Wazuh Write-up

Wazuh is a free, open source and enterprise-ready security monitoring solution for threat detection, integrity monitoring.

Task 1 Introduction

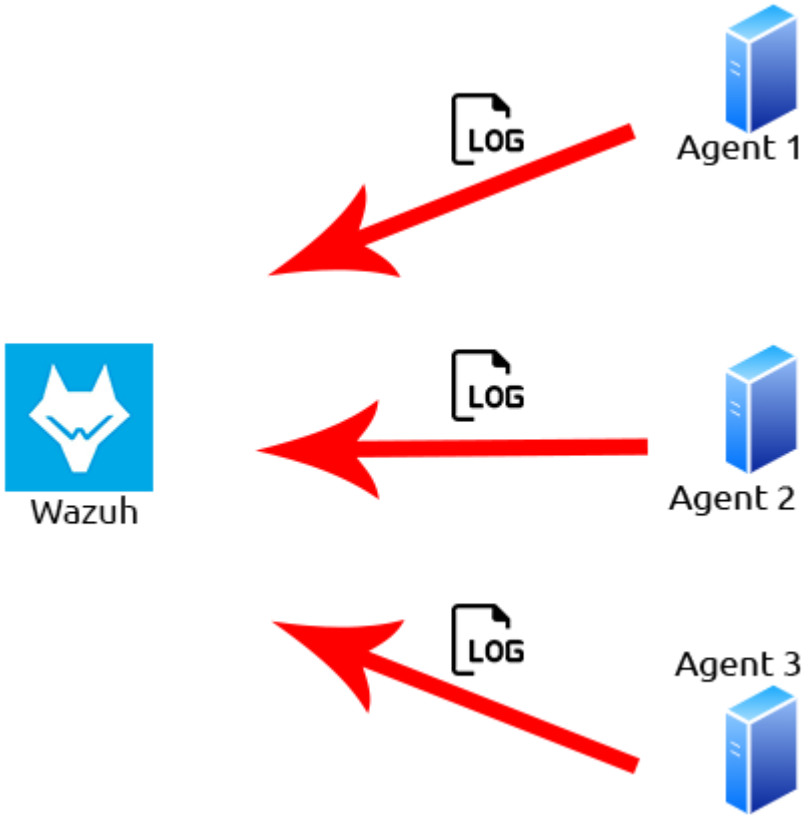
Welcome to a room showcasing the capabilities of the Wazuh EDR software solution. In this room, you can expect to learn the following things:

- What is an EDR and why are they useful solutions
- Where an EDR like Wazuh is used
- Accessing Wazuh
- Navigating Wazuh
- Learning about Wazuh rules and alerts
- Digesting logs to view specific events on devices including Linux and Windows
- How you can extend Wazuh using plugins and its API

Firstly, let's understand what EDR solutions are exactly. **Endpoint detection and response (EDR)** are a series of tools and applications that monitor devices for an activity that could indicate a threat or security breach. These tools and applications have features that include:

- Auditing a device for common vulnerabilities
- Proactively monitoring a device for suspicious activity such as unauthorised logins, brute-force attacks or privilege escalations
- Visualising complex data and events into neat and trendy graphs
- Recording a device's normal operating behaviour to help with detecting anomalies

Created in 2015, Wazuh is an open-source, freely available and extensive EDR solution. It can be used in all scales of environments. Wazuh operates on a **management and agent model**. Simply, a device is dedicated to running Wazuh named a **manager**, where Wazuh operates on a **management and agent model** where the manager is responsible for managing agents installed on the devices you'd like to monitor. Let's look at this model in the diagram below:



We can see logs from three Agents being sent to the Wazuh server.

1. When was Wazuh released?
Answer: 2015
2. What is the term that Wazuh calls a device that is being monitored for suspicious activity and potential security threats?
Answer: Agent
3. Lastly, what is the term for a device that is responsible for managing these devices?
Answer: Manager

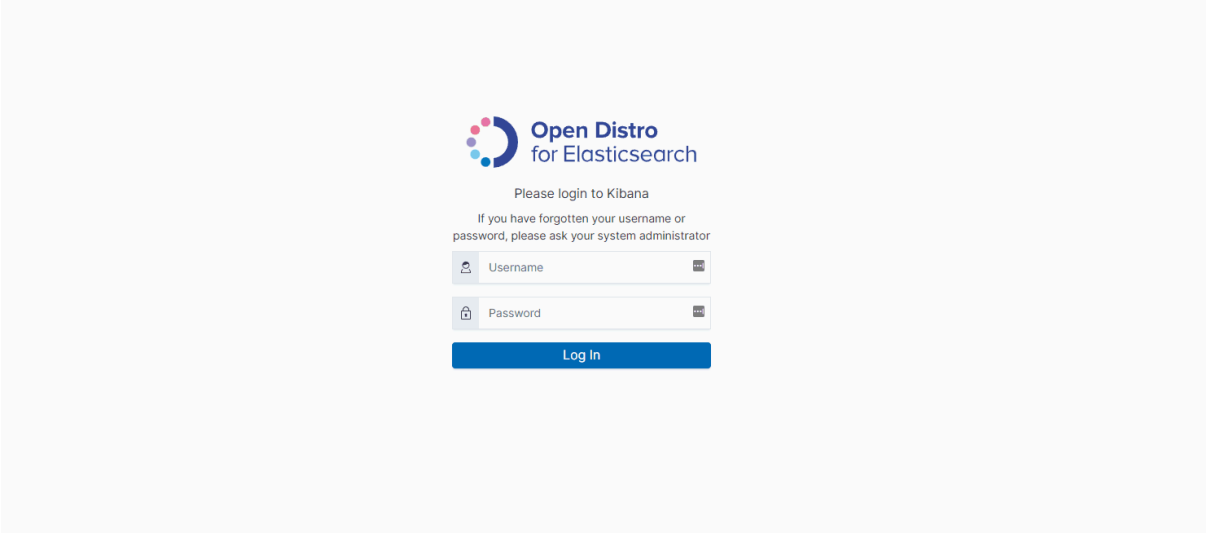
Task 2 Required: Deploy Wazuh Server
Connect to the TryHackMe network and deploy the Wazuh management server attached to this task and wait a minimum of five minutes before visiting the Wazuh server on HTTP://MACHINE_IP.
If you load the Wazuh management server too early, it will say "Kibana Server is not ready yet" Please wait a few more minutes before refreshing the page and trying again.

Once it has started, log in using the following **credentials**:

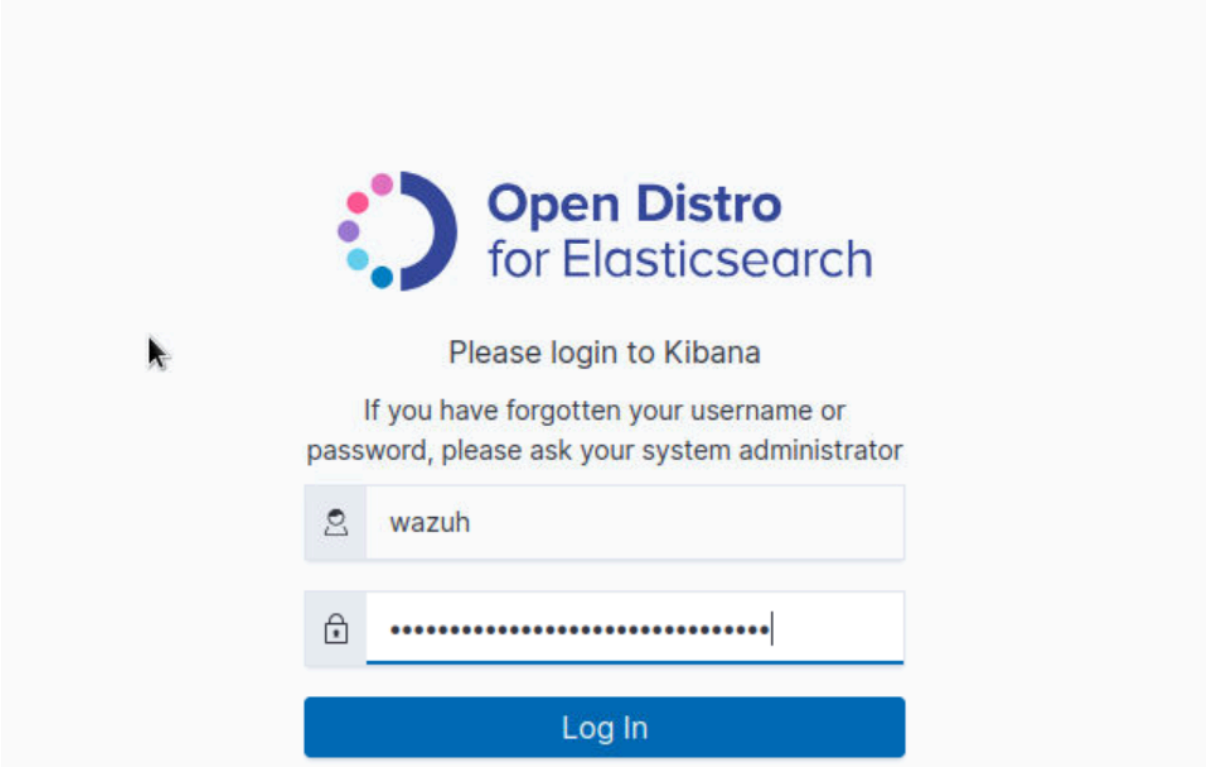
Username: wazuh (make sure that this is lowercase!)

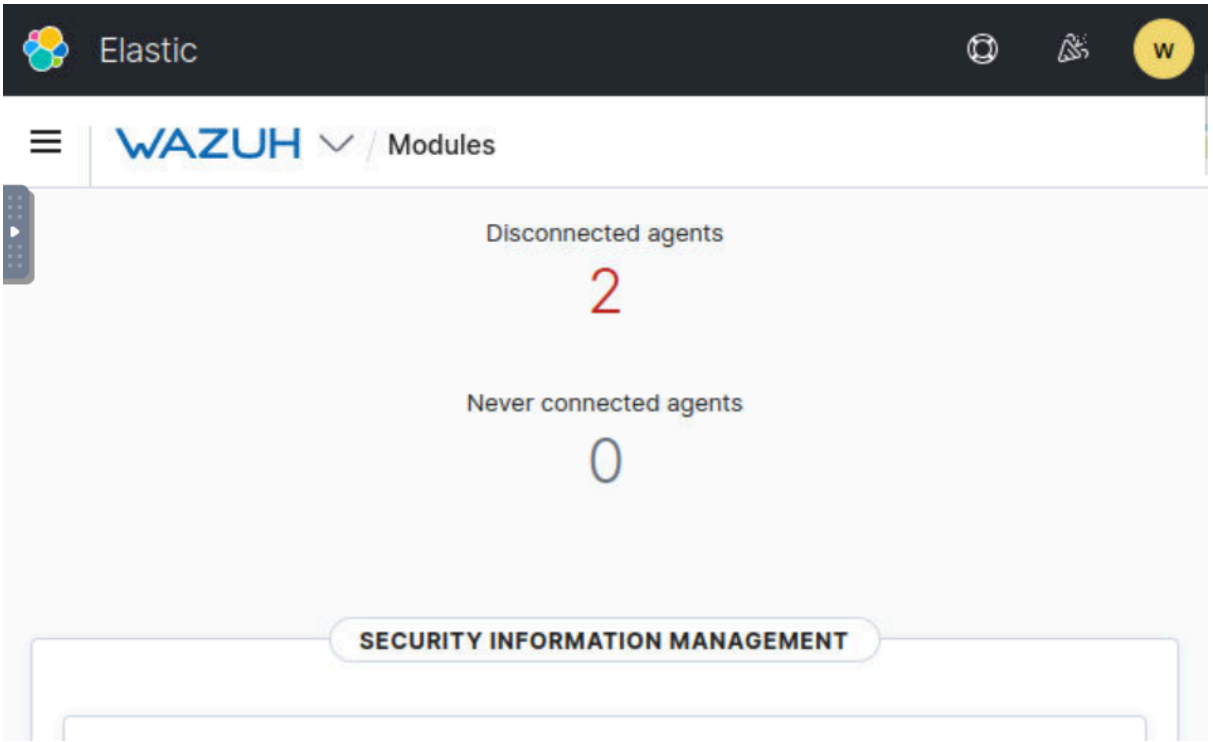
Password: eYa0M1-hG0e7rjGi-IRB2qGYVoonsG1K

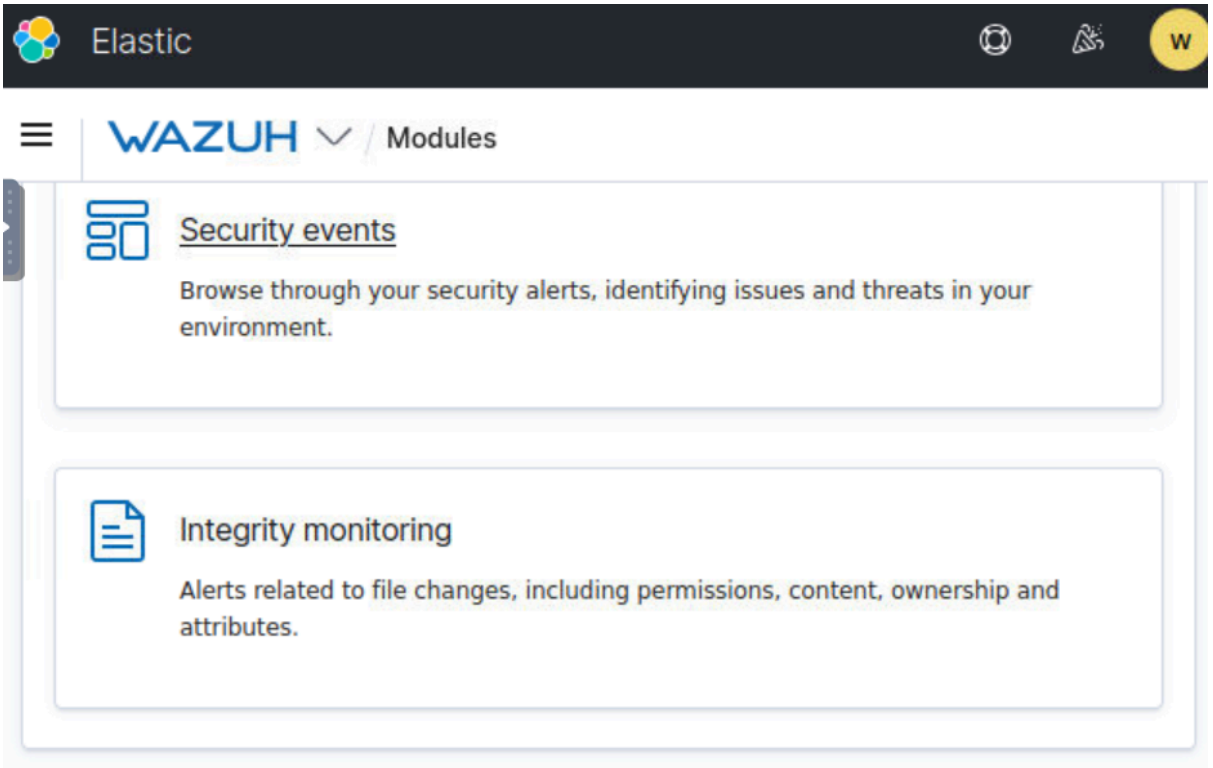
Select "Global Tenant" after successfully logging in. Refer to the animated gif(On tryhackme) below of the process if you are stuck.



Note: The questions within the tasks of this room will expect the data stored on this Wazuh management server, so it is vital that you are able to connect to this server before continuing.
The Wazuh management server in this room will show the agents as being disconnected - this is expected.
Login to the Wazuh management server on HTTP://10.48.154.115 before proceeding with this room's tasks.







