HAYABUSA

[**English**] | [日本語]

About Hayabusa

Hayabusa is a **Windows event log fast forensics timeline generator** and **threat hunting tool** created by the Yamato Security group in Japan. Hayabusa means "peregrine falcon" in Japanese and was chosen as peregrine falcons are the fastest animal in the world, great at hunting and highly trainable. It is written in Rust and supports multi-threading in order to be as fast as possible. We have provided a tool to convert Sigma rules into Hayabusa rule format. The Sigma-compatible Hayabusa detection rules are written in YML in order to be as easily customizable and extensible as possible. Hayabusa can be run either on single running systems for live analysis, by gathering logs from single or multiple systems for offline analysis, or by running the Hayabusa artifact with Velociraptor for enterprise-wide threat hunting and incident response. The output will be consolidated into a single CSV timeline for easy analysis in Excel, Timeline Explorer, Elastic Stack, Timesketch, etc...

Companion Projects

- EnableWindowsLogSettings - Documentation and scripts to properly enable Windows event logs.
- Hayabusa Rules - Detection rules for hayabusa.
- Hayabusa Sample EVTXs - Sample evtx files to use for testing hayabusa/sigma detection rules.
- Takajo - An analyzer for hayabusa results.
- WELA (Windows Event Log Analyzer) - An analyzer for Windows event logs written in PowerShell.

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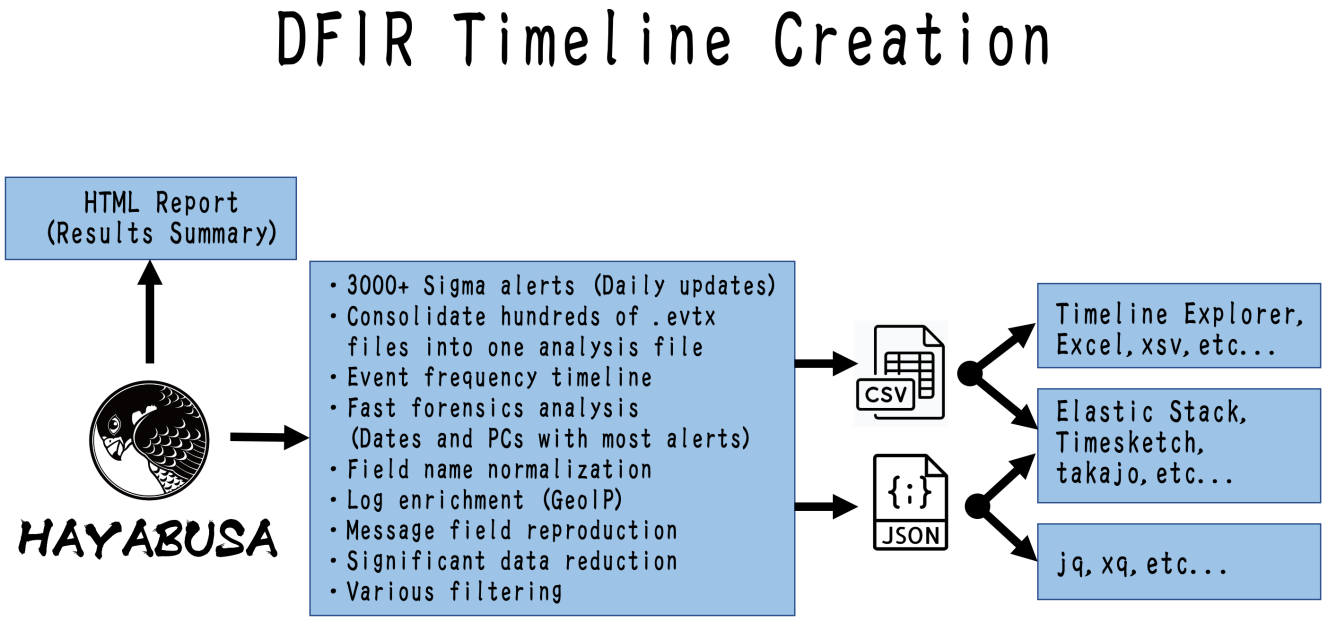
Main Goals

Threat Hunting and Enterprise-wide DFIR

Hayabusa currently has over 3250 Sigma rules and around 150 Hayabusa built-in detection rules with more rules being added regularly. It can be used for enterprise-wide proactive threat hunting as well as DFIR (Digital Forensics and Incident Response) for free with Velociraptor's Hayabusa artifact. By combining these two open-source tools, you can essentially retroactively reproduce a SIEM when there is no SIEM setup in the environment. You can learn about how to do this by watching Eric Capuano's Velociraptor walkthrough here.

Fast Forensics Timeline Generation

Windows event log analysis has traditionally been a very long and tedious process because Windows event logs are 1) in a data format that is hard to analyze and 2) the majority of data is noise and not useful for investigations. Hayabusa's goal is to extract out only useful data and present it in a concise as possible easy-to-read format that is usable not only by professionally trained analysts but any Windows system administrator. Hayabusa hopes to let analysts get 80% of their work done in 20% of the time when compared to traditional Windows event log analysis.



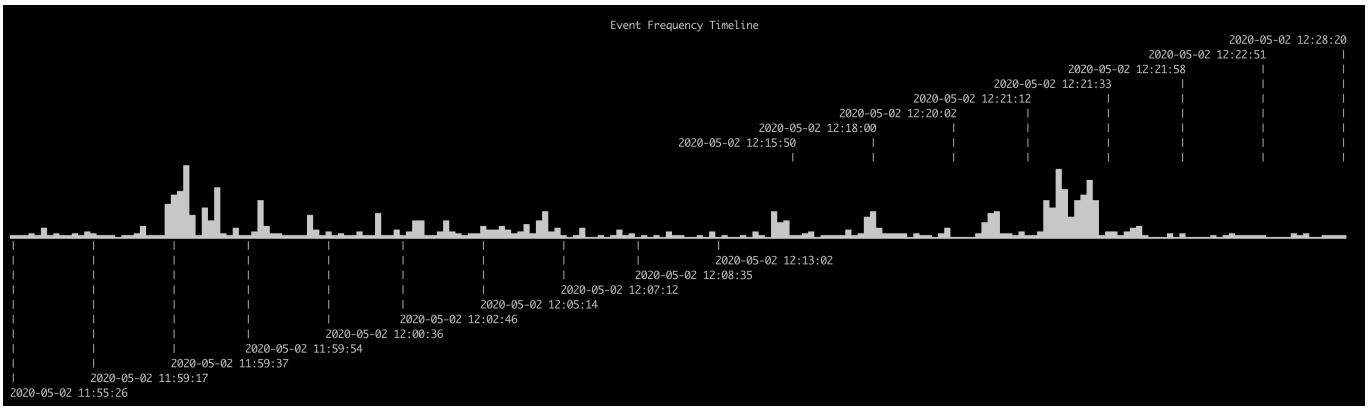
Screenshots

Startup

Terminal Output

```
2021-12-13 17:21:30.845 +09:00 ‖ fs03vuln.offsec.lan ‖ Sec ‖ 5145 ‖ info ‖ 1176260 ‖ NetShare File Access ‖ User: admmig ¦ ShareName: \\*\C$ ¦ SharePath: \??\C:\ ¦ Path: Windows\System32\Drivers\etc ¦ IP-Addr: 10.23.23.9 ¦ LID: 0x8ca6e1d
2021-12-13 21:55:45.250 +09:00 ‖ rootdc1.offsec.lan ‖ Sys ‖ 7045 ‖ info ‖ 1467331 ‖ Svc Installed ‖ Svc: BTOBTO ¦ Path: %COMSPEC% /Q /c echo cd ^> \\127.0.0.1\C$\__output 2^>^&1 > %TEMP%\execute.bat & %COMSPEC% /Q /c %TEMP%\execute.bat & del %TEMP%\execute.bat ¦ Acct: LocalSystem ¦ StartType: demand start
2021-12-13 21:55:45.250 +09:00 ‖ rootdc1.offsec.lan ‖ Sys ‖ 7045 ‖ crit ‖ 1467331 ‖ smbexec.py Service Installation ‖ Svc: BTOBTO ¦ Path: %COMSPEC% /Q /c echo cd ^> \\127.0.0.1\C$\__output 2^>^&1 > %TEMP%\execute.bat & %COMSPEC% /Q /c %TEMP%\execute.bat & del %TEMP%\execute.bat ¦ Acct: LocalSystem ¦ StartType: demand start
2021-12-13 21:55:45.250 +09:00 ‖ - ‖ - ‖ - ‖ low  ‖  ‖ Rare Service Installations ‖ [condition] count() by ServiceName < 5 in timeframe [result] count:1 ServiceName:BTOBTO timeframe:7d
2021-12-13 21:55:45.250 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4697 ‖ info ‖ 236864754 ‖ Svc Installed ‖ Svc: BTOBTO ¦ Path: %COMSPEC% /Q /c echo cd ^> \\127.0.0.1\C$\__output 2^>^&1 > %TEMP%\execute.bat & %COMSPEC% /Q /c %TEMP%\execute.bat & del %TEMP%\execute.bat ¦ User: admmig ¦ SvcAccount: LocalSystem ¦ SvcType: 0x10 ¦ SvcStartType: 3 ¦ LID: 0x2cff42b44
2021-12-14 23:42:48.182 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4776 ‖ info ‖ 237294513 ‖ NTLM Logon To Local Account ‖ User: hack1 ¦ Comp: attacker ¦ Status: 0x0
2021-12-14 23:42:48.182 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4624 ‖ info ‖ 237294514 ‖ Logon (Type 3 Network) ‖ User: hack1 ¦ Comp: attacker ¦ IP-Addr: 10.23.123.11 ¦ LID: 0x308fabb0c
2021-12-14 23:42:48.182 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4624 ‖ med  ‖ 237294514 ‖ Pass the Hash Activity 2 ‖ User: hack1 ¦ Comp: attacker ¦ IP-Addr: 10.23.123.11 ¦ Proc: - ¦ LID: 0x308fabb0c
2021-12-14 23:42:48.690 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4776 ‖ info ‖ 237294516 ‖ NTLM Logon To Local Account ‖ User: hack1 ¦ Comp:  ¦ Status: 0x0
2021-12-14 23:42:48.690 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4624 ‖ info ‖ 237294517 ‖ Logon (Type 3 Network) ‖ User: hack1 ¦ Comp: - ¦ IP-Addr: 10.23.123.11 ¦ LID: 0x308fb82ad
2021-12-14 23:42:48.693 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 5140 ‖ info ‖ 237294519 ‖ NetShare Access ‖ User: hack1 ¦ ShareName: \\*\IPC$ ¦ SharePath:  ¦ IP-Addr: 10.23.123.11 ¦ LID: 0x308fb82ad
2021-12-14 23:42:48.908 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4781 ‖ high ‖ 237294532 ‖ Suspicious Computer Account Name Change CVE-2021-42287 ‖ OldTgtUser: compnay-88$ ¦ NewTgtUser: rootdc1 ¦ TgtSID: S-1-5-21-4230534742-2542757381-3142984815-1296 ¦ User: hack1 ¦ SID: S-1-5-21-4230534742-2542757381-3142984815-1234 ¦ Domain: OFFSEC ¦ TgtDomain: OFFSEC ¦ PrivList: - ¦ LID: 0x308fabb0c
2021-12-14 23:42:48.908 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4781 ‖ high ‖ 237294532 ‖ Suspicious Computer Account Name Change CVE-2021-42287 ‖ OldTgtUser: compnay-88$ ¦ NewTgtUser: rootdc1 ¦ TgtSID: S-1-5-21-4230534742-2542757381-3142984815-1296 ¦ User: hack1 ¦ SID: S-1-5-21-4230534742-2542757381-3142984815-1234 ¦ Domain: OFFSEC ¦ TgtDomain: OFFSEC ¦ PrivList: - ¦ LID: 0x308fabb0c
2021-12-14 23:42:49.222 +09:00 ‖ rootdc1.offsec.lan ‖ Sec ‖ 4768 ‖ info ‖ 237294534 ‖ Kerberos TGT Requested ‖ User: rootdc1 ¦ Svc: krbtgt ¦ IP-Addr: ::ffff:10.23.123.11 ¦ Status: 0x0 ¦ PreAuthType: 2
```

