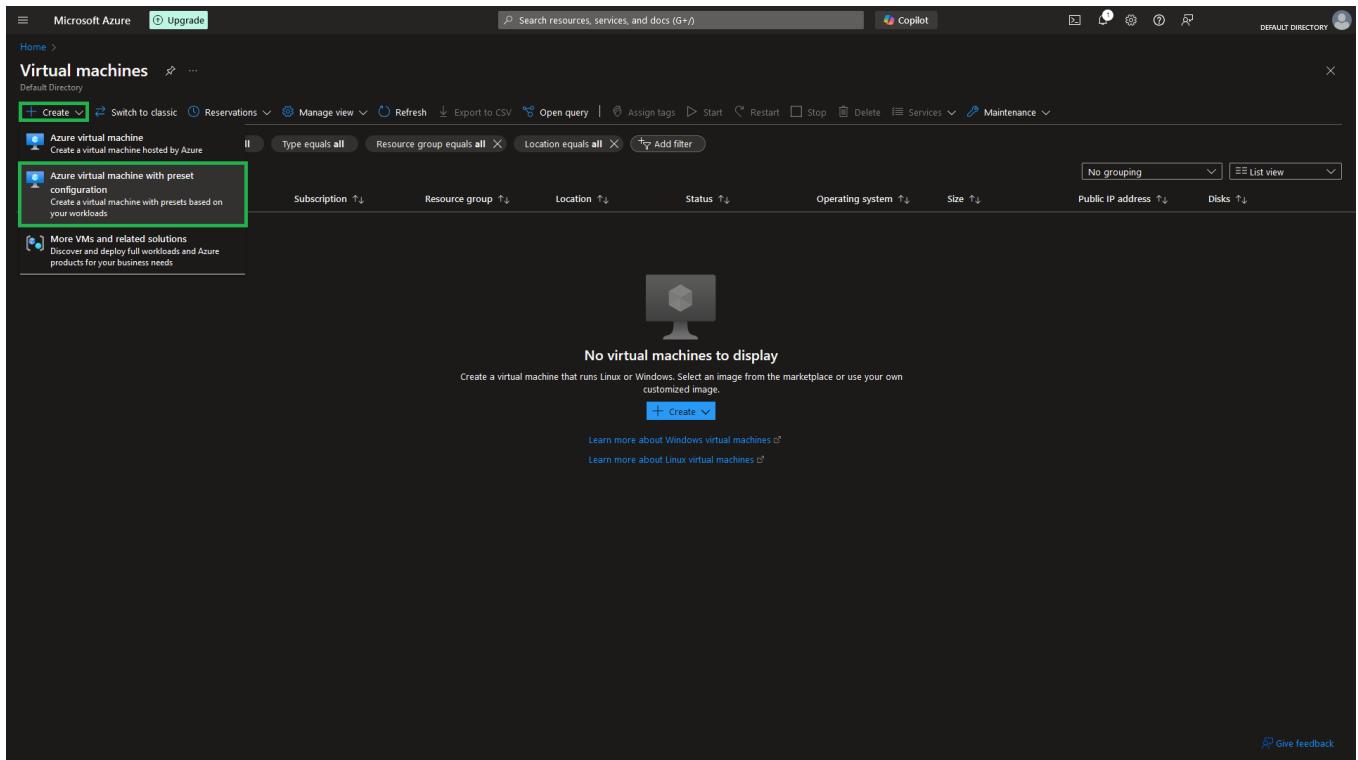


Azure security project solution PART 1: *Creating a honeypot VM*

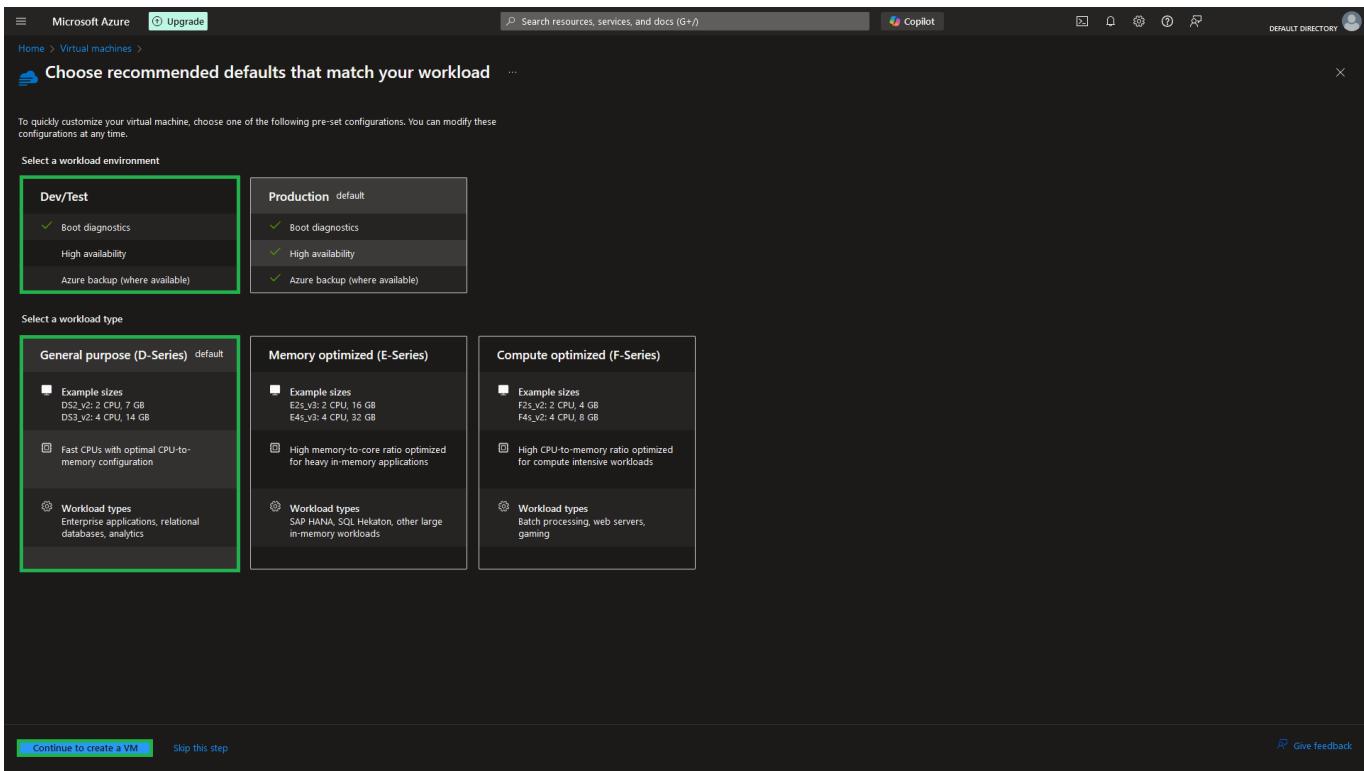
In this project we will build our own security operations center by utilizing Microsoft Sentinel to deploy a Security Information and Event Management (SIEM) solution that monitors and generates alerts for a virtual machine – we can use it as an RDP honeypot. We will also setup a threat intelligence feed that sends information about common and newly discovered indicators of compromise (IoCs) to the SIEM.

Task 1: Create a resource group and a Virtual Machine

1. After we have logged in to the Azure Portal, we begin by going to the **Virtual Machines** page, selecting **Create**, and clicking on **Azure virtual machine with preset**.



2. We then choose to the a **Dev/Test** under *Select a workload environment* and **General purpose (D-Series)** under *Select a workload type*.



3. On the next page, on the **Basics** tab, we create the following configuration:

Field	Value
Subscription	Our current subscription.
Resource group	Create a new resource group called SIEMproject by clicking on Create new in the Resource group section.
Virtual machine name	Enter a unique VM name, such as SIEMprojectVM .
Region	Select the with the least latency and highest availability closest to you.
Availability options	Select Availability zone .
Availability zone	Select Zones 1 .
Image	Select Windows 10 Pro

The screenshot shows the Microsoft Azure 'Create a virtual machine' wizard. The top navigation bar includes 'Microsoft Azure', 'Upgrade', 'Search resources, services, and docs (G+)', and 'Copilot'. The main title is 'Create a virtual machine'. A warning message at the top says: '⚠️ Changing Basic options may reset selections you have made. Review all options prior to creating the virtual machine.' Below the warning is a large 'Create' button with a checkmark icon.

The configuration steps are as follows:

- Subscription:** Azure subscription 1
- Resource group:** (New) SIEMproject (highlighted with a red box)
- Virtual machine name:** SIEMprojectVM
- Region:** (Europe) West Europe
- Availability options:** Availability zone
- Zone options:** Self-selected zone (selected)
Choose up to 3 availability zones, one VM per zone.
Azure-selected zone (Preview)
Let Azure assign the best zone for your needs
- Availability zone:** Zone 1
- Security type:** Trusted launch virtual machines
- Image:** Windows 10 Pro, version 22H2 - x64 Gen2 (free services eligible) (highlighted with a green box)
- VM architecture:** x64

At the bottom, there are navigation buttons: '< Previous', 'Next : Disks >', and 'Review + create' (highlighted with a green box).

