



# 資安攻防終極戰 - 端點偵測與回應

Marty 張益盛

[mchang@fortinet.com](mailto:mchang@fortinet.com)

# 苦 命 的 MIS

老闆的電腦又中毒了.....

叫他不要上有的沒有的網站,就是不聽!!

這次更慘了,中了勒索病毒 !!

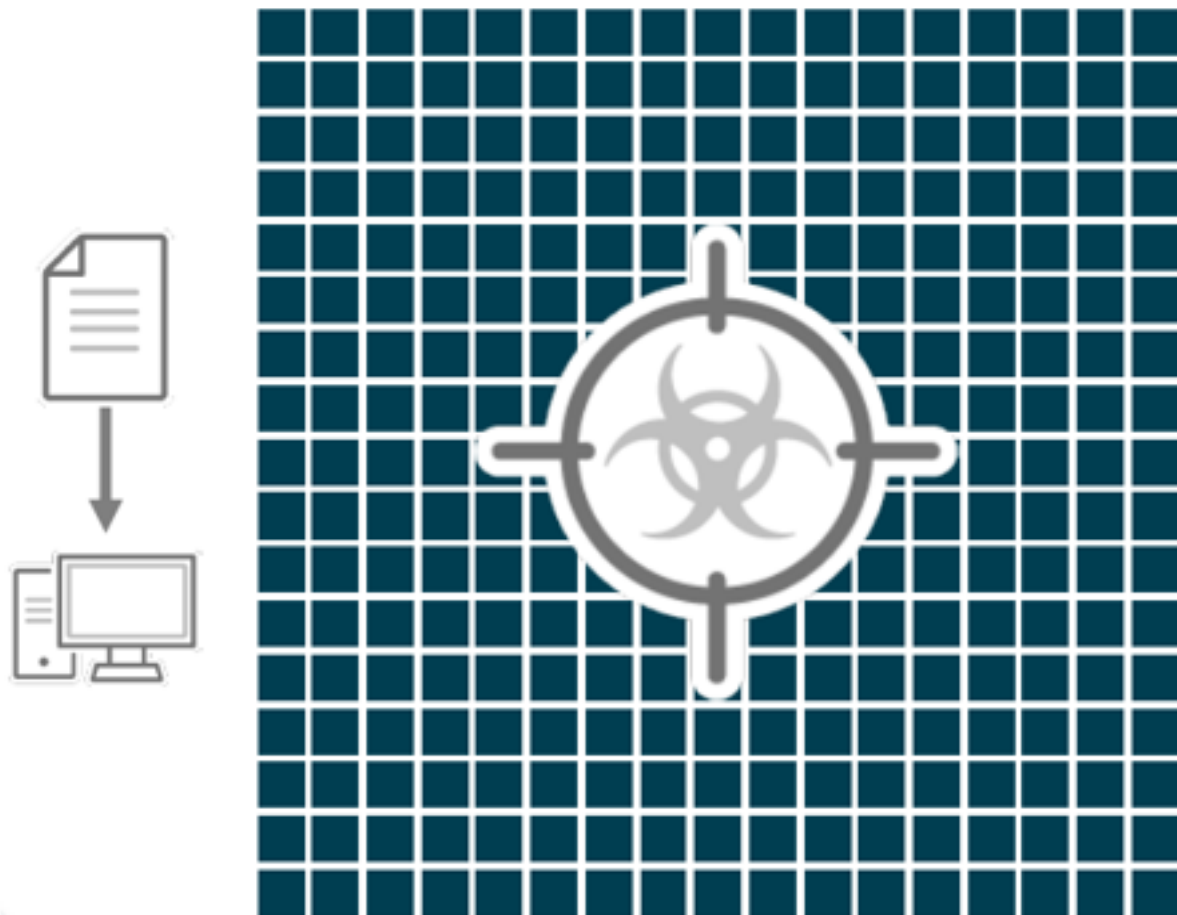
付 錢 < > 重 灌 ??



此相片 (作者: 未知的作者) 已透過 [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/4.0/) 授權

# 病毒防範的演進與攻防

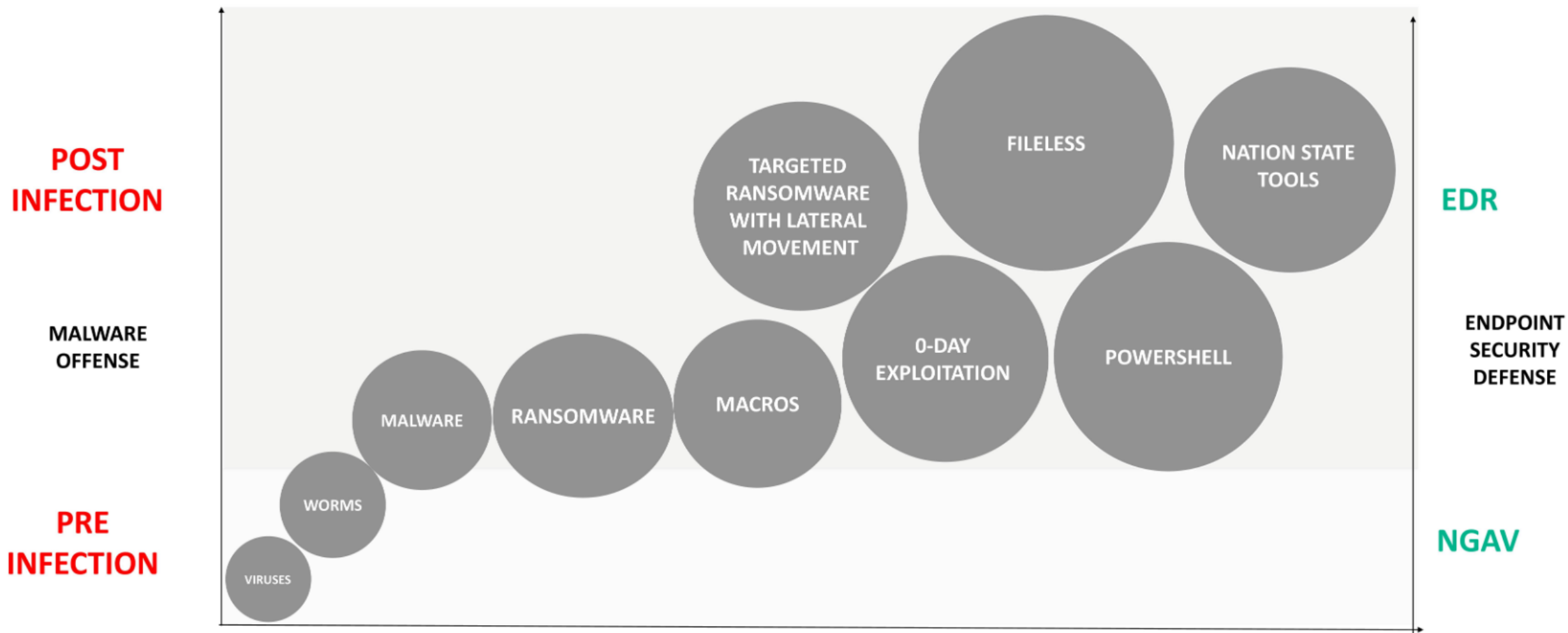
## Last Decade: Rise of Machine Learning