Event Fequency Timeline (-T option)



Results Summary

```
Results Summary:

Events with hits / Total events: 19,545 / 76,967 (Data reduction: 57,422 events (74.61%))

Total | Unique detections: 32,684 | 554
Total | Unique critical detections: 46 (0.14%) | 18 (3.25%)
Total | Unique high detections: 6,141 (18.79%) | 250 (45.13%)
Total | Unique medium detections: 1,472 (4.50%) | 156 (28.16%)
Total | Unique low detections: 6,771 (20.72%) | 76 (13.72%)
Total | Unique informational detections: 18,254 (55.85%) | 54 (9.75%)

Dates with most total detections:
critical: 2019-07-19 (15), high: 2016-09-20 (3,656), medium: 2019-05-19 (165), low: 2016-09-20 (3,780), informational: 2016-08-19 (2,105)

Top 5 computers with most unique detections:
critical: MSEDGEWIN10 (6), IEWIN7 (3), FS03.offsec.lan (2), rootdc1.offsec.lan (2), srvdefender01.offsec.lan (2)
high: MSEDGEWIN10 (109), IEWIN7 (70), FS03.offsec.lan (31), fs03vuln.offsec.lan (27), IE10Win7 (23)
medium: MSEDGEWIN10 (62), IEWIN7 (38), FS03.offsec.lan (16), IE10Win7 (15), PC01.example.corp (14)
low: MSEDGEWIN10 (35), IEWIN7 (18), FS03.offsec.lan (16), fs03vuln.offsec.lan (13), IE10Win7 (11)
informational: MSEDGEWIN10 (18), IEWIN7 (17), fs01.offsec.lan (16), PC01.example.corp (13), IE8Win7 (12)

Top critical alerts:                                                Top high alerts:
-------------------------------------------------------------------------------------------------------------------------
Sticky Key Like Backdoor Usage (10)                                 Metasploit SMB Authentication (3,562)
Meterpreter or Cobalt Strike Getsystem Service Installation (6)     Malicious Svc Possibly Installed (271)
Active Directory Replication from Non Machine Account (6)           Susp Svc Installed (257)
Windows Defender Alert (4)                                          PowerShell Scripts Installed as Services (253)
WannaCry Ransomware (4)                                             Suspicious Service Installation Script (250)
-------------------------------------------------------------------------------------------------------------------------
Top medium alerts:                                                  Top low alerts:
-------------------------------------------------------------------------------------------------------------------------
Potentially Malicious PwSh (235)                                    Logon Failure_Wrong Password (3,564)
Proc Injection (104)                                                Susp CmdLine (Possible LOLBIN) (1,418)
Reg Key Value Set_Sysmon Alert (103)                                Non Interactive PowerShell (325)
Suspicious Remote Thread Target (93)                                Rare Service Installations (321)
Cscript Visual Basic Script Execution (60)                          Windows Processes Suspicious Parent Directory (282)
-------------------------------------------------------------------------------------------------------------------------
Top informational alerts:
-------------------------------------------------------------------------------------------------------------------------
Proc Exec (11,173)                                                  Explicit Logon (342)
NetShare File Access (2,564)                                        Svc Installed (331)
PwSh Scriptblock (789)                                              New Non-USB PnP Device (268)
PwSh Pipeline Exec (680)                                            Logon (Type 3 Network) (228)
NetShare Access (433)                                               File Created (210)

Elapsed Time: 00:00:28.827
```

HTML Results Summary (–H option)

General Overview

- Start time: 2022/10/02 03:16
- Excluded rules: 12
- Noisy rules: 5 (Disabled)
- Experimental rules: 2036 (67.24%)
- Stable rules: 213 (7.03%)
- Test rules: 779 (25.73%)
- Hayabusa rules: 138
- Sigma rules: 2890
- Total enabled detection rules: 3028
- Elapsed Time: 00:00:23.844

Results Summary

- Saved alerts and events: 19,545
- Total events analyzed: 76,967
- Data reduction: 57,422 events (74.61%)
- Dates with most total detections:
    - critical: 2019-07-19 (15)
    - high: 2016-09-20 (3,656)
    - medium: 2019-05-19 (165)
    - low: 2016-09-20 (3,780)
    - informational: 2016-08-19 (2,105)

Computers with most unique critical detections:

- MSEDGEWIN10 (6)
- IEWIN7 (3)
- srvdefender01.offsec.lan (2)
- FS03.offsec.lan (2)
- rootdc1.offsec.lan (2)
- alice.insecurebank.local (1)
- IE10Win7 (1)
- DC1.insecurebank.local (1)
- win10-02.offsec.lan (1)
- fs01.offsec.lan (1)
- fs03vuln.offsec.lan (1)
- DESKTOP-PIU87N6 (1)

Computers with most unique high detections:

- MSEDGEWIN10 (112)
- IEWIN7 (72)

Top critical alerts:

- Sticky Key Like Backdoor Usage (10)
- Meterpreter or Cobalt Strike Getsystem Service Installation (6)
- Active Directory Replication from Non Machine Account (6)
- Windows Defender Alert (4)
- WannaCry Ransomware (4)
- Dumpert Process Dumper (3)
- SystemNightmare Exploitation Script Execution (2)
- Mimikatz MemSSP Default Log File Creation (2)
- Suspicious LSASS Process Clone (2)
- TrustedPath UAC Bypass Pattern (2)
- SMB Relay Attack Tools (1)
- smbexec.py Service Installation (1)
- Malicious Named Pipe (1)
- CobaltStrike Service Installations in Registry (1)
- Lsass Memory Dump via Comsvcs DLL (1)

Top high alerts:

- Metasploit SMB Authentication (3,562)
- Malicious Svc Possibly Installed (271)

Analysis in Excel

Time	Computername	Eventi	Level	Alert	Details
2021-05-03 17:58:38.774 +09:00	webiis01.offsec.lan	4624	informational	Logon Type 3 - Network	User: ammig : Workstation: - : IP Address: 10.23.23.9 : Port: 62234 : LogonID: 0x258b9ee5
2021-05-03 17:58:38.775 +09:00	webiis01.offsec.lan	4624	informational	Logon Type 3 - Network	User: ammig : Workstation: - : IP Address: 10.23.23.9 : Port: 62235 : LogonID: 0x258b9ef8
2021-05-03 17:58:38.775 +09:00	webiis01.offsec.lan	4624	informational	Logon Type 3 - Network	User: ammig : Workstation: - : IP Address: 10.23.23.9 : Port: 62236 : LogonID: 0x258b9efd
2021-05-03 21:06:57.954 +09:00	win10-02.offsec.lan	1	high	Process Creation Sysmon Rule Alert	Rule: technique_id=T1059,technique_name=Command-Line Interface : Command: C:\windows\s
2021-05-03 21:06:57.954 +09:00	win10-02.offsec.lan	1	critical	Sticky Key Like Backdoor Usage	
2021-05-15 05:39:33.214 +09:00	fs01.offsec.lan	1102	high	Security log was cleared	User: ammig
2021-05-19 06:18:40.607 +09:00	rootdc1.offsec.lan	150	critical	DNS Server Error Failed Loading the ServerLevelPluginDLL	
2021-05-19 06:18:40.607 +09:00	rootdc1.offsec.lan	150	high	Possible CVE-2021-1675 Print Spooler Exploitation	
2021-05-19 06:18:40.607 +09:00	rootdc1.offsec.lan	150	critical	Mimikatz Use	
2021-05-19 06:23:27.038 +09:00	rootdc1.offsec.lan	150	critical	DNS Server Error Failed Loading the ServerLevelPluginDLL	
2021-05-19 06:23:27.038 +09:00	rootdc1.offsec.lan	150	high	Possible CVE-2021-1675 Print Spooler Exploitation	
2021-05-19 06:23:27.038 +09:00	rootdc1.offsec.lan	150	critical	Mimikatz Use	
2021-05-19 06:30:17.318 +09:00	rootdc1.offsec.lan	4688	high	Possible CVE-2021-1675 Print Spooler Exploitation	
2021-05-19 06:30:17.318 +09:00	rootdc1.offsec.lan	4688	critical	Mimikatz Use	
2021-05-19 06:30:17.318 +09:00	rootdc1.offsec.lan	4688	high	Relevant Anti-Virus Event	
2021-05-19 06:33:49.548 +09:00	rootdc1.offsec.lan	770	critical	DNS Server Error Failed Loading the ServerLevelPluginDLL	
2021-05-19 06:33:49.548 +09:00	rootdc1.offsec.lan	770	high	Possible CVE-2021-1675 Print Spooler Exploitation	
2021-05-19 06:33:49.548 +09:00	rootdc1.offsec.lan	770	high	Relevant Anti-Virus Event	
2021-05-19 06:33:49.548 +09:00	rootdc1.offsec.lan	770	critical	Mimikatz Use	
2021-05-20 21:49:31.863 +09:00	fs01.offsec.lan	1102	high	Security log was cleared	User: ammig
2021-05-20 21:49:46.875 +09:00	fs01.offsec.lan	4648	informational	Explicit Logon	Source User: FS01$: Target User: sshd_5848 : IP Address: - : Process: C:\Program Files\OpenS
2021-05-20 21:49:46.876 +09:00	fs01.offsec.lan	4624	low	Logon Type 5 - Service	User: sshd_5848 : Workstation: - : IP Address: - : Port: - : LogonID: 0x3c569ed
2021-05-20 21:49:46.876 +09:00	fs01.offsec.lan	4672	informational	Admin Logon	User: sshd_5848 : LogonID: 0x3c569ed
2021-05-20 21:49:52.315 +09:00	fs01.offsec.lan	4776	informational	NTLM Logon to Local Account	User: NOUSER : Workstation FS01 : Status: 0xc0000064
2021-05-20 21:49:52.315 +09:00	fs01.offsec.lan	4625	informational	Logon Failure - Username does not exist	User: NOUSER : Type: 8 : Workstation: FS01 : IP Address: - : SubStatus: 0xc0000064 : AuthP