4. We scroll down to create our admin account **username** and **password** and allow **RDP port 3389**.

Note: RDP events are the most easily generated security events which is why they are ideal to quickly test if our SIEM solution is successfully generating alerts. In a production environment, it is best to use **Microsoft Defender for Cloud's just-in-time (JIT) access** for VMs for maximum security.

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

D-series is recommended for general purpose workloads.

Enable Hibernation

Hibernate is not supported by the size that you have selected. Choose a size that is compatible with Hibernate to enable this feature. [Learn more](#)

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports None Allow selected ports

Select inbound ports * ✓

All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Licensing

< Previous Next : Disks > Review + create

5. We can leave all other tabs to their default values and go straight to the **Review + create** tab where we click on **Create** to deploy the resource.

Validation passed

Price

1 X Standard D4s v3
by Microsoft
[Terms of use](#) [Privacy policy](#)

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Basics

Subscription	Azure subscription 1
Resource group	(new) SIEMproject
Virtual machine name	SIEMprojectVM
Region	West Europe
Availability options	Availability zone
Zone options	Self-selected zone
Availability zone	Create

You have set RDP port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

< Previous Next > **Create**

6. We now wait for notification that our deployment is complete.

The screenshot shows the Microsoft Azure portal with the search bar at the top containing "CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20241022171902". Below the search bar, the "Overview" tab is selected. A prominent green box highlights the message "Your deployment is complete". Deployment details are listed in a table:

Resource	Type	Status	Operation details
SIEMprojectvM	Microsoft.Compute/virtualMachines	OK	Operation details
siemprojectvm790_x1	Microsoft.Network/networkInterfaces	Created	Operation details
SIEMprojectVM-vnet	Microsoft.Network/virtualNetworks	OK	Operation details
SIEMprojectVM-nsg	Microsoft.Network/networkSecurityGroups	OK	Operation details
SIEMprojectVM-ip	Microsoft.Network/publicIPAddresses	OK	Operation details

Below the table, there are "Next steps" recommendations: "Setup auto-shutdown Recommended", "Monitor VM health, performance and network dependencies Recommended", and "Run a script inside the virtual machine Recommended". At the bottom, there are two buttons: "Go to resource" and "Create another VM". To the right, there are promotional cards for "Cost Management", "Microsoft Defender for Cloud", and "Free Microsoft tutorials".

Task 2: Create a Log Analytics workspace and activate Microsoft Sentinel

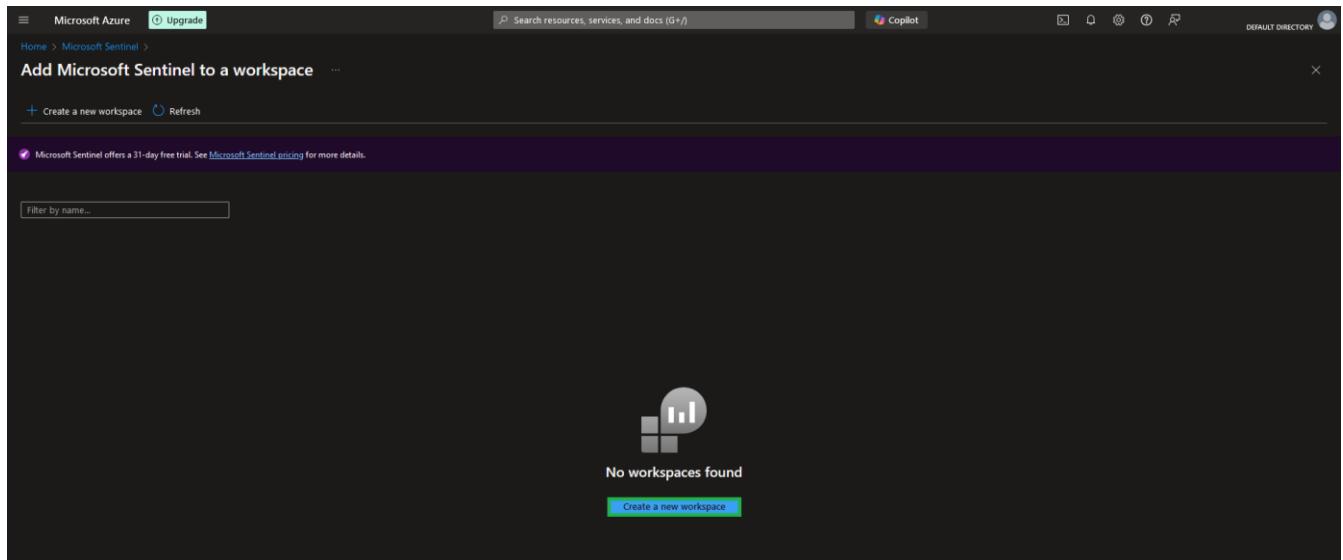
- Once that is done, we go back to the Azure Portal and type in “Microsoft Sentinel” into the search box.

The screenshot shows the Microsoft Azure portal search results for "Microsoft Sentinel". The search bar at the top contains "Microsoft Sentinel". Below the search bar, the "Azure services" section is visible, along with a "Resources" section. The search results show a list of services, with "Microsoft Sentinel" highlighted by a green box. Other listed services include "Virtual machines", "Cosmos DB", "Microsoft Entra ID", "Microsoft Entra Connect", and "Microsoft Entra authentication methods". To the right, there are buttons for "Storage accounts" and "More services".

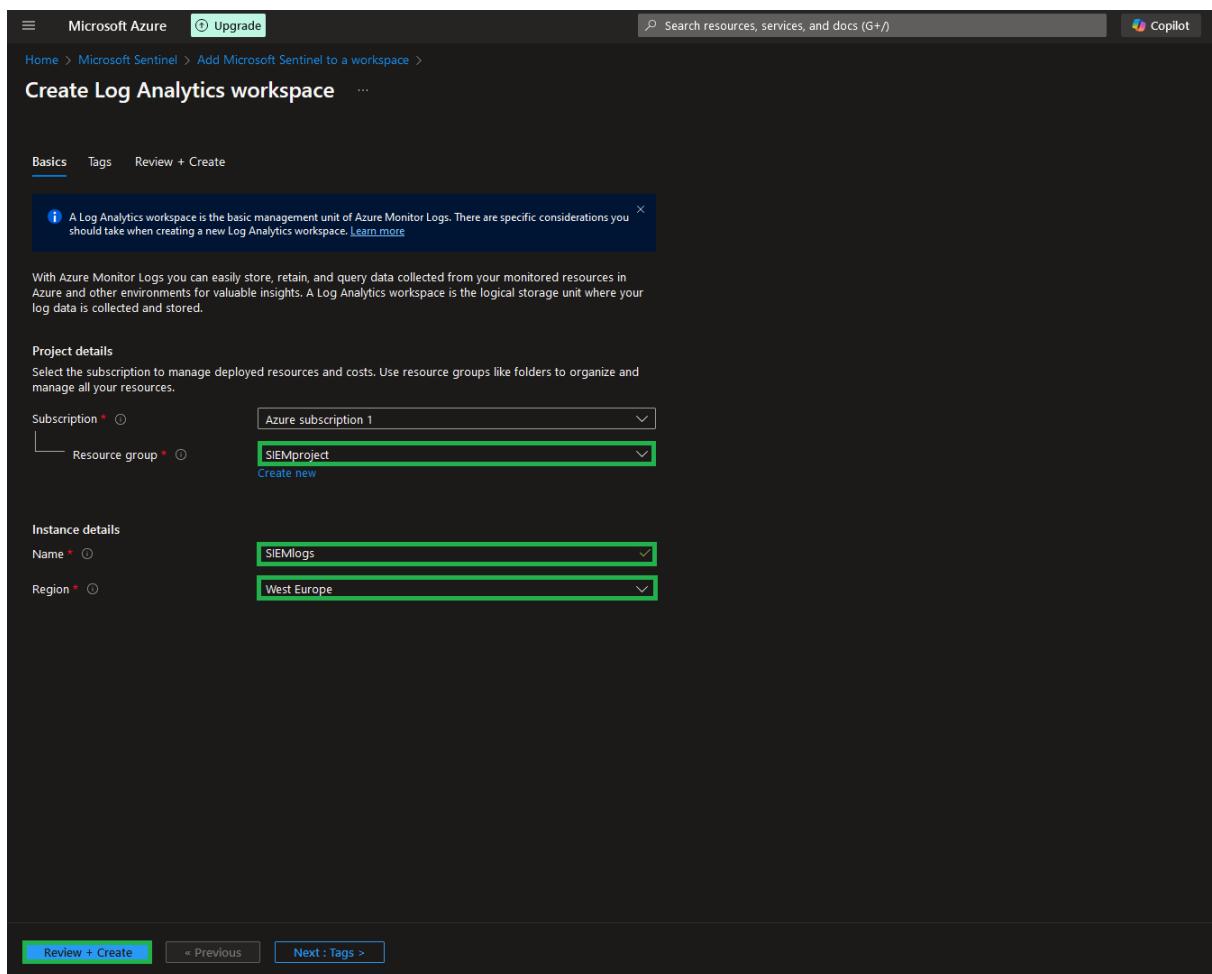
- On the Microsoft Sentinel page, we simply click on **Create Microsoft Sentinel**.