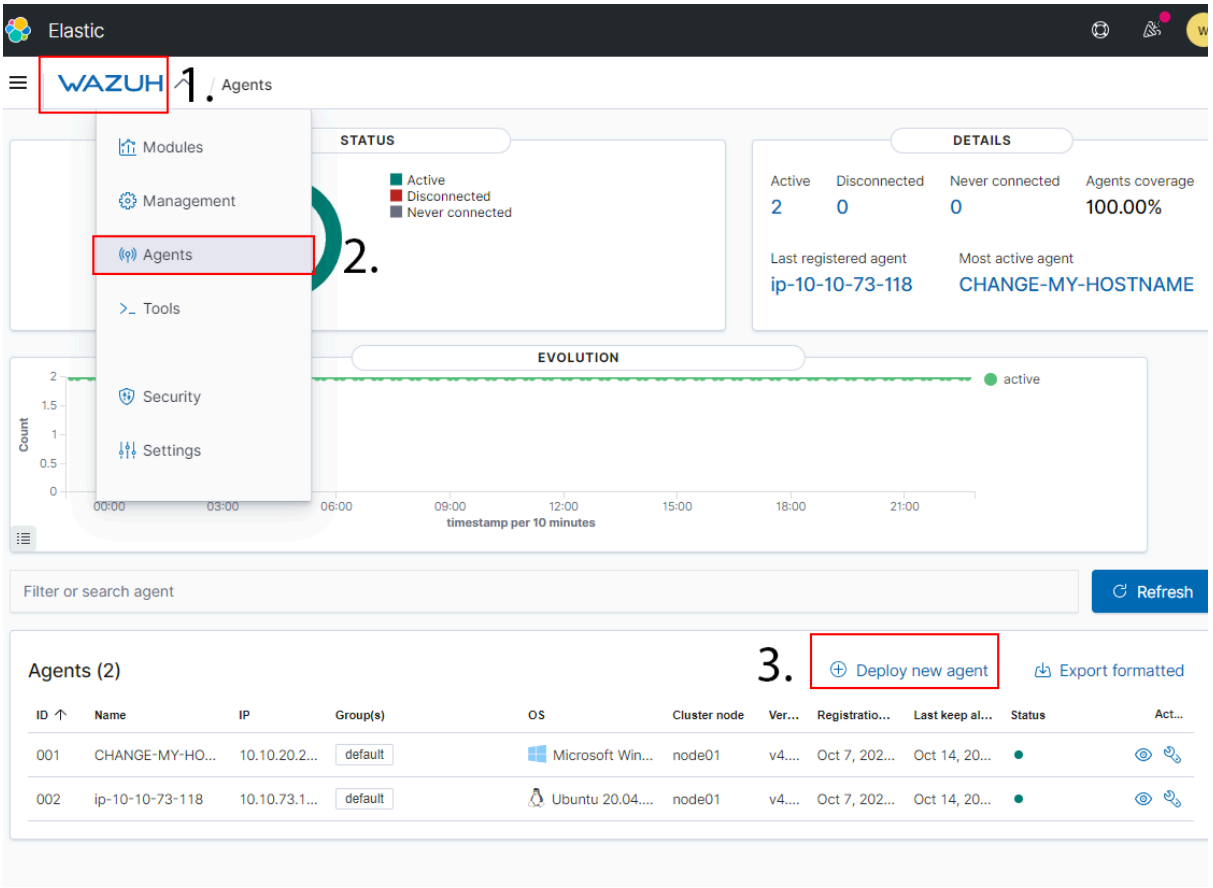
Task 3 Wazuh Agents

Devices that record the events and processes of a system are called agents. Agents monitor the processes and events that take place on the device, such as authentication and user management. Agents will offload these logs to a designated collector for processing, such as Wazuh.

In order for Wazuh to be populated, agents need to be installed onto devices to log such events. Wazuh can guide you through the agent deployment process provided you fill out some pre-requisites such as::

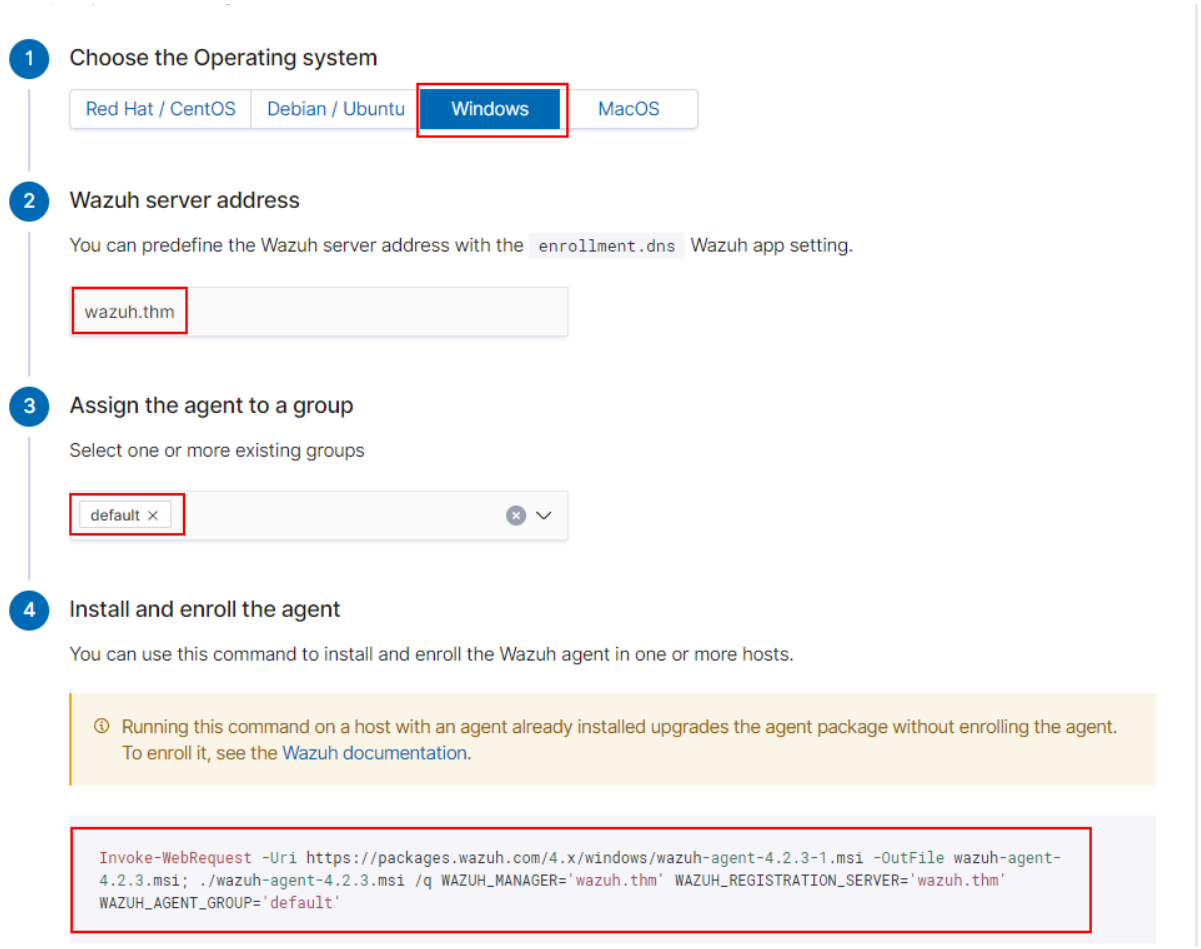
- Operating System
- The address of the Wazuh server that the agent should send logs to (this can be a DNS entry or an IP address)
- What group the agent will be under - you can sort agents into groups within Wazuh if you wish

This wizard can be launched by navigating to the following location on the Wazuh server: **Wazuh -> Agents -> Deploy New Agent** as illustrated in this screenshot below:

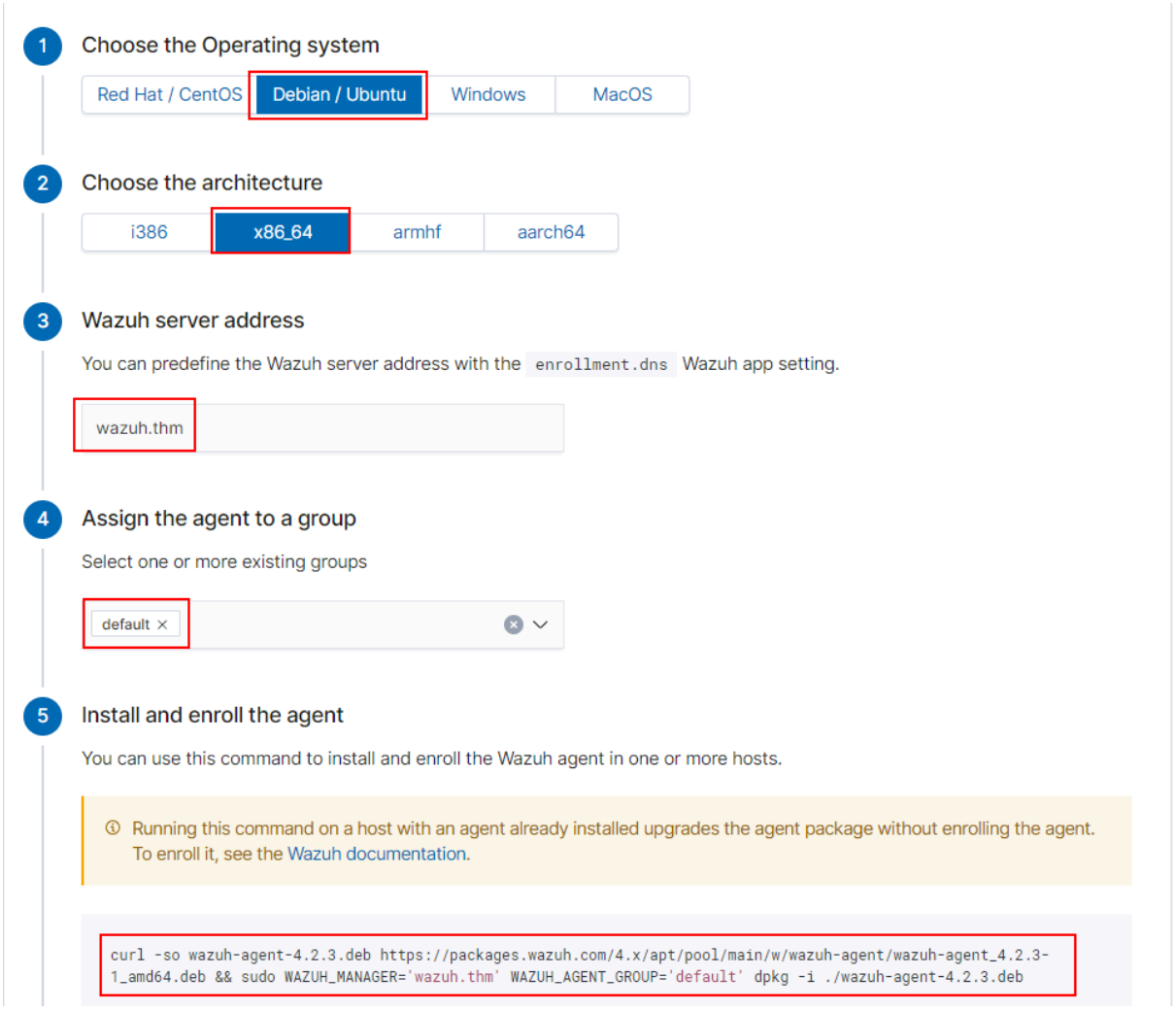


Once you navigate to this display, the intuitive wizard will be available to you. I have shared screenshots of using the wizard to install Wazhur's agent on both Windows and Debian/Ubuntu. At stage 4, you are given a command to copy and paste to your clipboard which will install & configure the agent on the device that you wish to collect logs from.

Installing the Wazuh agent on Windows:

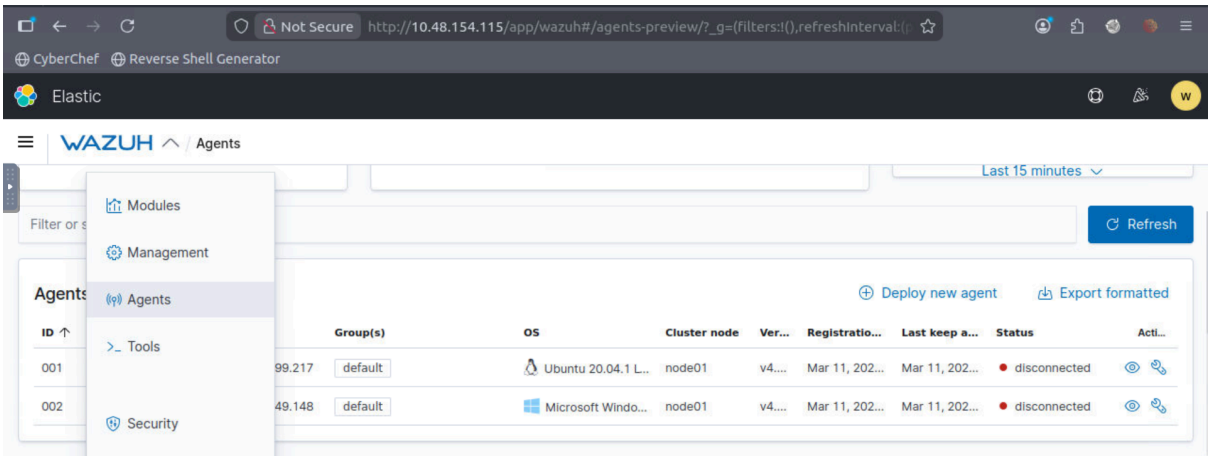


Installing the Wazuh agent on Debian/Ubuntu:

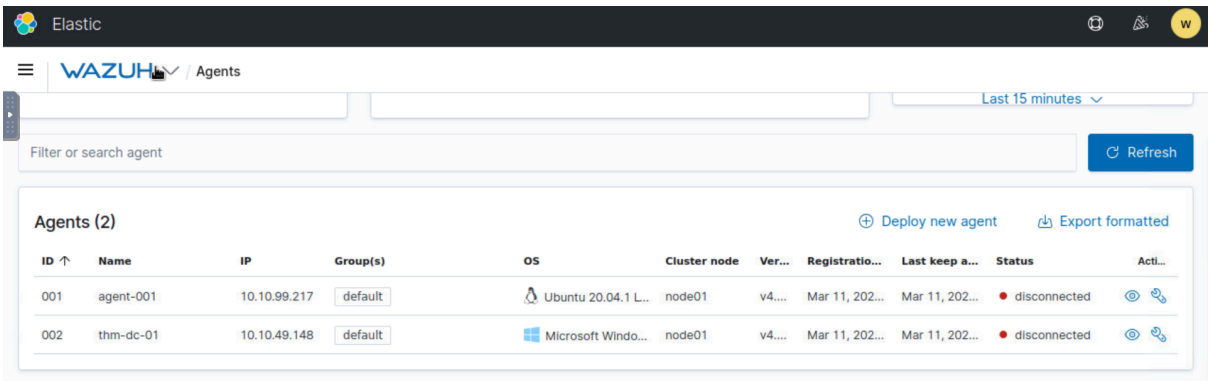


Ensure that you are logged in to the Wazuh management server on HTTPS://10.48.154.115

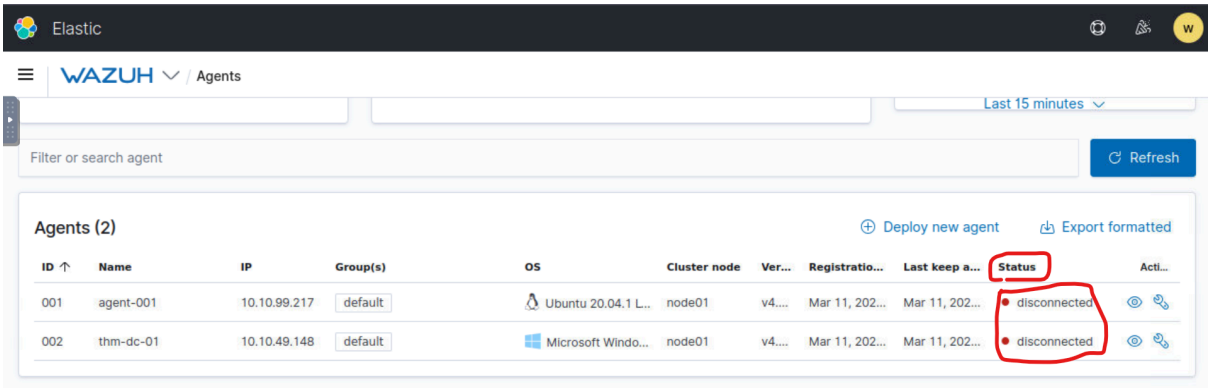
Navigate to the "Agents" tab by pressing **Wazuh -> Agents**



How many agents does this Wazuh management server manage?
Answer: 2



What are the status of the agents managed by this Wazuh management server?
Answer: disconnected

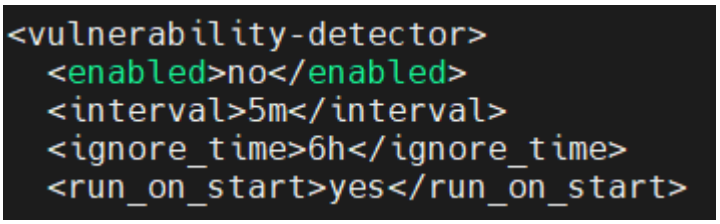


Task 4 Wazuh Vulnerability Assessment & Security Events
Wazuh's Vulnerability Assessment module is a powerful tool that can be used to periodically scan an agent's operating system for installed applications and their version numbers.