Analysis in Timeline Explorer

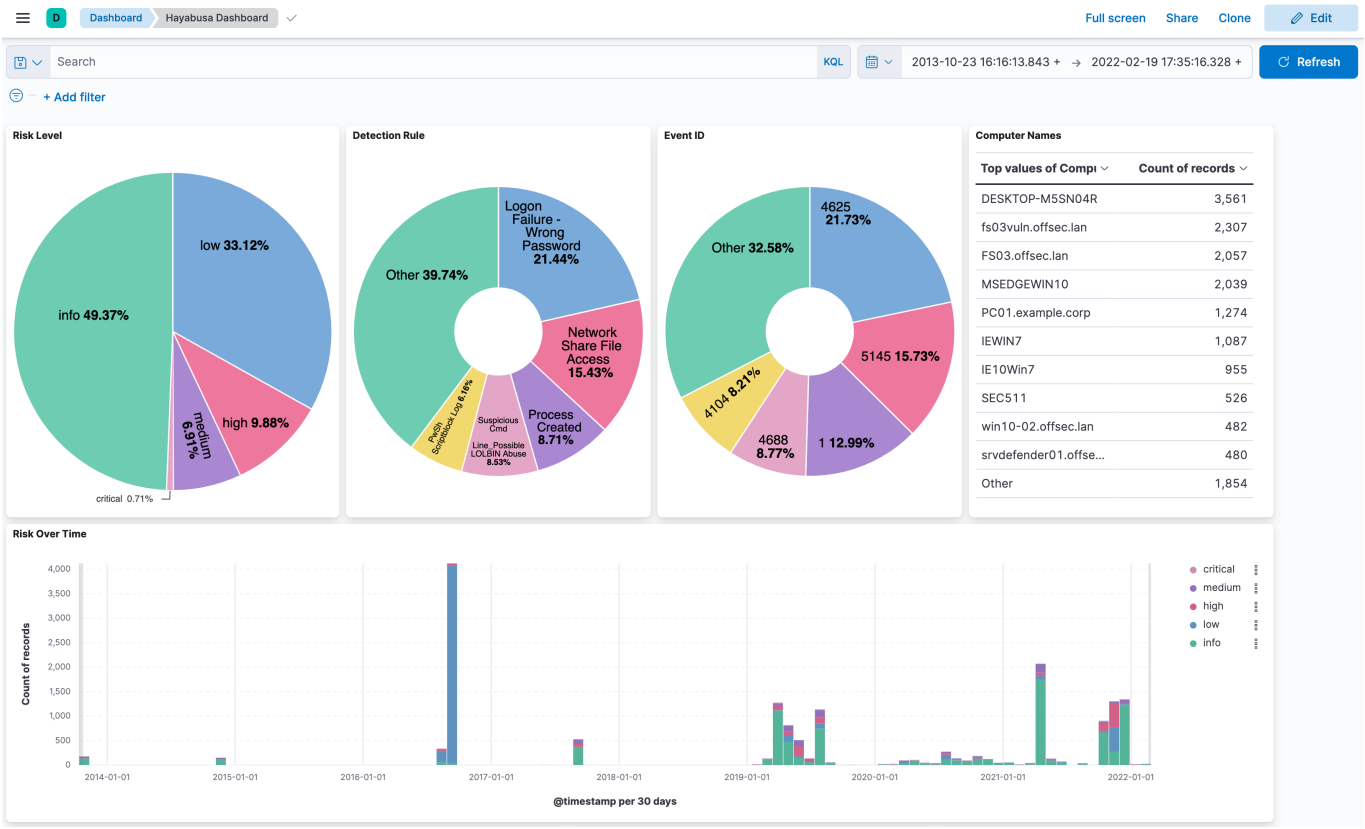
Time	Computername	Eventid	Level	Alert	Details
2021-05-22 05:43:18.227 +09:00	fs01.offsec.lan	4648	informational	Explicit Logon	Source User: FS01$: Target User: admmig
2021-05-22 05:43:22.562 +09:00	fs01.offsec.lan	4625	low	Logon Failure - Wrong Password	User: admmig@offsec.lan : Type: 8 : Wor
2021-05-22 05:43:49.345 +09:00	fs01.offsec.lan	4625	low	Logon Failure - Wrong Password	User: admmig@offsec.lan : Type: 8 : Wor
2021-05-22 05:43:50.131 +09:00	fs01.offsec.lan	4625	low	Logon Failure - Wrong Password	User: admmig@offsec.lan : Type: 8 : Wor
2021-05-22 05:43:50.607 +09:00	fs01.offsec.lan	4625	low	Logon Failure - Wrong Password	User: admmig@offsec.lan : Type: 8 : Wor
2021-05-22 05:43:50.866 +09:00	fs01.offsec.lan	4625	low	Logon Failure - Wrong Password	User: admmig@offsec.lan : Type: 8 : Wor
2021-05-23 06:56:57.685 +09:00	fs01.offsec.lan	1102	high	Security log was cleared	User: admmig
2021-05-23 06:57:11.842 +09:00	fs01.offsec.lan	4688	high	Relevant Anti-Virus Event	
2021-05-23 06:57:11.842 +09:00	fs01.offsec.lan	4688	critical	Mimikatz Use	
2021-05-26 22:02:27.149 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-26 22:02:27.155 +09:00	mssql01.offsec.lan	5145	medium	DCERPC SMB Spoolss Named Pipe	
2021-05-26 22:02:27.155 +09:00	mssql01.offsec.lan	5145	critical	CVE-2021-1675 Print Spooler Exploitation IPC Access	
2021-05-26 22:02:29.726 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-26 22:02:29.734 +09:00	mssql01.offsec.lan	5145	medium	DCERPC SMB Spoolss Named Pipe	
2021-05-26 22:02:29.734 +09:00	mssql01.offsec.lan	5145	critical	CVE-2021-1675 Print Spooler Exploitation IPC Access	
2021-05-26 22:02:34.373 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-26 22:02:34.375 +09:00	mssql01.offsec.lan	5145	medium	DCERPC SMB Spoolss Named Pipe	
2021-05-26 22:02:34.379 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-26 22:02:34.379 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-26 22:02:34.380 +09:00	mssql01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-05-27 05:24:46.570 +09:00	rootdc1.offsec.lan	4768	medium	Possible AS-REP Roasting	Possible AS-REP Roasting
2021-05-27 05:24:46.570 +09:00	rootdc1.offsec.lan	4768	informational	Kerberos TGT was requested	User: admin-test : Service: krbtgt : IP
2021-06-01 23:06:34.542 +09:00	fs01.offsec.lan	4720	medium	Local user account created	User: WADGUtilityAccount : SID:S-1-5-21-1
2021-06-01 23:08:21.225 +09:00	fs01.offsec.lan	4720	medium	Local user account created	User: elie : SID:S-1-5-21-1081258321-3780
2021-06-03 21:17:56.988 +09:00	fs01.offsec.lan	1102	high	Security log was cleared	User: admmig
2021-06-03 21:18:12.941 +09:00	fs01.offsec.lan	4672	informational	Admin Logon	User: admmig : LogonID: 0x322e5b7
2021-06-03 21:18:12.942 +09:00	fs01.offsec.lan	4624	informational	Logon Type 3 - Network	User: admmig : Workstation: - : IP Addr
2021-06-04 03:34:12.672 +09:00	fs01.offsec.lan	4104	high	Windows Firewall Profile Disabled	
2021-06-04 04:17:44.873 +09:00	fs01.offsec.lan	1102	high	Security log was cleared	User: admmig

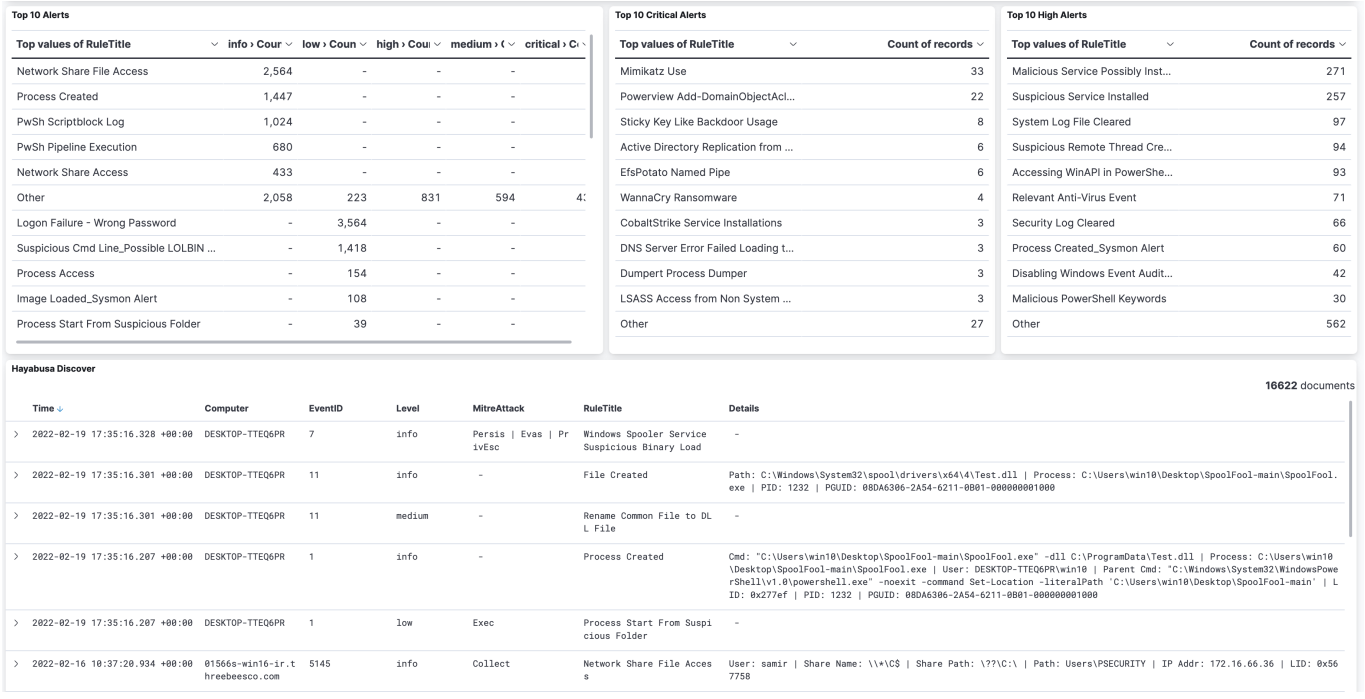
Critical Alert Filtering and Computer Grouping in Timeline Explorer

Computername

Line	Tag	Time	Eventid	Level	Alert
=				= critical	
Computername: 01566s-win16-ir.threebeesco.com (Count: 1)					
Computername: alice.insecurebank.local (Count: 3)					
Computername: DC1.insecurebank.local (Count: 18)					
5540		2019-03-26 06:28:45.026 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5539		2019-03-26 06:28:45.026 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5538		2019-03-26 06:28:45.026 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5537		2019-03-26 06:28:45.026 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5536		2019-03-26 06:28:45.025 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5535		2019-03-26 06:28:45.025 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5534		2019-03-26 06:28:45.025 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5533		2019-03-26 06:28:45.025 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5532		2019-03-26 06:28:45.025 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5531		2019-03-26 06:28:45.024 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5530		2019-03-26 06:28:45.024 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5529		2019-03-26 06:28:45.024 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5528		2019-03-26 06:28:45.023 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5527		2019-03-26 06:28:45.023 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5526		2019-03-26 06:28:45.023 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5525		2019-03-26 06:28:45.023 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5524		2019-03-26 06:28:45.022 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
5523		2019-03-26 06:28:45.022 +09:00	5136	critical	Powerview Add-DomainObjectAcl DCSync AD Extend Right
Computername: DESKTOP-PIU87N6 (Count: 1)					

Analysis with the Elastic Stack Dashboard





Analysis in Timesketch

2019-05-08T02:10:43	Active Directory Replication from Non Machine Account	User: Administrator | ObjSvr: DS | ObjName: %{c6faf700-bfe4-452a-a766-424f84c29583} | OpType: Object Access | HID: 0x0 | LID: 0x40c6511	4662	DC1.insecurebank.local	Sec	T1003.006
2019-05-08T02:10:43	Active Directory Replication from Non Machine Account	User: Administrator | ObjSvr: DS | ObjName: %{c6faf700-bfe4-452a-a766-424f84c29583} | OpType: Object Access | HID: 0x0 | LID: 0x40c6511	4662	DC1.insecurebank.local	Sec	T1003.006
2019-05-08T02:10:43	Active Directory Replication from Non Machine Account	User: Administrator | ObjSvr: DS | ObjName: %{c6faf700-bfe4-452a-a766-424f84c29583} | OpType: Object Access | HID: 0x0 | LID: 0x40c6511	4662	DC1.insecurebank.local	Sec	T1003.006
4 days						
2019-05-12T12:52:43	Meterpreter or Cobalt Strike Getsystem Service Installation	Svc: WinPwnage | Path: %COMSPEC% /c ping -n 1 127.0.0.1 >nul && echo 'WinPwnage' > \\.\pipe\WinPwnagePipe | Acct: LocalSystem | StartType: demand start	7045	IEWIN7	Sys	T1134.001 : T1134.002
39 days						
2019-06-21T07:35:37	Dumpert Process Dumper	Path: C:\Windows\Temp\dumpert.dmp | Process: C:\Users\administrator\Desktop\x64\Outflank-Dumpert.exe | PID: 3572 | PGUID: ECAD0485-88C9-5D0C-0000-0010348C1D00	11	alice.insecurebank.local	Sysmon	T1003.001

Importing and Analyzing Timeline Results

You can learn how to analyze CSV timelines in Excel and Timeline Explorer here.