The screenshot shows the Microsoft Azure portal Microsoft Sentinel page. The search bar at the top contains "Microsoft Sentinel". The main content area displays a message: "No Microsoft Sentinel to display. See and stop threats before they cause harm, with SEM reinvented for a modern world. Microsoft Sentinel is your birds-eye view across the enterprise." Below this message are two buttons: "Create Microsoft Sentinel" and "Learn more".

3. We can then either add Sentinel to an existing Log Analytics workspace or create a new one. Here we have no existing workspaces, so we click on the **Create a workspace** button.



4. On the **Create Log Analytics workspace** page, we make sure that we have selected the same resource group as the resources that we want to monitor – in this case, the **SIEMproject** resource group where our VM is. We also make sure that we are deploying it the same region, in my case **West Europe**. Finally, we name our workspace, select Review + create, and click **Create** after we've reviewed our configuration.



5. Once we are notified that our Log Analytics workspace is created, we click on the **Add** button to add Microsoft Sentinel to the workspace.

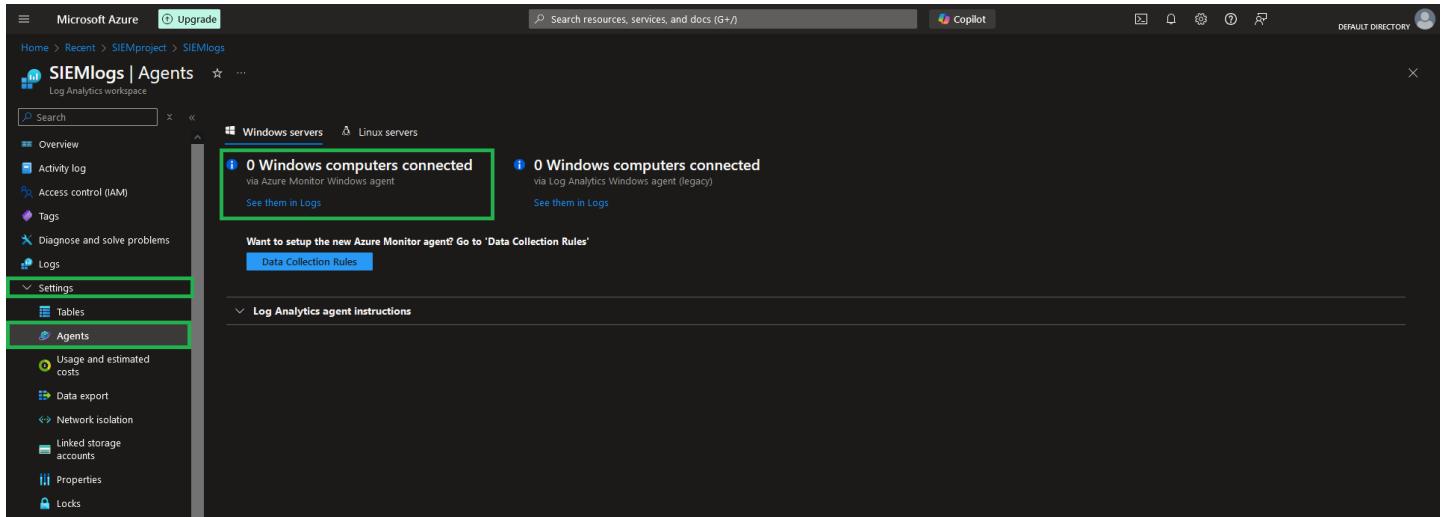
The screenshot shows the Microsoft Azure portal with the URL [https://portal.azure.com/#blade/Microsoft_Azure_Sentinel/AddSentinelToWorkspaceBlade/resourceGroup/ResourceGroup/resourceName/LogAnalyticsWorkspace](#). The page title is "Add Microsoft Sentinel to a workspace". The main content area lists workspaces, with "SIEMLogs" selected and highlighted with a green border. The workspace details shown are: Location: westeurope, ResourceGroup: siemproject, Subscription: Azure subscription 1, and Directory: Default Directory. At the bottom, there are "Add" and "Cancel" buttons. A notification bar at the top right displays a green checkmark icon and the message "Deployment succeeded Deployment 'SIEMLogs' to resource group 'siemproject' was successful." with "Pin to dashboard..." and "Go to resource group..." buttons.

6. We now wait for the confirmation that Microsoft Sentinel has been activated.

The screenshot shows the Microsoft Azure portal with the URL [https://portal.azure.com/#blade/Microsoft_Azure_Sentinel/NewsAndGuidesBlade/resourceGroup/ResourceGroup/resourceName/LogAnalyticsWorkspace](#). The page title is "Microsoft Sentinel | News & guides". The left sidebar shows navigation categories like General, Threat management, Content management, Configuration, and more. The main content area features sections for "A cloud-native SIEM to help you focus on what matters most" and "Install your first content hub solution". The right side has a "Notifications" sidebar with a green box highlighting a message: "Successfully added Microsoft Sentinel" with the subtext "Successfully added Microsoft Sentinel to workspace 'SIEMLogs'. It might take a few minutes for your workspace to appear in Microsoft Sentinel workspaces list." Below it is another message: "Deployment succeeded Deployment 'SIEMLogs' to resource group 'siemproject' was successful." with "Pin to dashboard..." and "Go to resource group..." buttons. The timestamp for the second message is "5 minutes ago".

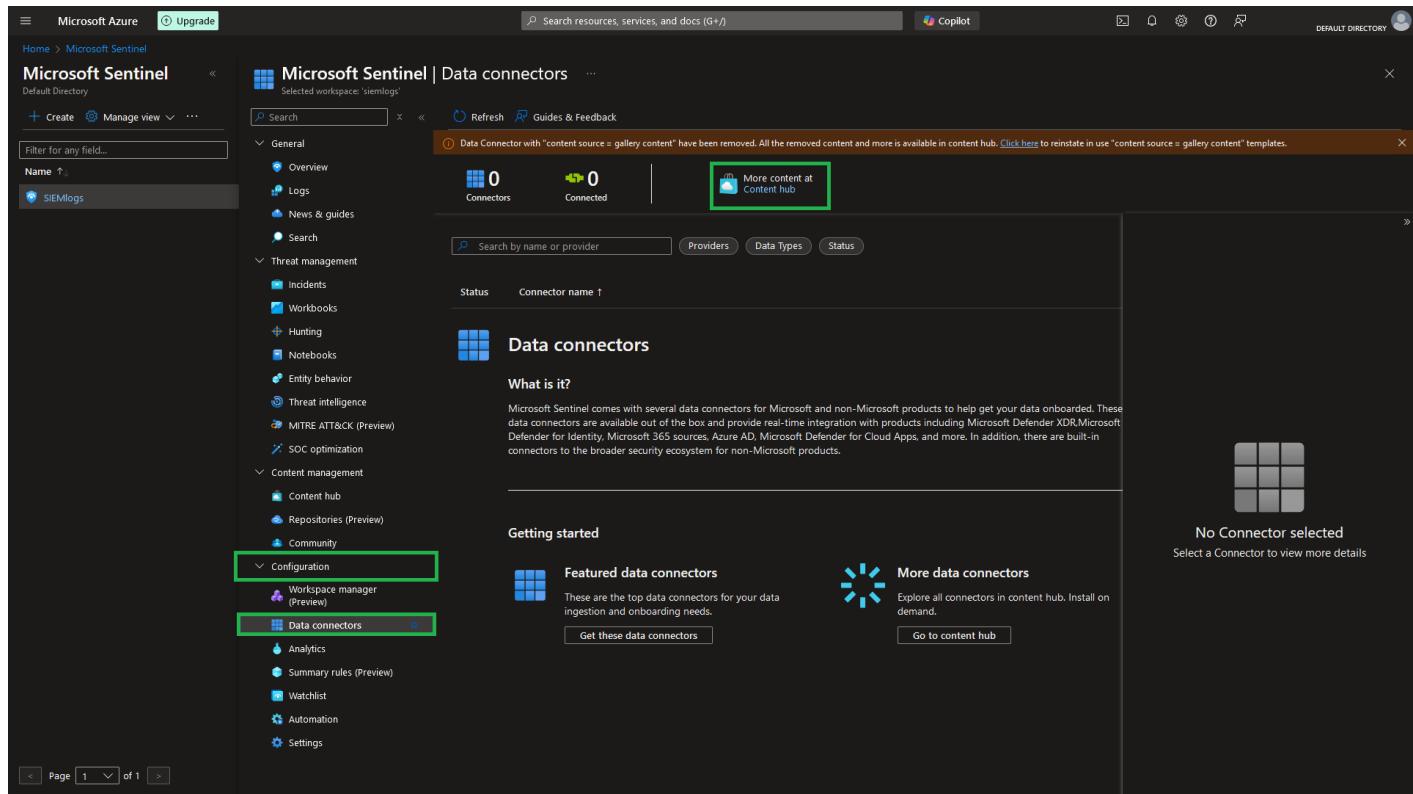
Task 3: Setting up a Data Connector and creating a data collection rule

1. We now need to add our virtual machine to the Log Analytics workspace so that its event logs can be ingested by Microsoft Sentinel. If we go back to the **SIEMlogs** Log Analytics workspace page and go to **Agents** under the *Settings* blade, we will see that we have 0 Windows computers connected to the workspace.