引進機器  
學習防護

(Very) Simplified  
Machine  
Learning Model

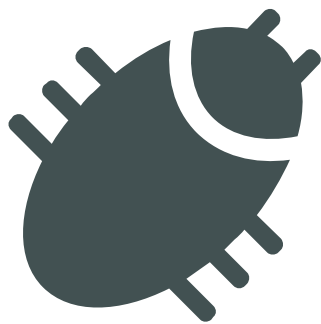
# 惡意軟體的演進與資安產品的因應之道



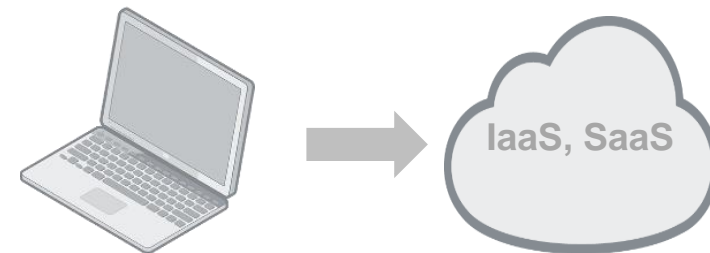
# 端點防護的挑戰



威脅層面  
與日俱進



系統弱點  
不斷暴露



雲端應用  
規避檢測

**Gartner**<sup>®</sup>

Notes/Sources:

1. Gartner Magic Quadrant for Endpoint Protection Platforms, August 2019.

The security mindset has shifted to acknowledge that prevention alone is not enough; security and risk management leaders must be able to more easily harden endpoints and perform more detailed incident response to resolve alerts.

# 資安人員痛苦之處—四大難題

## 1. 遭受病毒感染或被加密的電腦

- 是否有100%的保護機制
- 資安威脅面向 – 勒索病毒, 資料竊取, 營運中斷威脅
- 需要更好的偵測產品以及具備快速修復功能

## 2. 資安事件的處理方式– 價位, 災難復原所需的時間考量

- 想要建構一個沒有資安威脅的環境, 價位是否可以負擔的起?
- 告警轟炸時, 如何減少誤判
- 修復工具是否簡易使用, 是否需要手動介入
- 是否有效降低公司營運中斷時間, 是否需要長時間的系統回復, 減少使用者抱怨

## 3. 缺乏專業的資安人員, 受限於有限的資安與網管工具

- 需要強化公司的資訊安全監控中心功能
- 需要擴建資訊安全監控中心的廣度
- 缺乏時間可以對所有設備做系統漏洞的修復或系統的更新

## 4. 複雜的資安系統, 缺乏完整的資安解決方案

# 端點防護需要的是： 事前防範 VS 事後保護？

- 事前防範 = EPP(防毒軟體)  
資安工具,惡意軟體的過濾

## 防毒軟體

防毒引擎 (AV)

端點防火牆

應用程式控管 (伺服器)

網頁過濾

通訊埠與設備控管

弱點與補釘管理

- 事後保護 = EDR (偵測與回應)

記錄使用者的行為軌跡,偵測與回應異常行為

## EDR 偵測與回應防護

行為模型建立

惡意軟體遏制功能

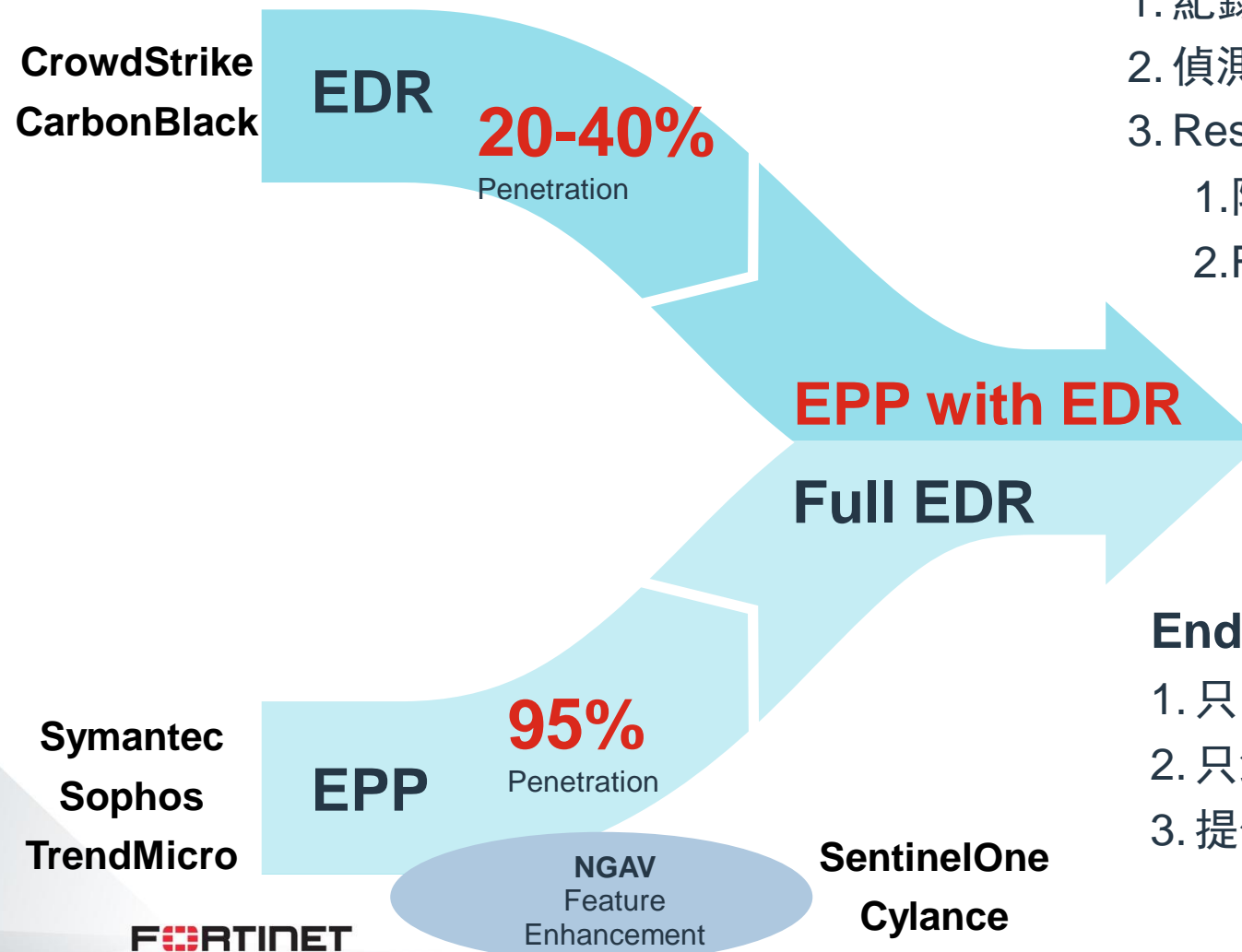
使用者行為軌跡紀錄,提供日後稽核

系統回復機制

# 端點防護的發展 —— 特徵值比對 VS 行為模式分析

## Endpoint Detection and Response (EDR)

1. 紀錄和儲存所有 endpoint 的行為
2. 偵測病毒事件
3. Response
  1. 阻止病毒和修復
  2. Forensic—偵查資安事件，並找尋其源頭