You can learn how to import CSV files into Elastic Stack here.

You can learn how to import CSV files into Timesketch here.

Analyzing JSON-formatted results with JQ

You can learn how to analyze JSON-formatted results with `jq` here.

Features

- Cross-platform support: Windows, Linux, macOS.
- Developed in Rust to be memory safe and faster than a hayabusa falcon!
- Multi-thread support delivering up to a 5x speed improvement.
- Creates a single easy-to-analyze CSV timeline for forensic investigations and incident response.
- Threat hunting based on IoC signatures written in easy to read/create/edit YML based hayabusa rules.
- Sigma rule support to convert sigma rules to hayabusa rules.
- Currently it supports the most sigma rules compared to other similar tools and even supports count rules and new aggregators such as `|equalsfield` and `|endswithfield`.

- Event ID metrics. (Useful for getting a picture of what types of events there are and for tuning your log settings.)
- Rule tuning configuration by excluding unneeded or noisy rules.
- MITRE ATT&CK mapping of tactics.
- Rule level tuning.
- Create a list of unique pivot keywords to quickly identify abnormal users, hostnames, processes, etc... as well as correlate events.
- Output all fields for more thorough investigations.
- Successful and failed logon summary.
- Enterprise-wide threat hunting and DFIR on all endpoints with Velociraptor.
- Output to CSV, JSON/JSONL and HTML Summary Reports.
- Daily Sigma rule updates.
- Support for JSON-formatted log input.
- Log field normalization. (Converting multiple fields with different naming conventions into the same field name.)
- Log enrichment by adding GeoIP (ASN, city, country) information to IP addresses.

Downloads

Please download the latest stable version of Hayabusa with compiled binaries or compile the source code from the Releases page.

Git Cloning

You can `git clone` the repository with the following command and compile binary from source code:

Warning: The main branch of the repository is for development purposes so you may be able to access new features not yet officially released, however, there may be bugs so consider it unstable.

```
git clone https://github.com/Yamato-Security/hayabusa.git --recursive
```

> **Note:** If you forget to use --recursive option, the `rules` folder, which is managed as a git submodule, will not be cloned.

You can sync the `rules` folder and get latest Hayabusa rules with `git pull --recurse-submodules` or use the following command:

```
hayabusa.exe update-rules
```

If the update fails, you may need to rename the `rules` folder and try again.

> Caution: When updating, rules and config files in the `rules` folder are replaced with the latest rules and config files in the hayabusa-rules repository. Any changes you make to existing files

> will be overwritten, so we recommend that you make backups of any files that you edit before updating. If you are performing level tuning with `level-tuning`, please re-tune your rule files after each update. If you add **new** rules inside of the `rules` folder, they will **not** be overwritten or deleted when updating.

Advanced: Compiling From Source (Optional)

If you have Rust installed, you can compile from source with the following command:

Note: To compile, you need a Rust(rustc) version of `1.66.0` or higher.

```
cargo build --release
```

You can download the latest unstable version from the main branch or the latest stable version from the Releases page.

Be sure to periodically update Rust with:

```
rustup update stable
```

The compiled binary will be outputted in the `./target/release` folder.

Updating Rust Packages

You can update to the latest Rust crates before compiling:

```
cargo update
```

> Please let us know if anything breaks after you update.

Cross-compiling 32-bit Windows Binaries

You can create 32-bit binaries on 64-bit Windows systems with the following:

```
rustup install stable-i686-pc-windows-msvc
rustup target add i686-pc-windows-msvc
rustup run stable-i686-pc-windows-msvc cargo build --release
```

> **Warning: Be sure to run `rustup install stable-i686-pc-windows-msvc` whenever there is a new stable version of Rust as `rustup update stable` will not update the compiler for cross compiling and you may receive build errors.**

macOS Compiling Notes

If you receive compile errors about openssl, you will need to install Homebrew and then install the following packages:

```
brew install pkg-config
brew install openssl
```

Linux Compiling Notes

If you receive compile errors about openssl, you will need to install the following package.

Ubuntu-based distros:

```
sudo apt install libssl-dev
```

Fedora-based distros:

```
sudo yum install openssl-devel
```

Cross-compiling Linux MUSL Binaries

On a Linux OS, first install the target.

```
rustup install stable-x86_64-unknown-linux-musl
rustup target add x86_64-unknown-linux-musl
```

Compile with:

```
cargo build --release --target=x86_64-unknown-linux-musl
```

> **Warning: Be sure to run `rustup install stable-x86_64-unknown-linux-musl` whenever there is a new stable version of Rust as `rustup update stable` will not update the compiler for cross compiling and you may receive build errors.**

The MUSL binary will be created in the `./target/x86_64-unknown-linux-musl/release/` directory. MUSL binaries are are about 15% slower than the GNU binaries, however, they are more portable accross different versions and distributions of linux.

Running Hayabusa

Caution: Anti-Virus/EDR Warnings and Slow Runtimes

You may receive an alert from anti-virus or EDR products when trying to run hayabusa or even just when downloading the `.yml` rules as there will be keywords like `mimikatz` and suspicious PowerShell commands in the detection signature. These are false positives so will need to configure exclusions in your security products to allow hayabusa to run. If you are worried about malware or supply chain attacks, please check the hayabusa source code and compile the binaries yourself.

You may experience slow runtime especially on the first run after a reboot due to the real-time protection of Windows Defender. You can avoid this by temporarily turning real-time protection off or adding an exclusion to the hayabusa runtime directory. (Please take into consideration the security risks before doing these.)

Windows

In a Command/PowerShell Prompt or Windows Terminal, just run the appropriate 32-bit or 64-bit Windows binary.

Linux

You first need to make the binary executable.

```
chmod +x ./hayabusa
```

Then run it from the Hayabusa root directory:

```
./hayabusa
```

macOS

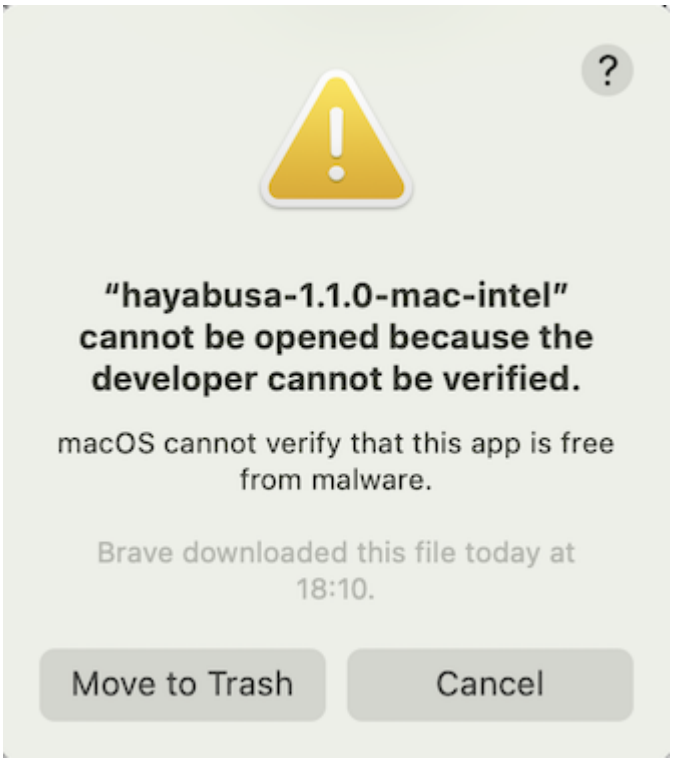
From Terminal or iTerm2, you first need to make the binary executable.

```
chmod +x ./hayabusa
```

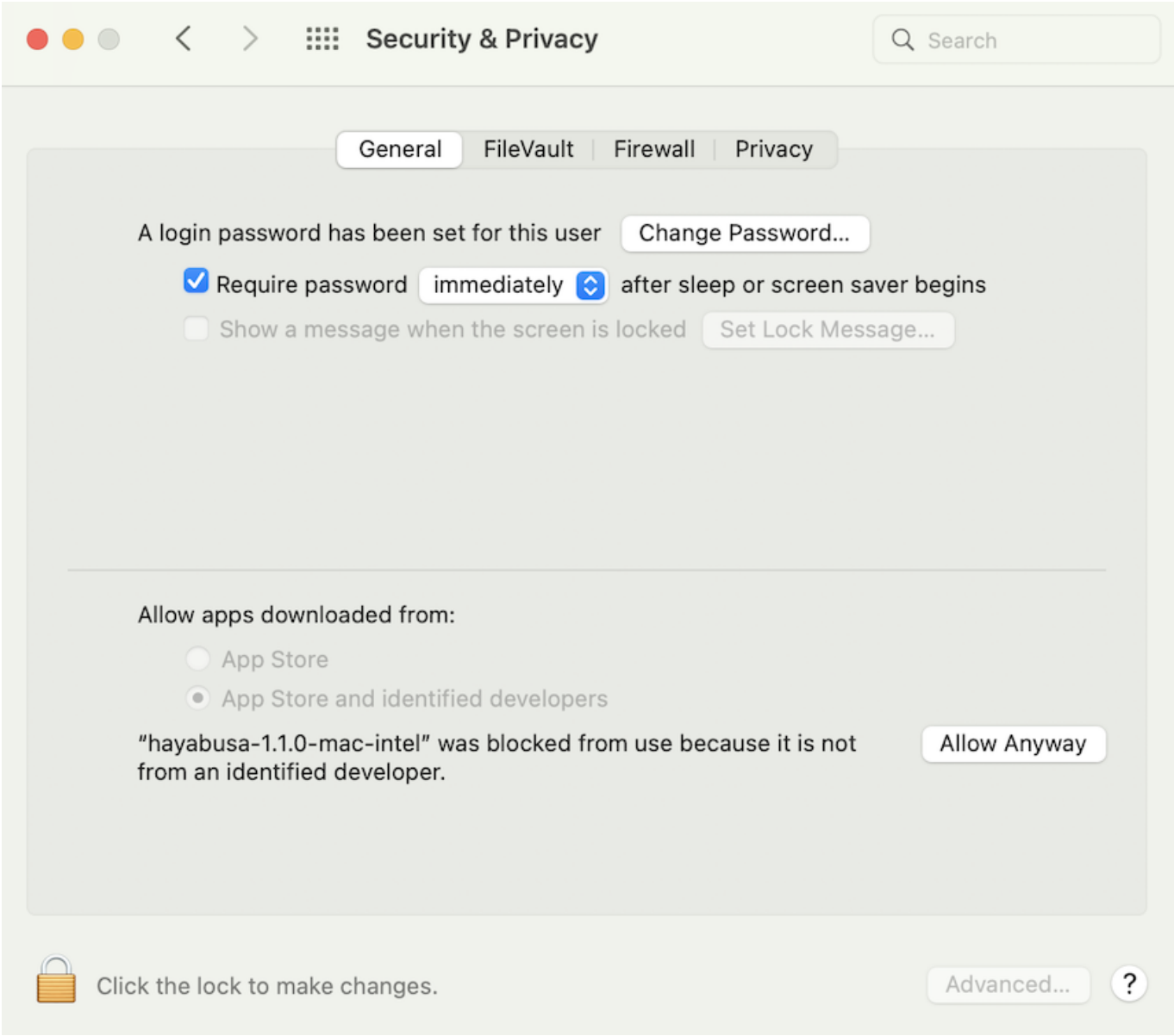
Then, try to run it from the Hayabusa root directory:

```
./hayabusa
```