The screenshot shows the Microsoft Azure Log Analytics workspace named 'SIEMlogs'. In the left sidebar, under the 'Settings' section, the 'Agents' item is highlighted with a green box. The main content area displays two status boxes: one for 'Windows servers' and one for 'Linux servers', both stating '0 Windows computers connected'. Below these boxes, a message says 'Want to setup the new Azure Monitor agent? Go to 'Data Collection Rules''. A blue button labeled 'Data Collection Rules' is visible. Further down, there's a section titled 'Log Analytics agent instructions'.

2. To remedy this, we have to set up a **Data connector**. This is done by going to the **Microsoft Sentinel** page, clicking on **Data connectors** under the *Configurations* blade, and going to the **Content hub**.



The screenshot shows the Microsoft Sentinel 'Data connectors' page. The left sidebar has sections like 'Create', 'Manage view', 'Name', and 'SIEMlogs'. Under 'Configuration', the 'Data connectors' item is highlighted with a green box. The main content area has a heading 'Data connectors' with a sub-section 'What is it?'. It mentions that Microsoft Sentinel comes with several data connectors for Microsoft and non-Microsoft products. There are two status boxes: 'Connectors' (0) and 'Connected' (0). A message at the top states: 'Data Connector with "content source = gallery content" have been removed. All the removed content and more is available in content hub. Click here to reinstate in use "content source = gallery content" template.' On the right, there's a 'Content hub' section with a large button labeled 'Content hub' and a message 'No Connector selected Select a Connector to view more details'.

3. On the Content hub page, we input “Azure Monitor Agent” into the search box, select **Windows Security Events** from the results and click on **Install**.

The screenshot shows the Microsoft Azure Content hub interface. At the top, there are summary counts: 367 Solutions, 303 Standalone contents, 0 Installed, and 0 Updates. A search bar and Copilot button are also present. Below the summary, a search bar filters results for "Azure Monitor Agent". The main table lists various connectors, including "Windows Security Events" which is highlighted with a green border. The right sidebar provides detailed information about the selected connector, including its provider (Microsoft), support (Microsoft Support), and version (3.0.9). It also includes a note about the connector's functionality and deprecated status.

- Two data connectors should now show up on the Data connectors page. We select the **Windows Security Events via AMA** connector and click on **Open connector page**.

The screenshot shows the Microsoft Sentinel Data connectors page. The left sidebar navigation includes General, Threat management, Content management, Configuration, and Data connectors (which is currently selected). The main area displays a list of connectors, with "Windows Security Events via AMA" highlighted with a green border. The right sidebar provides detailed information about the selected connector, including its status (Disconnected), provider (Microsoft), and last log received. It also includes sections for Last data received, Content source, Author, Related content, and a chart showing data received over time.

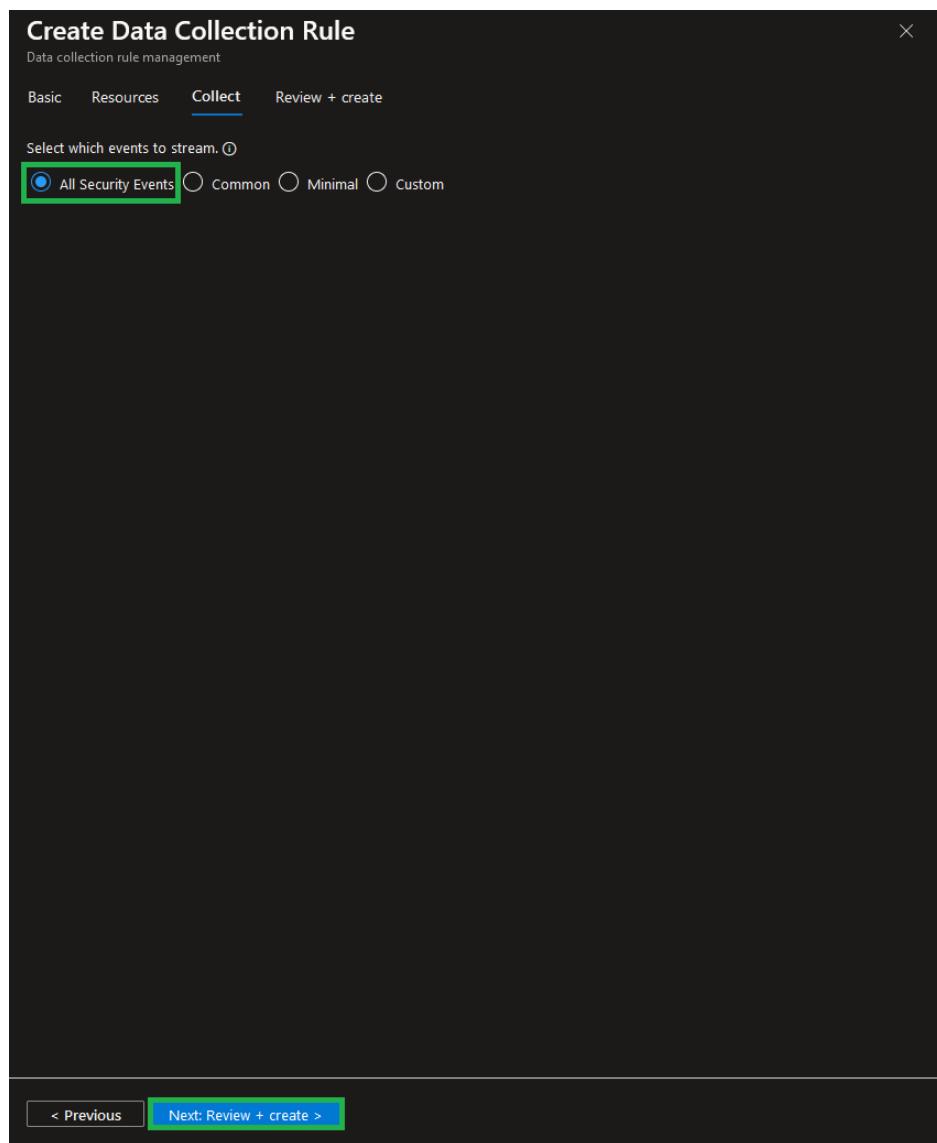
5. Once on the connector page, we click on **+Create data collection rule** and input a **Rule name** on the **Basic** tab like, for example, **WinEventLogsToSentinel**. We then click on **Next: Resources**.

The screenshot shows the Microsoft Azure portal interface. On the left, the 'Windows Security Events via AMA' connector page is displayed, showing details like 'Disconnected Status', 'Microsoft Provider', and 'Last Log Received'. It also includes a 'Description' section about streaming security events from Windows machines. On the right, the 'Create Data Collection Rule' wizard is open, specifically the 'Basic' tab. The 'Rule name' field is set to 'WinEventLogsToSentinel'. The 'Subscription' dropdown shows 'Azure subscription 1' and the 'Resource group' dropdown shows 'SIEMproject'. A green box highlights the 'Rule name' field. At the bottom right of the wizard, the 'Next: Resources >' button is visible.

6. On the **Resources** tab, we select the subscription, resource group, and VM we wish to include and click on **Next: Collect**.

The screenshot shows the 'Create Data Collection Rule' wizard on the 'Resources' tab. It lists the selected resources under 'Scope': 'Selected: All' for Subscriptions, Resource Groups, Resource Types, and Locations. The 'Search to filter items...' and 'Show Selected' buttons are present. A green box highlights the 'Scope' section where 'Selected: All' is chosen. Below this, a tree view shows 'Azure subscription 1' expanded, revealing 'siempreproject' and 'SIEMprojectVM'. The 'SIEMprojectVM' node is selected, indicated by a checked checkbox. At the bottom, the '< Previous' and 'Next: Collect >' buttons are visible.

7. On the **Collect** tab we select the **All Security Events** radio button and click on **Next: Review + create**.



8. We then click on **Create** once more to finalize the process.

Create Data Collection Rule

Data collection rule management

Validation passed

Basic Resources Collect **Review + create**

Basic

Data rule name: WinEventLogsToSentinel

Subscription: Azure subscription 1

Resource Group: SIEMproject

Selected resources

Name	Type
siemprojectvm	microsoft.compute/virtualmachines

Selected events

AllEvents

< Previous **Create**

A green box highlights the "Create" button at the bottom.

