Elastic SIEM + Sysmon Endpoint Detection

Project Type: Endpoint Detection Engineering / SOC Telemetry

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Role: Founder & Cybersecurity Consultant

Organization: NS Cybersecurity

Date: December 2024

Objective

The objective of this project was to design, deploy, and validate endpoint detection and logging pipelines using Sysmon and Elastic SIEM. The goal was to establish high-fidelity visibility into process execution, network connections, and PowerShell activity, ensuring endpoint telemetry is centrally ingested, searchable, and actionable for SOC monitoring, detection engineering, and incident response.

Tools & Technologies

- Elastic Cloud (Elastic SIEM & Kibana)
- Elastic Agent (Fleet-managed)
- Sysmon (System Monitor)
- Windows PowerShell (Administrator)
- Windows Event Logs
- Kibana Discover & KQL

Technical Steps Performed

1. Elastic Agent Deployment

- Installed Elastic Agent on the Windows endpoint using PowerShell.
- Enrolled the agent into Elastic Cloud via Fleet.
- Verified that the agent service was successfully installed and running.

2. Sysmon Deployment & Configuration

- Installed Sysmon as a persistent system service.
- Enabled Sysmon operational logging to capture detailed endpoint telemetry.
- Confirmed Sysmon integration with Elastic Agent for centralized forwarding.

3. Telemetry Ingestion Validation

- Navigated to Kibana → Discover.
- Queried Sysmon data streams to validate ingestion of endpoint events.
- Confirmed visibility of:
    - Process creation events
    - Network connection events
    - PowerShell execution telemetry

4. Event Analysis in Elastic SIEM

- Reviewed ingested events using Kibana Query Language (KQL).
- Verified that endpoint activity was timestamped, structured, and correlated with host metadata.
- Confirmed continuous event flow from endpoint to Elastic SIEM.

Findings

Endpoint Visibility Findings

- Sysmon process creation events (Event ID 1) were successfully ingested.

- Sysmon network connection events (Event ID 3) were visible and correlated to originating processes.
- PowerShell activity was captured and searchable within Elastic SIEM.

SIEM Ingestion Findings

- Endpoint telemetry was indexed in the appropriate data streams.
- Events were searchable in near real time.
- No ingestion errors or gaps were observed.

Outcome

- Successfully deployed an endpoint detection pipeline using Sysmon and Elastic SIEM.
- Established centralized visibility into endpoint process, network, and PowerShell activity.
- Demonstrated SOC-relevant detection capabilities aligned with real-world endpoint monitoring workflows.
- Produced verifiable evidence supporting detection engineering, threat hunting, and incident response readiness.

This project demonstrates experience building and validating endpoint detection telemetry pipelines using industry-standard SOC tooling.

Portfolio Status

Project Status: Completed

Deliverable: Endpoint_Detection_Elastic_Sysmon.pdf

Evidence: Elastic Agent installation output, Sysmon event ingestion, Kibana Discover validation

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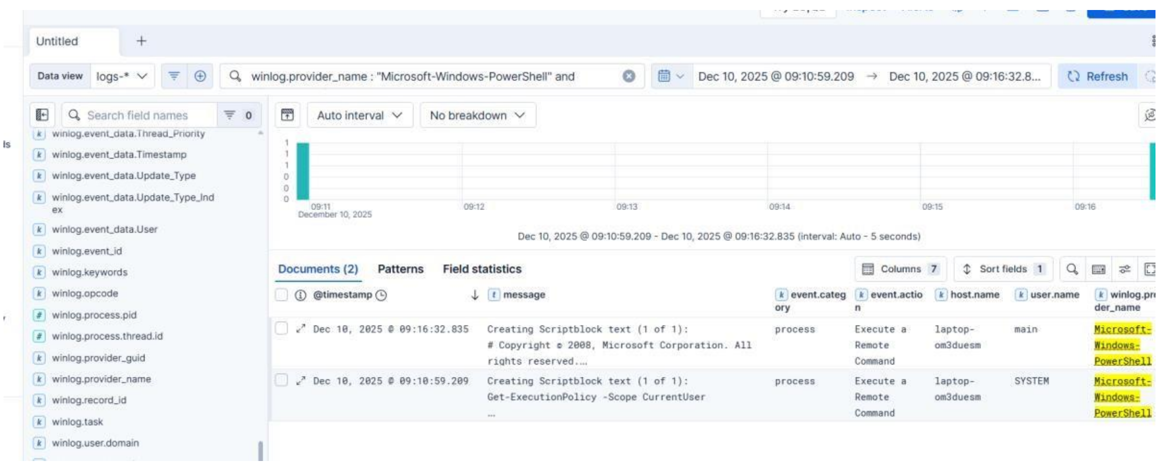
Résumé Bullet (Final)

