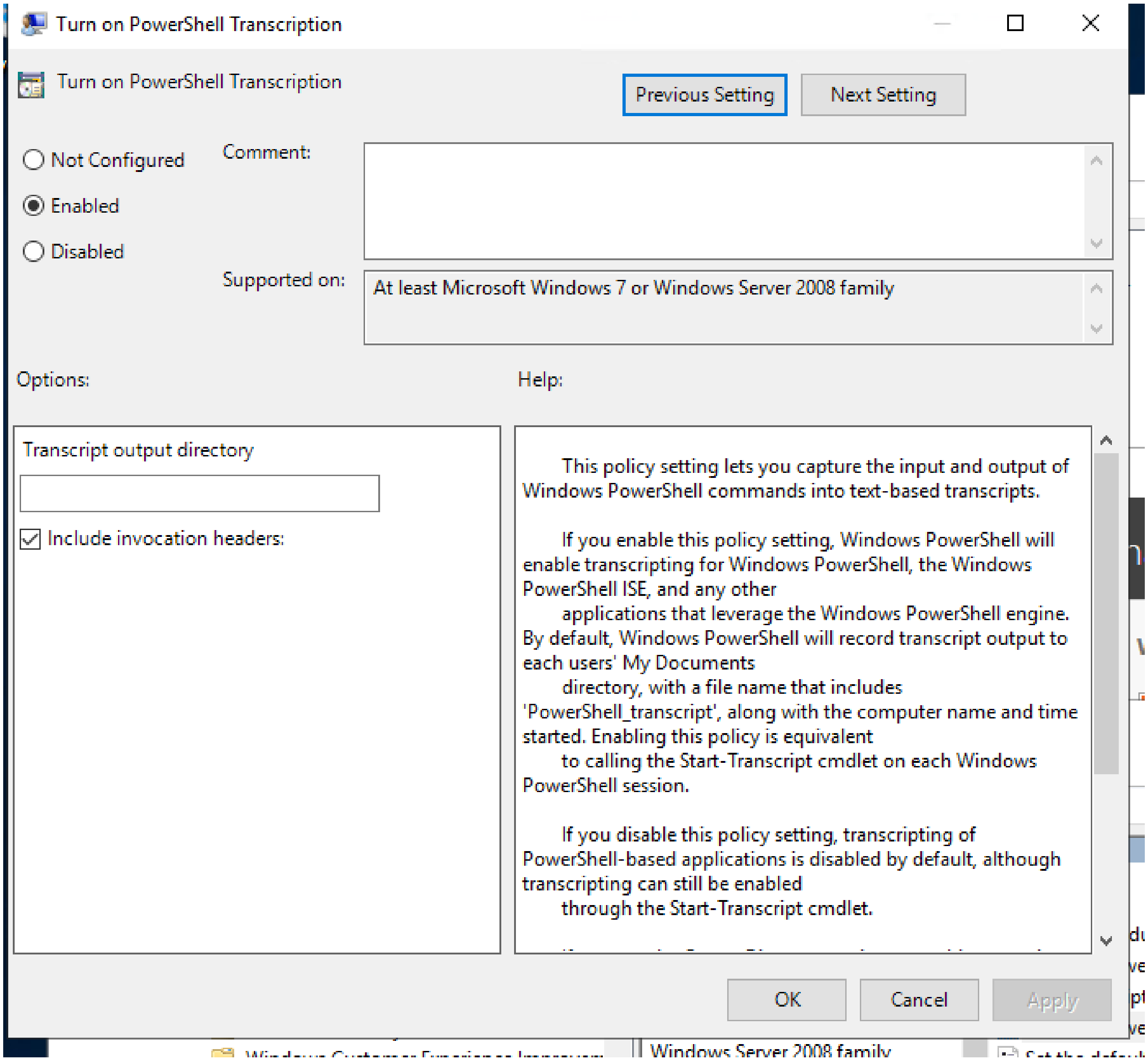
The "Allow only signed scripts" policy setting allows scripts to execute only if they are signed by a trusted publisher.

The "Allow local scripts and remote signed scripts" policy setting allows any local scrips to run; scripts that originate from the Internet must be signed by a trusted publisher.