Once this information has been gathered, it is sent back to the Wazuh server and compared against a database of CVEs to discover potential vulnerabilities. For example, the agent in the screenshot below has a version of Vim that is vulnerable to **CVE-2019-12735.**

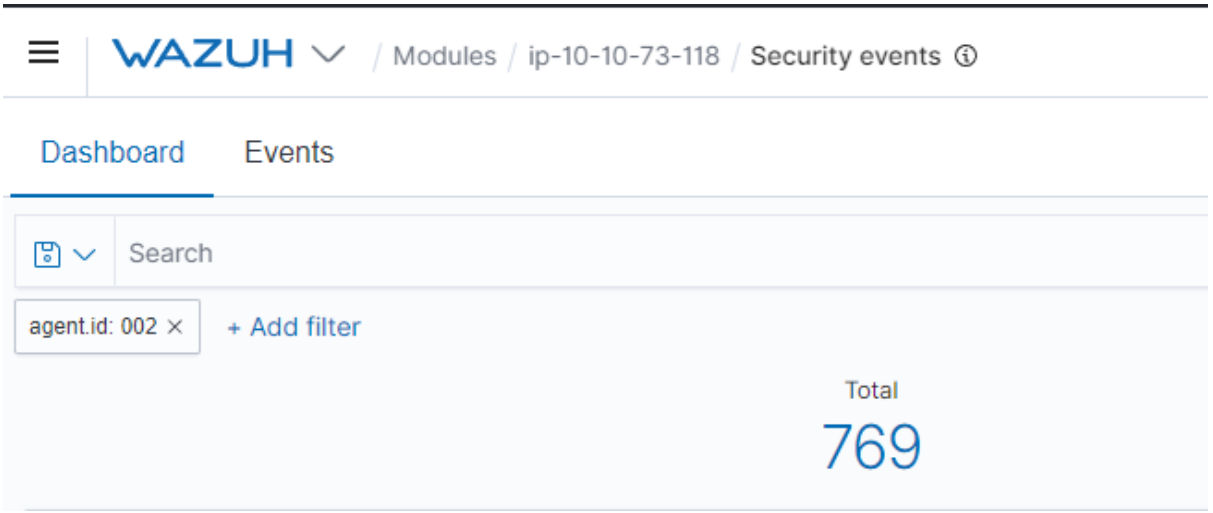
t data.vulnerability.package.architecture	amd64
t data.vulnerability.package.condition	Package less than 2:8.0.0197-4+deb9u2
t data.vulnerability.package.name	vim
t data.vulnerability.package.version	2:8.0.0197-4+deb9u1
data.vulnerability.published	Jun 5, 2019 @ 02:00:00.000
t data.vulnerability.rationale	getchar.c in Vim before 8.1.1365 and Neovim before 0.3.6 allows remote attackers to execute arbitrary OS commands via the :source! command in a modeline, as demonstrated by execute in Vim, and assert_fails or nvim_input in Neovim.
t data.vulnerability.references	http://lists.opensuse.org/opensuse-security-announce/2019-06/msg00031.html, http://lists.opensuse.org/opensuse-security-announce/2019-06/msg00036.html, http://lists.opensuse.org/opensuse-security-announce/2019-06/msg00037.html, http://lists.opensuse.org/opensuse-security-announce/2019-07/msg00034.html, http://lists.opensuse.org/opensuse-security-announce/2019-07/msg00050.html, http://lists.opensuse.org/opensuse-security-announce/2019-08/msg00075.html, http://www.securityfocus.com/bid/108724, http
t data.vulnerability.severity	High
t data.vulnerability.title	CVE-2019-12735
data.vulnerability.updated	Jun 13, 2019 @ 02:00:00.000

The vulnerability scanner module will perform a full scan when the Wazuh agent is first installed on a device and must be configured to run at a set interval then after (by default, this is set to 5 minute intervals when enabled) like so:



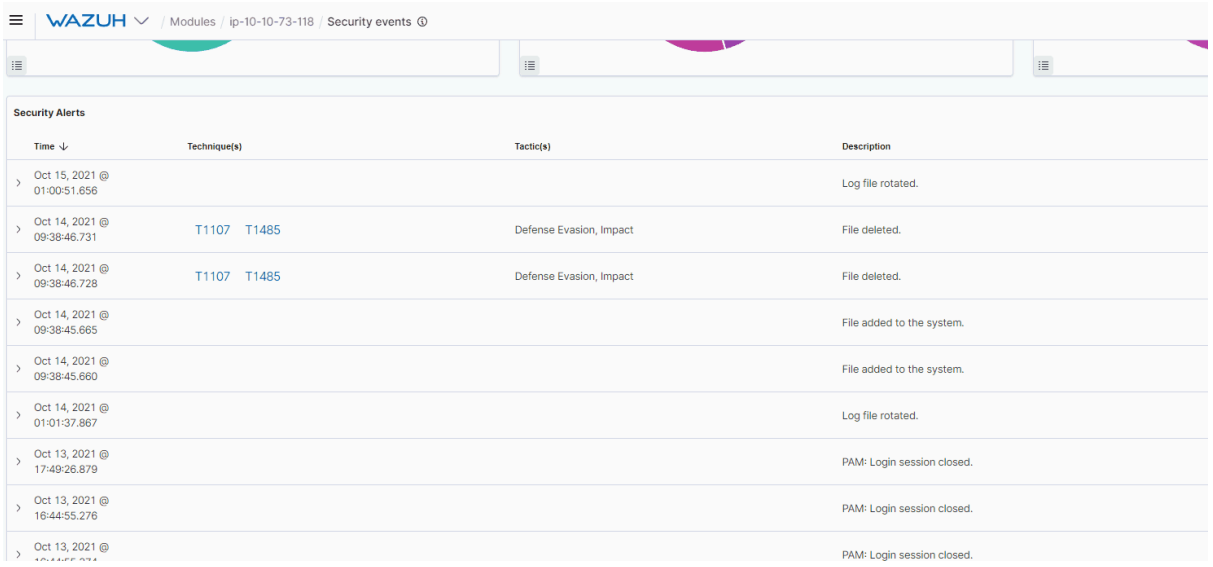
Configuring the Wazuh management server to audit agents for vulnerabilities frequently (/var/ossec/etc/ossec.conf)

Wazuh is capable of testing an agent's configuration against certain rulesets to check for compliance. However, out of the box, it is arguably sensitive. Take, for example, this Linux host running the Wazuh agent. There have been a total of 769 events occurring that the system performs as part of its daily maintenance

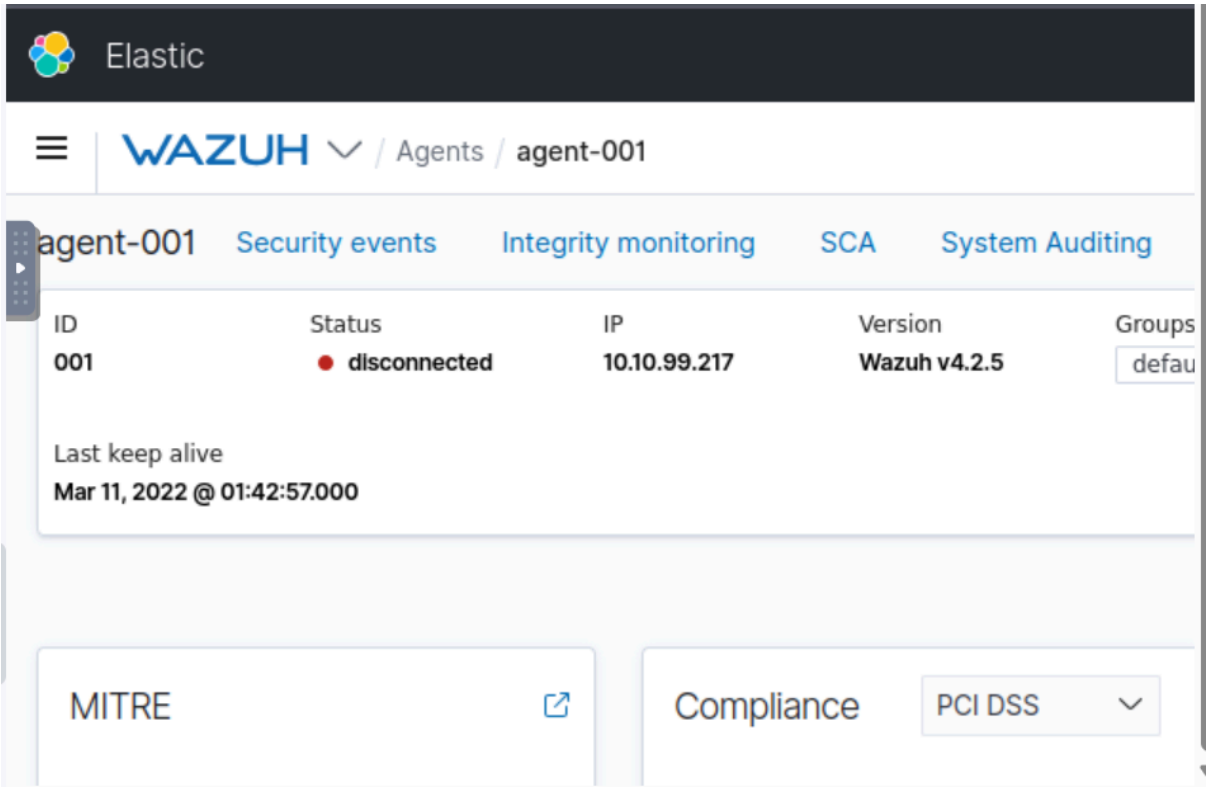


These frequent actions, such as removing files, are often detected as a security event. These events and the related severities are determined by Wazuh's rulesets, which is something that we will come on to explore adjusting in another task.

We can analyze these events individually by selecting the event's dropdown. You can sort events based upon various factors such as timestamp, tactics, or description.

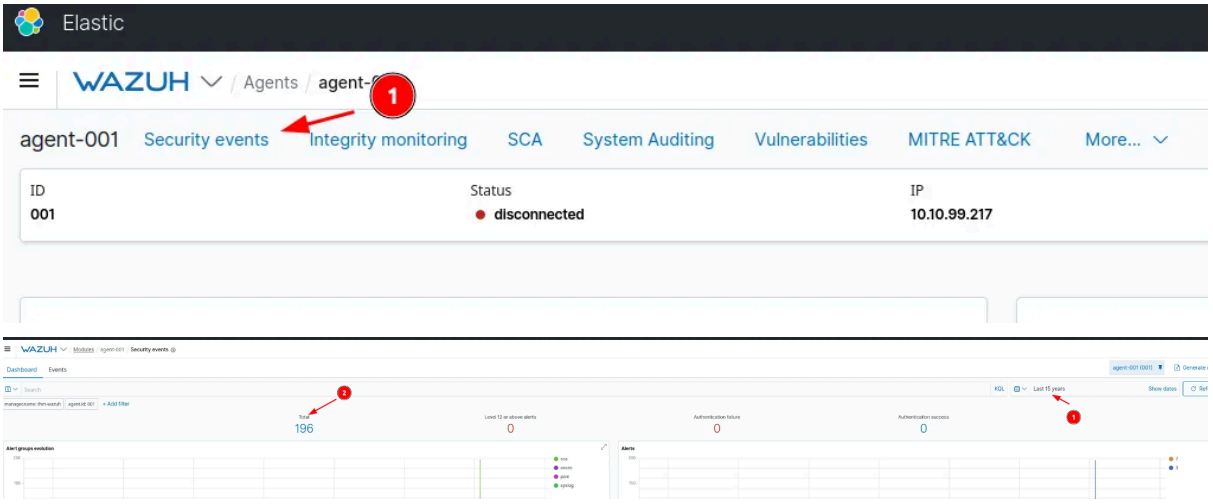


Ensure that you are logged in to the Wazuh management server on HTTP://10.48.154.115
Navigate to the Agents tab by pressing Wazuh -> Agents like so
Select the agent named "AGENT-001"



How many "Security Event" alerts have been generated by the agent "AGENT-001"?

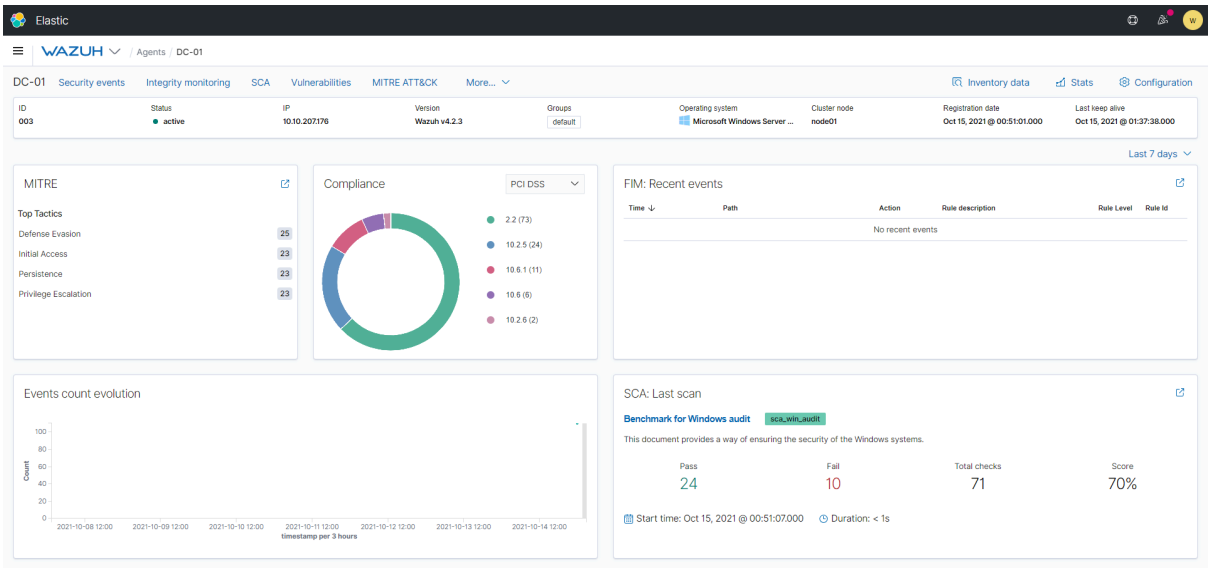
Note: You will need to make sure that your time range includes the 11th of March 2022
Answer: 196



Task 5 Wazuh Policy Auditing
Wazuh is capable of auditing and monitoring an agent's configuration whilst proactively recording event logs. When the Wazuh agent is installed, an audit is performed where a metric is given using multiple frameworks and legislations such as **NIST**(National Institute of Standards and Technology (NIST). This organisation develops frameworks and policies for information security that is used all throughout the industry.), **MITRE** (MITRE Adversarial Tactics, Techniques, and Common Knowledge (**ATT&CK**)) and **GDPR** (General Data

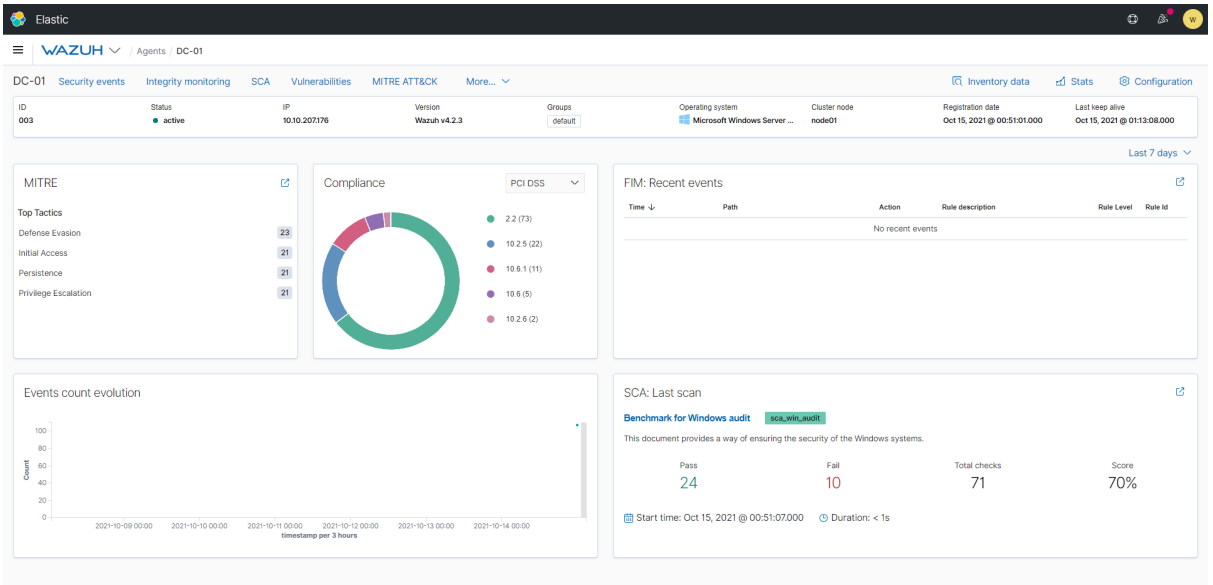
Protection Regulation (GDPR) is a comprehensive EU law, effective since May 25, 2018, that mandates strict rules for collecting, storing, and processing personal data).