On the latest version of macOS, you may receive the following security error when you try to run it:



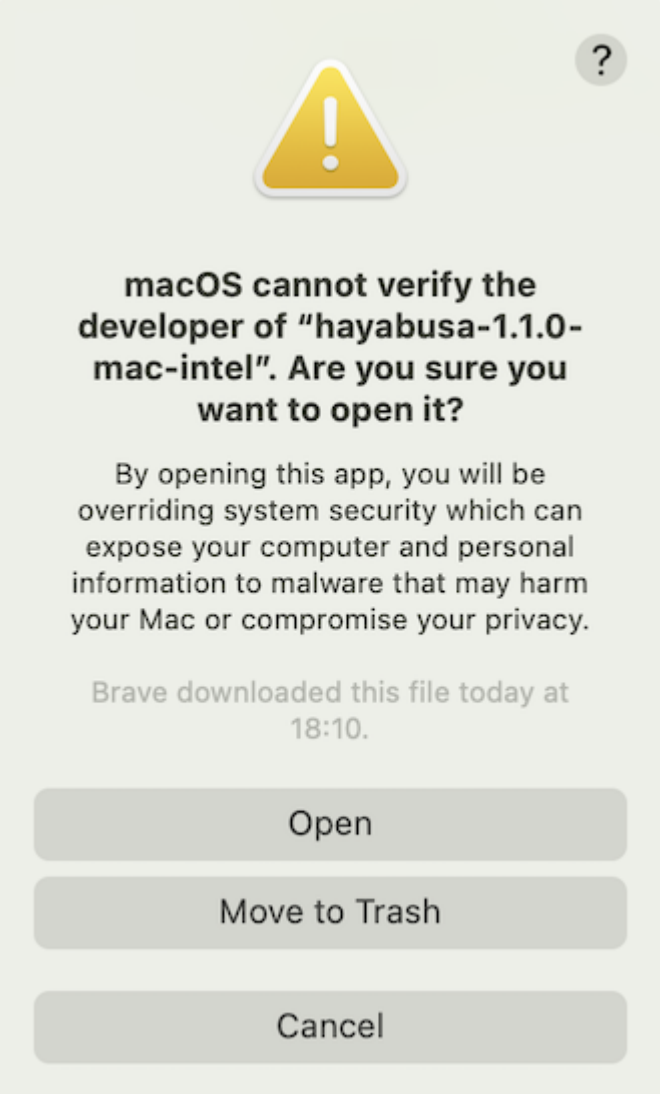
Click "Cancel" and then from System Preferences, open "Security & Privacy" and from the General tab, click "Allow Anyway".



After that, try to run it again.

```
./hayabusa
```

The following warning will pop up, so please click "Open".



You should now be able to run hayabusa.

Main Commands

- `csv-timeline`: Save the timeline in CSV format.
- `json-timeline`: Save the timeline in JSON/JSONL format.
- `logon-summary`: Print a summary of logon events.
- `metrics`: Print metrics of the number and percentage of events based on Event ID.
- `pivot-keywords-list`: Print a list of suspicious keywords to pivot on.
- `update-rules`: Sync the rules to the latest rules in the hayabusa-rules GitHub repository.
- `level-tuning`: Custom tune the alerts' `level`.
- `list-profiles`: List the available output profiles.
- `set-default-profile`: Change the default profile.

Usage

Main Help Menu

```
Usage:
  hayabusa.exe help <COMMAND>
  hayabusa.exe <COMMAND> [OPTIONS]

Commands:
  csv-timeline         Save the timeline in CSV format
  json-timeline        Save the timeline in JSON/JSONL format
  logon-summary        Print a summary of successful and failed logons
  metrics              Print event ID metrics
  pivot-keywords-list  Create a list of pivot keywords
  update-rules         Update to the latest rules in the hayabusa-rules
github repository
  level-tuning         Tune alert levels (default:
./rules/config/level_tuning.txt)
  set-default-profile  Set default output profile
  list-contributors    Print the list of contributors
  list-profiles        List the output profiles
  help                 Print this message or the help of the given
subcommand(s)

Options:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner
```

`csv-timeline` command

The `csv-timeline` command will create a forensics timeline of events in CSV format.

```
Usage: csv-timeline <INPUT> [OPTIONS]

Input:
  -d, --directory <DIR>  Directory of multiple .evtx files
  -f, --file <FILE>      File path to one .evtx file
  -l, --live-analysis    Analyze the local C:\Windows\System32\winevt\Logs
folder
  -J, --JSON-input       Scan JSON formatted logs instead of .evtx (.json
or .jsonl)

Output:
  -G, --GeoIP <MAXMIND-DB-DIR>  Add GeoIP (ASN, city, country) info to IP
addresses
  -H, --HTML-report <FILE>      Save Results Summary details to an HTML
report (ex: results.html)
  -o, --output <FILE>           Save the timeline in CSV format (ex:
results.csv)
  -p, --profile <PROFILE>       Specify output profile

Display Settings:
      --no-color            Disable color output
      --no-summary          Do not display Results Summary (slightly
```

```
faster speed)
  -q, --quiet               Quiet mode: do not display the launch banner
  -v, --verbose             Output verbose information
  -T, --visualize-timeline  Output event frequency timeline (terminal
needs to support unicode)

Filtering:
  -E, --EID-filter               Scan only common EIDs for faster speed
(./rules/config/target_event_IDs.txt)
      --enable-deprecated-rules  Enable rules marked as deprecated (no
longer included by default)
  -n, --enable-noisy-rules       Enable rules marked as noisy
(./rules/config/noisy_rules.txt)
  -e, --exact-level <LEVEL>      Scan for only specific levels
(informational, low, medium, high, critical)
      --exclude-status <STATUS>  Ignore rules according to status (ex:
experimental) (ex: stable,test)
  -m, --min-level <LEVEL>        Minimum level for rules (default:
informational)
      --timeline-end <DATE>      End time of the event logs to load (ex:
"2022-02-22 23:59:59 +09:00")
      --timeline-start <DATE>    Start time of the event logs to load (ex:
"2020-02-22 00:00:00 +09:00")

General Options:
  -Q, --quiet-errors                    Quiet errors mode: do not save
error logs
  -r, --rules <DIR/FILE>                Specify a custom rule directory
or file (default: ./rules)
  -c, --rules-config <DIR>              Specify custom rule config
directory (default: ./rules/config)
      --target-file-ext <EVTX_FILE_EXT>  Specify additional file
extensions (ex: evtx_data) (ex: evtx1,evtx2)
  -t, --threads <NUMBER>                Number of threads (default:
optimal number for performance)

Time Format:
      --European-time     Output timestamp in European time format (ex:
22-02-2022 22:00:00.123 +02:00)
      --ISO-8601          Output timestamp in ISO-8601 format (ex: 2022-
02-22T10:10:10.1234567Z) (Always UTC)
      --RFC-2822          Output timestamp in RFC 2822 format (ex: Fri, 22
Feb 2022 22:00:00 -0600)
      --RFC-3339          Output timestamp in RFC 3339 format (ex: 2022-
02-22 22:00:00.123456-06:00)
      --US-military-time  Output timestamp in US military time format (ex:
02-22-2022 22:00:00.123 -06:00)
      --US-time           Output timestamp in US time format (ex: 02-22-
2022 10:00:00.123 PM -06:00)
  -U, --UTC               Output time in UTC format (default: local time)
```

`csv-timeline` command examples

- Run hayabusa against one Windows event log file with default `standard` profile:

```
hayabusa.exe csv-timeline -f eventlog.evtx
```

- Run hayabusa against the sample-evtx directory with multiple Windows event log files with the verbose profile:

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -p verbose
```

- Export to a single CSV file for further analysis with Excel, Timeline Explorer, Elastic Stack, etc... and include all field information (Warning: your file output size will become much larger with the `super-verbose` profile!):

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -o results.csv -p
super-verbose
```

- Enable the EID (Event ID) filter:

> Note: Enabling the EID filter will speed up the analysis by about 10-15% in our tests but there is a possibility of missing alerts.

```
hayabusa.exe csv-timeline -E -d .\hayabusa-sample-evtx -o results.csv
```

- Only run hayabusa rules (the default is to run all the rules in `-r .\rules`):

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -r .\rules\hayabusa -o
results.csv
```

- Only run hayabusa rules for logs that are enabled by default on Windows:

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -r
.\rules\hayabusa\builtin -o results.csv
```

- Only run hayabusa rules for sysmon logs:

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -r
.\rules\hayabusa\sysmon -o results.csv
```

- Only run sigma rules:

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -r .\rules\sigma -o
results.csv
```

- Enable deprecated rules (those with `status` marked as `deprecated`) and noisy rules (those whose rule ID is listed in `.\rules\config\noisy_rules.txt`):

> Note: Recently, deprecated rules are now located in a separate directory in the sigma repository so are not included by default anymore in Hayabusa. Therefore, you probably have no need to enable deprecated rules.

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx --enable-noisy-rules --
--enable-deprecated-rules -o results.csv
```

- Only run rules to analyze logons and output in the UTC timezone:

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -r
.\rules\hayabusa\builtin\Security\LogonLogoff\Logon -U -o results.csv
```

- Run on a live Windows machine (requires Administrator privileges) and only detect alerts (potentially malicious behavior):

```
hayabusa.exe csv-timeline -l -m low
```

- Print verbose information (useful for determining which files take long to process, parsing errors, etc...):

```
hayabusa.exe csv-timeline -d .\hayabusa-sample-evtx -v
```

- Verbose output example:

```
Checking target evtx FilePath: "./hayabusa-sample-
evtx/YamatoSecurity/T1027.004_Obfuscated Files or Information\u{a0}Compile
After Delivery/sysmon.evtx"
1 / 509 [>----------------------------------------------------------------
----------------------------------------] 0.20 % 1s
Checking target evtx FilePath: "./hayabusa-sample-
evtx/YamatoSecurity/T1558.004_Steal or Forge Kerberos Tickets AS-REP
Roasting/Security.evtx"
2 / 509 [>----------------------------------------------------------------
```

```
----------------------------------------] 0.39 % 1s
Checking target evtx FilePath: "./hayabusa-sample-
evtx/YamatoSecurity/T1558.003_Steal or Forge Kerberos
Tickets\u{a0}Kerberoasting/Security.evtx"
3 / 509 [>-------------------------------------------------------------
----------------------------------------] 0.59 % 1s
Checking target evtx FilePath: "./hayabusa-sample-
evtx/YamatoSecurity/T1197_BITS Jobs/Windows-BitsClient.evtx"
4 / 509 [=>------------------------------------------------------------
----------------------------------------] 0.79 % 1s
Checking target evtx FilePath: "./hayabusa-sample-
evtx/YamatoSecurity/T1218.004_Signed Binary Proxy
Execution\u{a0}InstallUtil/sysmon.evtx"
5 / 509 [=>------------------------------------------------------------
----------------------------------------] 0.98 % 1s
```

- Output to a CSV format compatible to import into Timesketch:

```
hayabusa.exe csv-timeline -d ../hayabusa-sample-evtx --RFC-3339 -o
timesketch-import.csv -p timesketch -U
```

- Quiet error mode: By default, hayabusa will save error messages to error log files. If you do not want to save error messages, please add `-Q`.