The "Allow all scripts" policy setting allows all scripts to run.

If you disable this policy setting, no scripts are allowed to run.

Note: This policy setting exists under both "Computer Configuration" and "User Configuration" in the Local Group Policy Editor. The "Computer Configuration" has precedence over "User Configuration."



Turn on PowerShell Transcription

○ Not Configured
● Enabled
○ Disabled

Comment:

Supported on: At least Microsoft Windows 7 or Windows Server 2008 family

Options:

Transcript output directory

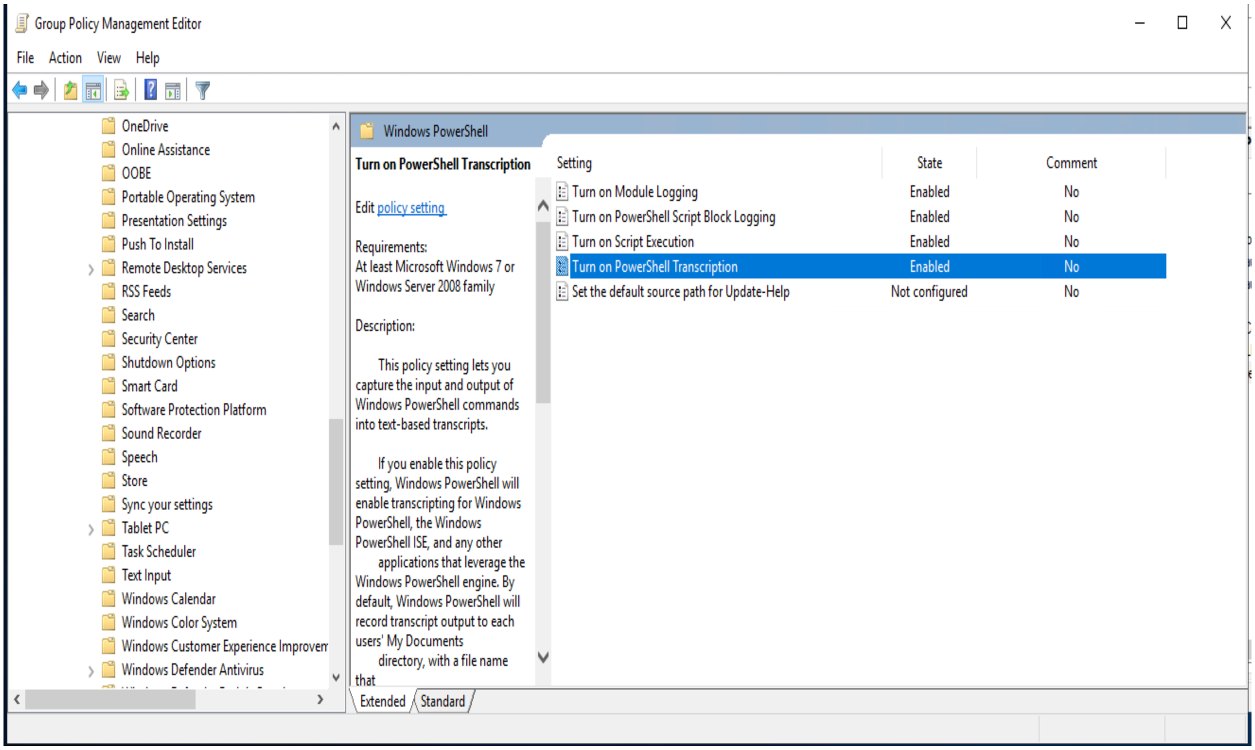
☑ Include invocation headers:

Help:

This policy setting lets you capture the input and output of Windows PowerShell commands into text-based transcripts.

If you enable this policy setting, Windows PowerShell will enable transcripting for Windows PowerShell, the Windows PowerShell ISE, and any other applications that leverage the Windows PowerShell engine. By default, Windows PowerShell will record transcript output to each users' My Documents directory, with a file name that includes 'PowerShell_transcript', along with the computer name and time started. Enabling this policy is equivalent to calling the Start-Transcript cmdlet on each Windows PowerShell session.