**FortiEDR 整合兩種防護機制**

## Endpoint Protection Platform (EPP)

1. 只防範 file-based 病毒
2. 只針對不信任的應用程式偵測和阻攔惡意的行為
3. 提供偵查及修復病毒能力，並且通報和告警



# 手動方式EDR vs 自動化EDR

## 手動方式 第一代 EDR

- 反應時間?
- 手動阻擋
- 系統重灌?
- 告警轟炸

vs

## 自動但不確實

- 誤判?
- 缺乏彈性 – 端點隔離
- 系統離線?
- 公司營運中斷

MDR/IR retainer

- Business disruption
- Lost of productivity
- Financial impact
- IT resources for remediation

# FortiEDR 自動化 vs. 手動方式 EDR



# 什麼是 FortiEDR—勒索病毒的終結者



提供次世代防毒機制功能並且整合惡意軟體的偵測與回應功能. 自動化腳本定義功能, 整合於 Fortinet 安全織網中

- **名列前茅的次世代端點保護產品**

多元的機器學習引擎並獲得 NSS Labs 端點防護產品的推薦名單之中

- **以行為分析基礎為出發點的EDR產品**

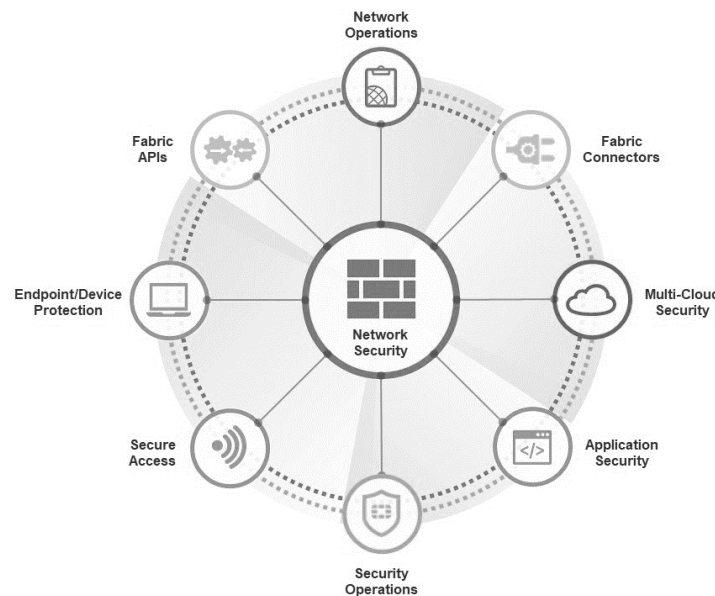
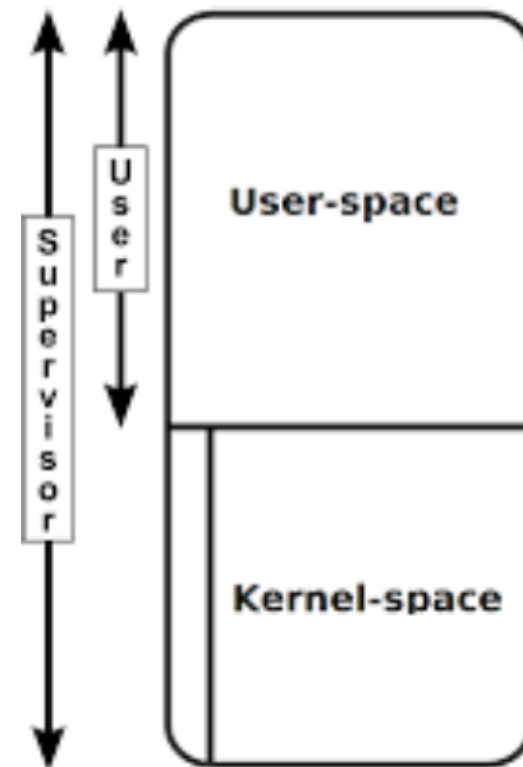
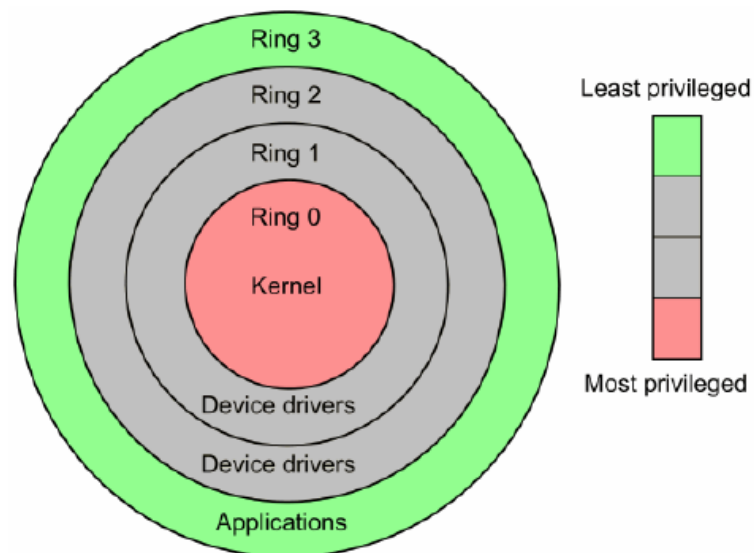
端點行為軌跡紀錄與分析, 監測任何可疑的行為

- **自動化的框架建構與學習**

以雲端應用為基礎開發出的深度學習與分析機制, 提供資安事件分類與自動化腳本功能. 面對資安威脅時, 提供全面性的防護

# 與眾不同的FortiEDR !!

- 運作於作業系統核心,全面性的保護
  - 程式啟動前的防護
  - 檔案滲透防範
  - 勒索病毒防範
- 自動化回復機制“腳本定義功能”
- 業界系統資源使用率最低
  - 少於 30MB 硬碟安裝空間
  - 少於 120MB 記憶體使用空間
- 高效率的離線保護機制
- **Fortinet--安全織網整合**



