White Paper

Managed Intelligence™

Shaping a Threat Hunt Program to Operationalize Data, Resource Accordingly, and Protect the Business

Actionable Intelligence

Deriving actionable intelligence to enhance organizational security is a challenge faced by all global companies and often further complicated by intertwined networks resulting from mergers and acquisitions. With the volumes of data, it's important to shape a threat hunting program to be able to consume and operationalize data collected from various sources.

Background

In today's threat landscape, standard tools and predefined compliance and risk policies are typically far too conventional to provide the appropriate risk deterrence against the threats an organization faces.

While many organizations have a plethora of tools through their network and application infrastructure that push data into a SIEM, they may not be appropriately scoped to collect the data necessary to detect likely threats.

Beyond detecting threats, organizations also need to identify risks and have the ability to address them. Understandably, not all organizations have the necessary resources to address risks; they might not even know the risks exist.

There are often cases where a tool deployment or policy change is the ultimate solution to an organization's security problems. However, threat actors have evolved just as defenders have. Tools can be subverted, and policies may be misconfigured, allowing attackers access to a network while the organization has a false sense of security.

Enter threat hunting, the proactive function of an organization's security program. The Threat Hunt team is mandated with discovering threat actors that have already bypassed currently deployed tools and policies.

This article describes how Nisos develops such a program and implements the proper metrics that will eventually allow an organization to operationalize many streams of intelligence to properly mitigate risk for the business.

Starting Out - Identify the Threat

Threat actors vary based on TTPs, targets, and motives, summarized in the below chart:

Threat Actor	Methods	Motives
Nation State	Highly advanced and difficult to detect. May utilize human enabled operations in order to obtain access into networks.	Espionage, sabotage, cyber war
Criminal Group	Often use "spray and pray" tactics. Will seek out targets of opportunity. May use commoditized exploit kits to develop tools.	Financial
Hacktivist	Denial of Service attacks, webpage defacement, hacking into social media accounts.	Political, Ideological
Insider Threat	Utilizes accesses granted. No tools needed. Can blend in with the noise.	Financial, Revenge
Script Kiddie	Simple to use tools freely available online.	Curiosity, fun, clout, financial.

Different organizations are targets of different threat actors. For example, a large R&D firm involved in developing weapons systems may be targeted by a nation state, while a large restaurant chain may not. Organizations may identify their likeliest threat based on previous breaches that involved their industry.

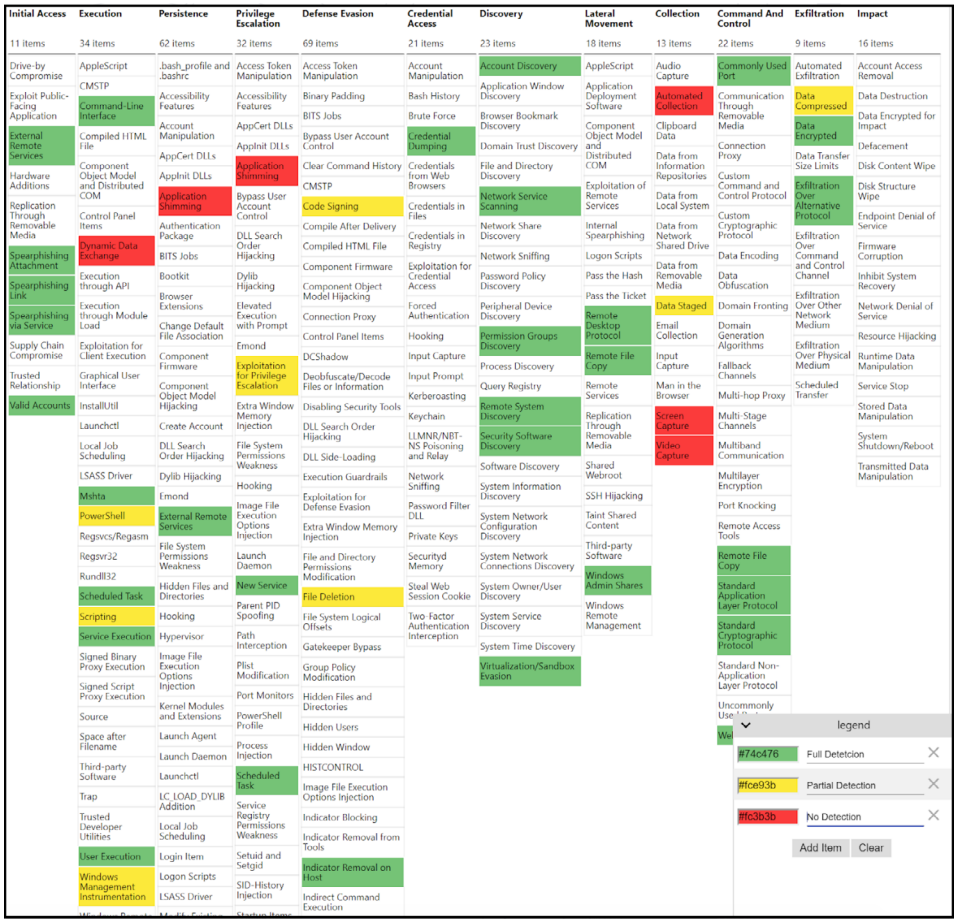
Organizations may also want to identify their “Crown Jewels.” Information considered to be of such value that any sort of breach or compromise will be catastrophic to the business, either through loss of money, loss of client/public trust or legal action from regulatory agencies. In the world of GDPR, breaches are not only embarrassing, they are expensive.