Task 4: Creating a Microsoft Sentinel scheduled rule and generating an incident

1. We now want to go back to the Microsoft Sentinel page and create a rule that checks for successful sign ins via RDP. To do this, we select **Logs** under the *General* blade. We type in the following query and hit **Run**:

```
SecurityEvent  
| where Activity contains "success" and Account !contains "system"
```

The screenshot shows the Microsoft Azure Microsoft Sentinel Logs interface. On the left, there's a navigation sidebar with sections like General, Threat management, Content management, and Configuration. The 'Logs' section is currently selected. In the main area, there's a 'New Query 1*' tab with a query editor containing the following Logstash-style query:

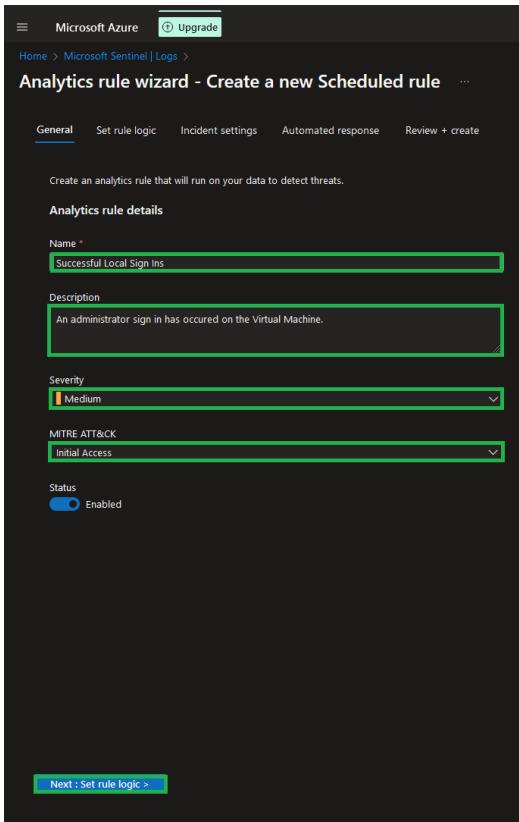
```
1 SecurityEvent  
2 | where Activity contains "success" and Account !contains "system"
```

The 'Run' button is highlighted in blue. Below the query editor, a message says 'No results found from the last 24 hours Try selecting another time range'. At the top right, there are various buttons for 'Save', 'Share', 'New alert rule', 'Export', 'Pin to', and 'Format query'.

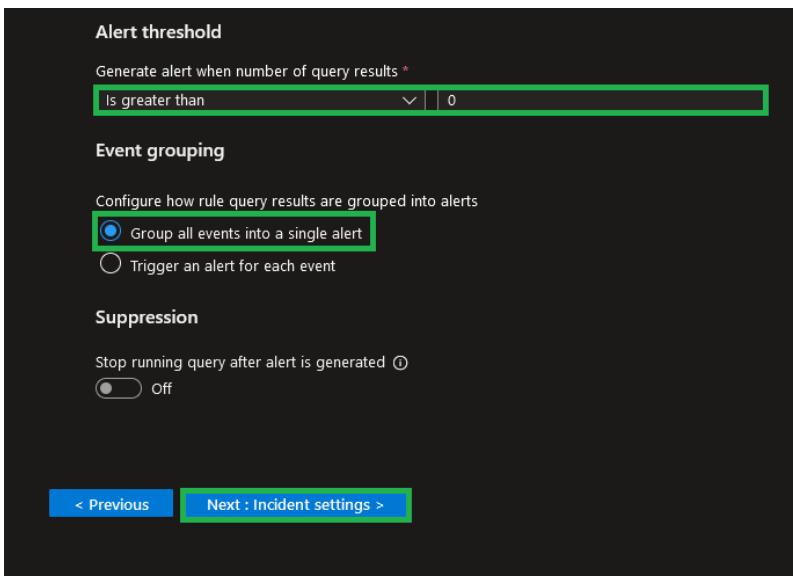
2. We then click on New alert rule and select Create Microsoft Sentinel Alert.

The screenshot shows the same Microsoft Azure Microsoft Sentinel Logs interface as above, but with a different focus. The 'New alert rule' button in the top right is highlighted in blue, and a dropdown menu has appeared. The 'Create Microsoft Sentinel alert' option is highlighted with a green box. Other options in the menu include 'Create Azure Monitor alert' and 'Create Microsoft Sentinel alert' (which is also highlighted with a green box).

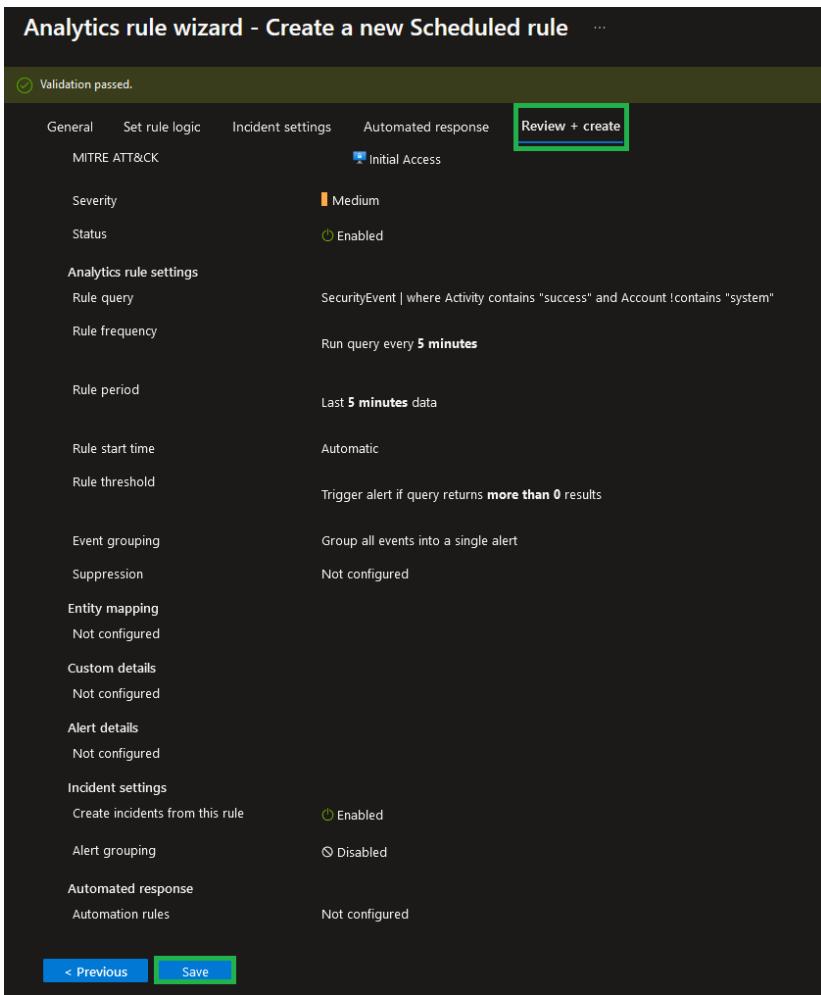
3. The General tab of the Create a new Scheduled rule page, we name our rule, choose the severity level of the event, and select Initial Access under MITRE ATT&CK. We then move on to the Set rule logic tab.



4. There, we set the **Alert threshold** to **Is greater than 0**, select the **Group all events into a single alert** radio button under **Event grouping**, and click on **Next: Incident settings**.



5. We leave the defaults on the **Incident settings** tab and **the Automated response** tab and go to the **Review + create** tab where we click on **Save**.



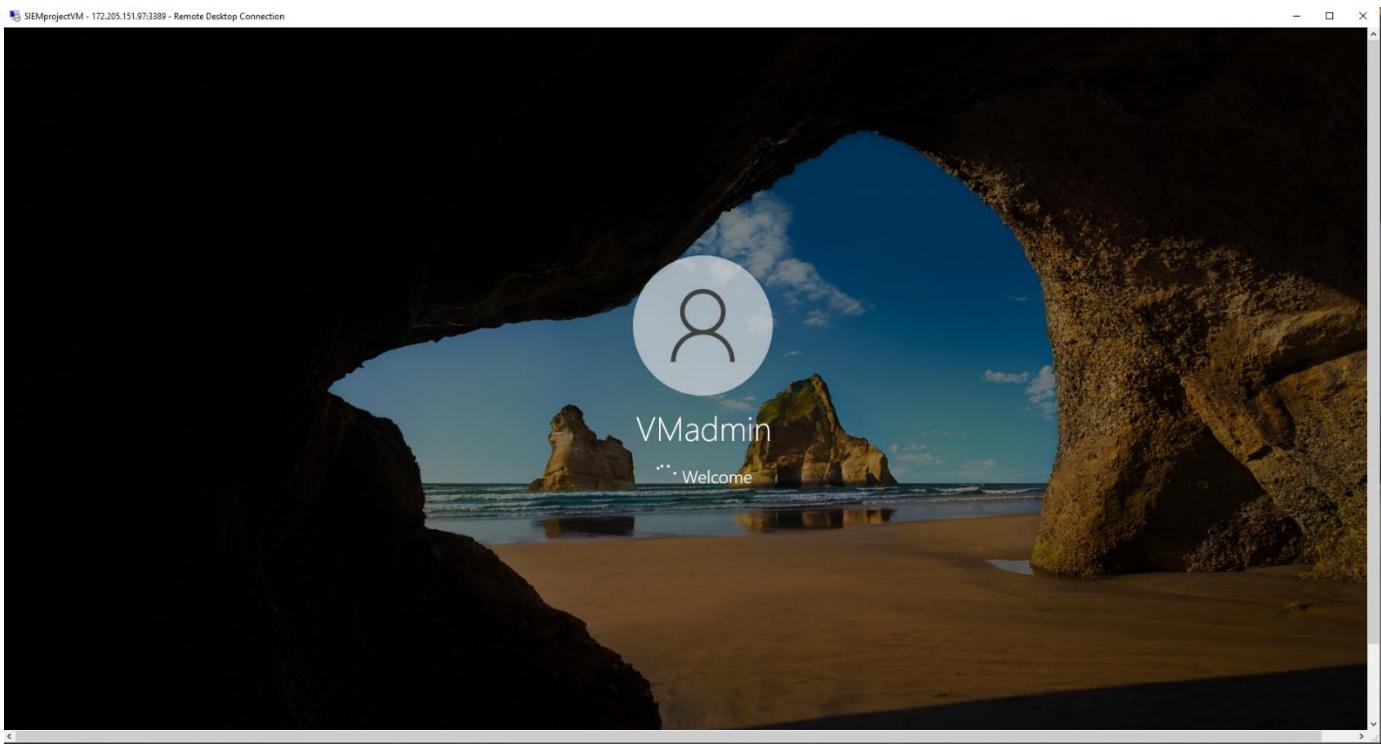
6. If we go back to the **Microsoft Sentinel** page and select **Analytics** under the *Configuration* blade, we can now see our newly created alert rule on the **Active rules** tab. Logging into our VM via RDP should trigger it.