If you disable this policy setting, transcripting of PowerShell-based applications is disabled by default, although transcripting can still be enabled through the Start-Transcript cmdlet.



Turn on PowerShell Transcription

Edit policy setting

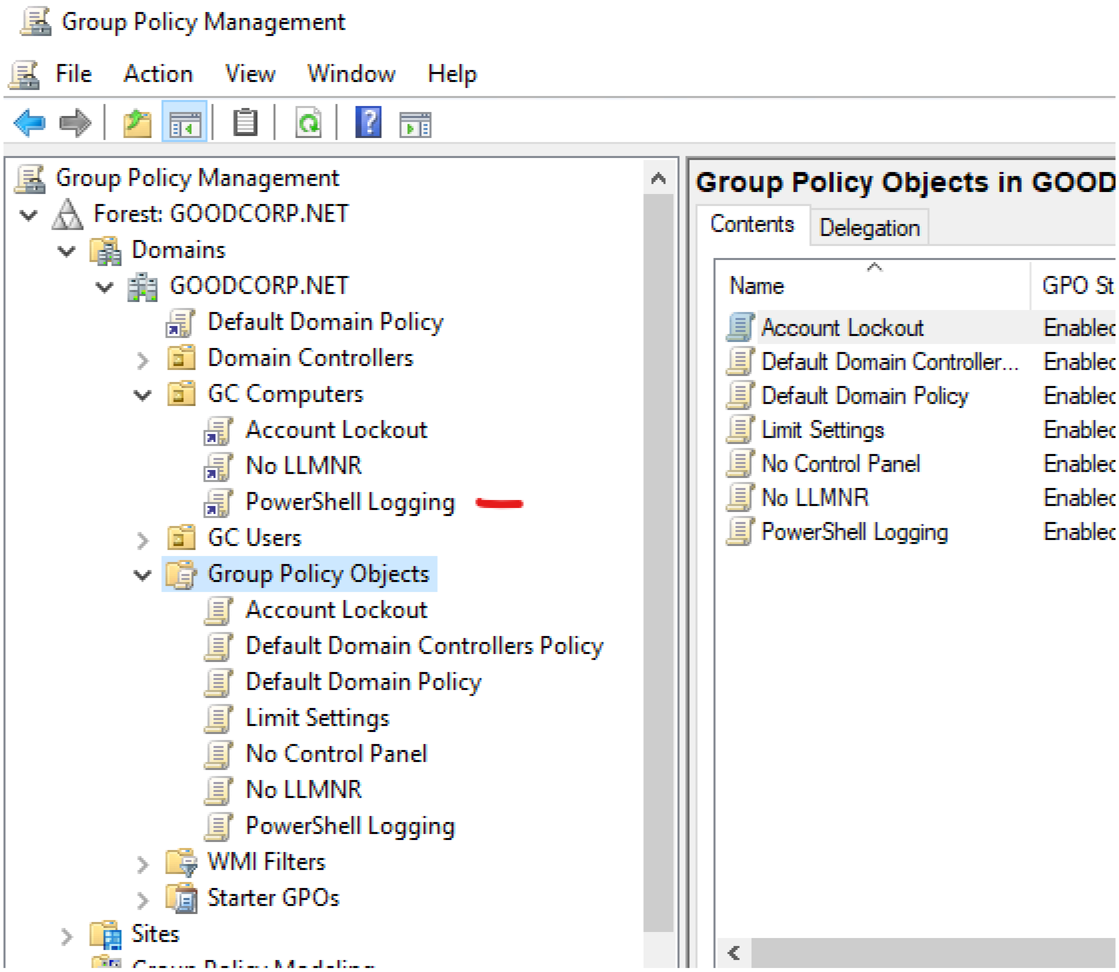
Requirements:
At least Microsoft Windows 7 or Windows Server 2008 family

Description:

This policy setting lets you capture the input and output of Windows PowerShell commands into text-based transcripts.