# FortiEDR – 即時的事前防範與事後阻擋與復原

## 事前防範



### 主動減少威脅

- 主動偵查未授權 IoT 及設備
- 應用程式評估
- 弱點分析
- 風險等級制的策略
- 虛擬補丁



### Pre-攻擊防護

- 系統核心層面防護
- 機器學習--不依賴特徵碼
- 應用程式之間溝通防護
- 遏止檔案的外流



### 第一時間偵測病毒

- 不亂通報病毒
- 提供惡意檔案分類
- 顯示 IOC's
- 提供完整的攻擊軌跡



### 防止檔案被加密及刪除

- 事後阻擋
- 阻擋對外連線
- 避免檔案遺失
- 避免檔案被滲透及加密



### 完整可視性

- 客製化事件回應報表
- 減少資安處理時間
- 針對非檔案類型攻擊有記憶體快照功能
- 大幅減少駭客源頭找尋



### 移除感染

- 系統回復機制
- 移除惡意檔案
- 系統無須重新安裝,確保服務正常
- 支援 REST API output

# 進階的端點「防護」、「偵測」、「回應」與「預測」

防護	偵測	回應	預測
檔案類型的病毒 沒有特徵碼的 預防惡意指令的攻擊 偵測和防禦漏洞弱點	針對檔案行為及非檔案 行為的行為模式的偵測	快速回應資安事件 遏制惡意事件 回覆機制 偵查機制 MDR 服務 [可選擇]	找出潛在的 威脅來源
<i>完整保護</i> <ul style="list-style-type: none"><li>事前的防範與 事後的保護</li></ul>	<i>自動解除資安威脅</i> <ul style="list-style-type: none"><li>避免勒索病毒的迫害</li><li>持續不斷的偵測與分 析營運不中斷</li></ul>	<i>自動化回應與系統回復</i> <ul style="list-style-type: none"><li>腳本化的應對機制</li><li>記憶體快照功能,提供 日後稽核與調查</li></ul>	<i>避免危害的發生</i> <ul style="list-style-type: none"><li>找出非法的設備 與IoT設備的威脅</li><li>虛擬補釘功能</li></ul>