For example, see how this agent DC-01 scores against MITRE, NIST, and **SCA** (Software Composition Analysis is an application security methodology in which development teams can quickly track and analyze any open source component):



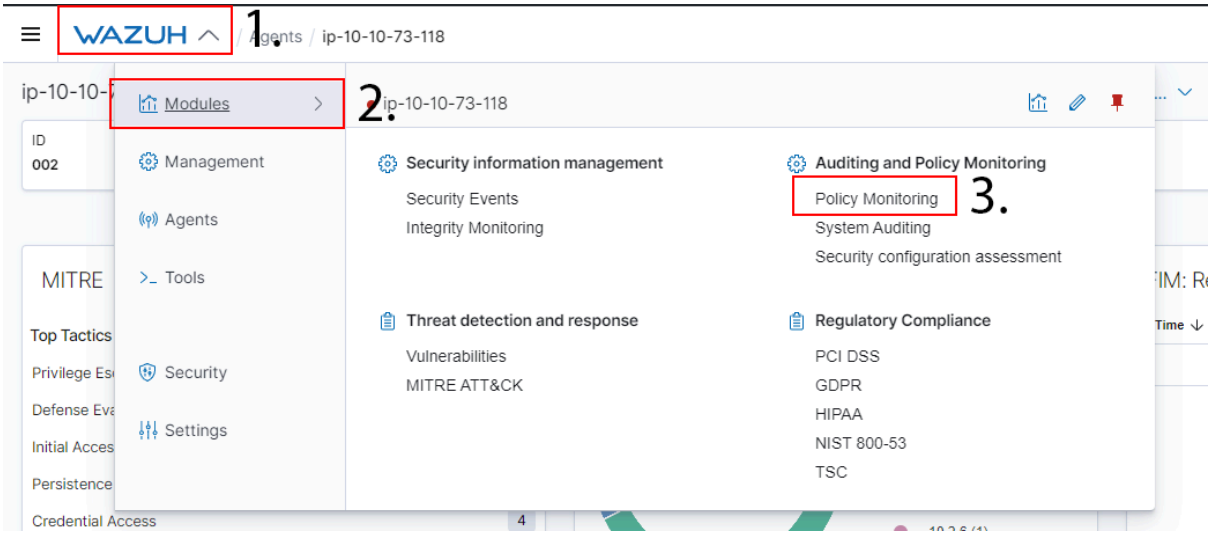
These frameworks are outlined in the Pentesting Fundamentals room: if you wish to learn more about them.

Wazuh presents a broad illustration of the logs. We can use the visualizations to break down this data and explore it further. Let's do this with the same agent. For example, see the benchmark for this domain controller running on a windows server:



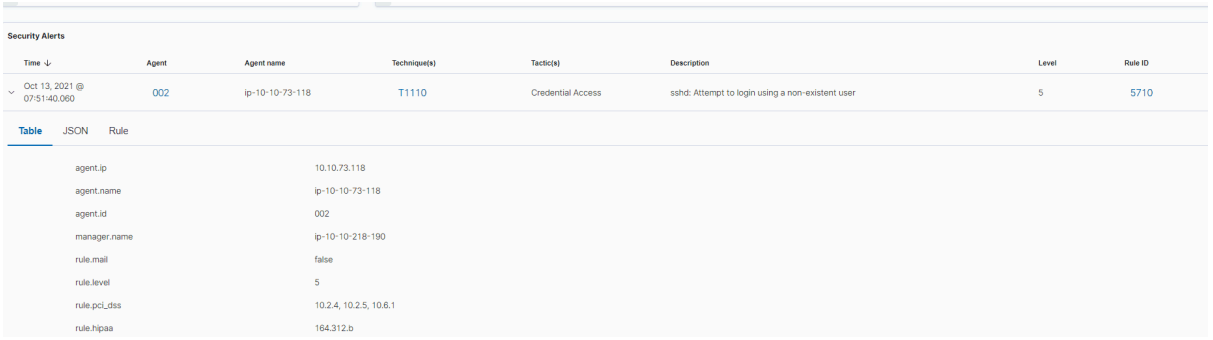
Ensure that you are logged in to the Wazuh management server on MACHINE_IP

Navigate to the "Modules" tab by pressing **Wazuh -> Modules** and open the "Policy Management" module like so:



Task 6 Monitoring Logons with Wazuh

Wazuh's security event monitor is capable to actively record both successful and unsuccessful authentication attempts. The rule with an id of 5710 detects attempted connections that are unsuccessful for the SSH protocol. Let's look at this animated picture below as an example.

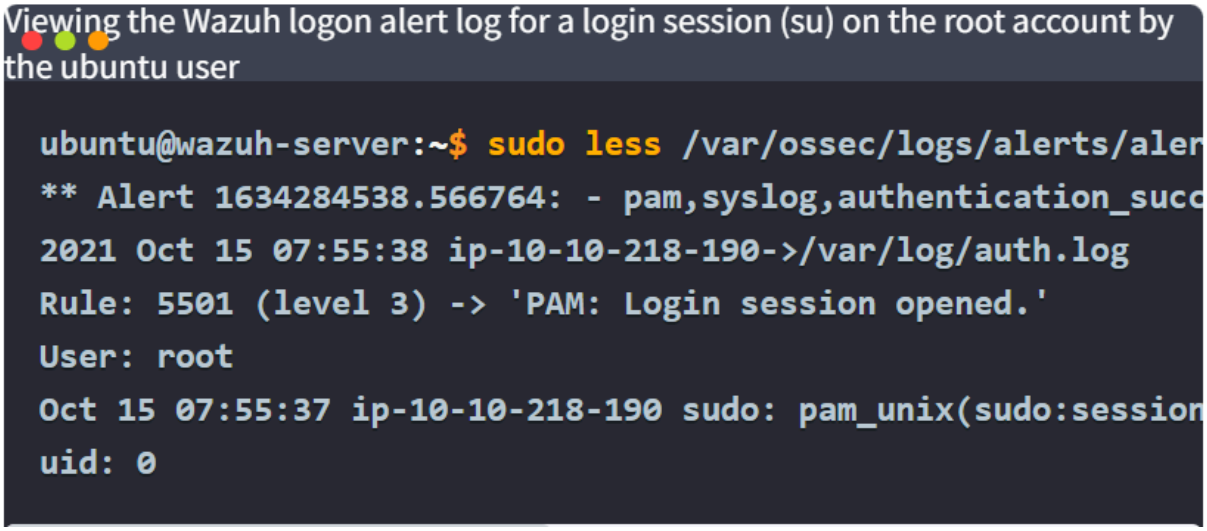


The alert was created because someone tried to log onto the agent "ip-10-10-73- 118" with the user "cmnatic" which does not exist. I have summarized this alert into the table below:

Field	Value	Description
agent.ip	10.10.73.118	This is the IP address of the agent that the alert was triggered on.
agent.name	ip-10-10-73-118	This is the hostname of the agent that the alert was triggered on.
rule.description	sshd: Attempt to login	This field is a brief

	using a non-existent user	description of what the event is alerting to.
rule.mitre.technique	Brute-Force	This field explains the MITRE technique that the alert pertains to.
rule.mitre.id	T1110	This field is the MITRE ID of the alert
rule.id	5710	This field is the ID assigned to the alert by Wazuh's ruleset
location	/var/log/auth.log	This field is the location of the file that the alert was generated from on the agent. In this example, it is the authentication log on the linux agent.

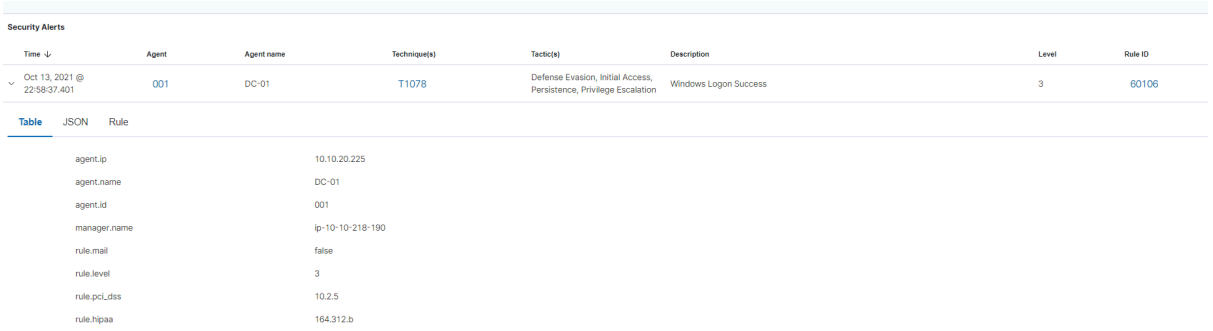
For reference, this alert is stored in a specific file on the Wazuh management server: `/var/ossec/logs/alerts/alerts.log`.
We can use a command such as grep or nano to search through this file on the management server manually.



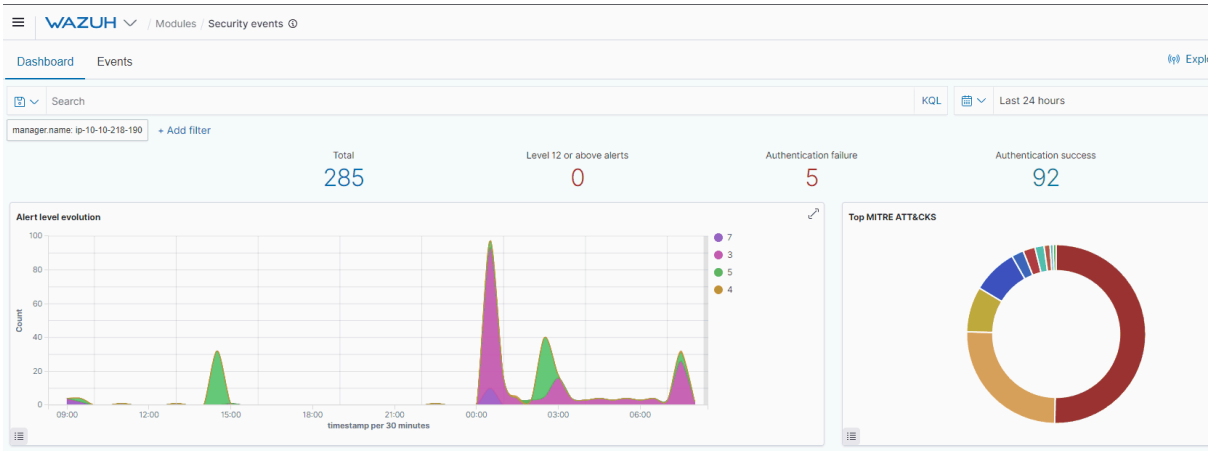
ubuntu@wazuh-server:~$ sudo less /var/ossec/logs/alerts/alerts.log
** Alert 1634284538.566764: - pam,syslog,authentication_success,pci_dss_10.2.5,gpg13_7.8,gpg13_7.9,gdpr_IV_32.2,hipaa_164.312.b,ni>
2021 Oct 15 07:55:38 ip-10-10-218-190->/var/log/auth.log
Rule: 5501 (level 3) -> 'PAM: Login session opened.'
User: root
Oct 15 07:55:37 ip-10-10-218-190 sudo: pam_unix(sudo:session): session opened for user root by ubuntu(uid=0)

uid: 0

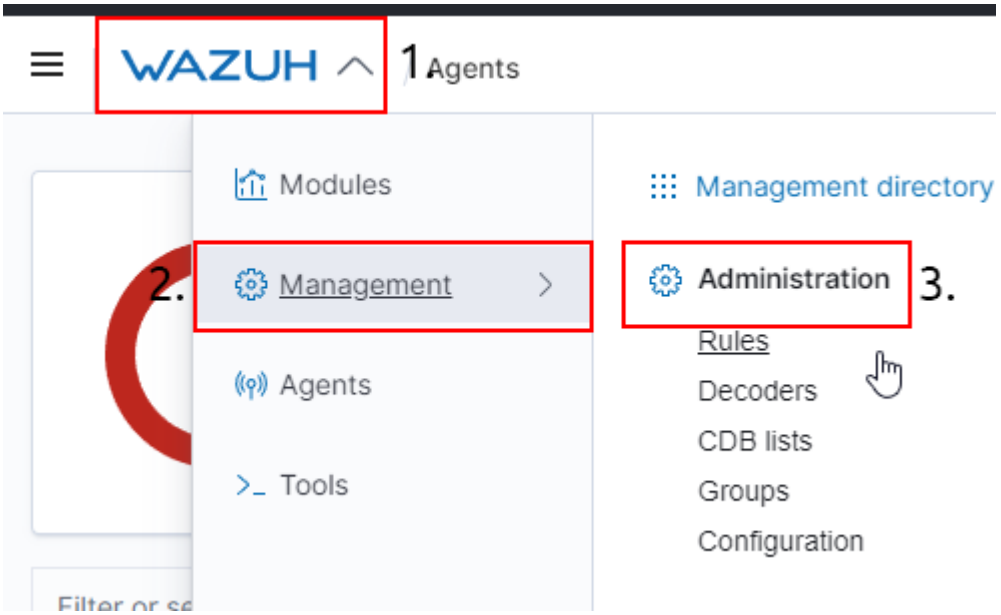
Looking at the animated gif below, we can see how Wazuh has created an alert for successful login to a Window's server running the Wazuh agent. Because this attempt was successful, the severity of the alert is considered less than that of an unsuccessful login. This can, of course, be tailored to your environment. For example, if a user infrequently used is logged on, you can configure Wazuh to list this alert with higher severity.



The animated gif below shows the number of Windows agent events/alerts triggered to show how many times a user has logged on. . In this case, it narrows down the total logon events of 285 to 79.



Navigate to the "Management" tab by pressing Wazuh -> Management and open the "Rules" module like so:



Task 7 Collecting Windows Logs with Wazuh

All sorts of actions and events are captured and recorded on a Windows operating system. This includes authentication attempts, networking connections, files that were accessed, and the behaviours of applications and services. This information is stored in the Windows event log using a tool called Sysmon.