Severity	Name	Status	Tactics	Techniques	Sub techniques	Source name	Last modified
Medium	Successful Local Logon	Enabled	Initial Access			Custom Content	22/10/2024, 21:15
High	Advanced Multi-step Logon	Enabled	Collection +11			Gallery Content	22/10/2024, 18:15

7. To test it, we go to our VM's page, go into the select **Connect** under the *Connect* blade, and click on **Download RDP file**.

The screenshot shows the Azure portal interface for a virtual machine named 'SIEMprojectVM'. On the left, there's a navigation bar with 'Virtual machines' and a search bar. The main area is titled 'SIEMprojectVM | Connect' and shows connection details: 'Connecting using Public IP address | 172.205.151.97'. It lists 'Admin username' as 'VMadmin', 'Port (change)' as '3389', and 'Just-in-time policy' as 'Unsupported by plan'. Below this, under 'Most common', is a section for 'Native RDP' with a 'Select' button and a highlighted 'Download RDP file' button. At the bottom right of this section is a blue heart icon. A link 'More ways to connect (4)' is also visible. The left sidebar has a 'Connect' section expanded, showing options like 'Connect', 'Bastion', and 'Windows Admin Center'.

8. We log in to the VM with our credentials



9. We then go the **Incidents** (or **Overview**) page of Microsoft Sentinel to view our generated alert. It should look like this:

Severity	Incident number	Title	Alerts	Incident provider n...	Alert product name
Medium	2	Successful Local Sig...	1	Azure Sentinel	Microsoft Sentinel
Medium	1	Successful Local Sig...	1	Azure Sentinel	Microsoft Sentinel

We can now use this VM as an RDP honeypot.

Azure security project solution PART 2: *Creating a threat intelligence feed using MISP*

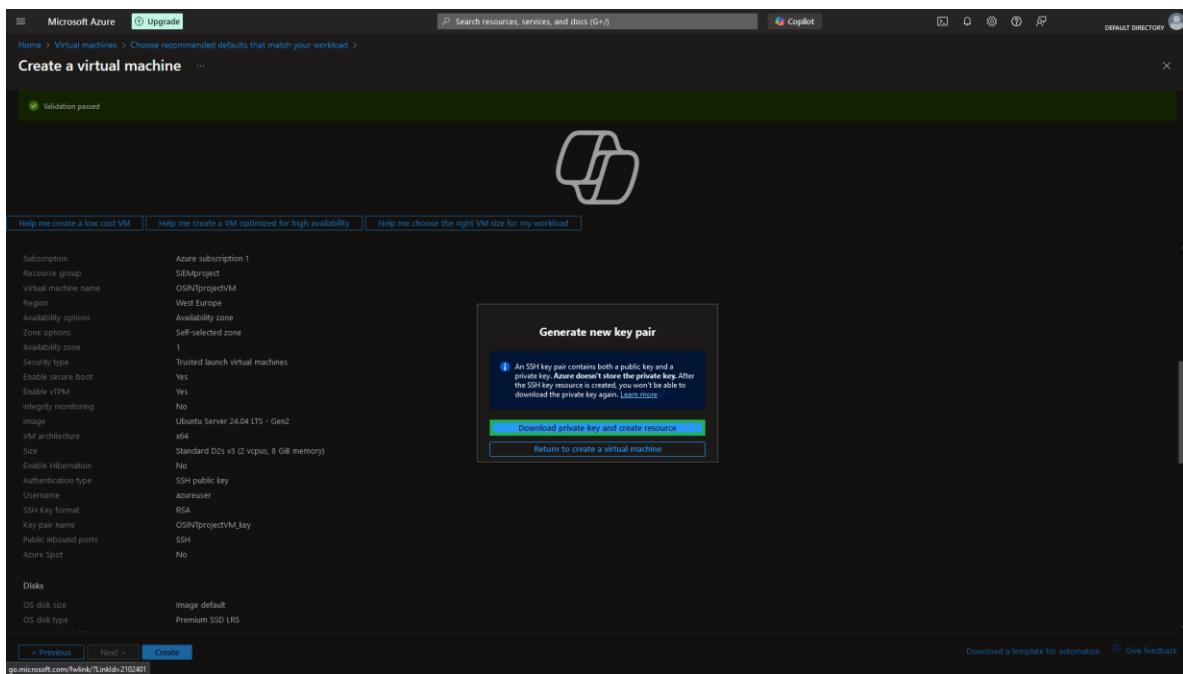
We will now setup a custom OSINT data feed to our Sentinel instance. Microsoft does have its own threat intelligence instance, but for this project we will be using the MISP open-source threat intelligence platform.

Task 5: Creating an Ubuntu server VM and setting up Docker

1. We begin by creating another preset virtual machine with these specifications. The rest can be leave at their default values.

Field	Value
Subscription	Our current subscription.
Resource group	SIEMproject
Virtual machine name	Enter a unique VM name, such as OSINTprojectVM .
Region	Select the same region as previous resources
Availability options	Select Availability zone .
Availability zone	Select Zones 1 .
Image	Select Ubuntu Server 24.04 LTS - x64 Gen2
Size	Select Standard_D2s_v3 - 2 vcpus, 8GiB memory

2. We then click on **Download private key and create resource** when prompted



3. We then click on **Go to resource**, navigate to the **Connect** page, and click **Select** under the SSH using Azure CLI connection method.

4. We then tick the checkbox beside “**I understand just-in-time policy on the virtual machine may be re-configured...**” in the wizard to continue.

5. When the shell opens, we will be prompted to confirm we would like to continue connecting and input “yes”.

```

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help
Connecting terminal...
Welcome to Azure Cloud Shell
Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell
sibil [ ~ ]$ az ssh vm --resource-group SIEMproject --vm-name OSINTprojectVM --subscription 1c231d77-b506-4287-925c-aba83bffa6fb
OpenSSH_8.9p1, OpenSSL 1.1.1k FIPS 25 Mar 2021
The authenticity of host '4.245.4.197 (4.245.4.197)' can't be established.
ED25519 key fingerprint is SHA256:jVtIc3//XLoIWNohbVV8Uoce5xhNQjIPAsJ/kDhUs.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes

```

- We now go to the webpage docs.docker.com/engine/install/ubuntu/, scroll down to the **Install using the apt repository** section and follow the steps there.

The screenshot shows the Docker documentation website for Ubuntu. The left sidebar has a navigation tree with categories like Docker Build, Docker Compose, Docker Desktop, Docker Engine, and Install (which is expanded to show Ubuntu). The main content area is titled 'Install using the apt repository'. It contains two numbered steps: 1. Set up Docker's apt repository, which includes a code block for adding the GPG key and configuring the repository; and 2. Install the Docker packages, which includes a code block for installing the Docker CE packages. A green box highlights the first step's code block.