- Deployed and validated endpoint detection pipeline using Sysmon and Elastic SIEM; ingested and analyzed process, network, and PowerShell telemetry to support SOC monitoring and detection engineering.



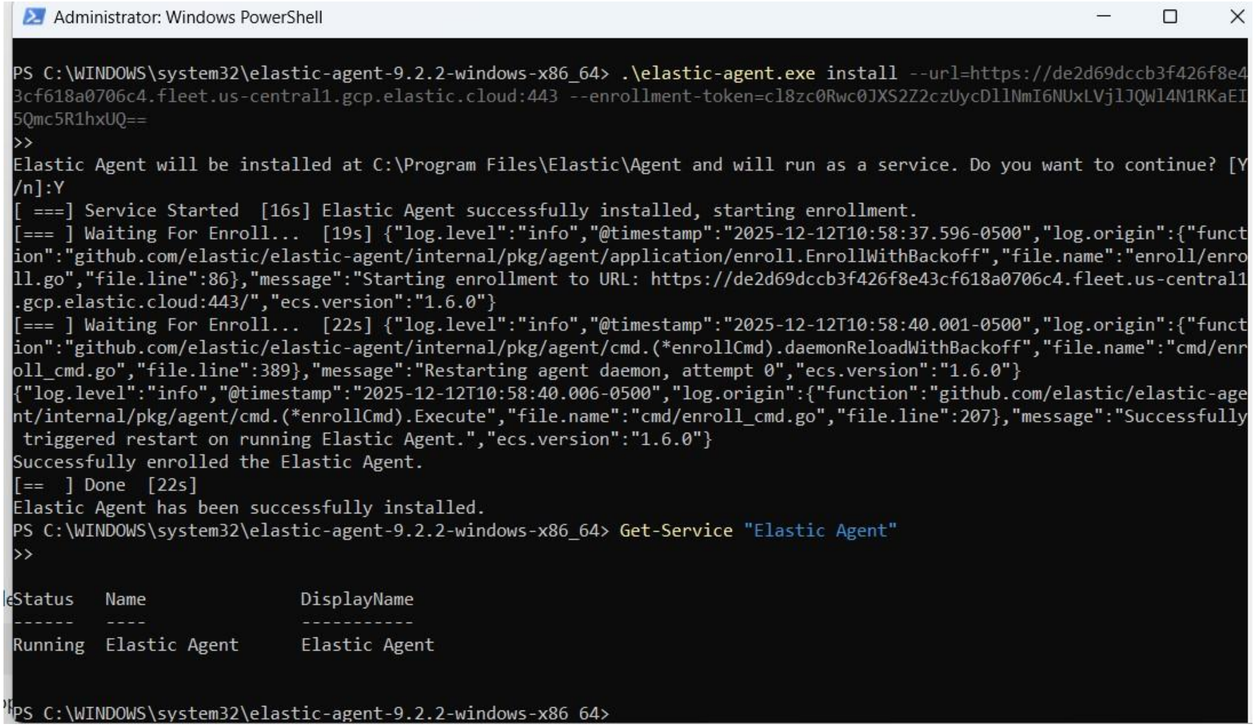
winlog.provider_name : "Microsoft-Windows-PowerShell" and