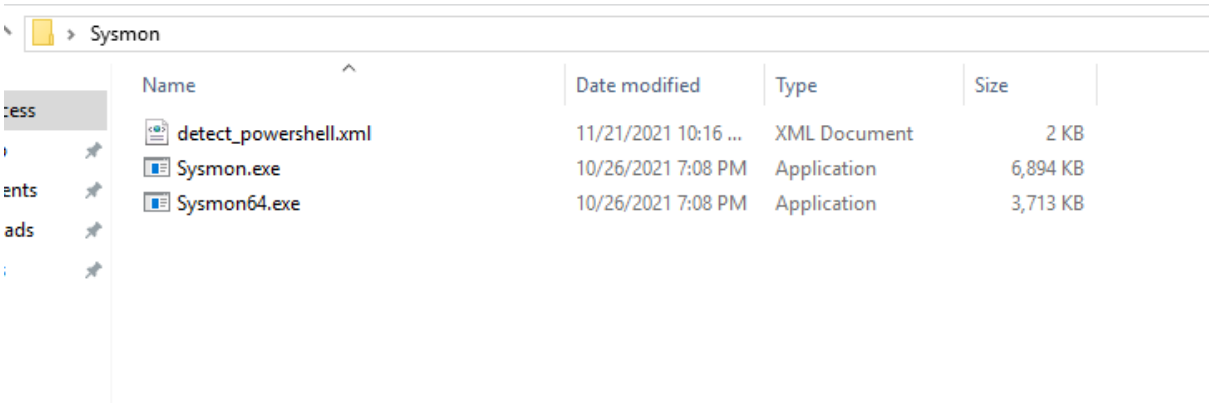
We can use the Wazuh agent to aggregate these events recorded by Sysmon for processing to the Wazuh manager. Now, we will need to configure both the Wazuh agent and the Sysmon application. Sysmon uses rules that are made in XML formatting to be triggered. For example, in the XML snippet below, we are telling Sysmon to monitor for the event of the powershell.exe process starting.

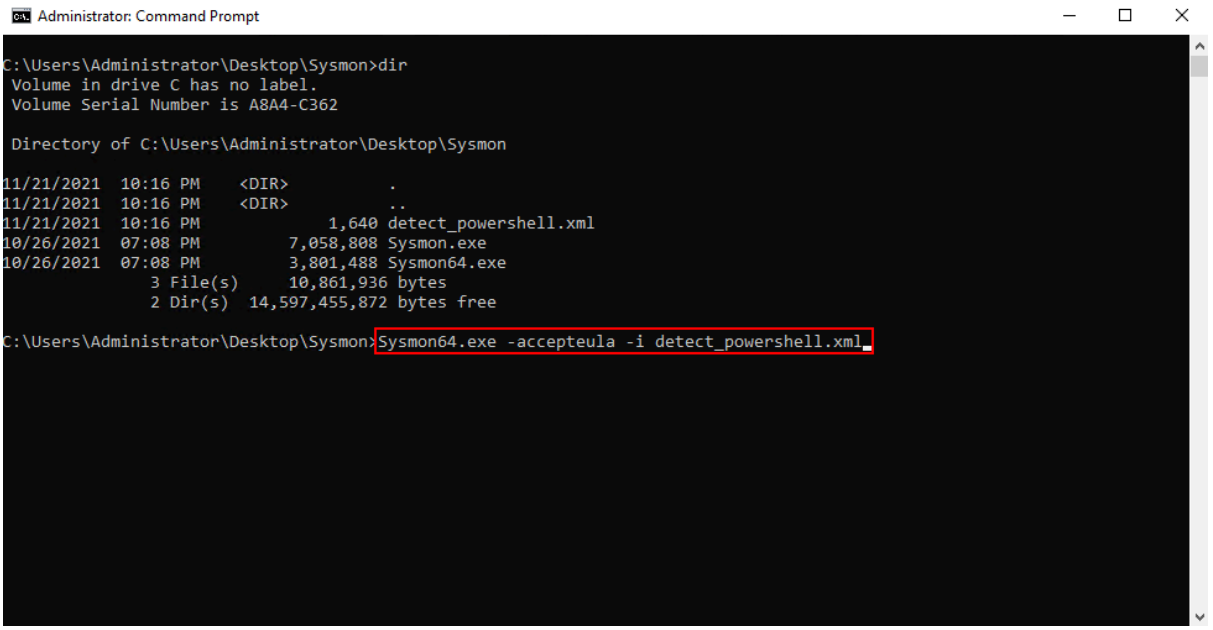
A Sysmon configuration file for monitoring the Powershell process

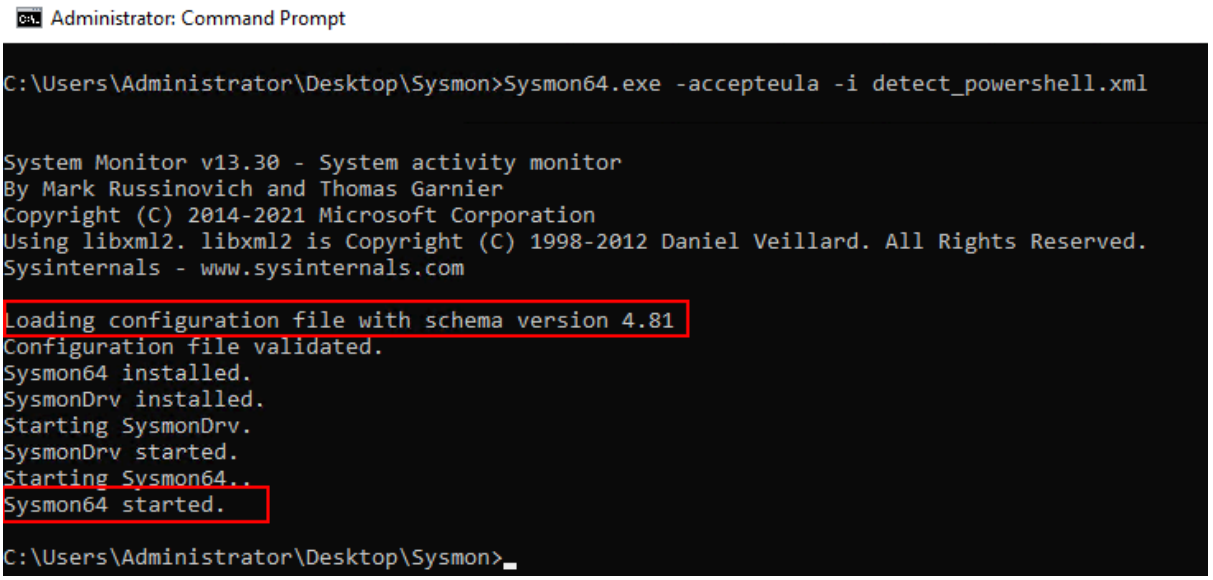
```
Sysmon schemaversion="3.30"
        HashAlgorithms md5 /HashAlgorithms
  EventFiltering
  !--SYSMON EVENT ID 1 : PROCESS CREATION--
  ProcessCreate onmatch="include"
  Image condition="contains" powershell.exe /Image
  /ProcessCreate
  !--SYSMON EVENT ID 2 : FILE CREATION TIME RETROACTIVELY
CHANGED IN THE FILESYSTEM--
  FileCreateTime onmatch="include"  /FileCreateTime
  !--SYSMON EVENT ID 3 : NETWORK CONNECTION INITIATED--
  NetworkConnect onmatch="include"  /NetworkConnect
  !--SYSMON EVENT ID 4 : RESERVED FOR SYSMON STATUS MESSAGES,
THIS LINE IS INCLUDED FOR DOCUMENTATION PURPOSES ONLY--
  !--SYSMON EVENT ID 5 : PROCESS ENDED--
  ProcessTerminate onmatch="include"  /ProcessTerminate
```

```
  !--SYSMON EVENT ID 6 : DRIVER LOADED INTO KERNEL--
  DriverLoad onmatch="include"  /DriverLoad
  !--SYSMON EVENT ID 7 : DLL (IMAGE) LOADED BY PROCESS--
  ImageLoad onmatch="include"  /ImageLoad
  !--SYSMON EVENT ID 8 : REMOTE THREAD CREATED--
  CreateRemoteThread onmatch="include"  /CreateRemoteThread
  !--SYSMON EVENT ID 9 : RAW DISK ACCESS--
  RawAccessRead onmatch="include"  /RawAccessRead
  !--SYSMON EVENT ID 10 : INTER-PROCESS ACCESS--
  ProcessAccess onmatch="include"  /ProcessAccess
  !--SYSMON EVENT ID 11 : FILE CREATED--
  FileCreate onmatch="include"  /FileCreate
  !--SYSMON EVENT ID 12 & 13 & 14 : REGISTRY MODIFICATION--
  RegistryEvent onmatch="include"  /RegistryEvent
  !--SYSMON EVENT ID 15 : ALTERNATE DATA STREAM CREATED--
  FileCreateStreamHash onmatch="include"
/FileCreateStreamHash
  PipeEvent onmatch="include"  /PipeEvent
  /EventFiltering
 /Sysmon
```

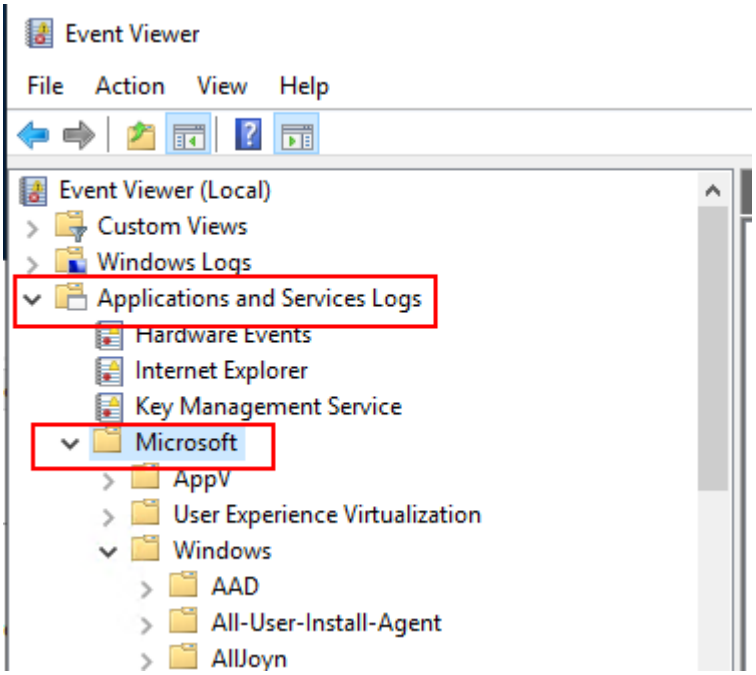
To instruct Sysmon to do, we need to execute the Sysmon application and provide the aforementioned configuration file like so: Sysmon64.exe -accepteula -i detect_powershell.xml

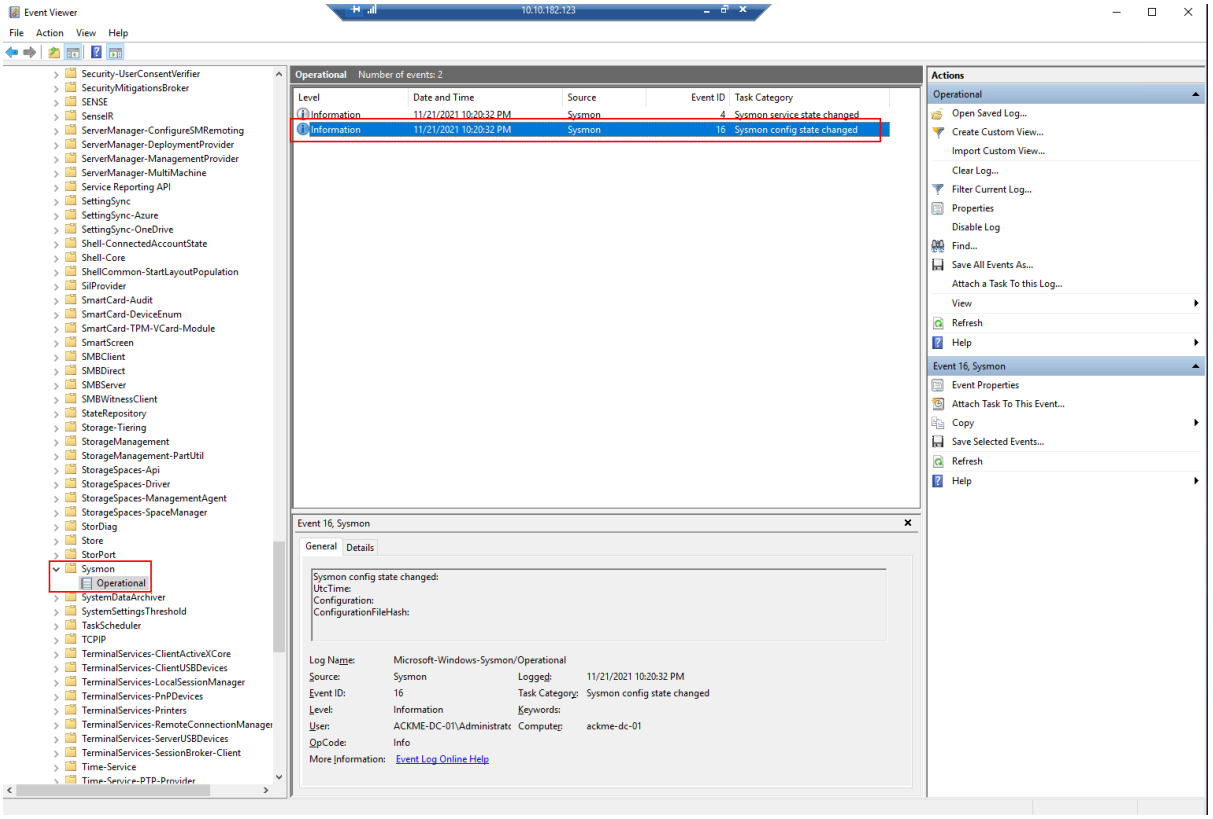




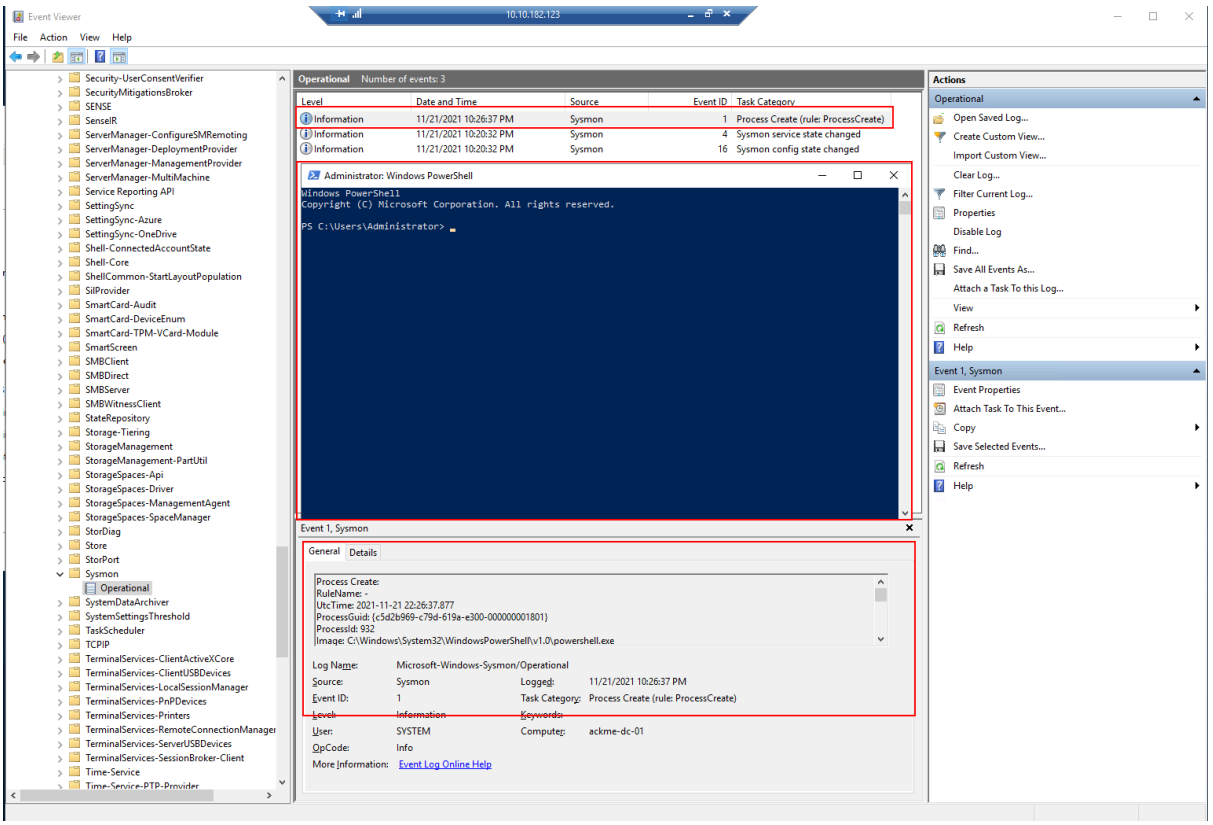


We can verify that Sysmon has accepted our configuration file by navigating to the Event Viewer and searching for the “Sysmon” module like so:

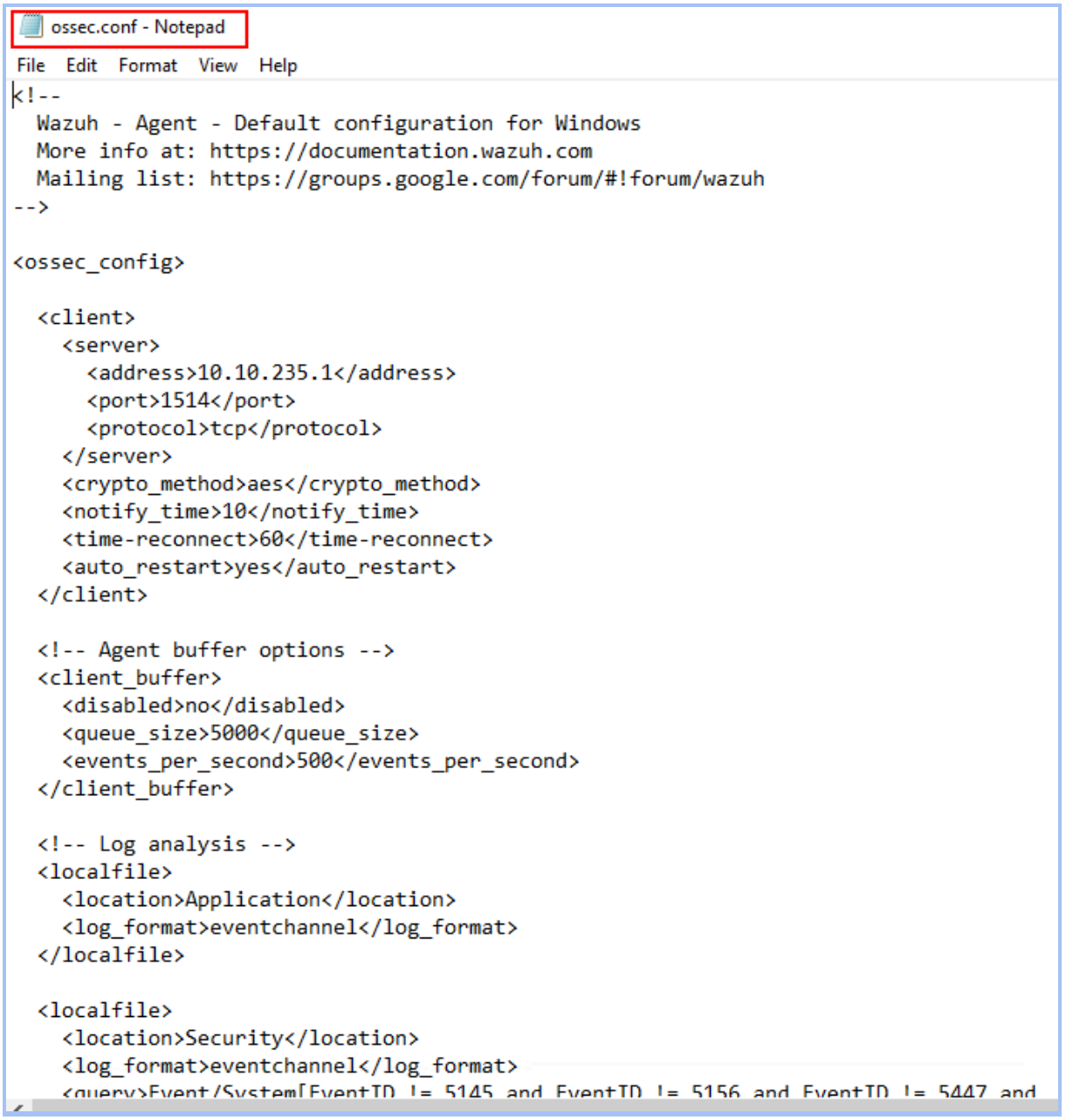




Let's launch a powershell prompt on the Windows Server and return to our Event Viewer. We can now see a record of this powershell prompt being opened, kept within the Event Viewer.



Now we will need to configure the Wazuh agent on this Window Server to instruct it to send these events to the Wazuh management server. To do so, we need to open the Wazuh agent file located at: C:\Program Files (x86)\ossec-agent\ossec.conf



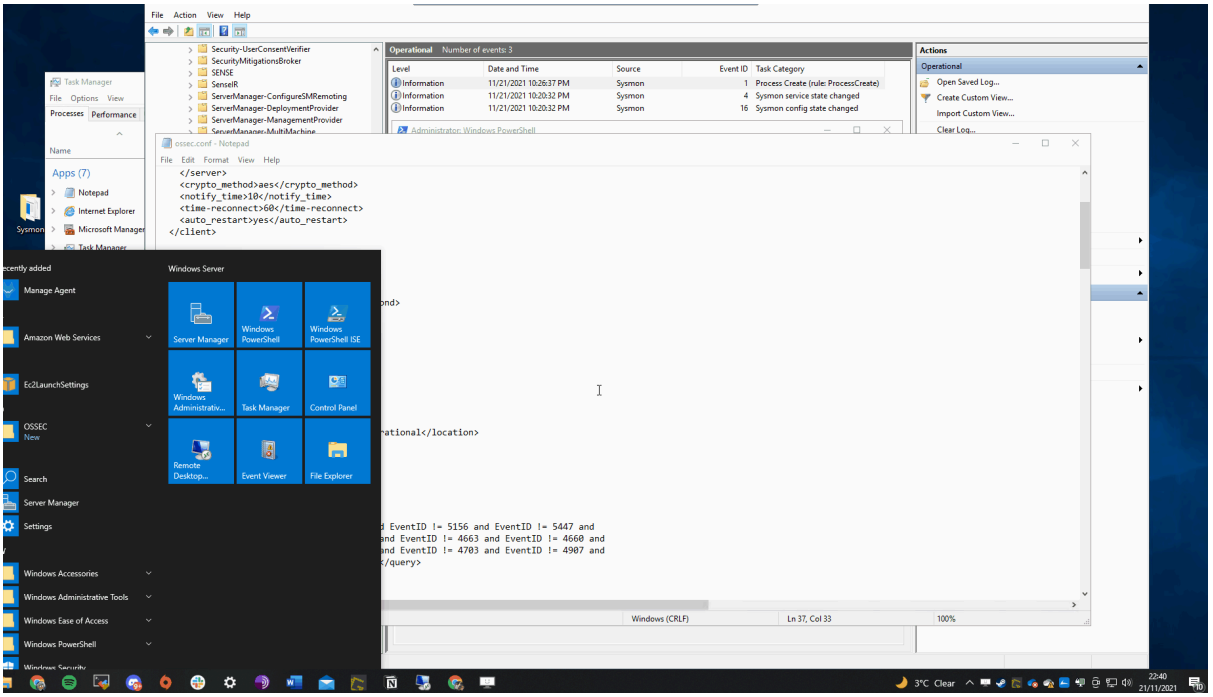
To include the following snippet:

Configuring theWazuhAgent's configuration

```
<localfile>
<location>Microsoft-Windows-Sysmon/Operational</location>
<log_format>eventchannel</log_format>
</localfile>
```

Looking like so:

Now, we will need to restart the Wazuh agent. In this instance, I am restarting the operating system just to be sure that these changes have taken place.



Once this is done, we need to tell the Wazuh Management server to add Sysmon as a rule to visualize these events. This can be done by adding an XML file to the local rules located in /var/ossec/etc/rules/local_rules.xml

Configuring theWazuhServer to ingress Ssymon events

```
<group name="sysmon,">
 <rule id="255000" level="12">
 <if_group>sysmon_event1</if_group>
 <field
name="sysmon.image">\\powershell.exe|\\.ps1|\\.ps2</field>
 <description>Sysmon - Event 1: Bad exe:
$(sysmon.image)</description>
 <group>sysmon_event1,powershell_execution,</group>
 </rule>
</group>
```

What is the name of the tool that we can use to monitor system events?
Answer: Sysmon
What standard application on Windows do these system events get recorded to?
Answer: Event Viewer

Task 8 Collecting Linux Logs with Wazuh
Capturing logs from a Linux agent is a simple process similar to capturing events from a Windows agent. We will be using Wazuh's log collector service to create an entry on the agent to instruct what logs should be sent to the Wazuh management server.

For example, in this task, we will be monitoring the logs of an Apache2 web server. To begin, let's configure the log collector service on a Linux server running the Wazuh agent.

Wazuh comes with many rules that enable Wazuh to analyze log files and can be found in **/var/ossec/ruleset/rules**. Some common applications include:

- Docker
- FTP
- WordPress
- SQL Server
- MongoDB
- Firewalld
- And many, many more (approximately 900).

However, you can always make your own rules. In this task, Wazuh will digest Apache2 logs using the 0250-apache_rules.xml ruleset.

This ruleset can analyze apache2 logs for warnings and error messages like so: We will need to insert this into the Wazuh's agent that is sending logs to the Wazuh management servers configuration file located in **/var/ossec/etc/ossec.conf:**

Apache2 Log Analysis

```
<!-- Apache2 Log Analysis -->
  <localfile>
    <location>/var/log/example.log</location>
    <log_format>syslog</log_format>
  </localfile>
```

We will now need to restart the Linux agent running the Apache2 service.
Answer the questions below
What is the full file path to the rules located on a Wazuh management server?
Answer: /var/ossec/ruleset/rules

Task 9 Auditing Commands on Linux with Wazuh

Wazuh utilises the auditd package that can be installed on Wazuh agents running on Debian/Ubuntu and CentOS operating systems. In this task, we will be using auditd on a Ubuntu system. Auditd monitors the system for certain actions and events and will write this to a log file.

We can then use the log collector module on a Wazuh agent to read this log file and send it to the Wazuh management server for processing.

First, we will need to install the auditd package and an auditd plugin. This may already be installed on your system; however, let's install it to make sure. Let's run the command sudo apt-get install auditd audispd-plugins and enable this service to run currently as well as on boot.sudo systemctl enable auditd.service & sudo systemctl start auditd.service

We will need to configure auditd to create a rule for the commands and events that we wish for it to monitor. In this task, we will be telling auditd to monitor for any commands executed as root.

You can extend this to monitor commands such as tcpdump, netcat, or catting files such as **/etc/passwd**, which are all hallmarks of a breach.

Auditd rules are located in the following directory: **/etc/audit/rules.d/audit.rules**. We will be adding our rules manually.

For this task, we will need to open this audit.rules file and append our rule ourselves. First, let's edit the file using **sudo nano /etc/audit/rules.d/audit.rules** and appending **-a exit,always -F arch=64 -F euid=0 -S execve -k audit-wazuh-c**

Monitoring commands executed as root

```
## First rule - delete all
-D

## Increase the buffers to survive stress events.
## Make this bigger for busy systems
-b 8192

## This determine how long to wait in burst of events
--backlog_wait_time 0

## Set failure mode to syslog
-f 1

-a exit,always -F arch=b64 -F euid=0 -S execve -k
audit-wazuh-c
```

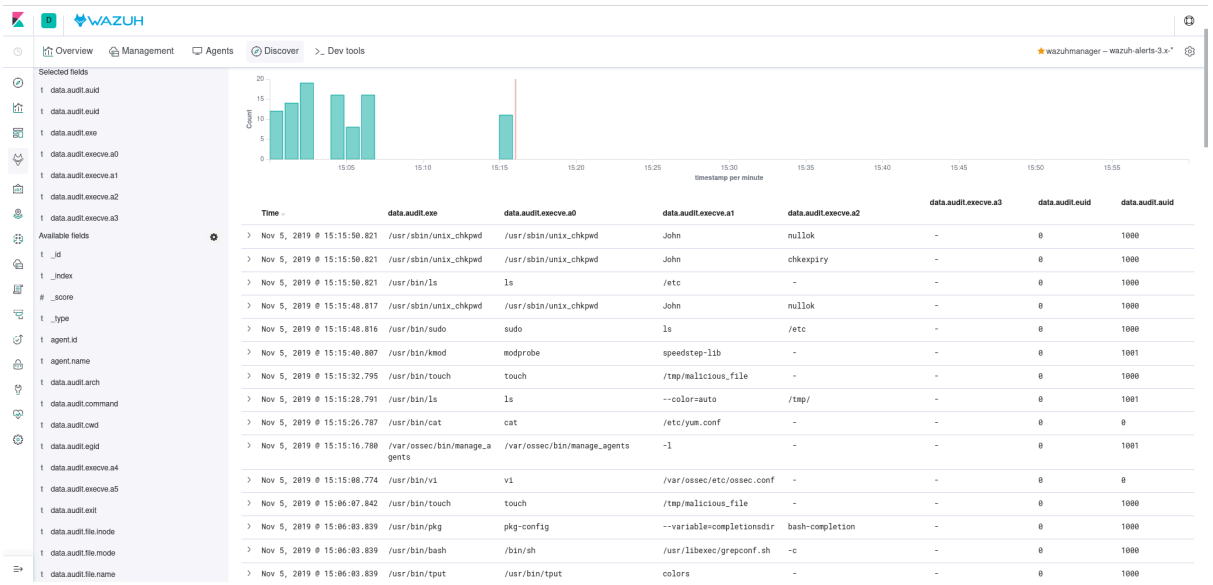
We will now need to inform audits of this new rule, so let's run this command **sudo auditctl -R /etc/audit/rules.d/audit.rules** to now read the new audit.rules file that we appended to in the previous task.

Now, let's configure the system that is running a Wazuh agent that we wish to monitor these events on. We'll be monitoring a Linux host in this case, so like in our previous tasks, we will need to configure the Wazuh agent to detect this new log file that is generated by **auditd** like so **sudo nano /var/ossec/etc/ossec.conf** and add the **auditd** log like so:

Configuring the Wazuh agent to add the auditd log as a log file to send to the Wazuh management server

```
<localfile>
    <location>/var/log/audit/audit.log</location>
    <log_format>audit</log_format>
```

```
</localfile>
```



What application do we use on Linux to monitor events such as command execution?
Answer: auditd
What is the full path & filename for where the aforementioned application stores rules?
Answer: /etc/audit/rules.d/audit.rules

Task 10: Wazuh API
Using Our Own Client

The Wazuh management server features a rich and extensive API to allow the Wazuh management server to be interacted with using the command line. Because the Wazuh management server requires authentication, we must first authenticate our client.

In this task, we will be using a Linux machine with the **curl** tool installed to interact with the Wazuh management server API. First, we will need to authenticate ourselves by providing a valid set of credentials to the authentication endpoint.