- We first add Docker's official GPG key:

```

sudo apt-get update
sudo apt-get install ca-certificates curl
sudo install -m 0755 -d /etc/apt/keyrings
sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc
sudo chmod a+r /etc/apt/keyrings/docker.asc

```

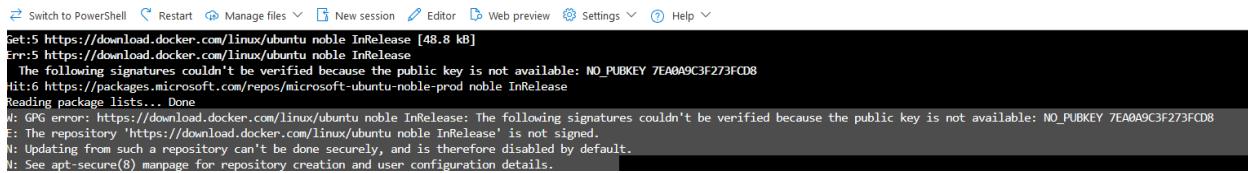
- We then add the repository to apt sources:

```

echo \
"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] \
https://download.docker.com/linux/ubuntu \
$(/etc/os-release && echo "$VERSION_CODENAME") stable" / \
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
sudo apt-get update

```

Note: in my case here I got the following error:



```
Switch to PowerShell  Restart  Manage files  New session  Editor  Web preview  Settings  Help
Get:5 https://download.docker.com/linux/ubuntu noble InRelease [48.8 kB]
Err:5 https://download.docker.com/linux/ubuntu noble InRelease
  The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 7EA0A9C3F273FCDB
Hit:6 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble InRelease
Reading package lists... Done
W: GPG error: https://download.docker.com/linux/ubuntu noble InRelease: The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 7EA0A9C3F273FCDB
E: The repository 'https://download.docker.com/linux/ubuntu noble InRelease' is not signed.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
```

I fixed this in the following way:

- I. Update the GPG Key for Docker's Repository:** We need to download and add the correct public key for the Docker repository manually. We run the following commands:

```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg
```

This command fetches the GPG key and stores it in /usr/share/keyrings/docker-archive-keyring.gpg.

- II. Update the Docker Repository List:** Now that we have the key, we update the Docker repository entry to use the GPG key we just added. We create or update the following repository file:

```
echo \
```

```
"deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg]
https://download.docker.com/linux/ubuntu \
```

```
$(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

This ensures that the correct key is used when installing Docker.

- III. Update Package Index and Install Docker:** Now, we update our package list and install Docker:

```
sudo apt-get update
```

```
sudo apt-get install docker-ce docker-ce-cli containerd.io
```

9. We can now continue with our installation of the docker packages:

```
sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
```

Note: input Y



```
$ sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  docker-ce-rootless-extras libltdl7 libslirp0 pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libltdl7 libslirp0 pigz slirp4netns
0 upgraded, 10 newly installed, 0 to remove and 1 not upgraded.
Need to get 123 MB of archives.
After this operation, 442 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

10. If no errors are present, the response should look like this:

```
Running kernel seems to be up-to-date.  
No services need to be restarted.  
No containers need to be restarted.  
No user sessions are running outdated binaries.  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
$ █
```

11. We now run the hello-world image to verify that the installation is successful:

```
sudo docker run hello-world
```

```
$ sudo docker run hello-world  
Unable to find image 'hello-world:latest' locally  
latest: Pulling from library/hello-world  
c1ec31eb5944: Pull complete  
Digest: sha256:d211f485f2dd1dee407a80973c8f129f00d54604d2c90732e8e320e5038a0348  
Status: Downloaded newer image for hello-world:latest  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.  
  
To generate this message, Docker took the following steps:  
1. The Docker client contacted the Docker daemon.  
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.  
   (amd64)  
3. The Docker daemon created a new container from that image which runs the  
   executable that produces the output you are currently reading.  
4. The Docker daemon streamed that output to the Docker client, which sent it  
   to your terminal.  
  
To try something more ambitious, you can run an Ubuntu container with:  
$ docker run -it ubuntu bash  
  
Share images, automate workflows, and more with a free Docker ID:  
https://hub.docker.com/  
  
For more examples and ideas, visit:  
https://docs.docker.com/get-started/  
$ █
```

Task 6: Setting up MISP

1. We can now get the MISP docker image from this URL: github.com/MISP/misp-docker:

```
git clone https://github.com/MISP/misp-docker
```

```
$ git clone https://github.com/MISP/misp-docker  
Cloning into 'misp-docker'...  
remote: Enumerating objects: 2080, done.  
remote: Counting objects: 100% (467/467), done.  
remote: Compressing objects: 100% (159/159), done.  
remote: Total 2080 (delta 409), reused 327 (delta 305), pack-reused 1613 (from 1)  
Receiving objects: 100% (2080/2080), 454.23 KiB | 8.26 MiB/s, done.  
Resolving deltas: 100% (1121/1121), done.  
$ █
```

2. We can check whether the image is in the directory by typing *dir*.

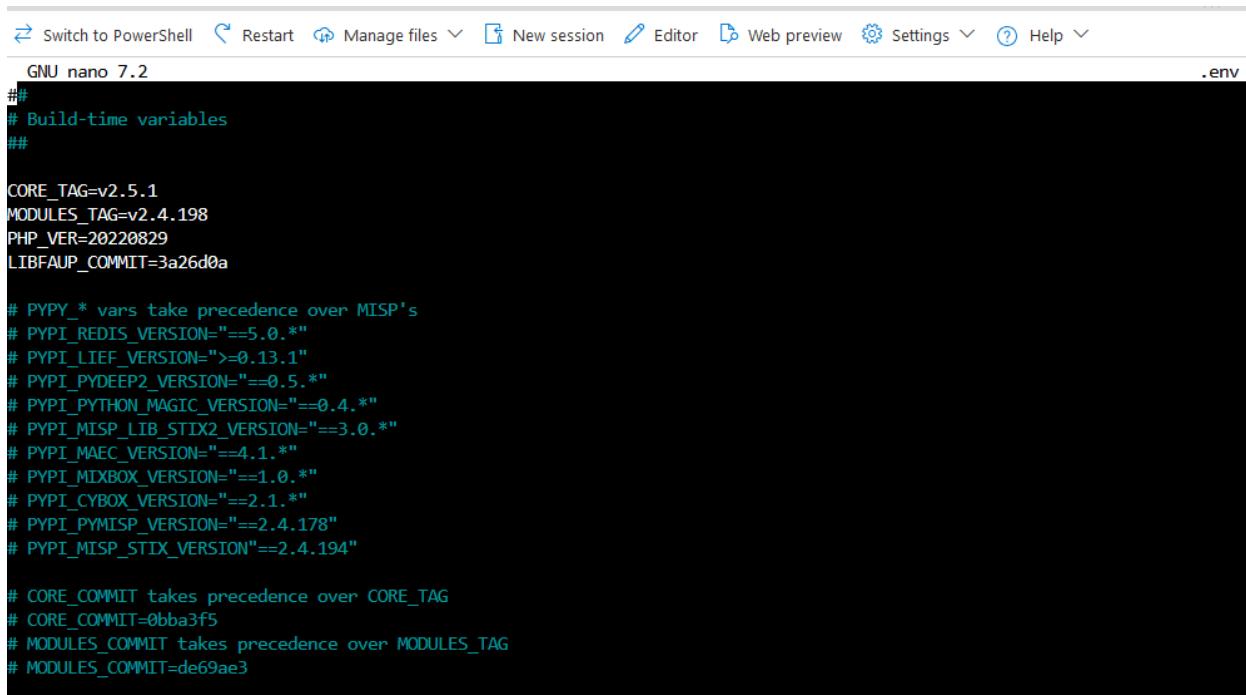
```
$ dir  
misp-docker  
$
```

3. The next step is to navigate to the misp-docker directory using the *cd* command.
4. We then use the *dir* command once more to confirm we changed directories.
5. And finally we copy the *template.env* file with the following command to create a new *.env* file:

```
cp template.env .env
```

```
$ cd misp-docker  
$ dir  
LICENSE README.md core docker-bake.hcl docker-compose.yml experimental modules template.env  
$ cp template.env .env  
$
```

6. We have to now edit the new file using nano by typing in *nano .env* which should open up the editing software.



```
GNU nano 7.2 .env  
##  
# Build-time variables  
##  
  
CORE_TAG=v2.5.1  
MODULES_TAG=v2.4.198  
PHP_VER=20220829  
LIBFAUP_COMMIT=3a26d0a  
  
# Pypy_* vars take precedence over MISP's  
# PYPI_REDIS_VERSION=="5.0.*"  
# PYPI_LIEF_VERSION">=0.13.1"  
# PYPI_PYDEEP2_VERSION=="0.5.*"  
# PYPI_PYTHON_MAGIC_VERSION=="0.4.*"  
# PYPI_MISP_LIB_STIX2_VERSION=="3.0.*"  
# PYPI_MAEC_VERSION=="4.1.*"  
# PYPI_MIXBOX_VERSION=="1.0.*"  
# PYPI_CYBOX_VERSION=="2.1.*"  
# PYPI_PYMISP_VERSION=="2.4.178"  
# PYPI_MISP_STIX_VERSION=="2.4.194"  
  
# CORE_COMMIT takes precedence over CORE_TAG  
# CORE_COMMIT=0bba3f5  
# MODULES_COMMIT takes precedence over MODULES_TAG  
# MODULES_COMMIT=de69ae3
```