If you enable this policy setting, Windows PowerShell will enable transcripting for Windows PowerShell, the Windows PowerShell ISE, and any other applications that leverage the Windows PowerShell engine. By default, Windows PowerShell will record transcript output to each users' My Documents directory, with a file name that

Setting	State	Comment
Turn on Module Logging	Enabled	No
Turn on PowerShell Script Block Logging	Enabled	No
Turn on Script Execution	Enabled	No
Turn on PowerShell Transcription	Enabled	No
Set the default source path for Update-Help	Not configured	No



Name	GPO St
Account Lockout	Enablec
Default Domain Controller...	Enablec
Default Domain Policy	Enablec
Limit Settings	Enablec
No Control Panel	Enablec
No LLMNR	Enablec
PowerShell Logging	Enablec

Task 4: Create a Script: Enumerate Access Control Lists (powershell comandlet)

Before we create a script, let's review Access Control Lists. (controlling access)

- In Windows, access to files and directories are managed by Access Control Lists (ACLs). These identify which entities (known as security principals), such as users and groups, can access which resources. ACLs use security identifers to manage which principals can access which resources.
- While you don't need to know the specific components within ACLs for this task, you do need to know how to use the Get-Acl PowerShell cmdlet to retrieve them. View Get-Acl documentation here.

Familiarize yourself with the basics of Get-Acls:

- Get-Acl without any parameters or arguments will return the security descriptors of the directory you're currently in.
- Get-Acl <filename> will return the specific file's ACL. We'll need to use this for our task.

Instructions

For this task, you'll be working in your nested **Windows 10** machine with the following credentials: sysadmin | cybersecurity.

Create a PowerShell script that will enumerate the Access Control List of each file or subdirectory within the current working directory. (TASK 3 WILL ALLOW THE ACCESS TO COMPLETE THE BELOW)

1. Create a foreach loop. You can use the following template:
   foreach ($item in $directory) {
 <Script block>

   }

1. Above the foreach condition, set a variable, $directory, to the contents of the current directory.
2. Replace the script block placeholder with the command to enumerate the ACL of a file, using the $item variable in place of the file name. (ACL command learned above)
   - You'll need to use the following cmdlets:
     - Get-ChildItem (or any alias of Get-ChildItem, such as ls or dir)
     - Get-Acl
3. Save this script in C:\Users\sysadmin\Documents as enum_acls.ps1.
4. Test this script by moving to any directory (cd C:\Windows), and running C:\Users\sysadmin\Documents\enum_acls.ps1 (enter the full path and file name).
   - You should see the ACL output of each file or subdirectory where you ran the script from.