Once we are authenticated, the Wazuh management server will give us a token (similar to a session) that we will need to provide for any further interaction. We can store this token as an environment variable on our Linux machine like the snippet below:

(replacing WAZUH_MANAGEMENT_SERVER_IP with the IP address of the Wazuh management server (i.e. MACHINE_IP):

TOKEN=$(curl -u : -k -X GET "https://WAZUH_MANAGEMENT_SERVER_IP:55000/security/user/authenticate?raw=true")

Let's confirm that we have authenticated okay and have been given a token by the Wazuh management server:

curl -k -X GET "https://MACHINE_IP:55000/" -H "Authorization: Bearer $TOKEN"

Wazuh API Verify Authentication


```
{
   "data": {
      "title": "Wazuh API",
      "api_version": "4.0.0",
      "revision": 4000,
      "license_name": "GPL 2.0",
      "license_url": "https://github.com/wazuh/wazuh/blob/master/LICENSE",
      "hostname": "wazuh-master",
      "timestamp": "2021-10-25T07:05:00+0000"
   },
   "error": 0
}
```


We can use the standard HTTP request methods such as GET/POST/PUT/DELETE by providing the relevant option after a -X i.e. -X GET

curl -k -X GET "https://MACHINE_IP:55000/manager/status?pretty=true" -H "Authorization: Bearer $TOKEN"

Getting information about the Wazuh manager


```
{
  "data": {
    "affected_items": [
      {
        "wazuh-agentlessd": "running",
        "wazuh-analysisd": "running",
        "wazuh-authd": "running",
        "wazuh-csyslogd": "running",
        "wazuh-dbd": "stopped",
        "wazuh-monitord": "running",
        "wazuh-execd": "running",
        "wazuh-integratord": "running",
        "wazuh-logcollector": "running",
        "wazuh-maild": "running",
        "wazuh-remoted": "running",
        "wazuh-reportd": "stopped",
        "wazuh-syscheckd": "running",
        "wazuh-clusterd": "running",
        "wazuh-modulesd": "running",
        "wazuh-db": "running",
        "wazuh-apid": "stopped"
      }
```

```
    ],
    "total_affected_items": 1,
    "total_failed_items": 0,
    "failed_items": []
  },
  "message": "Processes status were successfully read in specified node",
  "error": 0
}
```


Or perhaps, we can use the Wazuh management server's API to interact with an agent:

curl -k -X GET "https://MACHINE_IP:55000/agents?pretty=true&offset=1&limit=2&select=status%2Cid%2Cmanager%2Cname%2Cnode_name%2Cversion&status=active" -H "Authorization: Bearer $TOKEN"

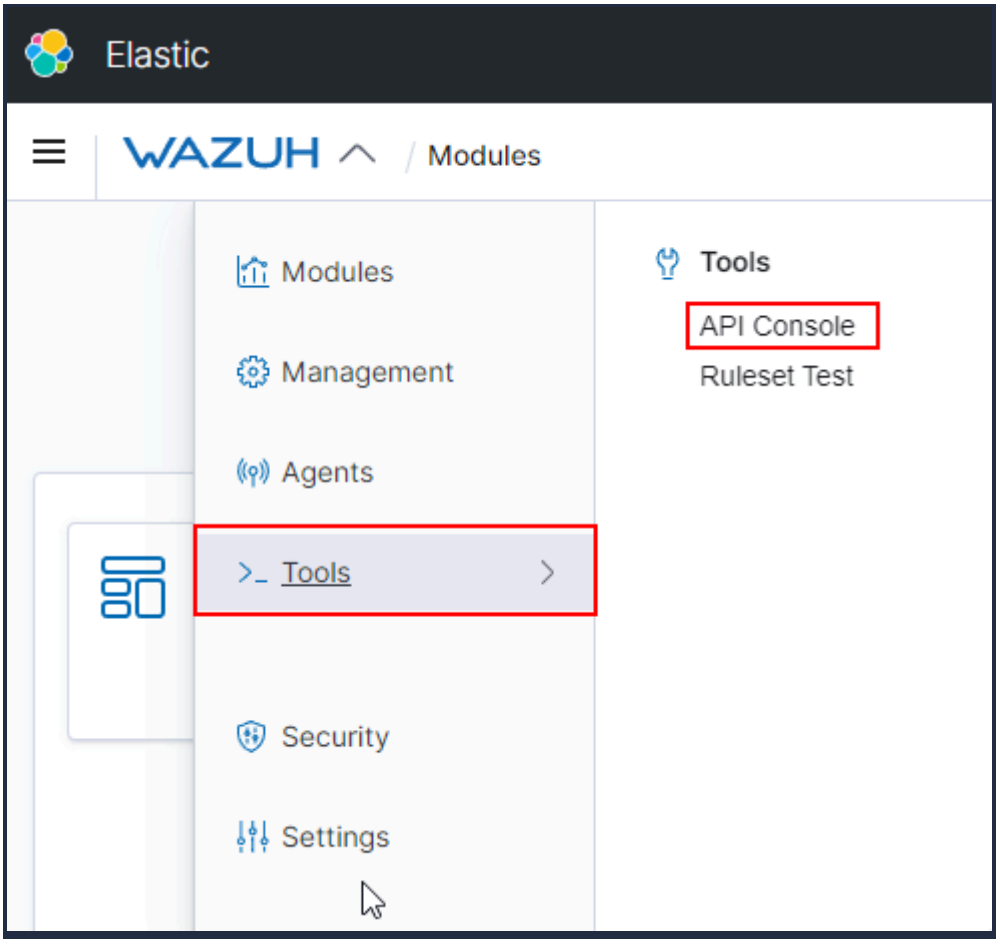
Using the Wazuh management server's API to interact with an agent


```
{
  "data": {
    "affected_items": [
      {
        "node_name": "worker2",
        "status": "active",
        "manager": "wazuh-worker2",
        "version": "Wazuh v3.13.1",
        "id": "001",
        "name": "wazuh-agent1"
      }
],
    "total_affected_items": 9,
    "total_failed_items": 0,
    "failed_items": []
  },
  "message": "All selected agents information was returned",
  "error": 0
}
```

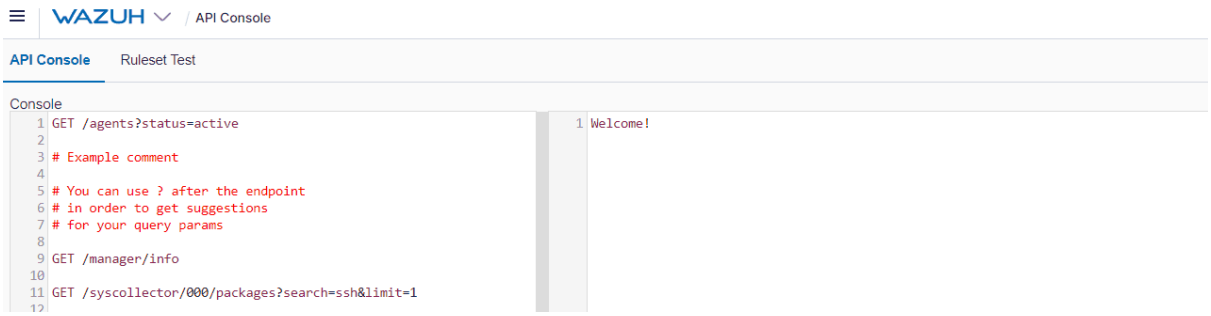

Using Wazuh's API Console

Wazuh has a powerful, integrated API console within the Wazuh website to query management servers and agents. Whilst it is not as extensive as using your own environment (where you can create and run scripts using python, for example), it is convenient.

To find this API console, we need to open the "Tools" category within the Wazuh heading at the top:



You will be greeted with a few sample queries that you can run. Simply select the line and press the green run arrow to run the query as demonstrated below:



Reminder, the syntax for running queries uses the same web methods (i.e. GET/PUT/POST) and endpoints (i.e. /manager/info) as you would use with curl. You can view some more options about API endpoints by following Wazuh's detailed API documentation here: https://documentation.wazuh.com/current/user-manual/api/reference.html

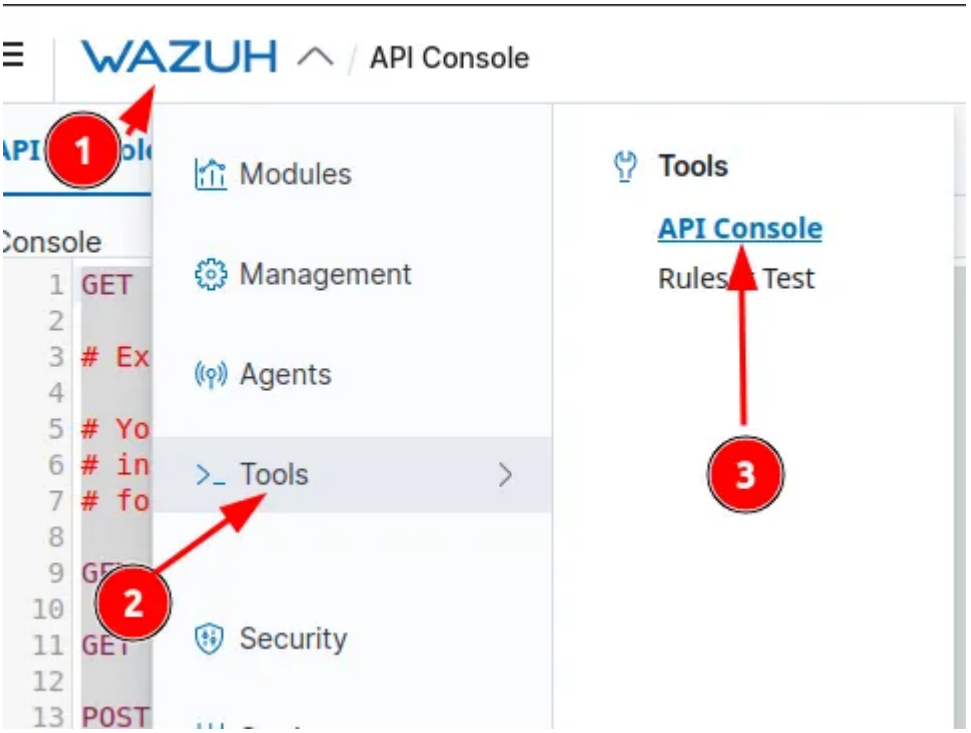
What is the name of the standard Linux tool that we can use to make requests to the Wazuh management server?

Answer: curl
What HTTP method would we use to retrieve information for a Wazuh management server API?
Answer: GET

What HTTP method would we use to perform an action on a Wazuh management server API?
Answer: PUT

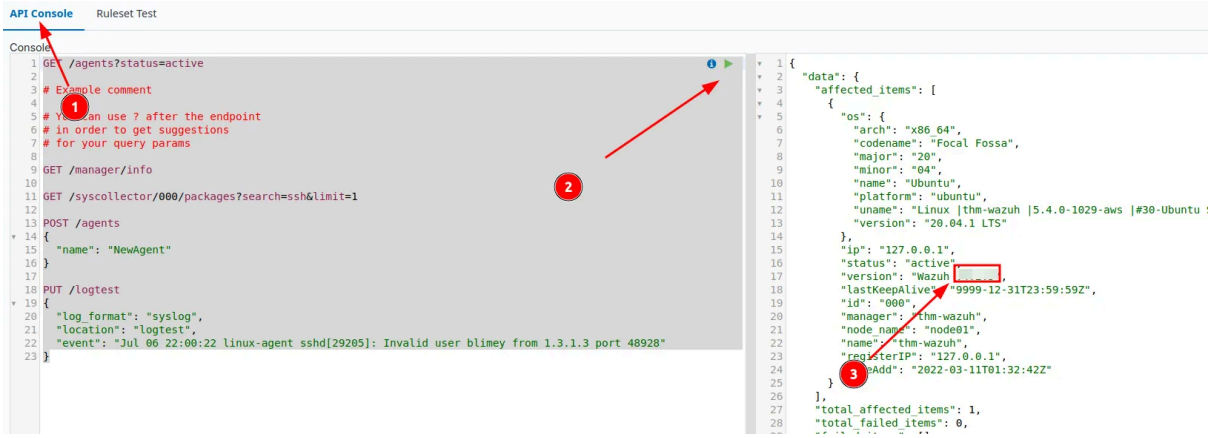
Navigate to Wazuh's API console.

No answer needed



Use the API console to find the Wazuh server's version.

Note: You will need to add the "v" prefix to the number for this answer. For example v1.2.3

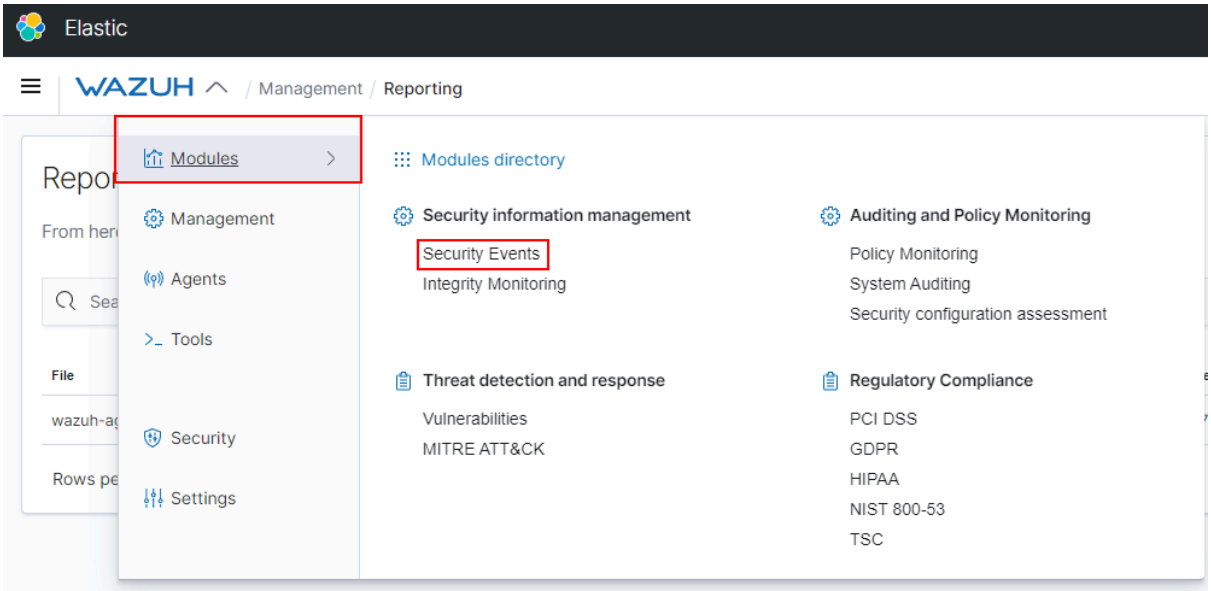


Answer: v4.2.5

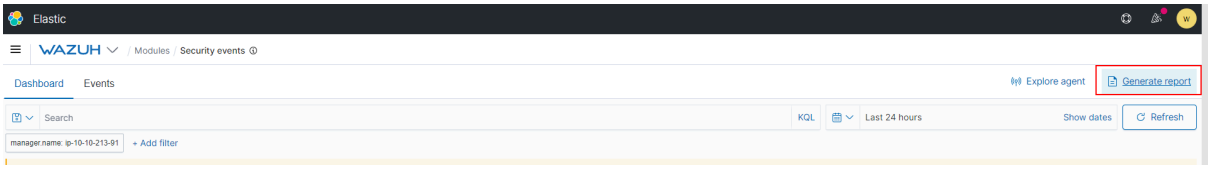
Task 11 Generating Reports with Wazuh

Wazuh features a reporting module that allows you to view a summarised breakdown of events that have occurred on an agent.