Coverage Map - Collecting What Matters

Once an organization identifies the threat actor(s), it should create a coverage map with the purpose of identifying collection gaps. This does not have to be difficult; the MITRE ATT&CK Framework is a thorough matrix that covers tactics and techniques utilized by threat actors. In addition, MITRE has a list of threat actors along with the techniques and tactics they use. The team can easily map the MITRE ATT&CK framework to the organization's security controls as demonstrated in the example below.

Example Coverage Map - Criminal Organization

An organization identifies financially motivated criminal groups as their likeliest threat actor, singling out the groups FIN5, FIN6, FIN7 and FIN8 for specific attention. Using the information MITRE has on those groups and mapping detection capabilities to the MITRE ATT&CK Framework, they created the following coverage map:



(Sample Coverage Map. Above created using: https://mitre-attack.github.io/attack-navigator/enterprise/)

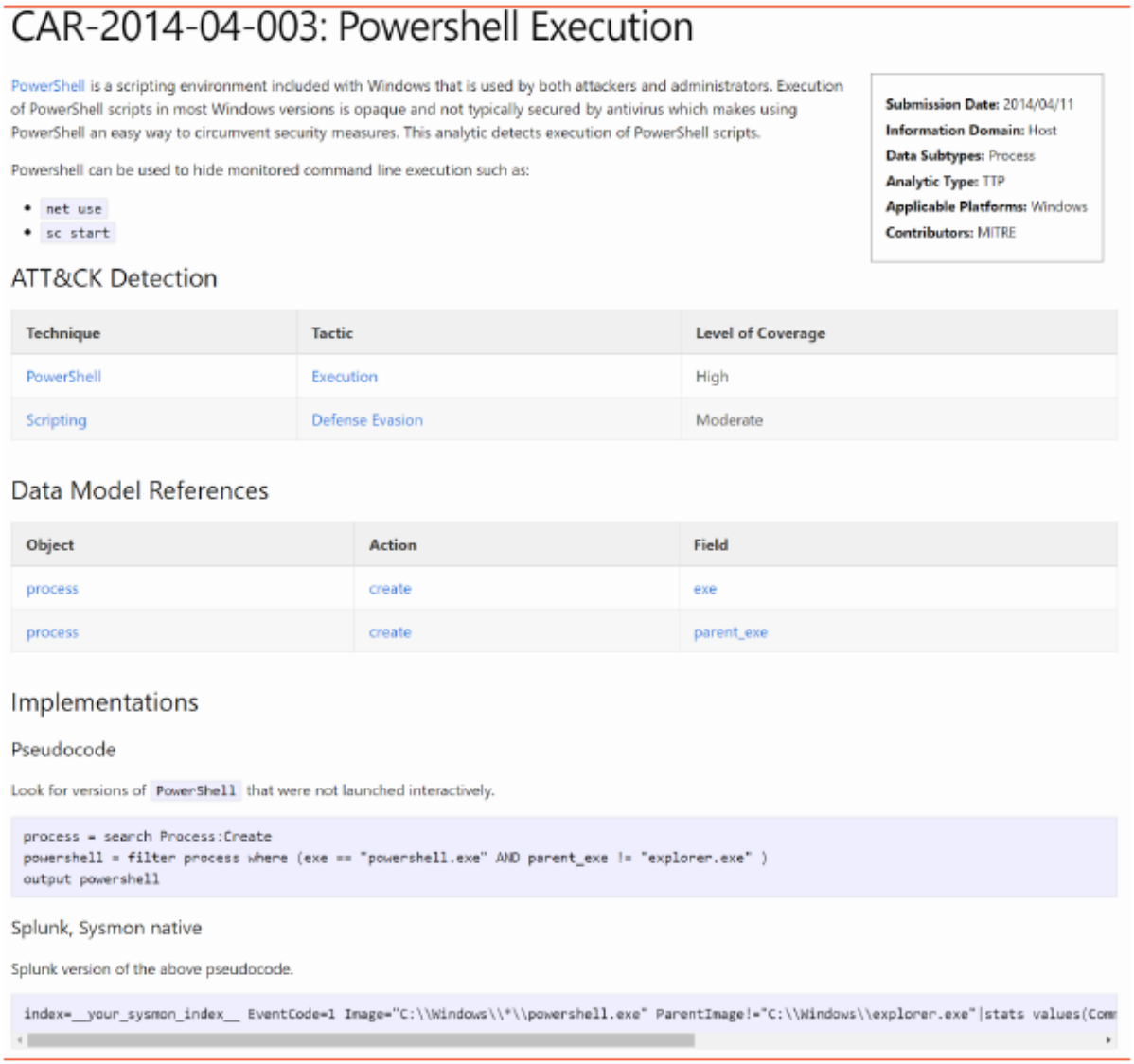
Note that specific TTPs are selected, allowing the organization to identify and address the gaps that matter. This may not always be possible due to a variety of reasons. The amount of logging necessary may be too much and impractical, or the TTP may require a tool that would require a significant financial investment that is not in budget.

Cyber Analytics Repository

A Cyber Analytics Repository (CAR) is a catalog of product-specific queries used to hunt TTPs identified in the coverage map. For example, if an organization uses Splunk the query will be in SPL, if an endpoint detection and response agent (Endgame for example) is used the query will be in EQL, etc. The CAR may also include Use Cases from which to create alerting rules. Use Cases can be described as the type of activity we expect from threat actors. An example Use Case may be PowerShell execution from a malicious word document. Alerts are then based on this Use Case.