`csv-timeline` command config files

`./rules/config/channel_abbreviations.txt`: Mappings of channel names and their abbreviations.

`./rules/config/default_details.txt`: The configuration file for what default field information (`%Details%` field) should be outputted if no `details:` line is specified in a rule. This is based on provider name and event IDs.

`./rules/config/eventkey_alias.txt`: This file has the mappings of short name aliases for fields and their original longer field names.

Example:

```
InstanceID,Event.UserData.UMDFHostDeviceArrivalBegin.InstanceId
IntegrityLevel,Event.EventData.IntegrityLevel
IpAddress,Event.EventData.IpAddress
```

If a field is not defined here, Hayabusa will automatically check under `Event.EventData` for the field.

`./rules/config/exclude_rules.txt`: This file has a list of rule IDs that will be excluded from use. Usually this is because one rule has replaced another or the rule cannot be used in the first place. Like firewalls and IDSes, any signature-based tool will require some tuning to fit your environment so you may need to permanently or temporarily exclude certain rules. You can add a rule ID (Example: `4fe151c2-`

`ecf9-4fae-95ae-b88ec9c2fca6`) to `./rules/config/exclude_rules.txt` in order to ignore any rule that you do not need or cannot be used.

`./rules/config/noisy_rules.txt`: This file a list of rule IDs that are disabled by default but can be enabled by enabling noisy rules with the `-n, --enable-noisy-rules` option. These rules are usually noisy by nature or due to false positives.

`./rules/config/target_event_IDs.txt`: Only the event IDs specified in this file will be scanned if the EID filter is enabled. By default, Hayabusa will scan all events, but if you want to improve performance, please use the `-E, --EID-filter` option. This usually results in a 10~25% speed improvement.

`json-timeline` command

The `json-timeline` command will create a forensics timeline of events in JSON or JSONL format. Outputting to JSONL will be faster and smaller file size than JSON so is good if you are going to just import the results into another tool like Elastic Stack. JSON is better if you are going to manually analyze the results with a text editor. CSV output is good for importing smaller timelines (usually less than 2GB) into tools like Excel or Timeline Explorer. JSON is best for more detailed analysis of data (including large results files) with tools like `jq` as the `Details` fields are separated for easier analysis. (In the CSV output, all of the event log fields are in one big `Details` column making sorting of data, etc... more difficult.)

```
Usage: json-timeline <INPUT> [OPTIONS]

Input:
  -d, --directory <DIR>  Directory of multiple .evtx files
  -f, --file <FILE>      File path to one .evtx file
  -l, --live-analysis    Analyze the local C:\Windows\System32\winevt\Logs
folder
  -J, --JSON-input       Scan JSON formatted logs instead of .evtx (.json
or .jsonl)

Output:
  -G, --GeoIP <MAXMIND-DB-DIR>  Add GeoIP (ASN, city, country) info to IP
addresses
  -H, --HTML-report <FILE>      Save Results Summary details to an HTML
report (ex: results.html)
  -L, --JSONL-output            Save the timeline in JSONL format (ex: -L
-o results.jsonl)
  -o, --output <FILE>           Save the timeline in JSON format (ex:
results.json)
  -p, --profile <PROFILE>       Specify output profile

Display Settings:
      --no-color            Disable color output
      --no-summary          Do not display Results Summary (slightly
faster speed)
  -q, --quiet               Quiet mode: do not display the launch banner
  -v, --verbose             Output verbose information
  -T, --visualize-timeline  Output event frequency timeline (terminal
needs to support unicode)
```

```
Filtering:
  -E, --EID-filter               Scan only common EIDs for faster speed
(./rules/config/target_event_IDs.txt)
      --enable-deprecated-rules  Enable rules marked as deprecated (no
longer included by default)
  -n, --enable-noisy-rules       Enable rules marked as noisy
(./rules/config/noisy_rules.txt)
  -e, --exact-level <LEVEL>      Scan for only specific levels
(informational, low, medium, high, critical)
      --exclude-status <STATUS>  Ignore rules according to status (ex:
experimental) (ex: stable,test)
  -m, --min-level <LEVEL>        Minimum level for rules (default:
informational)
      --timeline-end <DATE>      End time of the event logs to load (ex:
"2022-02-22 23:59:59 +09:00")
      --timeline-start <DATE>    Start time of the event logs to load (ex:
"2020-02-22 00:00:00 +09:00")

General Options:
  -Q, --quiet-errors                    Quiet errors mode: do not save
error logs
  -r, --rules <DIR/FILE>                Specify a custom rule directory
or file (default: ./rules)
  -c, --rules-config <DIR>              Specify custom rule config
directory (default: ./rules/config)
      --target-file-ext <EVTX_FILE_EXT>  Specify additional file
extensions (ex: evtx_data) (ex: evtx1,evtx2)
  -t, --threads <NUMBER>                Number of threads (default:
optimal number for performance)

Time Format:
      --European-time     Output timestamp in European time format (ex:
22-02-2022 22:00:00.123 +02:00)
      --ISO-8601          Output timestamp in ISO-8601 format (ex: 2022-
02-22T10:10:10.1234567Z) (Always UTC)
      --RFC-2822          Output timestamp in RFC 2822 format (ex: Fri, 22
Feb 2022 22:00:00 -0600)
      --RFC-3339          Output timestamp in RFC 3339 format (ex: 2022-
02-22 22:00:00.123456-06:00)
      --US-military-time  Output timestamp in US military time format (ex:
02-22-2022 22:00:00.123 -06:00)
      --US-time           Output timestamp in US time format (ex: 02-22-
2022 10:00:00.123 PM -06:00)
  -U, --UTC               Output time in UTC format (default: local time)
```

`json-timeline` command examples and config files

The options and config files for `json-timeline` are the same as `csv-timeline` but one extra option `-L, --JSONL-output` for outputting to JSONL format.

`logon-summary` command

You can use the `logon-summary` command to output logon information summary (logon usernames and successful and failed logon count). You can display the logon information for one evtx file with `-f` or multiple evtx files with the `-d` option.

```
Usage: logon-summary <INPUT> [OPTIONS]

Input:
  -d, --directory <DIR>  Directory of multiple .evtx files
  -f, --file <FILE>      File path to one .evtx file
  -l, --live-analysis    Analyze the local C:\Windows\System32\winevt\Logs
folder
  -J, --JSON-input       Scan JSON formatted logs instead of .evtx (.json
or .jsonl)

Output:
  -o, --output <FILE>  Save the Logon summary in CSV format (ex: logon-
summary.csv)

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner
  -v, --verbose   Output verbose information

General Options:
  -Q, --quiet-errors                    Quiet errors mode: do not save
error logs
  -c, --rules-config <DIR>              Specify custom rule config
directory (default: ./rules/config)
      --target-file-ext <EVTX_FILE_EXT>  Specify additional file
extensions (ex: evtx_data) (ex: evtx1,evtx2)
  -t, --threads <NUMBER>                Number of threads (default:
optimal number for performance)
```

`logon-summary` command example

- Print logon summary: `hayabusa.exe logon-summary -f Security.evtx`
- Save logon summary results: `hayabusa.exe logon-summary -d ../logs -o logon-summary.csv`

`metrics` command

You can use the `metrics` command to print out the total number and percentage of Event IDs seperated by Channels.

```
Usage: metrics <INPUT> [OPTIONS]

Input:
  -d, --directory <DIR>  Directory of multiple .evtx files
  -f, --file <FILE>      File path to one .evtx file
```

```
  -l, --live-analysis    Analyze the local C:\Windows\System32\winevt\Logs
folder
  -J, --JSON-input       Scan JSON formatted logs instead of .evtx (.json
or .jsonl)

Output:
  -o, --output <FILE>  Save the Metrics in CSV format (ex: metrics.csv)

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner
  -v, --verbose   Output verbose information

General Options:
  -Q, --quiet-errors                    Quiet errors mode: do not save
error logs
  -c, --rules-config <DIR>              Specify custom rule config
directory (default: ./rules/config)
      --target-file-ext <EVTX_FILE_EXT>  Specify additional file
extensions (ex: evtx_data) (ex: evtx1,evtx2)
  -t, --threads <NUMBER>                Number of threads (default:
optimal number for performance)
```

`metrics` command examples

- Print Event ID metrics from a single file: `hayabusa.exe metrics -f Security.evtx`
- Print Event ID metrics from a directory: `hayabusa.exe metrics -d ../logs`
- Save results to a CSV file: `hayabusa.exe metrics -f metrics.csv`

`metrics` command config file

The channel, event IDs and titles of the events are defined in `rules/config/channel_eid_info.txt`.

Example:

```
Channel,EventID,EventTitle
Microsoft-Windows-Sysmon/Operational,1,Process Creation.
Microsoft-Windows-Sysmon/Operational,2,File Creation Timestamp Changed.
(Possible Timestomping)
Microsoft-Windows-Sysmon/Operational,3,Network Connection.
Microsoft-Windows-Sysmon/Operational,4,Sysmon Service State Changed.
```

`pivot-keywords-list` command

You can use the `pivot-keywords-list` command to create a list of unique pivot keywords to quickly identify abnormal users, hostnames, processes, etc... as well as correlate events.

Important: by default, hayabusa will return results from all events (informational and higher) so we highly recommend combining the `pivot-keywords-list` command with the `-m, --min-level` option. For example, start off with only creating keywords from `critical` alerts with `-m critical` and then continue with `-m high`, `-m medium`, etc... There will most likely be common keywords in your results that will match on many normal events, so after manually checking the results and creating a list of unique keywords in a single file, you can then create a narrowed down timeline of suspicious activity with a command like `grep -f keywords.txt timeline.csv`.

```
Usage: pivot-keywords-list <INPUT> [OPTIONS]

Input:
  -d, --directory <DIR>  Directory of multiple .evtx files
  -f, --file <FILE>      File path to one .evtx file
  -l, --live-analysis    Analyze the local C:\Windows\System32\winevt\Logs
folder
  -J, --JSON-input       Scan JSON formatted logs instead of .evtx (.json
or .jsonl)

Output:
  -o, --output <FILENAMES-BASE>  Save pivot words to separate files (ex:
PivotKeywords)

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner
  -v, --verbose   Output verbose information

Filtering:
  -E, --EID-filter               Scan only common EIDs for faster speed
(./rules/config/target_event_IDs.txt)
      --enable-deprecated-rules  Enable rules marked as deprecated (no
longer included by default)
  -n, --enable-noisy-rules       Enable rules marked as noisy
(./rules/config/noisy_rules.txt)
  -e, --exact-level <LEVEL>      Scan for only specific levels
(informational, low, medium, high, critical)
      --exclude-status <STATUS>  Ignore rules according to status (ex:
experimental) (ex: stable,test)
  -m, --min-level <LEVEL>        Minimum level for rules (default:
informational)
      --timeline-end <DATE>      End time of the event logs to load (ex:
"2022-02-22 23:59:59 +09:00")
      --timeline-start <DATE>    Start time of the event logs to load (ex:
"2020-02-22 00:00:00 +09:00")

General Options:
  -Q, --quiet-errors                    Quiet errors mode: do not save
error logs
  -c, --rules-config <DIR>              Specify custom rule config
directory (default: ./rules/config)
      --target-file-ext <EVTX_FILE_EXT>  Specify additional file
extensions (ex: evtx_data) (ex: evtx1,evtx2)
```

```
  -t, --threads <NUMBER>                Number of threads (default:
optimal number for performance)
```

`pivot-keywords-list` command example

- Create a list of pivot keywords from critical alerts and save the results. (Results will be saved to `keywords-Ip Addresses.txt`, `keywords-Users.txt`, etc...):

```
hayabusa.exe pivot-keywords-list -d ../logs -m critical -o keywords
```

`pivot-keywords-list` config file

You can customize what keywords you want to search for by editing `./config/pivot_keywords.txt`. This is the default setting:

```
Users.SubjectUserName
Users.TargetUserName
Users.User
Logon IDs.SubjectLogonId
Logon IDs.TargetLogonId
Workstation Names.WorkstationName
Ip Addresses.IpAddress
Processes.Image
```

The format is `KeywordName.FieldName`. For example, when creating the list of `Users`, hayabusa will list up all the values in the `SubjectUserName`, `TargetUserName` and `User` fields.