Dec 10, 2025 @ 09:10:59.209 → Dec 10, 2025 @ 09:16:32.8...

winlog.event_data.Thread_Priority
winlog.event_data.Timestamp
winlog.event_data.Update_Type
winlog.event_data.Update_Type_Index
winlog.event_data.User
winlog.event_id
winlog.keywords
winlog.opcode
winlog.process.pid
winlog.process.thread.id
winlog.provider_guid
winlog.provider_name
winlog.record_id
winlog.task
winlog.user.domain

Dec 10, 2025 @ 09:10:59.209 - Dec 10, 2025 @ 09:16:32.835 (interval: Auto - 5 seconds)

@timestamp	message	event.category	event.action	host.name	user.name	winlog.provider_name
Dec 10, 2025 @ 09:16:32.835	Creating Scriptblock text (1 of 1): # Copyright © 2008, Microsoft Corporation. All rights reserved....	process	Execute a Remote Command	laptop-om3duesm	main	Microsoft-Windows-PowerShell
Dec 10, 2025 @ 09:10:59.209	Creating Scriptblock text (1 of 1): Get-ExecutionPolicy -Scope CurrentUser ...	process	Execute a Remote Command	laptop-om3duesm	SYSTEM	Microsoft-Windows-PowerShell



```
PS C:\WINDOWS\system32\elastic-agent-9.2.2-windows-x86_64> .\elastic-agent.exe install --url=https://de2d69dccb3f426f8e4
3cf618a0706c4.fleet.us-central1.gcp.elastic.cloud:443 --enrollment-token=cl8zc0Rwc0JXS2Z2czUycDllNmI6NUxLVjlJQWl4N1RKaEI
5Qmc5R1hxUQ==
>>
Elastic Agent will be installed at C:\Program Files\Elastic\Agent and will run as a service. Do you want to continue? [Y
/n]:Y
[ ===] Service Started  [16s] Elastic Agent successfully installed, starting enrollment.
[=== ] Waiting For Enroll...  [19s] {"log.level":"info","@timestamp":"2025-12-12T10:58:37.596-0500","log.origin":{"funct
ion":"github.com/elastic/elastic-agent/internal/pkg/agent/application/enroll.EnrollWithBackoff","file.name":"enroll/enro
ll.go","file.line":86},"message":"Starting enrollment to URL: https://de2d69dccb3f426f8e43cf618a0706c4.fleet.us-central1
.gcp.elastic.cloud:443/","ecs.version":"1.6.0"}
[=== ] Waiting For Enroll...  [22s] {"log.level":"info","@timestamp":"2025-12-12T10:58:40.001-0500","log.origin":{"funct
ion":"github.com/elastic/elastic-agent/internal/pkg/agent/cmd.(*enrollCmd).daemonReloadWithBackoff","file.name":"cmd/enr
oll_cmd.go","file.line":389},"message":"Restarting agent daemon, attempt 0","ecs.version":"1.6.0"}
{"log.level":"info","@timestamp":"2025-12-12T10:58:40.006-0500","log.origin":{"function":"github.com/elastic/elastic-age
nt/internal/pkg/agent/cmd.(*enrollCmd).Execute","file.name":"cmd/enroll_cmd.go","file.line":207},"message":"Successfully
 triggered restart on running Elastic Agent.","ecs.version":"1.6.0"}
Successfully enrolled the Elastic Agent.
[==  ] Done  [22s]
Elastic Agent has been successfully installed.
PS C:\WINDOWS\system32\elastic-agent-9.2.2-windows-x86_64> Get-Service "Elastic Agent"
>>

Status   Name               DisplayName
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Running  Elastic Agent      Elastic Agent


PS C:\WINDOWS\system32\elastic-agent-9.2.2-windows-x86_64>
```