One popular CAR template is available from MITRE's GitHub page: https://github.com/mitre-attack/car. It includes queries for several TTPs in the MITRE ATT&CK framework.

Below is an example of the Powershell page from MITRE:



CAR-2014-04-003: Powershell Execution

PowerShell is a scripting environment included with Windows that is used by both attackers and administrators. Execution of PowerShell scripts in most Windows versions is opaque and not typically secured by antivirus which makes using PowerShell an easy way to circumvent security measures. This analytic detects execution of PowerShell scripts.

Powershell can be used to hide monitored command line execution such as:

- `net use`
- `sc start`

Submission Date: 2014/04/11
Information Domain: Host
Data Subtypes: Process
Analytic Type: TTP
Applicable Platforms: Windows
Contributors: MITRE

ATT&CK Detection

Technique	Tactic	Level of Coverage
PowerShell	Execution	High
Scripting	Defense Evasion	Moderate

Data Model References

Object	Action	Field
process	create	exe
process	create	parent_exe

Implementations

Pseudocode

Look for versions of `PowerShell` that were not launched interactively.

```
process = search Process:Create
powershell = filter process where (exe == "powershell.exe" AND parent_exe != "explorer.exe" )
output powershell
```

Splunk, Sysmon native

Splunk version of the above pseudocode.

```
index=__your_sysmon_index__ EventCode=1 Image="C:\\Windows\\*\\powershell.exe" ParentImage!="C:\\Windows\\explorer.exe"|stats values(Com
```

(Sample of MITRE's CAR describing PowerShell technique and ways to Hunt)