`update-rules` command

The `update-rules` command will sync the `rules` folder with the Hayabusa rules github repository, updating the rules and config files.

```
Usage: update-rules [OPTIONS]

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner

General Options:
  -r, --rules <DIR/FILE>  Specify a custom rule directory or file
(default: ./rules)
```

`update-rules` command example

You will normally just execute this: `hayabusa.exe update-rules`

`level-tuning` command

The `level-tuning` command will let you tune the alert levels for rules, either raising or decreasing the risk level according to your environment.

```
Usage: level-tuning [OPTIONS]

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner

General Options:
  -f, --file <FILE>  Tune alert levels (default:
./rules/config/level_tuning.txt)
```

`level-tuning` command examples

- Normal usage: `hayabusa.exe level-tuning`
- Tune rule alert levels based on your custom config file: `hayabusa.exe level-tuning -f my_level_tuning.txt`

`level-tuning` config file

Hayabusa and Sigma rule authors will determine the risk level of the alert when writing their rules. However, the actual risk level may differ according to the environment. You can tune the risk level of the rules by adding them to `./rules/config/level_tuning.txt` and executing `hayabusa.exe level-tuning` which will update the `level` line in the rule file. Please note that the rule file will be updated directly.

> Warning: Anytime you run `update-rules`, the original alert level will overwrite any settings you have changed, so you will need to run the `level-tuning` command after every time you run `update-rules` if you want to change the levels.

`./rules/config/level_tuning.txt` sample line:

```
id,new_level
00000000-0000-0000-0000-000000000000,informational # sample level tuning
line
```

In this case, the risk level of the rule with an `id` of `00000000-0000-0000-0000-000000000000` in the rules directory will have its `level` rewritten to `informational`. The possible levels to set are `critical`, `high`, `medium`, `low` and `informational`.

`set-default-profile` command

```
Usage: set-default-profile [OPTIONS]
```

```
Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner

General Options:
  -p, --profile <PROFILE>  Specify output profile
```

`list-profiles` command

```
Usage: list-profiles [OPTIONS]

Display Settings:
      --no-color  Disable color output
  -q, --quiet     Quiet mode: do not display the launch banner
```

Advanced

GeoIP Log Enrichment

You can add GeoIP (ASN organization, city and country) information to SrcIP (source IP) fields and TgtIP (target IP) fields with the free GeoLite2 geolocation data.

Steps:

1. First sign up for a MaxMind account here.
2. Download the three `.mmdb` files from the download page and save them to a directory. The filenames should be called `GeoLite2-ASN.mmdb`, `GeoLite2-City.mmdb` and `GeoLite2-Country.mmdb`.
3. When running the `csv-timeline` or `json-timeline` commands, add the `-G` option followed by the directory with the MaxMind databases.

- When `csv-timeline` is used, the following 6 columns will be additionally outputted: `SrcASN`, `SrcCity`, `SrcCountry`, `TgtASN`, `TgtCity`, `TgtCountry`.
- When `json-timeline` is used, the same `SrcASN`, `SrcCity`, `SrcCountry`, `TgtASN`, `TgtCity`, `TgtCountry` fields will be added to the `Details` object, but only if they contain information.
- When `SrcIP` or `TgtIP` is localhost (`127.0.0.1`, `::1`, etc...), `SrcASN` or `TgtASN` will be outputted as `Local`.
- When `SrcIP` or `TgtIP` is a private IP address (`10.0.0.0/8`, `fe80::/10`, etc...), `SrcASN` or `TgtASN` will be outputted as `Private`.

GeoIP config file

The field names that contain source and target IP addresses that get looked up in the GeoIP databases are defined in `rules/config/geoip_field_mapping.yaml`. You can add to this list if necessary. There is also a filter section in this file that determines what events to extract IP address information from.

Automatic updates of GeoIP databases

MaxMind GeoIP databases are updated every 2 weeks. You can install the MaxMind `geoipupdate` tool here in order to automatically update these databases.

Steps on macOS:

1. `brew install geoipupdate`
2. Edit `/usr/local/etc/GeoIP.conf`: Put in your `AccountID` and `LicenseKey` you create after logging into the MaxMind website. Make sure the `EditionIDs` line says `EditionIDs GeoLite2-ASN GeoLite2-City GeoLite2-Country`.
3. Run `geoipupdate`.
4. Add `-G /usr/local/var/GeoIP` when you want to add GeoIP information.

Steps on Windows:

1. Download the latest Windows binary (Ex: `geoipupdate_4.10.0_windows_amd64.zip`) from the Releases page.
2. Edit `\ProgramData\MaxMind/GeoIPUpdate\GeoIP.conf`: Put in your `AccountID` and `LicenseKey` you create after logging into the MaxMind website. Make sure the `EditionIDs` line says `EditionIDs GeoLite2-ASN GeoLite2-City GeoLite2-Country`.
3. Run the `geoipupdate` executable.

Testing Hayabusa on Sample Evtx Files

We have provided some sample evtx files for you to test hayabusa and/or create new rules at https://github.com/Yamato-Security/hayabusa-sample-evtx

You can download the sample evtx files to a new `hayabusa-sample-evtx` sub-directory with the following command:

```
git clone https://github.com/Yamato-Security/hayabusa-sample-evtx.git
```

Hayabusa CSV and JSON/L Output

Output Profiles

Hayabusa has 5 pre-defined output profiles to use in `config/profiles.yaml`:

1. `minimal`
2. `standard` (default)
3. `verbose`
4. `all-field-info`
5. `all-field-info-verbose`
6. `super-verbose`
7. `timesketch-minimal`

8. `timesketch-verbose`

You can easily customize or add your own profiles by editing this file. You can also easily change the default profile with `set-default-profile --profile <profile>`. Use the `list-profiles` command to show the available profiles and their field information.

1. `minimal` profile output

`%Timestamp%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%RuleTitle%`, `%Details%`

2. `standard` profile output

`%Timestamp%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%RecordID%`, `%RuleTitle%`, `%Details%`

3. `verbose` profile output

`%Timestamp%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%MitreTactics%`, `%MitreTags%`, `%OtherTags%`, `%RecordID%`, `%RuleTitle%`, `%Details%`, `%RuleFile%`, `%EvtxFile%`

4. `all-field-info` profile output

Instead of outputting the minimal `details` information, all field information in the `EventData` section will be outputted.

`%Timestamp%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%RecordID%`, `%RuleTitle%`, `%AllFieldInfo%`, `%RuleFile%`, `%EvtxFile%`

5. `all-field-info-verbose` profile output

`all-field-info` profile plus tag information.

`%Timestamp%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%MitreTactics%`, `%MitreTags%`, `%OtherTags%`, `%RecordID%`, `%RuleTitle%`, `%AllFieldInfo%`, `%RuleFile%`, `%EvtxFile%`

6. `super-verbose` profile output

`verbose` profile plus all field information (`%AllFieldInfo%`). **(Warning: this will usually double the output file size!)**

`%Timestamp%`, `%Computer%`, `%Channel%`, `%Provider%`, `%EventID%`, `%Level%`, `%MitreTactics%`, `%MitreTags%`, `%OtherTags%`, `%RecordID%`, `%RuleTitle%`, `%RuleAuthor%`, `%RuleCreationDate%`, `%RuleModifiedDate%`, `%Status%`, `%Details%`, `%RuleFile%`, `%EvtxFile%`, `%AllFieldInfo%`

7. `timesketch-minimal` profile output

The `verbose` profile that is compatible with importing into Timesketch.

`%Timestamp%`, `hayabusa`, `%RuleTitle%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%MitreTactics%`, `%MitreTags%`, `%OtherTags%`, `%RecordID%`, `%Details%`, `%RuleFile%`, `%EvtxFile%`

8. `timesketch-verbose` profile output

The `super-verbose` profile that is compatible with importing into Timesketch. **(Warning: this will usually double the output file size!)**

`%Timestamp%`, `hayabusa`, `%RuleTitle%`, `%Computer%`, `%Channel%`, `%EventID%`, `%Level%`, `%MitreTactics%`, `%MitreTags%`, `%OtherTags%`, `%RecordID%`, `%Details%`, `%RuleFile%`, `%EvtxFile%`, `%AllFieldInfo%`

Profile Comparison

The following benchmarks were conducted on a 2018 MBP with 7.5GB of evtx data.

Profile	Processing Time	Output Filesize
minimal	16 minutes 18 seconds	690 MB
standard	16 minutes 23 seconds	710 MB
verbose	17 minutes	990 MB
timesketch-minimal	17 minutes	1015 MB
all-field-info-verbose	16 minutes 50 seconds	1.6 GB
super-verbose	17 minutes 12 seconds	2.1 GB

Profile Field Aliases

Alias name	Hayabusa output information
%Timestamp%	Default is `YYYY-MM-DD HH:mm:ss.sss +hh:mm` format. `<Event><System><TimeCreated SystemTime>` field in the event log. The default timezone will be the local timezone but you can change the timezone to UTC with the `--UTC` option.
%Computer%	The `<Event><System><Computer>` field.
%Channel%	The name of log. `<Event><System><Channel>` field.
%EventID%	The `<Event><System><EventID>` field.
%Level%	The `level` field in the YML detection rule. (`informational`, `low`, `medium`, `high`, `critical`)
%MitreTactics%	MITRE ATT&CK tactics (Ex: Initial Access, Lateral Movement, etc...).
%MitreTags%	MITRE ATT&CK Group ID, Technique ID and Software ID.
%OtherTags%	Any keyword in the `tags` field in a YML detection rule which is not included in `MitreTactics` or `MitreTags`.
%RecordID%	The Event Record ID from `<Event><System><EventRecordID>` field.
%RuleTitle%	The `title` field in the YML detection rule.

Alias name	Hayabusa output information
%Details%	The `details` field in the YML detection rule, however, only hayabusa rules have this field. This field gives extra information about the alert or event and can extract useful data from the fields in event logs. For example, usernames, command line information, process information, etc... When a placeholder points to a field that does not exist or there is an incorrect alias mapping, it will be outputted as `n/a` (not available). If the `details` field is not specified (i.e. sigma rules), default `details` messages to extract fields defined in `./rules/config/default_details.txt` will be outputted. You can add more default `details` messages by adding the `Provider Name`, `EventID` and `details` message you want to output in `default_details.txt`. When no `details` field is defined in a rule nor in `default_details.txt`, all fields will be outputted to the `details` column.
%AllFieldInfo%	All field information.
%RuleFile%	The filename of the detection rule that generated the alert or event.
%EvtxFile%	The evtx filename that caused the alert or event.
%RuleAuthor%	The `author` field in the YML detection rule.
%RuleCreationDate%	The `date` field in the YML detection rule.
%RuleModifiedDate%	The `modified` field in the YML detection rule.
%Status%	The `status` field in the YML detection rule.
%RuleID%	The `id` field in the YML detection rule.
%Provider%	The `Name` attribute in `<Event><System><Provider>` field.
%RenderedMessage%	The `<Event><RenderingInfo><Message>` field in WEC forwarded logs.

You can use these aliases in your output profiles, as well as define other event key alises to output other fields.

Level Abbrevations

In order to save space, we use the following abbrevations when displaying the alert `level`.