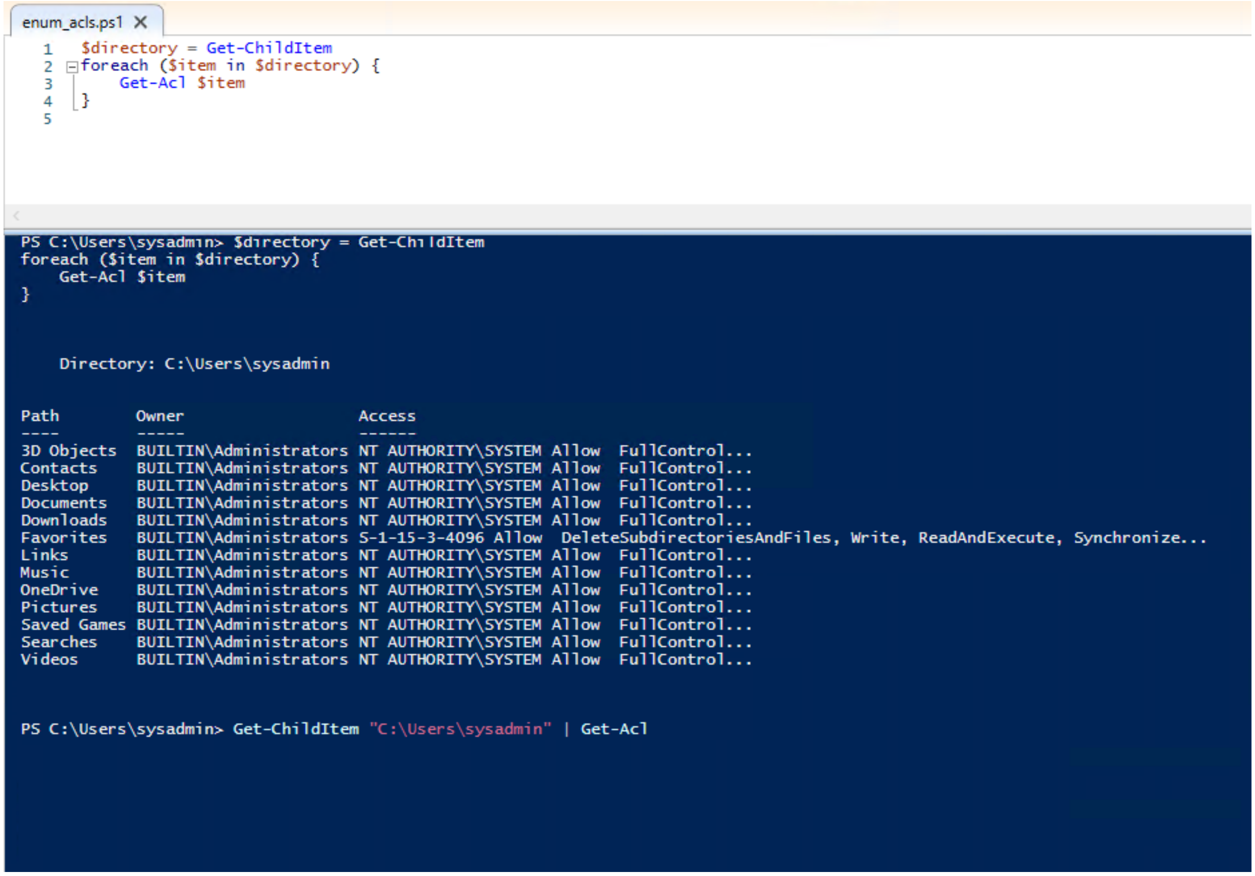
Copy of script below:

```
$directory = Get-ChildItem

foreach ($item in $directory) {

   Get-Acl $item

}
```



```
$directory = Get-ChildItem
foreach ($item in $directory) {
    Get-Acl $item
}

```

```
PS C:\Users\sysadmin> $directory = Get-ChildItem
foreach ($item in $directory) {
    Get-Acl $item
}


    Directory: C:\Users\sysadmin


Path        Owner                  Access
----        -----                  ------
3D Objects  BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Contacts    BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Desktop     BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Documents   BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Downloads   BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Favorites   BUILTIN\Administrators S-1-15-3-4096 Allow  DeleteSubdirectoriesAndFiles, Write, ReadAndExecute, Synchronize...
Links       BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Music       BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
OneDrive    BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Pictures    BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Saved Games BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Searches    BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...
Videos      BUILTIN\Administrators NT AUTHORITY\SYSTEM Allow  FullControl...


PS C:\Users\sysadmin> Get-ChildItem "C:\Users\sysadmin" | Get-Acl
```

(NO ERRORS AND RAN THE SAME AS THE ACL COMMAND - SEE BELOW, RAN FROM C:\Windows too)