FortiEDR



# Fortinet 安全織網整合效益

## 現階段整合產品及功能

- FortiGate

- 資安威脅情資分享  
惡意檔案內容,目的IP

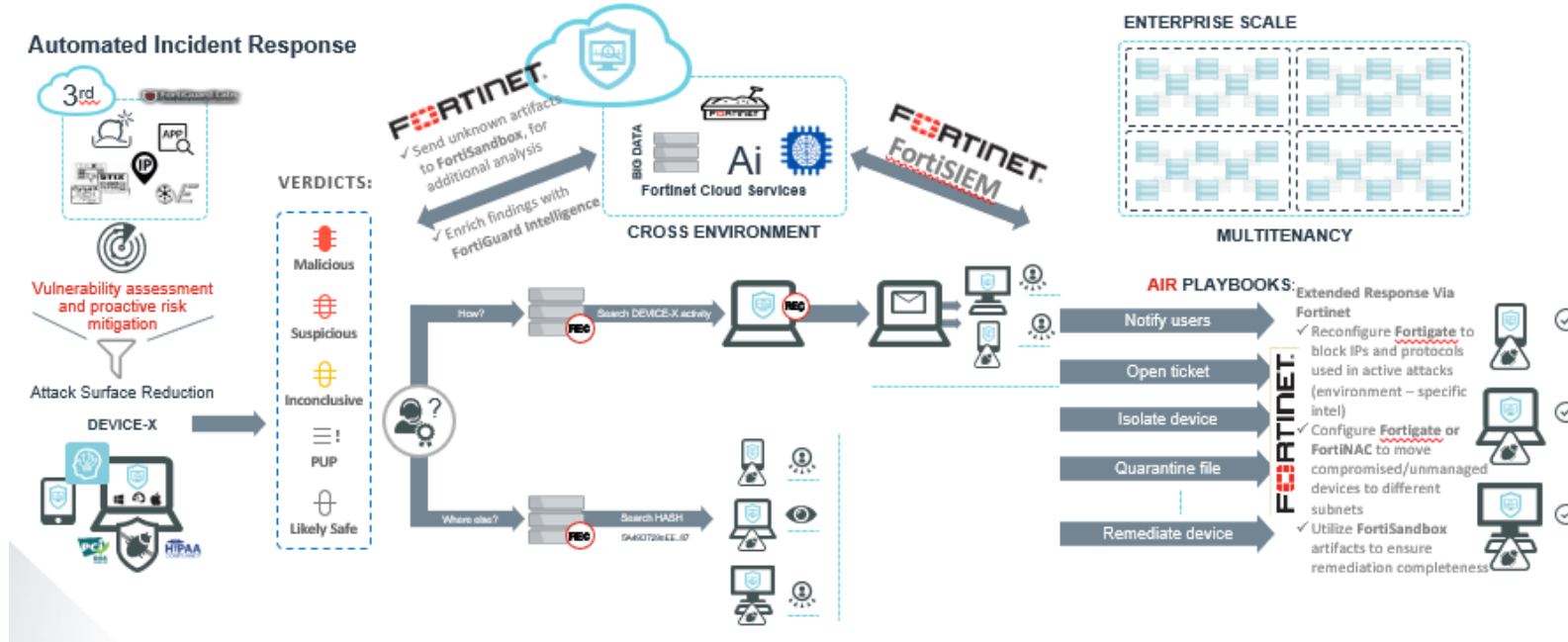
- FortiSIEM – 雙向整合

- 端點告警 → FortiSIEM  
告警分流/ 事件確認

SIEM → 訊息的傳遞與確認

- FortiSandbox

- 可疑檔案的分析  
病毒特徵值的共享



## 未來整合產品

- FortiNAC

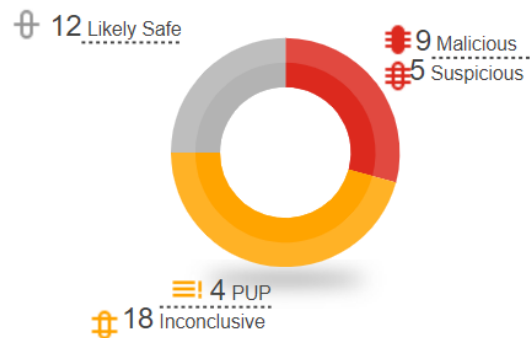
- FortiInsight

# 管理介面

Generate Reports

## SECURITY EVENTS

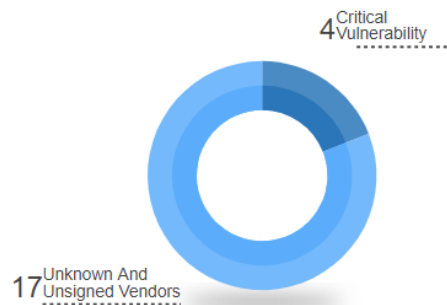
Unhandled Devices



34 Devices protected by Fortinet

## COMMUNICATION CONTROL

Unresolved Communicating Applications

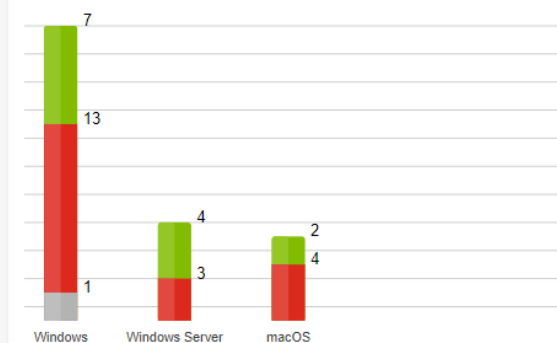


687 Applications monitored by Fortinet

## COLLECTORS

View by operating system

- Running
- Degraded
- Disconnected
- Pending reboot
- Disabled

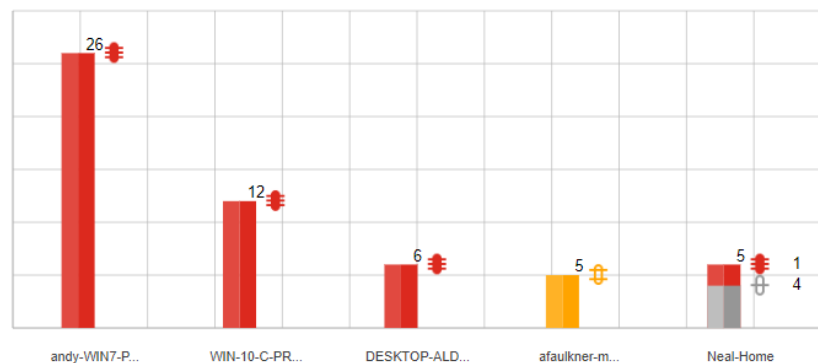


## MOST TARGETED

Events (#)



- Malicious
- Suspicious
- PUP
- Inconclusive
- Likely Safe



## EXTERNAL DESTINATIONS

Devices

Month



## SYSTEM COMPONENTS

- Running
- Degraded
- Disconnected





# 資安事件的分類與簡化, 增加 SOC 效用

### EVENTS

Showing 1-17/99 Search Event

Archive Mark As... Export Handle Event Delete Forensics Exception Manager

☐ All	ID	DEVICE	PROCESS	CLASSIFICATION	DESTINATIONS	RECEIVED	LAST UPDATED
☐	45a4bd970485ca539c95d746f8e8866f868972dcf7f...			Malicious		11-Feb-2020, 09:56:02	
☐	bad-file.exe (10 events)			Malicious		27-Mar-2020, 08:49:41	
☐	bad-stuff.exe (2 events)			Malicious		27-Mar-2020, 08:44:09	
☐	CardHunter.exe (1 event)			Malicious		22-Feb-2020, 16:55:36	
☐ ▶	400415	Hub-PC	CardHunter.exe	Malicious	5 destinations	22-Feb-2020, 16:55:36	22-Feb-2020, 16:55:47
▶ User: Hub-PC\Hub Certificate: Unsigned Process path: \Device\HarddiskVolume3\Program Files (x86)\Steam\steamapps\common\CardHunter\CardHunter.exe Raw data items: 5							
☐	click_me.exe (6 events)			Malicious		03-Mar-2020, 18:20:46	
☐	EndlessSpace2.exe (2 events)						
☐	explorer.exe (2 events)						
☐	Main.exe (1 event)			Malicious		22-Feb-2020, 14:40:32	
☐	MediaMallServer.exe (3 events)			Malicious		22-Mar-2020, 13:07:53	
☐	RainbowSix.exe (3 events)			Malicious		20-Dec-2019, 13:42:35	
☐	ransom2.exe (3 events)			Malicious		27-Mar-2020, 06:32:09	

Automatically aggregate events across devices

### CLASSIFICATION DETAILS

Malicious **FORTINET**  
By ReversingLabs

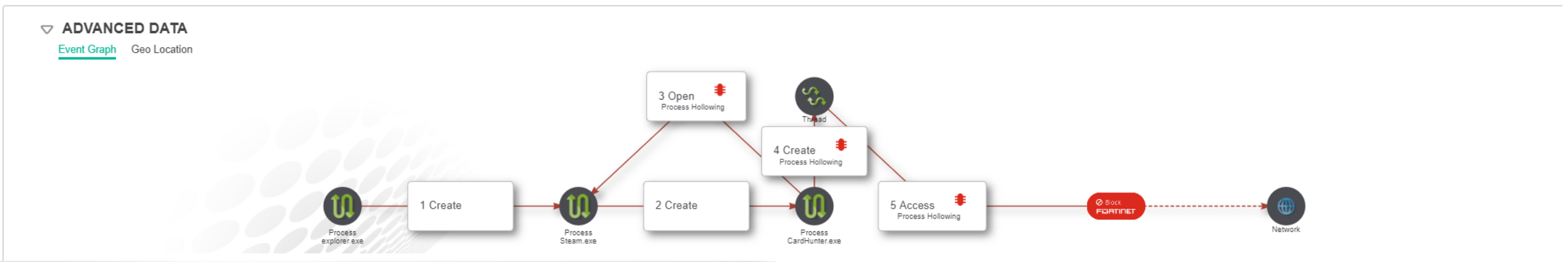
Threat name: Unknown  
Threat family: Unknown  
Threat type: Unknown

### History





- Malicious, by FortinetCloudServices, on 26-Mar-2020, 07:00:37
  - Simulation Process ...ter\CardHunter.exe\ with PID 256 was terminated at device Hub-PC 4 times
  - Process ...ter\CardHunter.exe\ with PID 256 was terminated at device Hub-PC 4 times

### Triggered Rules

- ccassidy Exfiltration Policy



# 資安政策的設定與套用

POLICY NAME		
 Execution Prevention	FORTINET	<input type="checkbox"/>
 Exfiltration Prevention	FORTINET	<input type="checkbox"/>
 Ransomware Prevention	FORTINET	<input checked="" type="checkbox"/>
 Device Control	FORTINET	<input type="checkbox"/>

Malicious File Detected	<input checked="" type="checkbox"/> Block
Privilege Escalation Exploit Detected - A malicious escalation of privileges was detected	<input checked="" type="checkbox"/> Block
Sandbox Analysis - File was sent to the sandbox for analysis	<input type="checkbox"/> Log
Access to critical system information	<input checked="" type="checkbox"/> Block
Bruteforce Attempt Detected	<input type="checkbox"/> Log
Debugged Process - Connection from a Debugged Process	<input type="checkbox"/> Log
File Encryptor - Suspicious file modification	<input checked="" type="checkbox"/> Block
Hidden Process - Connection Attempt from a Hidden Process	<input checked="" type="checkbox"/> Block
Injected Executable - Connection Attempt from an Injected Executable	<input checked="" type="checkbox"/> Block
USB Application Specific Device Detected	<input checked="" type="checkbox"/> Block
USB Audio Device Detected	<input checked="" type="checkbox"/> Block
USB Audio/Video Device Detected	<input checked="" type="checkbox"/> Block