- `crit`: `critical`
- `high`: `high`
- `med` : `medium`
- `low` : `low`
- `info`: `informational`

MITRE ATT&CK Tactics Abbreviations

In order to save space, we use the following abbreviations when displaying MITRE ATT&CK tactic tags. You can freely edit these abbreviations in the `./config/mitre_tactics.txt` configuration file.

- `Recon` : Reconnaissance
- `ResDev` : Resource Development
- `InitAccess` : Initial Access
- `Exec` : Execution
- `Persis` : Persistence
- `PrivEsc` : Privilege Escalation
- `Evas` : Defense Evasion
- `CredAccess` : Credential Access
- `Disc` : Discovery
- `LatMov` : Lateral Movement
- `Collect` : Collection
- `C2` : Command and Control
- `Exfil` : Exfiltration
- `Impact` : Impact

Channel Abbreviations

In order to save space, we use the following abbreviations when displaying Channel. You can freely edit these abbreviations in the `./rules/config/channel_abbreviations.txt` configuration file.

- `App` : `Application`
- `AppLocker` : `Microsoft-Windows-AppLocker/*`
- `BitsCli` : `Microsoft-Windows-Bits-Client/Operational`
- `CodeInteg` : `Microsoft-Windows-CodeIntegrity/Operational`
- `Defender` : `Microsoft-Windows-Windows Defender/Operational`
- `DHCP-Svr` : `Microsoft-Windows-DHCP-Server/Operational`
- `DNS-Svr` : `DNS Server`
- `DvrFmwk` : `Microsoft-Windows-DriverFrameworks-UserMode/Operational`
- `Exchange` : `MSExchange Management`
- `Firewall` : `Microsoft-Windows-Windows Firewall With Advanced Security/Firewall`
- `KeyMgtSvc` : `Key Management Service`
- `LDAP-Cli` : `Microsoft-Windows-LDAP-Client/Debug`
- `NTLM` `Microsoft-Windows-NTLM/Operational`
- `OpenSSH` : `OpenSSH/Operational`
- `PrintAdm` : `Microsoft-Windows-PrintService/Admin`
- `PrintOp` : `Microsoft-Windows-PrintService/Operational`
- `PwSh` : `Microsoft-Windows-PowerShell/Operational`
- `PwShClassic` : `Windows PowerShell`
- `RDP-Client` : `Microsoft-Windows-TerminalServices-RDPClient/Operational`
- `Sec` : `Security`
- `SecMitig` : `Microsoft-Windows-Security-Mitigations/*`
- `SmbCliSec` : `Microsoft-Windows-SmbClient/Security`
- `SvcBusCli` : `Microsoft-ServiceBus-Client`
- `Sys` : `System`
- `Sysmon` : `Microsoft-Windows-Sysmon/Operational`
- `TaskSch` : `Microsoft-Windows-TaskScheduler/Operational`
- `WinRM` : `Microsoft-Windows-WinRM/Operational`

- `WMI:Microsoft-Windows-WMI-Activity/Operational`

Other Abbreviations

The following abbreviations are used in rules in order to make the output as concise as possible:

- `Acct` -> Account
- `Addr` -> Address
- `Auth` -> Authentication
- `Cli` -> Client
- `Chan` -> Channel
- `Cmd` -> Command
- `Cnt` -> Count
- `Comp` -> Computer
- `Conn` -> Connection/Connected
- `Creds` -> Credentials
- `Crit` -> Critical
- `Disconn` -> Disconnection/Disconnected
- `Dir` -> Directory
- `Drv` -> Driver
- `Dst` -> Destination
- `EID` -> Event ID
- `Err` -> Error
- `Exec` -> Execution
- `FW` -> Firewall
- `Grp` -> Group
- `Img` -> Image
- `Inj` -> Injection
- `Krb` -> Kerberos
- `LID` -> Logon ID
- `Med` -> Medium
- `Net` -> Network
- `Obj` -> Object
- `Op` -> Operational/Operation
- `Proto` -> Protocol
- `PW` -> Password
- `Reconn` -> Reconnection
- `Req` -> Request
- `Rsp` -> Response
- `Sess` -> Session
- `Sig` -> Signature
- `Susp` -> Suspicious
- `Src` -> Source
- `Svc` -> Service
- `Svr` -> Server
- `Temp` -> Temporary
- `Term` -> Termination/Terminated

- `Tkt` -> Ticket
- `Tgt` -> Target
- `Unkwn` -> Unknown
- `Usr` -> User
- `Perm` -> Permament
- `Pkg` -> Package
- `Priv` -> Privilege
- `Proc` -> Process
- `PID` -> Process ID
- `PGUID` -> Process GUID (Global Unique ID)
- `Ver` -> Version

Progress Bar

The progress bar will only work with multiple evtx files. It will display in real time the number and percent of evtx files that it has finished analyzing.

Color Output

The alerts will be outputted in color based on the alert `level`. You can change the default colors in the config file at `./config/level_color.txt` in the format of `level,(RGB 6-digit ColorHex)`. If you want to disable color output, you can use `--no-color` option.

Results Summary

Total events, the number of events with hits, data reduction metrics, total and unique detections, dates with the most detections, top computers with detections and top alerts are displayed after every scan.

Event Fequency Timeline

If you add the `-T, --visualize-timeline` option, the Event Frequency Timeline feature displays a sparkline frequency timeline of detected events. Note: There needs to be more than 5 events. Also, the characters will not render correctly on the default Command Prompt or PowerShell Prompt, so please use a terminal like Windows Terminal, iTerm2, etc...

Hayabusa Rules

Hayabusa detection rules are written in a sigma-like YML format and are located in the `rules` folder. The rules are hosted at https://github.com/Yamato-Security/hayabusa-rules so please send any issues and pull requests for rules there instead of the main hayabusa repository.

Please read the hayabusa-rules repository README to understand about the rule format and how to create rules.

All of the rules from the hayabusa-rules repository should be placed in the `rules` folder. `informational` level rules are considered `events`, while anything with a `level` of `low` and higher are considered `alerts`.

The hayabusa rule directory structure is separated into 2 directories:

- `builtin`: logs that can be generated by Windows built-in functionality.
- `sysmon`: logs that are generated by sysmon.

Rules are further seperated into directories by log type (Example: Security, System, etc...) and are named in the following format:

Please check out the current rules to use as a template in creating new ones or for checking the detection logic.

Hayabusa v.s. Converted Sigma Rules

Sigma rules need to first be converted to hayabusa rule format explained here. However, almost all hayabusa rules are compatible with the sigma format so you can use them just like sigma rules to convert to other SIEM formats. Hayabusa rules are designed solely for Windows event log analysis and have the following benefits:

1. An extra `details` field to display additional information taken from only the useful fields in the log.
2. They are all tested against sample logs and are known to work.

> Some sigma rules may not work as intended due to bugs in the conversion process, unsupported features, or differences in implementation (such as in regular expressions).

3. Extra aggregators not found in sigma, such as `|equalsfield` and `|endswithfield`.

Limitations: To our knowledge, hayabusa provides the greatest support for sigma rules out of any open source Windows event log analysis tool, however, there are still rules that are not supported:

1. Aggregation expressions besides `count` in the sigma rule specification.
2. Rules that use `|near`.

Other Windows Event Log Analyzers and Related Resources

There is no "one tool to rule them all" and we have found that each has its own merits so we recommend checking out these other great tools and projects and seeing which ones you like.

- APT-Hunter - Attack detection tool written in Python.
- Awesome Event IDs - Collection of Event ID resources useful for Digital Forensics and Incident Response
- Chainsaw - Another sigma-based attack detection tool written in Rust.
- DeepBlueCLI - Attack detection tool written in Powershell by Eric Conrad.
- Epagneul - Graph visualization for Windows event logs.
- EventList - Map security baseline event IDs to MITRE ATT&CK by Miriam Wiesner.
- Mapping MITRE ATT&CK with Window Event Log IDs - by Michel de CREVOISIER
- EvtxECmd - Evtx parser by Eric Zimmerman.
- EVTXtract - Recover EVTX log files from unallocated space and memory images.
- EvtxToElk - Python tool to send Evtx data to Elastic Stack.
- EVTX ATTACK Samples - EVTX attack sample event log files by SBousseaden.

- EVTX-to-MITRE-Attack - EVTX attack sample event log files mapped to ATT&CK by Michel de CREVOISIER
- EVTX parser - the Rust evtx library we use written by @OBenamram.
- Grafiki - Sysmon and PowerShell log visualizer.
- LogonTracer - A graphical interface to visualize logons to detect lateral movement by JPCERTCC.
- NSA Windows Event Monitoring Guidance - NSA's guide on what to monitor for.
- RustyBlue - Rust port of DeepBlueCLI by Yamato Security.
- Sigma - Community based generic SIEM rules.
- SOF-ELK - A pre-packaged VM with Elastic Stack to import data for DFIR analysis by Phil Hagen
- so-import-evtx - Import evtx files into Security Onion.
- SysmonTools - Configuration and off-line log visualization tool for Sysmon.
- Timeline Explorer - The best CSV timeline analyzer by Eric Zimmerman.
- Windows Event Log Analysis - Analyst Reference - by Forward Defense's Steve Anson.
- WELA (Windows Event Log Analyzer) - The swiff-army knife for Windows event logs by Yamato Security
- Zircolite - Sigma-based attack detection tool written in Python.

Windows Logging Recommendations

In order to properly detect malicious activity on Windows machines, you will need to improve the default log settings. We have created a seperate project to document what log settings need to be enabled as well as scripts to automatically enable the proper settings at https://github.com/Yamato-Security/EnableWindowsLogSettings.

We also recommend the following sites for guidance:

- JSCU-NL (Joint Sigint Cyber Unit Netherlands) Logging Essentials
- ACSC (Australian Cyber Security Centre) Logging and Fowarding Guide
- Malware Archaeology Cheat Sheets

Sysmon Related Projects

To create the most forensic evidence and detect with the highest accuracy, you need to install sysmon. We recommend the following sites and config files:

- TrustedSec Sysmon Community Guide
- Sysmon Modular
- SwiftOnSecurity Sysmon Config
- SwiftOnSecurity Sysmon Config fork by Neo23x0
- SwiftOnSecurity Sysmon Config fork by ion-storm

Community Documentation

English

- 2023/03/14 Rust Performance Guide for Hayabusa Developers by Fukusuke Takahashi

- 2022/06/19 Velociraptor Walkthrough and Hayabusa Integration by Eric Capuano
- 2022/01/24 Graphing Hayabusa results in neo4j by Matthew Seyer (@forensic_matt)

Japanese

- 2022/03/14 Rust Performance Guide for Hayabusa Developers by Fukusuke Takahashi
- 2022/01/22 Visualizing Hayabusa results in Elastic Stack by @kzzzzo2
- 2021/12/31 Intro to Hayabusa by itiB (@itiB_S144)
- 2021/12/27 Hayabusa internals by Kazuminn (@k47_um1n)

Contribution

We would love any form of contribution. Pull requests, rule creation and sample evtx logs are the best but feature requests, notifying us of bugs, etc... are also very welcome.

At the least, if you like our tool then please give us a star on GitHub and show your support!

Bug Submission

Please submit any bugs you find here. This project is currently actively maintained and we are happy to fix any bugs reported.

If you find any issues (false positives, bugs, etc...) with Hayabusa rules, please report them to the hayabusa-rules GitHub issues page here.

If you find any issues (false positives, bugs, etc...) with Sigma rules, please report them to the upstream SigmaHQ GitHub issues page here.

License

Hayabusa is released under GPLv3 and all rules are released under the Detection Rule License (DRL) 1.1.

Hayabusa uses GeoLite2 data created by MaxMind, available from https://www.maxmind.com.

Twitter

You can recieve the latest news about Hayabusa, rule updates, other Yamato Security tools, etc... by following us on Twitter at @SecurityYamato.