First, we will need to select a view to generate reports from. In this example, I want to generate a report of the security events in the last 24 hours. To do so, I will need to open the view: **1. Modules -> 2. Security Events**

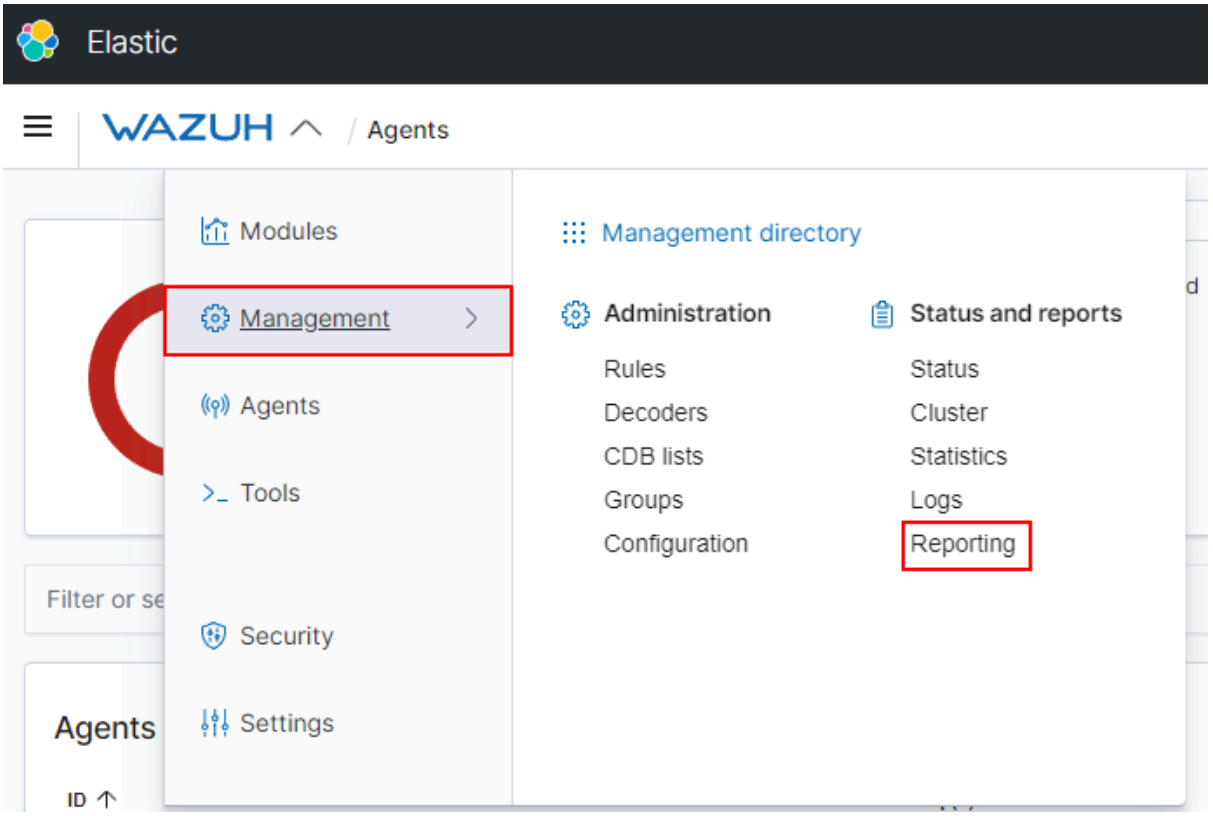


Now, if there have been alerts within the last 24 hours, I can generate a report like so:

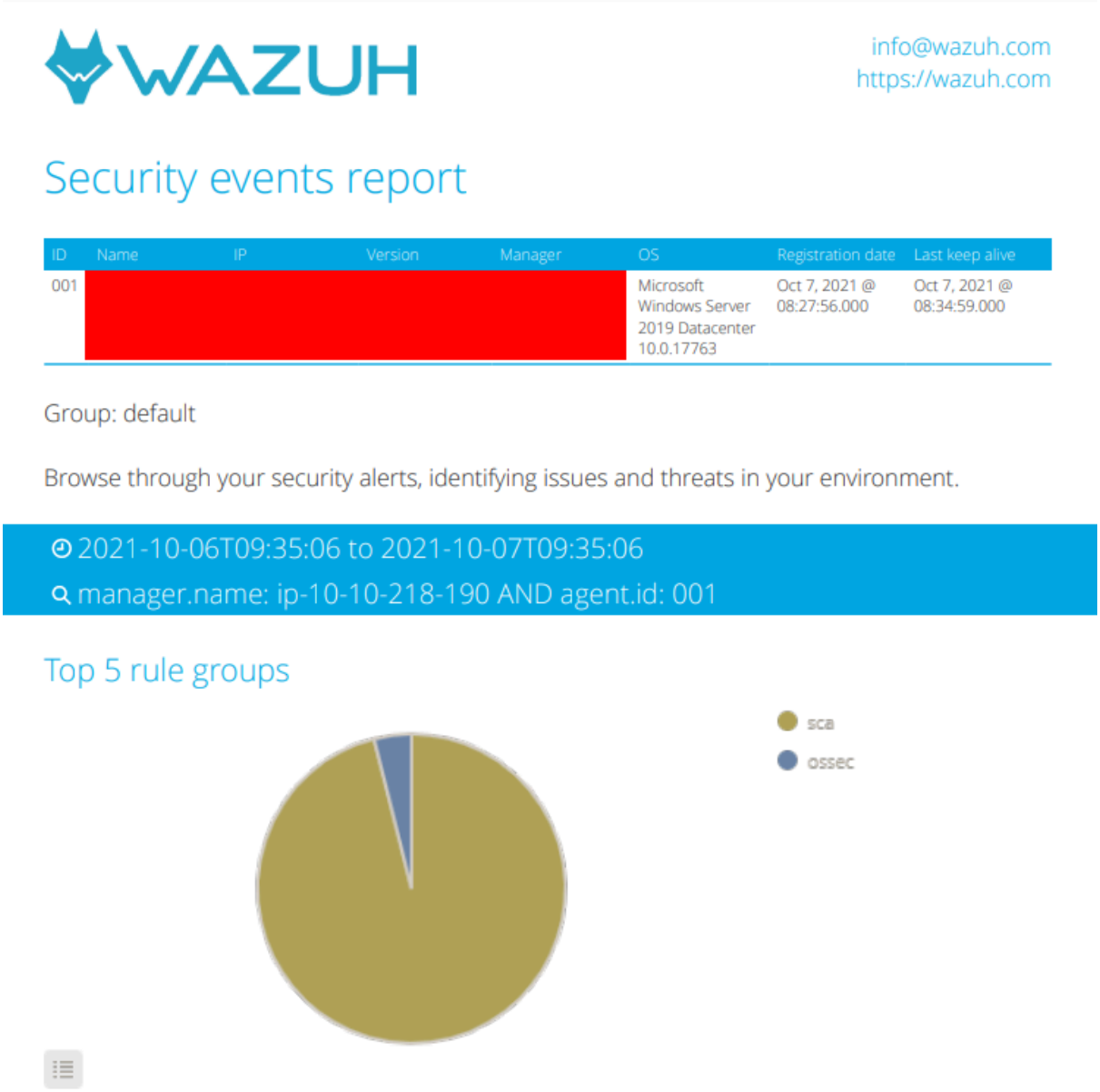


The report may take between a couple of seconds to a few minutes to generate (depending on the amount of data needed to be processed). After allowing some time, we will navigate to the report overview dashboard within Wazuh.

First, press on the "Wazuh" heading at the top of the screen and select "Management", and then click on the "Reporting" text located under the "Status and Reports" sub-heading:



The report overview dashboard lists all generated reports. To download a report, press the save icon on the right of the report located under the "Actions" heading.
Which will download the report as a PDF to your machine. A generated security events report looks like so:



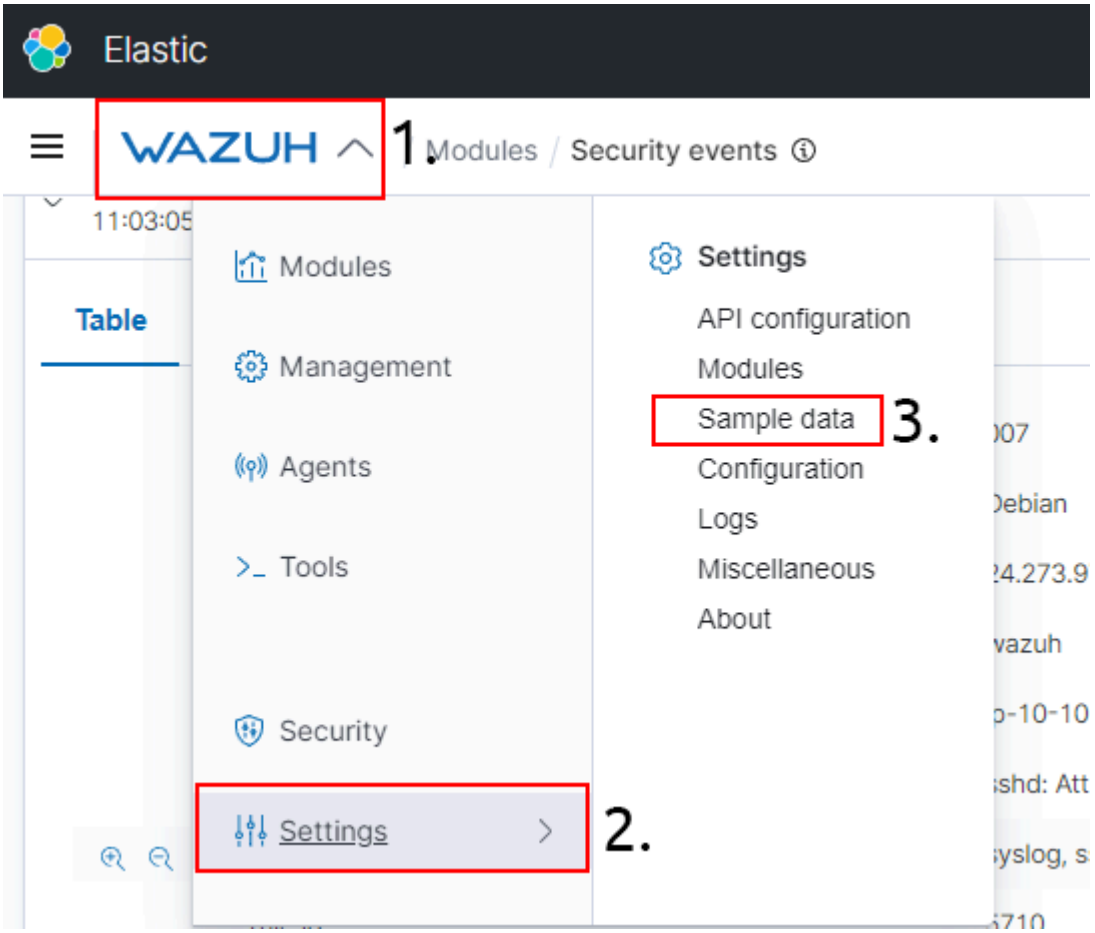
Use Wazuh's "Report" feature to generate a report of an agent.
Navigate to the Wazuh "Report" dashboard

Analyse the report. What is the name of the agent that has generated the most alerts?
Answer: agent-001
Open the generated report using the “Download” icon under “Actions”:

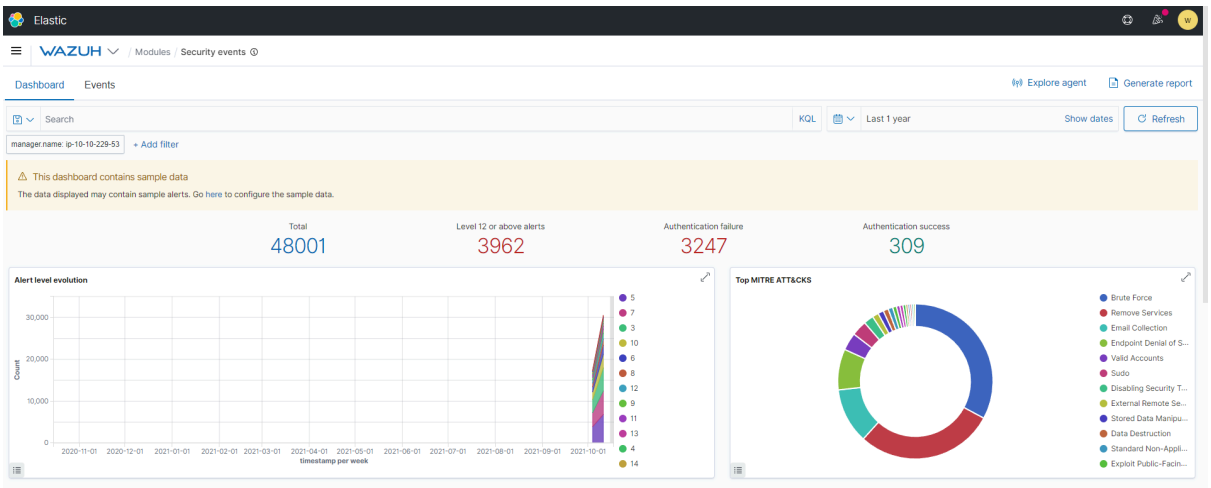
Task 12 Loading Sample Data

The Wazuh management server comes with sample data bundled with the installation that can be loaded at your convenience. I have not enabled this by default to improve the performance of the server. However, if you wish to import much more data to showcase the extensibility of Wazuh further, follow the steps below. Navigate to the module to load the sample data:

1. Open the "**Wazuh**" tab in the heading.
2. Highlight over "**Settings**".
3. Select the "**Sample Data**" heading.
4. Press the "**Add Data**" button on the respective three cards to import the data.

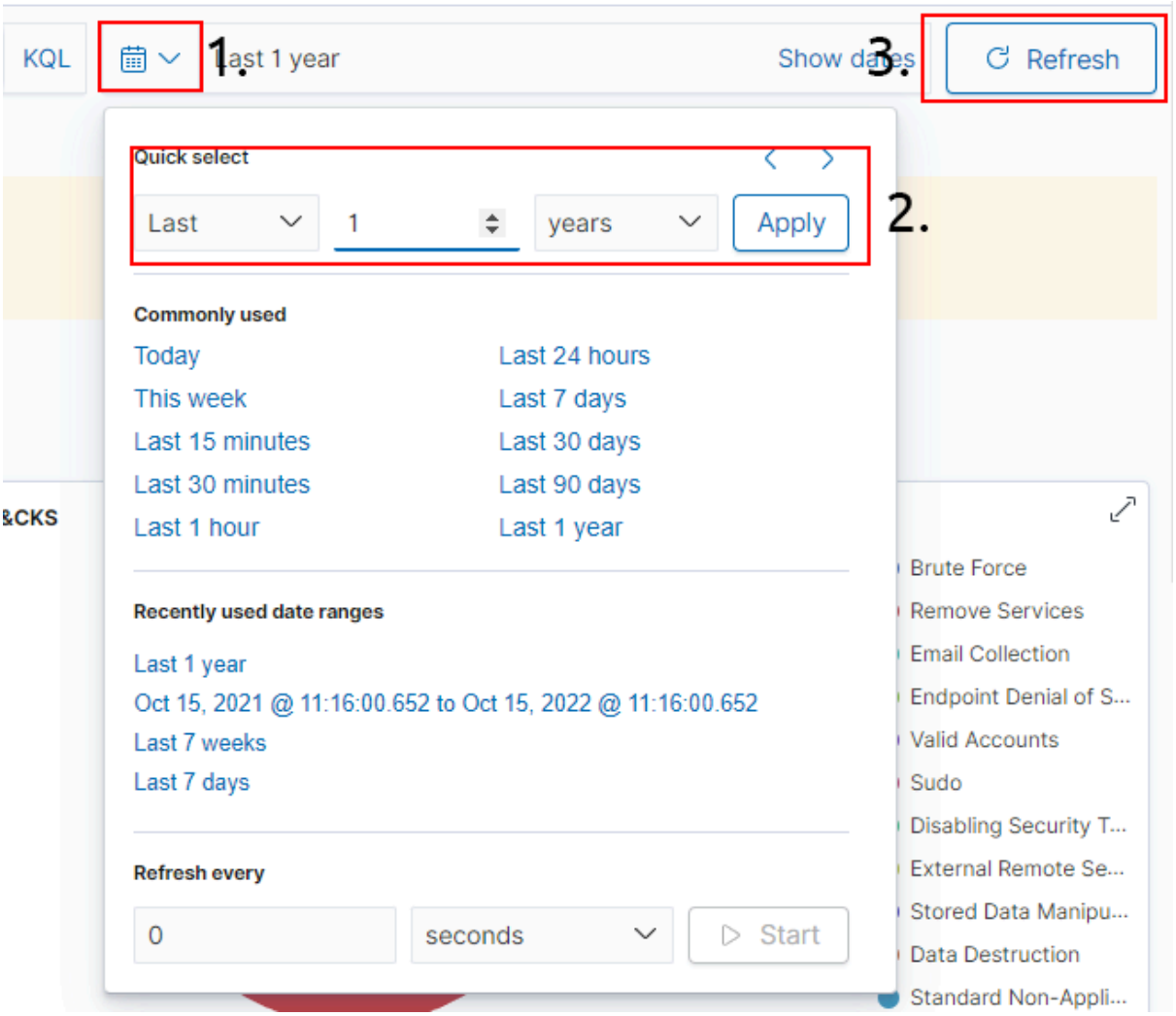


Note that this may take up to a minute for each. Refer to this animated picture below for example. The data will have successfully imported when the button on the card says "Remove data"



Return to the Wazuh dashboard to see the newly imported data. For example, we can now see that the "Security Events" module has a tonne more data for us to explore.

Please note that you will need to play with the date range. The absolute minimum required to show the sample will need to be Last 7 days+ and refresh the dashboard for this to apply.



This concludes the Wazuh room.This was interesting tool, seemingly very robust and incredibly useful for a free, open source and enterprise ready solution.