# 資安事件 → 腳本化的設定,彈性的處理方式

## AUTOMATED INCIDENT RESPONSE - PLAYBOOKS

Clone Playbook Set Mode Assign Collector Group Delete

NAME MALICIOUS SUSPICIOUS PUP INCONCLUSIVE LIKELY SAFE

Default Playbook **FORTINET**

### NOTIFICATIONS (sent in protection and simulation modes)

Send mail notification	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------

Send syslog notification	Syslog must be defined. Please contact Administrator.				
--------------------------	---	--	--	--	--

Open ticket	Open ticket must be defined. Please contact Administrator.				
-------------	--	--	--	--	--

### INVESTIGATION

Isolate device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
----------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Move device to the High Security group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

### REMEDIATION

Terminate process	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------	-------------------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Delete file	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Clean persistent data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-----------------------	-------------------------------------	--------------------------	--------------------------	--------------------------	--------------------------

# 應用程式控管

## APPLICATIONS

All ▼ | Mark As... ▼ | Delete | Modify Action | Advanced Filter | Export ▼

Showing 1-10/24 ◀ ▶

<input type="checkbox"/>	APPLICATION		VENDOR	REPUTATION	VULNERABILITY	FIRST SEEN	LAST SEEN
<input checked="" type="checkbox"/>	Host Process for Windows Services	Signed	Microsoft Corporation	5	Unknown	09-May-2020	10-May-2020
<input checked="" type="checkbox"/>	Google Chrome	Signed	Google	5	Critical	09-May-2020	10-May-2020
<input type="checkbox"/>	81.0.4044.138			5	Critical	09-May-2020	10-May-2020
<input checked="" type="checkbox"/>	Microsoft Windows Malicious Soft..	Signed	Microsoft Corporation	5	Unknown	09-May-2020	09-May-2020
<input checked="" type="checkbox"/>	WMI Provider Host	Signed	Microsoft Corporation	5	Unknown	09-May-2020	09-May-20...
<input checked="" type="checkbox"/>	Windows Defender SmartScreen	Signed	Microsoft Corporation	5	Unknown	09-May-2020	10-May-2020

## ADVANCED DATA

### APPLICATION INFO

Application Description: Google Chrome

First Connection Time: 09-May-2020, 18:47:44

Last Connection Time: 10-May-2020, 20:59:15

Process Names: \Device\HarddiskVolume2\Program Files (x86)\Google\Chrome\Application...

### APPLICATION USAGE

Total System: 442

Default Collector Group 305

## APPLICATION DETAILS

Google Chrome

### Policies

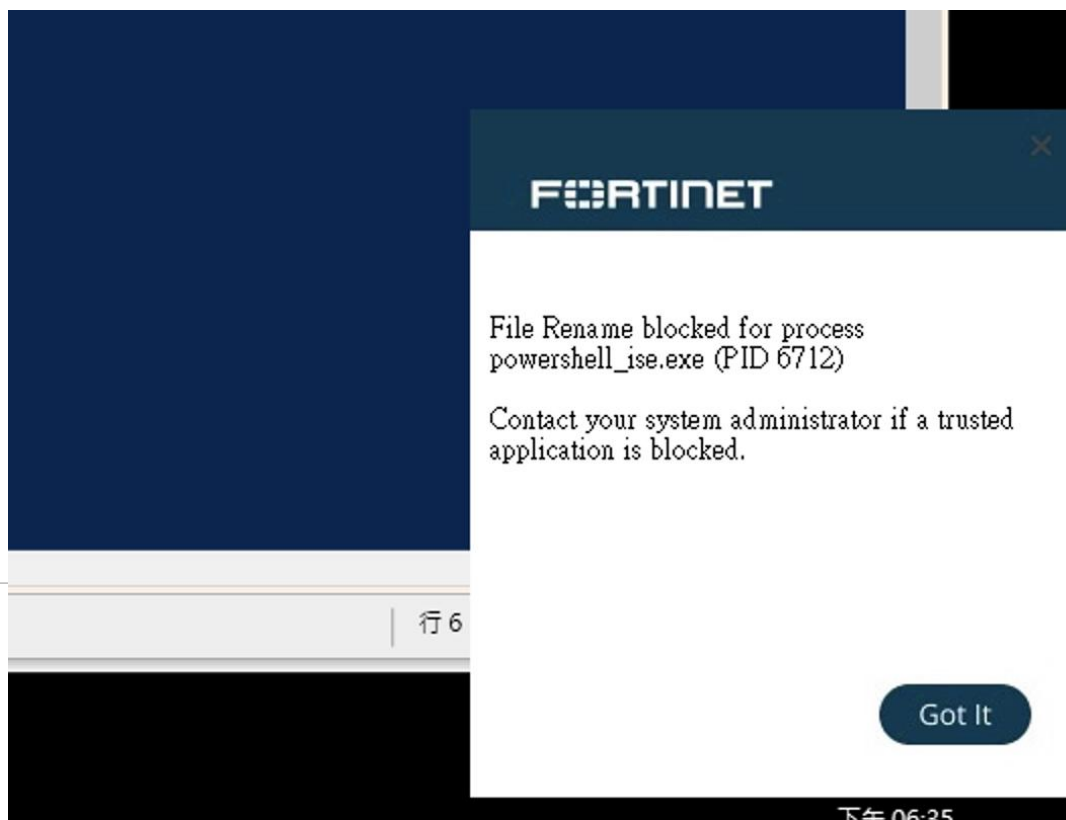
Policy	Action
Default Communication Control ...	Allow According to policy
Servers Policy	Deny According to policy
Isolation Policy	Deny According to policy

### DESTINATIONS

IP	CONNECTION TIME	COUNTRY
216.58.200.34	10-May-2020, 20:59:15	United States
103.43.90.53	10-May-2020, 20:59:15	Australia
35.212.182.232	10-May-2020, 20:59:15	United States

# 勒索病毒的偵測與防護

<input type="checkbox"/> powershell_ise.exe (1 event)	Inconclusive	10-May-2020, 12:35:45
<input type="checkbox"/> 882442 DESKTOP-Q3SOD26 powershell_ise.exe	Inconclusive 2 destinations	10-May-2020, 12:35:45 10-May-2020, 12:36:41
User: DESKTOP-Q3SOD26\user Certificate: Signed Process path: C:\Windows\System32\WindowsPowerShell\v1.0\powershell_ise.exe Raw data items: 2		
<input type="checkbox"/> LE.dll (1 event)	Malicious	10-May-2020, 10:01:19



Inconclusive **FORTINET**  
By [ReversingLabs](#)