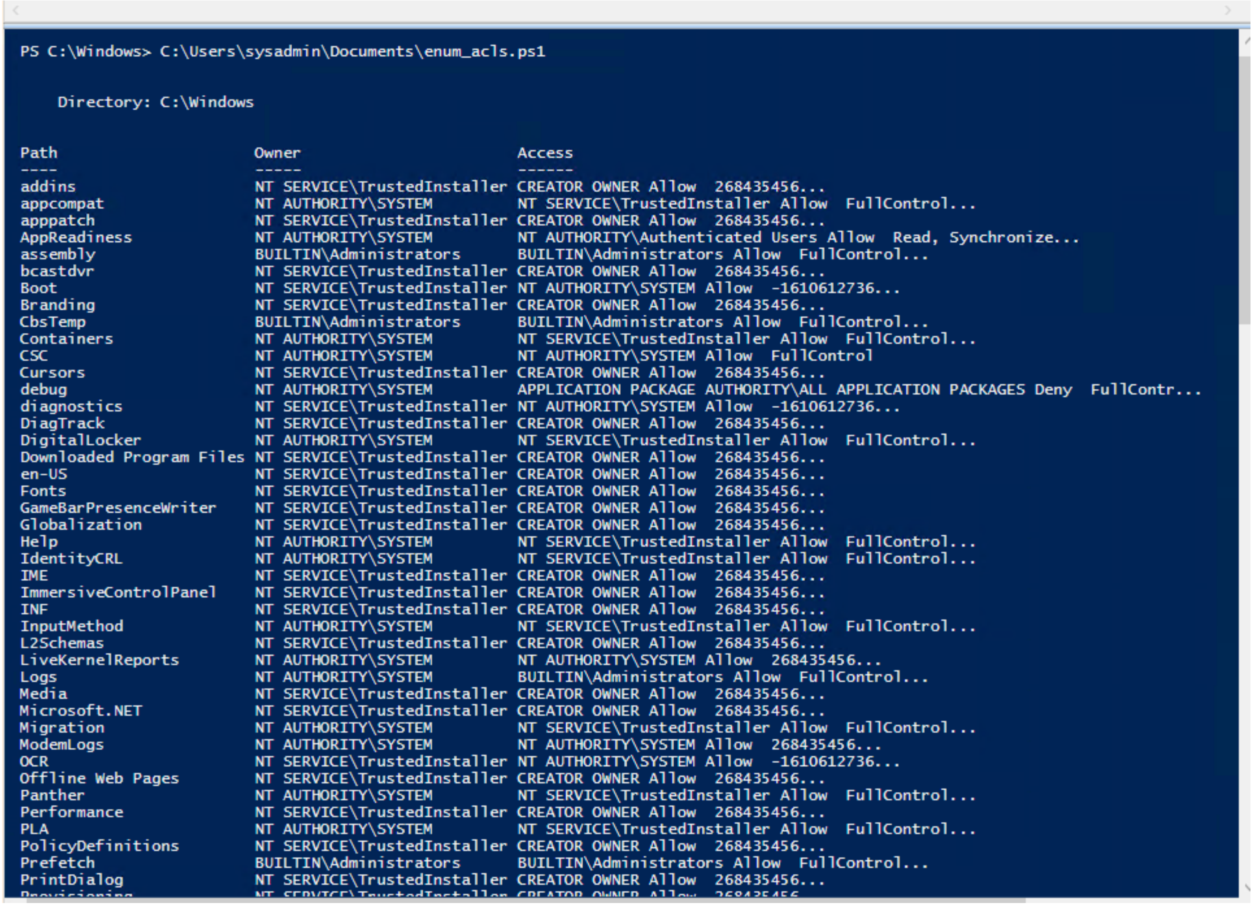
Bonus Task 5: Verify Your PowerShell Logging GPO

For this task we'll want to test and verify that our PowerShell logging GPO is working properly.

Instructions

- Ensure you're logged into the **Windows 10** machine as sysadmin | cybersecurity.
- Run gpupdate in an administrative PowerShell window to pull the latest Active Directory changes.
- Close and relaunch PowerShell into an administrative session.
- Navigate to a directory you want to see the ACLs in. You can go to C:\Windows, as you did in Task 4.
- Run the enum_acls.ps1 script using the full file path and name such as the one in Task 4.

- Check the C:\Users\sysadmin\Documents for your new logs.
    - You should see a directory with the current date (for example, 20200908) as the directory name. Your new transcribed PowerShell logs should be inside.