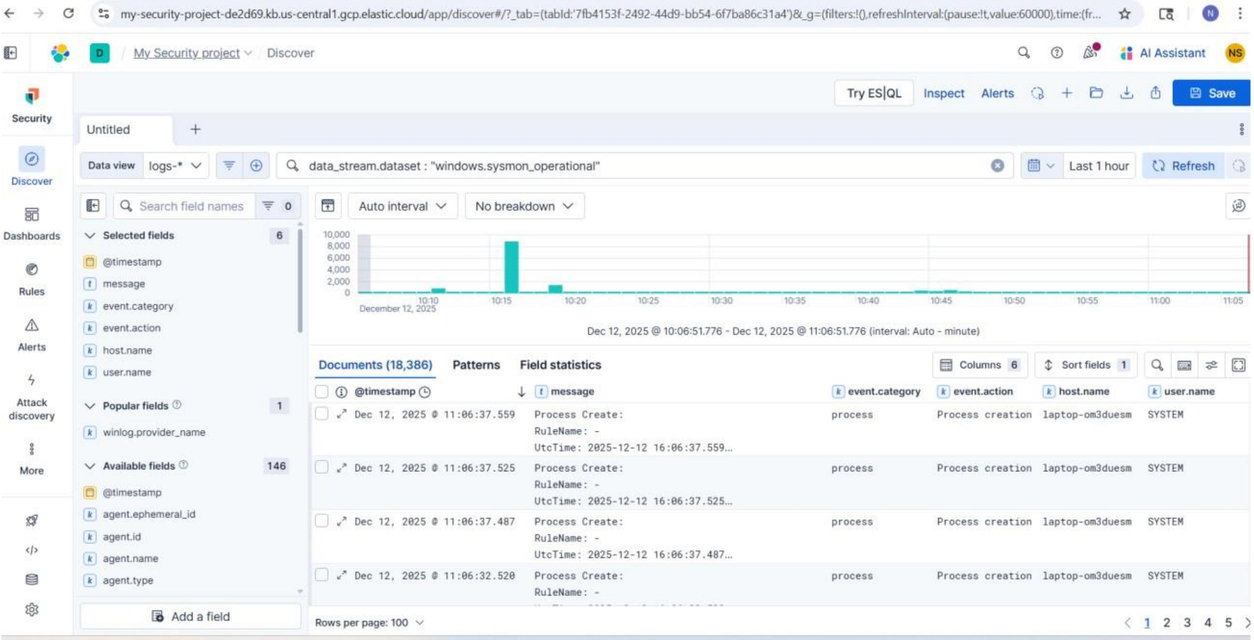

my-security-project-de2d69.kb.us-central1.gcp.elastic.cloud/app/discover#/?_tab=(tabId:'7fb4153f-2492-44d9-bb54-6f7ba86c31a4')&_g=(filters:!(),refreshInterval:(pause:!t,value:60000),time:(fr...

Data view: logs-*

data_stream.dataset : "windows.sysmon_operational"

Last 1 hour

Dec 12, 2025 @ 10:06:51.776 - Dec 12, 2025 @ 11:06:51.776 (interval: Auto - minute)

Documents (18,386)

@timestamp	message	event.category	event.action	host.name	user.name
Dec 12, 2025 @ 11:06:37.559	Process Create: RuleName: - UtcTime: 2025-12-12 16:06:37.559...	process	Process creation	laptop-om3duesm	SYSTEM
Dec 12, 2025 @ 11:06:37.525	Process Create: RuleName: - UtcTime: 2025-12-12 16:06:37.525...	process	Process creation	laptop-om3duesm	SYSTEM
Dec 12, 2025 @ 11:06:37.487	Process Create: RuleName: - UtcTime: 2025-12-12 16:06:37.487...	process	Process creation	laptop-om3duesm	SYSTEM
Dec 12, 2025 @ 11:06:32.520	Process Create: RuleName: -	process	Process creation	laptop-om3duesm	SYSTEM