Hunting Begins

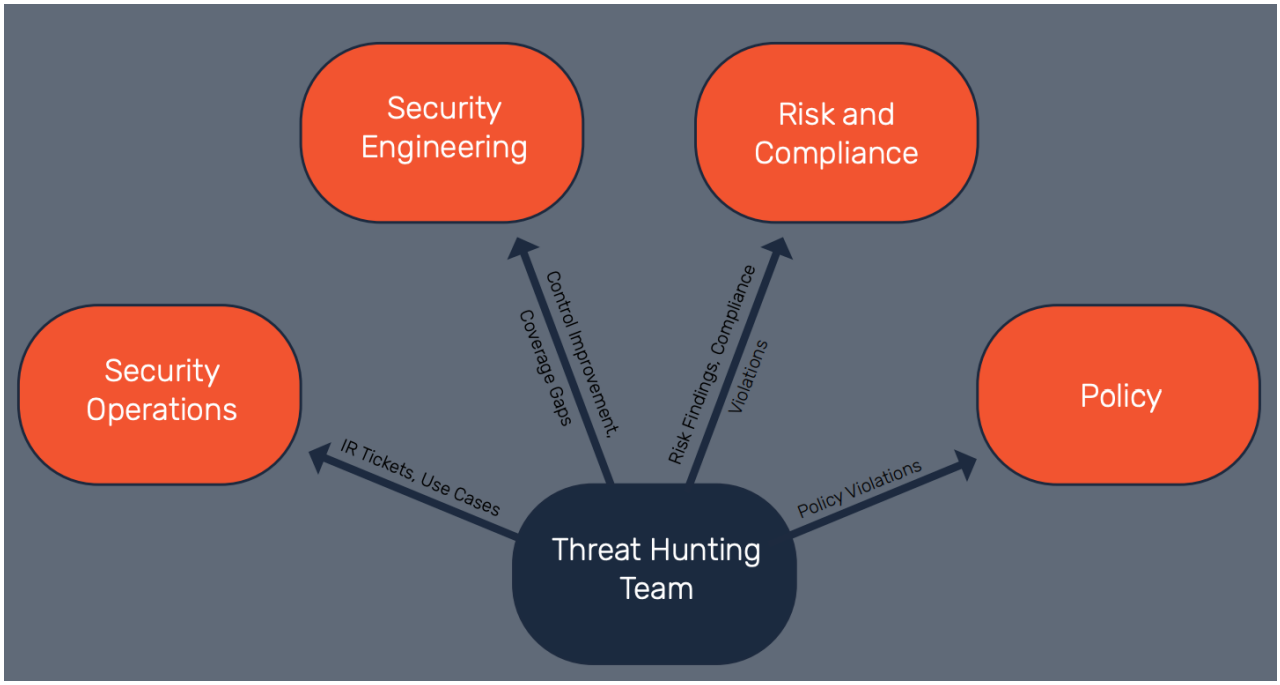
Ultimately, the goal of any security team is prevention of malicious activity through the deployment of security controls. This is not always possible, due either to lacking controls or the fact that not all malicious activity is distinguishable from normal user activity. This is where threat hunting comes in.

Threat hunters detect malicious activity and coverage gaps overlooked by security controls or auditing tools, but detection should not be their only role. They should drive threat and risk mitigation. It is not enough to discover a threat actor on a network or a coverage gap. They must reach out to the appropriate teams in an organization with suggestions on how to remove threats and close gaps.

Relationship Overview

Security teams at organizations are often split into the following:

Team	**Resposibile for:**
Security Operations	Developing alerts and Incident Response
Security Engineering	Security tools deployed to systems (EDR, AV, firewalls)
Risk and Compliance	Tracking systemic risks and information assurance
Policy	Creating and updating policies for organization, including acceptable use



Reporting Success - Measuring What Matters

Threat hunting carries an unusual value proposition. Unlike a development team or a product team, a Threat Hunt team's outcome is less tangible. The Threat Hunt team delivers findings, not products, divided into two sets; threats and risks. Threats include malicious or suspicious activity on the network. Risks include coverage gaps, missing logs or missing alerts. Both sets are tailored to an organization's requirements.