Threat name: Unknown  
Threat family: Unknown  
Threat type: Unknown

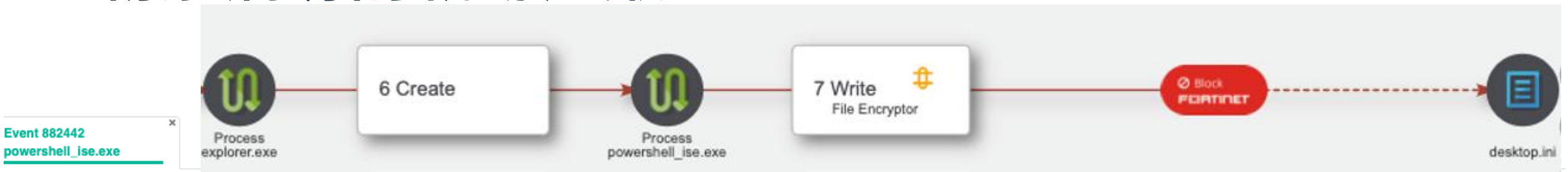
## History

Inconclusive, by Fortinet , on 10-May-2

## Triggered Rules

- ▾ Ransomware Prevention
  - File Encryptor - Suspicious file modi

# 勒索病毒的軌跡追蹤



Event 882442  
powershell\_ise.exe

Add Exception
Retrieve
Remediate
Isolate
Export

DEVICE	OS	PROCESS	CLASSIFICATION	DESTINATION	RECEIVED	LAS
DESKTOP-Q3SOD26	Windows 10 Pro	powershell_ise.exe	Suspicious	File Write Access	10-May-2020, 12:35:51	10-M
RAW ID: 152444687	Process Type: 64 bit	Certificate: Signed	Process Path: C:\Windows\System32\WindowsPowerShell\v1.0\powershell_ise.exe	User: DESI		



## PARENT PROCESS CREATION

Process ID: 4156  
 Company: Microsoft Corporation  
 Product:  
 Source Process: \Device\HarddiskVolume2\Windows\explorer.exe  
 Description:  
 Comments:  
 Target: ...Windows\System32\WindowsPowerShell\v1.0\powershell\_ise.exe  
 Version:  
 Command Line:

EXECUTABLE FILE NAME	WRITABLE	CERTIFICATE	REPETITIONS	BASE ADDRESS	END
<input type="checkbox"/> Main -\Device\HarddiskVolume2\Windows\explorer.exe	No	Signed			

# 資安事件後續的追蹤與處置

Event 464478  
trojen.exe

Add Exception
Retrieve
Remediate
Isolate
Export

Raw Data Items: All Selected | 1/1

DEVICE	OS	PROCESS	CLASSIFICATION	DESTINATION	RECEIVED	LAST SEEN
WIN-10-C-PRO	Windows 10 Pro	trojen.exe	Malicious	File Write Access	27-Mar-2020, 06:43:50	27-Mar-2020, 06:43:50
RAW ID: 1636460765	Process Type: 32 bit	Certificate: Unsigned	Process Path: \Device\HarddiskVolume4\Users\administrator\Downloads\le796e64c5f9a7568773bd2924e992172f222957e039ab7b41ade44865d0a48e5\trojen.exe	User: EVILBAST\Administrator	Count: 1	



**OPENED PROCESS**

Process ID: 3076  
 Source Process: ...2924e992172f222957e039ab7b41ade44865d0a48e5\trojen.exe  
 Target: \Device\HarddiskVolume4\Windows\explorer.exe

Company: Description: Product: Process Hash (SHA-1): 11D455FBFD9960483454BEF04F311FAB27B2AD75  
 Version: Command Line: Process Owner: EVILBAST\Administrator

EXECUTABLE FILE NAME	WRITABLE	CERTIFICATE	REPETITIONS	BASE ADDRESS	END ADDRESS	HASH
Main - ...Downloads\le796e64c5f9a7568773bd2924e992172f222957e039ab7b41ade44865d0a48e5\trojen.exe	No	Unsigned				11D455FBFD9960483454BEF04F...
\Device\HarddiskVolume4\Windows\System32\wow64.dll	No	Signed	2	0x7f8b13c0000	0x7f8b1415000	CA735FE238827F24C7F604D59B...
\Device\HarddiskVolume4\Windows\System32\wow64cpu.dll	No	Signed	2	0x77480000	0x77489000	7E891C2C24024884FDCFC03CD...
\Device\HarddiskVolume4\Windows\System32\wow64.dll	No	Signed	2	0x7f8b13c0000	0x7f8b1415000	CA735FE238827F24C7F604D59B...
\Device\HarddiskVolume4\Windows\System32\ntdll.dll	No	Signed	5	0x7f8b1600000	0x7f8b17f0000	C67C3C415EBDF8C51C80E098...
Runtime Generated Code	No	Unsigned	1	0x400000	0x42a000	612D23EE6409A3974425518D65...

# 資安事件災害復原

Dashboard navigation: DASHBOARD | EVENT VIEWER 133 | FORENSICS | COMMUNICATION CONTROL 682 | SECURITY SETTINGS | INVENTORY 2 | ADMINISTRATION 177 | Protection | eborbolla

Event 469778 taskeng.exe

Process details for andy-WIN7-PC (OS: Windows 7 Ultimate, Process: taskeng.exe):

- RAW ID: 1731790478
- Process Type: 64 bit
- Certificate: U

Timeline: PARENT PROCESS CREATION | SERVICES ACCESS ATTEMPT

Event Details: SERVICES ACCESS ATTEMPT (Process ID: 3480, Source Process: \Device\HarddiskVolume2\Windows\System32\vssadmin.exe, Target: SHADOW COPY ACCESS)

Remediate Device Dialog: REMEDIATE DEVICE ANDY-WIN7-PC (vssadmin.exe, EVENT 469778, PROCESS ID 3480)

- Terminate process vssadmin.exe
- Remove 1 selected executable file
- Delete file at path: c:\templabcd.exe
- Handle persistent data (registry)
  - Remove key
  - Modify registry value: (Default)
  - Remove value
  - Update value data to (A key or value that do not exist will automatically be created)

Raw Data Items: All | Selected | 1/1

RECEIVED	LAST SEEN	Count
7-Mar-2020, 08:50:21	27-Mar-2020, 08:50:20	2

BASE ADDRESS	END ADDRESS	HASH
0x76e10000	0x76f2f000	09FAFEB1B8404124B33C44440B...
0x77efea0000	0x77efeca1000	3F2847EF7677FEF8B1C1D48370...
0x76f30000	0x770db000	3D62555687087F3DD8C628752A...
0x77efea0000	0x77efeca1000	31BB9C5389A91733A101E06FBA...
0x76f30000	0x770db000	3D62555687087F3DD8C628752A...