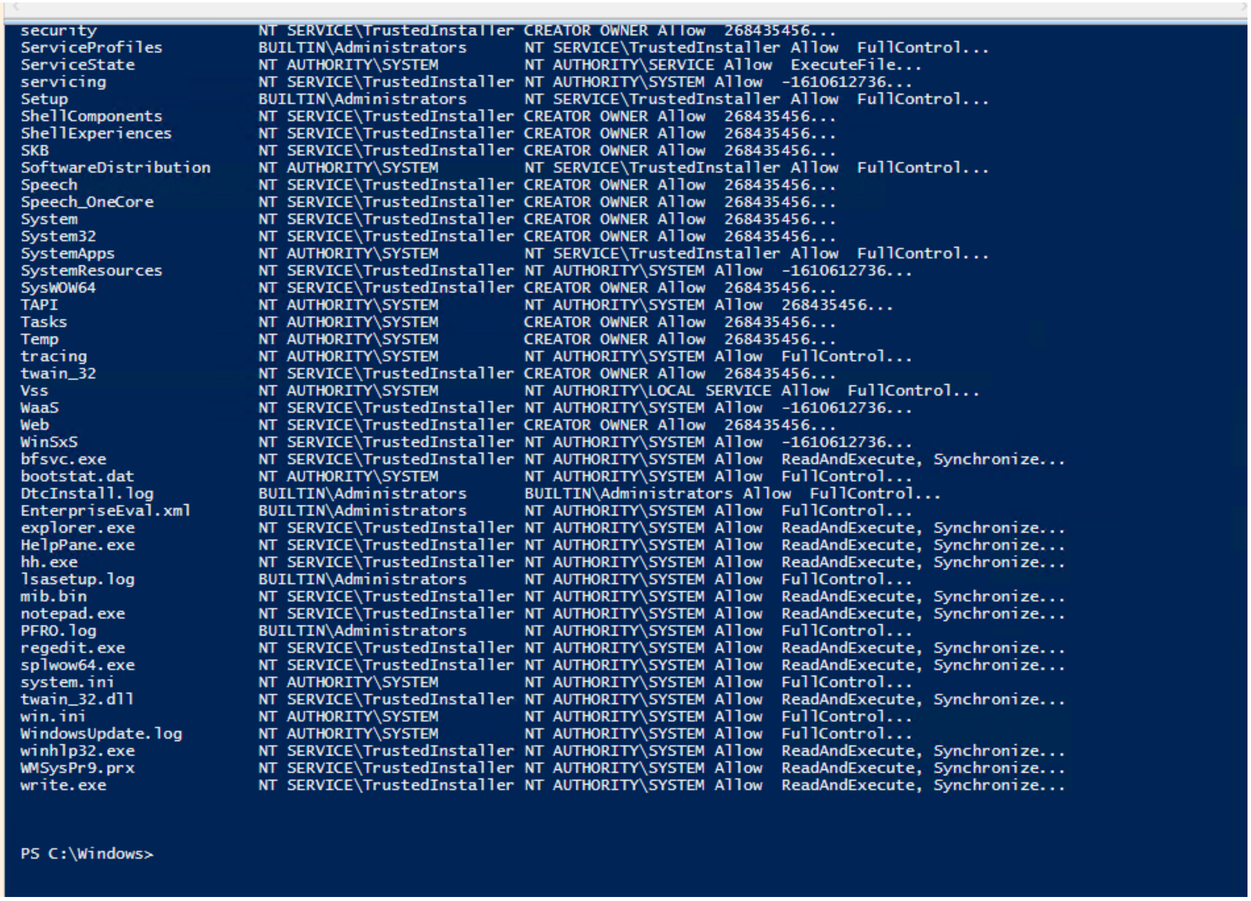


```
PS C:\Windows> C:\Users\sysadmin\Documents\enum_acls.ps1


    Directory: C:\Windows


Path                     Owner                       Access
----                     -----                       ------
addins                   NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
appcompat                NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
apppatch                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
AppReadiness             NT AUTHORITY\SYSTEM         NT AUTHORITY\Authenticated Users Allow  Read, Synchronize...
assembly                 BUILTIN\Administrators      BUILTIN\Administrators Allow  FullControl...
bcastdvr                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Boot                     NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
Branding                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
CbsTemp                  BUILTIN\Administrators      BUILTIN\Administrators Allow  FullControl...
Containers               NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
CSC                      NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl
Cursors                  NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
debug                    NT AUTHORITY\SYSTEM         APPLICATION PACKAGE AUTHORITY\ALL APPLICATION PACKAGES Deny  FullContr...
diagnostics              NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
DiagTrack                NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
DigitalLocker            NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
Downloaded Program Files NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
en-US                    NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Fonts                    NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
GameBarPresenceWriter    NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Globalization            NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Help                     NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
IdentityCRL              NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
IME                      NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
ImmersiveControlPanel    NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
INF                      NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
InputMethod              NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
L2Schemas                NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
LiveKernelReports        NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  268435456...
Logs                     NT AUTHORITY\SYSTEM         BUILTIN\Administrators Allow  FullControl...
Media                    NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Microsoft.NET            NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Migration                NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
ModemLogs                NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  268435456...
OCR                      NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
Offline Web Pages        NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Panther                  NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
Performance              NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
PLA                      NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
PolicyDefinitions        NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Prefetch                 BUILTIN\Administrators      BUILTIN\Administrators Allow  FullControl...
PrintDialog              NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Provisioning             NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456
```