Not all findings will have equal value. For example, discovering an advanced threat actor on a network will have much more value than finding adware on an endpoint. It is important to define values for findings and to keep track of these values in order to demonstrate the return on investment that the Threat Hunt team brings to an organization.

Below is an example of one way to define and quantify Threats and Risks.

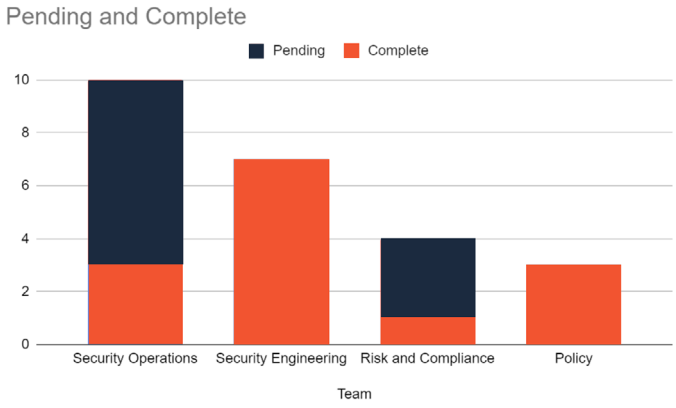
Values of Threats Discovered	
Value	**Definition**
High	1. Threat actors on the network 2. Malware that may allow for the remote control of a system and/or further infections 3. Unauthorized external access regardless of intent or motive 4. Credential leaks which may lead to future compromise, whether leak is public or internal
Medium	1. Policy abuse 2. Risky software (e.g., RAT, unapproved AV) 3. Risky traffic (e.g., large transfers to drop sites
Low	1. Potentially unwanted software

Values of Risks Discovered	
Value	**Definition**
High	1. Requires a large financial investment to address and possible cultural change to address. 2. Use Case Development 3. Misconfiguration that may pose a risk to the environment
Medium	1. Missing patches that pose a risk to the environment 2. Missing logs
Low	1. Gaps that are quick fixes (i.e. missing security product or patch on a single host)

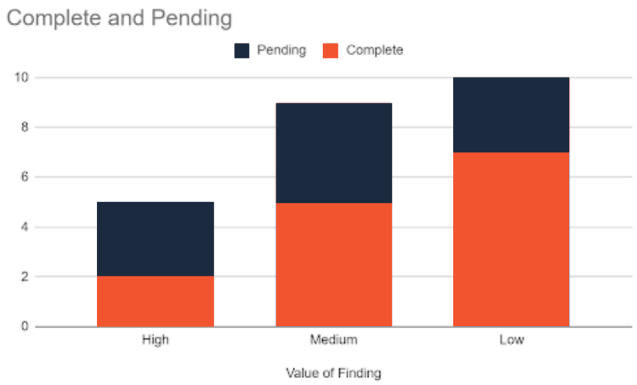
The Threat Hunt team uses the above metrics to demonstrate their value and organizational impact to management.

To ensure that findings are addressed the threat team must track closure. A ticketing system such as Jira is a useful tool for tracking closure. Assign each ticket with the responsible security team as well as its value metric. At the end of each quarter, the team can provide these metrics to management. In turn, management can use the metrics as a guide to allocate resources. For example, the Threat Hunt team may have discovered risks and gaps that fell under the onus of the security engineering team. By the end of the quarter, if the security engineering team has only actioned a small percentage, management can consider allocating additional resources to that team.

The chart below is a sample deliverable to management.



The above may suggest that the Security Engineering and Policy teams are capable of addressing the issues discovered by the Threat Hunt team, while the Security Operations or Risk and Compliance Team may require more investment and resources. Of course the Threat Hunt team would want to quantify its findings and present them as a chart to management and demonstrate ROI:



About this Campaign

One application of an actionable cyber threat intelligence program should inform where a security stack cannot detect. Over the coming month, Nisos will publish a variety of articles that go deeper building an actionable cyber intelligence program that builds on a hypotheses-led threat hunting program with limited resources allowing a program to scale over time. We will dig into more depth around how to effectively use risk findings, penetration testing results, threat intelligence feeds, and incident response reports to systematically report and track hypotheses that deliver actionable reporting and metrics. If captured appropriately, a security program can scale by reducing resources to the security unit teams but reducing time to respond which is the ultimate goal of any SOC.