# FortiReponse (MDR)

EPP

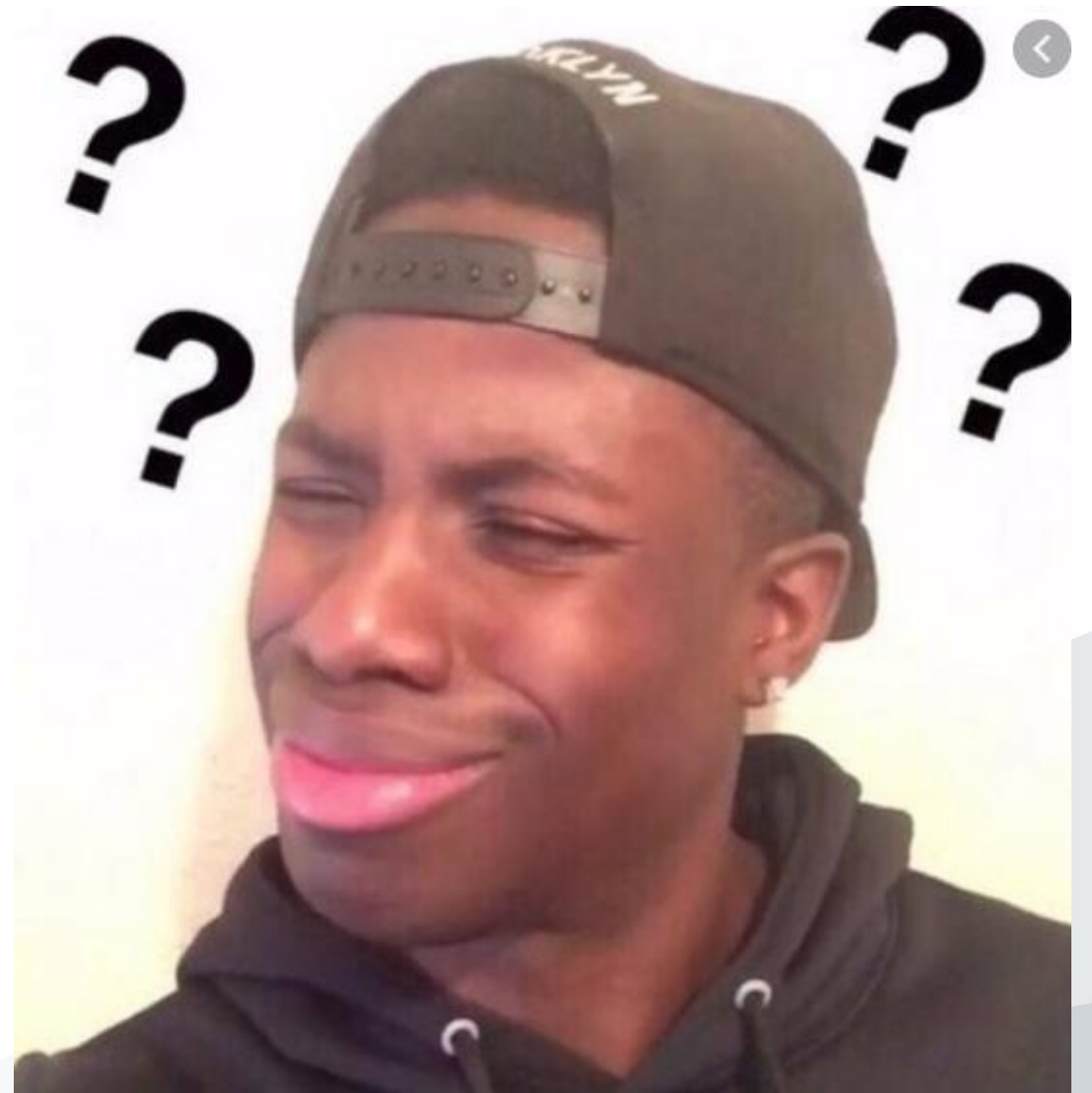
EDR

勒索病毒

應用程式控管

手動 自動

??????



# FortiResponder 團隊



## Fortinet 團隊專精於以下：

- 惡意軟件找尋/逆向工程
- 專精多種Script 語言
- 資安事件的調查
- 資安事件的處理
- 中文諮詢服務

# FortiResponder 事件分析



**Per Incident**

## Forensics and Incident Response

SOW-based remote forensic analysis  
and incident response

*Ideal for customers running FortiEDR who do not  
already have continuous monitoring  
subscriptions*

協助客戶針對資安事件：

1. 分析
2. 回應
3. 遏制
4. 復

目標在於大量減少客戶  
在資安反應時的時間

# FortiResponder 服務





# FortiResponder 優勢



7 X 24小時 365日  
資安事件監控



提高資安事件處理效率



減少分析時間

# 市面上EDR的進階功能比較

功能項目	Fortinet	CrowdStrike	CarbonBlack	SentinelOne	Symantec and other traditional EPP
機器學習病毒行為 (事前防範/ 程式執行過程中保護機制)	Yes	Yes	Yes	Yes	Yes
完整離線保護	Yes	Yes*(僅特徵值比對)	Yes*(僅特徵值比對)	Yes	Yes
支援離線保護	Yes	No	No	No	Yes
偵測	Yes	Yes	Yes	Yes	Yes
資料保存期限	6 month	7 days	30 days	3 month	??
即時的 <u>系統化政策與自動化回覆機制</u>	Yes	No (manual)	No (manual)	No (manual)	No
受感染電腦不須離線也可修復	Yes	No	No	No	No
弱點掃描	Yes	Yes	No	Yes	No
虛擬補丁機制	Yes	No	No	No	No
雲端架構	Yes	Yes	Yes	Yes	Cloud/ Hybrid
本地端佈建機制	Yes	No	Yes* (legacy)	Yes (limited)	Yes* (no feature parity)
支援舊的視窗作業系統(XP, 2003)	Yes	No	White-listing only	No	Yes (SEP only)

# FortiClient 與 FortiEDR 差異化比較

## FortiClient

## FortiEDR

- 安全織網架構成員
  - 端點保護機制Endpoint telemetry
  - 應用程式資產管理
  - 動態存取管控
- 安全的遠端存取功能
  - VPN 連線功能 – 支援SSL-VPN, IPsec
  - SSO
- 端點防護功能
  - 弱點掃描 / 弱點補丁
  - CPRL – 防毒
  - 系統漏洞防禦
  - 網頁過濾
  - 應用程式控管 (SaaS Control)
- 端點防護與勒索病毒阻擋
  - 機器學習-病毒防護 + 行為分析
  - 阻擋非檔案類型的攻擊與防護
  - 應用程式資產管理
  - 弱點掃描 / 弱點補丁
  - 資料保護
- 端點偵測與回應
  - 減少潛在的攻擊來源 – 虛擬補丁
  - 程式執行偵測與保護 (行為模式分析)
  - 系統化與自動化的資安事件處理與系統回復
- 資安事件的的調查與協助
- 威脅防範
- 提供FortiResponder MDR 服務

Q & A



**FORTINET**<sup>®</sup>