Continued below…



```
security                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
ServiceProfiles          BUILTIN\Administrators      NT SERVICE\TrustedInstaller Allow  FullControl...
ServiceState             NT AUTHORITY\SYSTEM         NT AUTHORITY\SERVICE Allow  ExecuteFile...
servicing                NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
Setup                    BUILTIN\Administrators      NT SERVICE\TrustedInstaller Allow  FullControl...
ShellComponents          NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
ShellExperiences         NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
SKB                      NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
SoftwareDistribution     NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
Speech                   NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Speech_OneCore           NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
System                   NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
System32                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
SystemApps               NT AUTHORITY\SYSTEM         NT SERVICE\TrustedInstaller Allow  FullControl...
SystemResources          NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
SysWOW64                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
TAPI                     NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  268435456...
Tasks                    NT AUTHORITY\SYSTEM         CREATOR OWNER Allow  268435456...
Temp                     NT AUTHORITY\SYSTEM         CREATOR OWNER Allow  268435456...
tracing                  NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl...
twain_32                 NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
Vss                      NT AUTHORITY\SYSTEM         NT AUTHORITY\LOCAL SERVICE Allow  FullControl...
WaaS                     NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
Web                      NT SERVICE\TrustedInstaller CREATOR OWNER Allow  268435456...
WinSxS                   NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  -1610612736...
bfsvc.exe                NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
bootstat.dat             NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl...
DtcInstall.log           BUILTIN\Administrators      BUILTIN\Administrators Allow  FullControl...
EnterpriseEval.xml       BUILTIN\Administrators      NT AUTHORITY\SYSTEM Allow  FullControl...
explorer.exe             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
HelpPane.exe             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
hh.exe                   NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
lsasetup.log             BUILTIN\Administrators      NT AUTHORITY\SYSTEM Allow  FullControl...
mib.bin                  NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
notepad.exe              NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
PFRO.log                 BUILTIN\Administrators      NT AUTHORITY\SYSTEM Allow  FullControl...
regedit.exe              NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
splwow64.exe             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
system.ini               NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl...
twain_32.dll             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
win.ini                  NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl...
WindowsUpdate.log        NT AUTHORITY\SYSTEM         NT AUTHORITY\SYSTEM Allow  FullControl...
winhlp32.exe             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
WMSysPr9.prx             NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...
write.exe                NT SERVICE\TrustedInstaller NT AUTHORITY\SYSTEM Allow  ReadAndExecute, Synchronize...


PS C:\Windows>
```

Submission Guidelines

Provide the following:

- **Deliverable for Task 1:** Take a screenshot of all the GPOs created for this homework assignment. To find these, launch the Group Policy Management tool, select **Group Policy Objects**, and take a screenshot of the GPOs you've created.
- **Deliverable for Task 2:** Submit a screenshot of the different Account Lockout policies in Group Policy Management Editor. It should show the three values you set under the Policy and Policy Setting columns.
- **Deliverable for Task 3:** Submit a screenshot of the different Windows PowerShell policies within the Group Policy Management Editor. Four of these should be enabled.
- **Deliverable for Task 4:** Submit a copy of your enum_acls.ps1 script.
- **Deliverable for Bonus Task 5:** Submit a screenshot of the contents of one of your transcribed PowerShell logs or a copy of one of the logs.