7. We scroll down to *BASE_URL* and input our VM's public IP address.

GNU nano 7.2 .env *

```
# Email/username for user #1, defaults to MISP's default (admin@admin.test)
ADMIN_EMAIL=
# name of org #1, default to MISP's default (ORGNAME)
ADMIN_ORG=
# defaults to an automatically generated one
ADMIN_KEY=
# defaults to MISP's default (admin)
ADMIN_PASSWORD=
# defaults to 'passphrase'
GPG_PASSPHRASE=
# defaults to 1 (the admin user)
CRON_USER_ID=
# defaults to 'https://localhost'
BASE_URL=https://4.245.4.197
# store settings in db except those that must stay in config.php. true/false, defaults to false
ENABLE_DB_SETTINGS=
# encryption key. defaults to empty string
ENCRYPTION_KEY=
# enable background updates. defaults to false
ENABLE_BACKGROUND_UPDATES=

# defines the FQDN of the mail sub-system (defaults to 'mail')
# SMTP_FQDN=
```

8. We then input **Ctrl+X** to Exit and will be prompted to save our changes. We confirm with **Y** and then Press **Enter** on the *File name to Write: .env* prompt.
9. The next step is to input *sudo docker compose pull* if to use pre-built images. Once completed, it should look like this:

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help

```
[root@4.245.4.197 ~]# sudo docker compose pull
[+] Pulling redis (misp-redis:latest)...
redis: Pulling from misp-redis
latest: Downloading [progress] 0B / 62.5M
redis: 62.5M / 62.5M (100%) 97.0s
[+] Pulling misp-modules (misp-modules:latest)...
misp-modules: Pulling from misp-modules
latest: Downloading [progress] 0B / 39.2M
misp-modules: 39.2M / 39.2M (100%) 62.4s
[+] Pulling db (misp-db:latest)...
db: Pulling from misp-db
latest: Downloading [progress] 0B / 121.1M
db: 121.1M / 121.1M (100%) 121.1s
```

10. We then run the command *sudo docker compose up* to spin up the docker container. Successful completion should end with *INIT / Done...*

```
misp-core-1 | MISP | Set Up AAD ...
misp-core-1 | ... Entra (AzureAD) authentication disabled
misp-core-1 | MISP | Set Up Session ...
misp-core-1 | ... Session configured
misp-core-1 | MISP | Set Up Proxy ...
misp-core-1 | ... Proxy disabled
misp-core-1 | MISP | Mark instance live
misp-core-1 | Set live status to True in Redis.
misp-core-1 | Set live status in PHP config file.
misp-core-1 | MISP is now live. Users can now log in.
INIT | Configure PHP ...
2024-10-23 14:08:35,229 INFO waiting for php-fpm to stop
misp-core-1 | Entrypoint FPM caught SIGTERM signal!
misp-core-1 | Killing process 38
2024-10-23 14:08:35,230 WARN stopped: php-fpm (exit status 143)
2024-10-23 14:08:35,240 INFO spawned: 'php-fpm' with pid 3679
misp-core-1 | Configure PHP | Change PHP values ...
misp-core-1 | Configure PHP | Setting 'memory_limit = 2048M'
misp-core-1 | Configure PHP | Setting 'max_execution_time = 300'
misp-core-1 | Configure PHP | Setting 'upload_max_filesize = 50M'
misp-core-1 | Configure PHP | Setting 'post_max_size = 50M'
misp-core-1 | Configure PHP | Setting 'max_input_time = 300'
misp-core-1 | Configure PHP | Setting 'session.save_path = 'tcp://redis:6379?auth=redispASSWORD'
misp-core-1 | Configure PHP | Starting PHP FPM
2024-10-23 14:08:36,306 INFO success: php-fpm entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
misp-core-1 | php-fpm: stopped
misp-core-1 | php-fpm: started
misp-core-1 | INIT | Done ...
```

Note: Ctrl+Z might be necessary to exit the process after *INIT / Done...* is displayed.

11. To make sure that everything succeeded we can check the status of the container with *sudo docker ps*.

```
*[1] + Stopped      sudo docker compose up
$ sudo docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS               NAMES
ee7741bd7dbc        ghcrl.io/misp/misp-docker/misp-core:latest   "/entrypoint.sh"    7 minutes ago     Up 7 minutes (unhealthy)   0.0.0.0:80->80/tcp, ::1:80->80/tcp, 0.0.0.0:443->443/tcp, ::1:443->443/tcp   misp-docker-misp-core-1
1d702851dfcc        ghcrl.io/misp/misp-docker/misp-modules:latest  "/usr/local/bin/misp_..."  7 minutes ago     Up 7 minutes          25/tcp               misp-docker-misp-modules-1
e2e7c9d1212e        ixodtai/smtp                                "/bin/entrypoint.sh ..."  7 minutes ago     Up 7 minutes          25/tcp               misp-docker-mail-1
d49d1a47436a        valkey/valkey:7.2                            "/docker-entrypoint.s..."  7 minutes ago     Up 7 minutes (healthy)  6379/tcp            misp-docker-redis-1
6d759207fd7        mariadb:10.11                             "/docker-entrypoint.s..."  7 minutes ago     Up 7 minutes (healthy)  3306/tcp            misp-docker-db-1
$
```

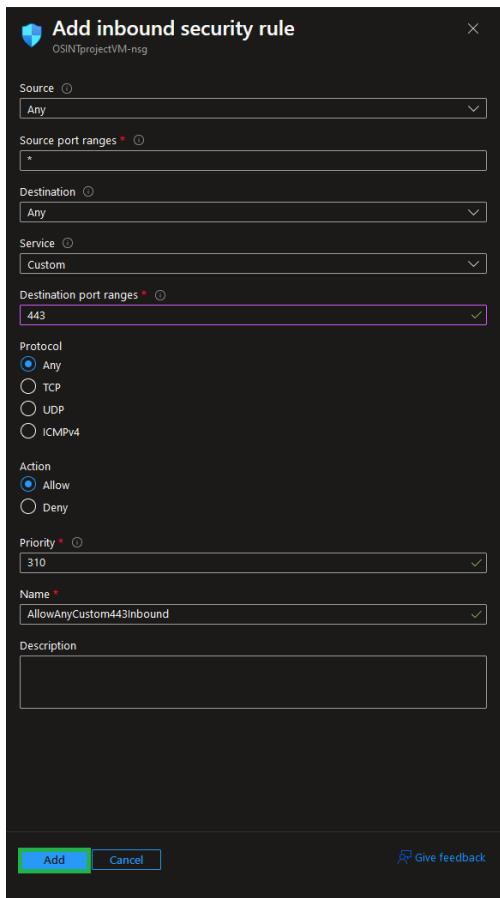
12. We now go the **Network settings** page under the *Networking* blade of the Ubuntu VM. We need to create an inbound port rule for Port 443.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named "OSINTProjectVM". The "Networking" blade is active. In the "Inbound port rules" section, a new rule is being added. The "Create port rule" dropdown menu is open, with "Inbound port rule" selected. The table below lists four existing inbound port rules, each defining a source IP range, destination port, protocol, and action (Allow or Deny). The table includes columns for Priority, Name, Port, Protocol, Source, Destination, and Action.

Priority ↑	Name	Port	Protocol	Source	Destination	Action
300	SSH	22	TCP	Any	Any	Allow
65000	Allow/metainbound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInbound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInbound	Any	Any	Any	Any	Deny

```
*[1] + Stopped      sudo docker compose up
$ sudo docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS               NAMES
ee7741bd7dbc        ghcrl.io/misp/misp-docker/misp-core:latest   "/entrypoint.sh"    7 minutes ago     Up 7 minutes (unhealthy)   0.0.0.0:80->80/tcp, ::1:80->80/tcp, 0.0.0.0:443->443/tcp, ::1:443->443/tcp   misp-docker-misp-core-1
1d702851dfcc        ghcrl.io/misp/misp-docker/misp-modules:latest  "/usr/local/bin/misp_..."  7 minutes ago     Up 7 minutes          25/tcp               misp-docker-misp-modules-1
e2e7c9d1212e        ixodtai/smtp                                "/bin/entrypoint.sh ..."  7 minutes ago     Up 7 minutes          25/tcp               misp-docker-mail-1
d49d1a47436a        valkey/valkey:7.2                            "/docker-entrypoint.s..."  7 minutes ago     Up 7 minutes (healthy)  6379/tcp            misp-docker-redis-1
6d759207fd7        mariadb:10.11                             "/docker-entrypoint.s..."  7 minutes ago     Up 7 minutes (healthy)  3306/tcp            misp-docker-db-1
$
```

13. We input the following configuration and select **Add**:



14. We then paste our VM's public IP address into a browser and bypass the warning that the page is unsafe (we need to add a signed certificate to fix this).

Note: this should now work for any VM we have, such as the honeypot VM from PART 1.



Warning: Potential Security Risk Ahead

Firefox detected a potential security threat and did not continue to **4.245.4.197**. If you visit this site, attackers could try to steal information like your passwords, emails, or credit card details.

[Learn more...](#)

[Go Back \(Recommended\)](#)

[Advanced...](#)

4.245.4.197 uses an invalid security certificate.

The certificate is not trusted because it is self-signed.

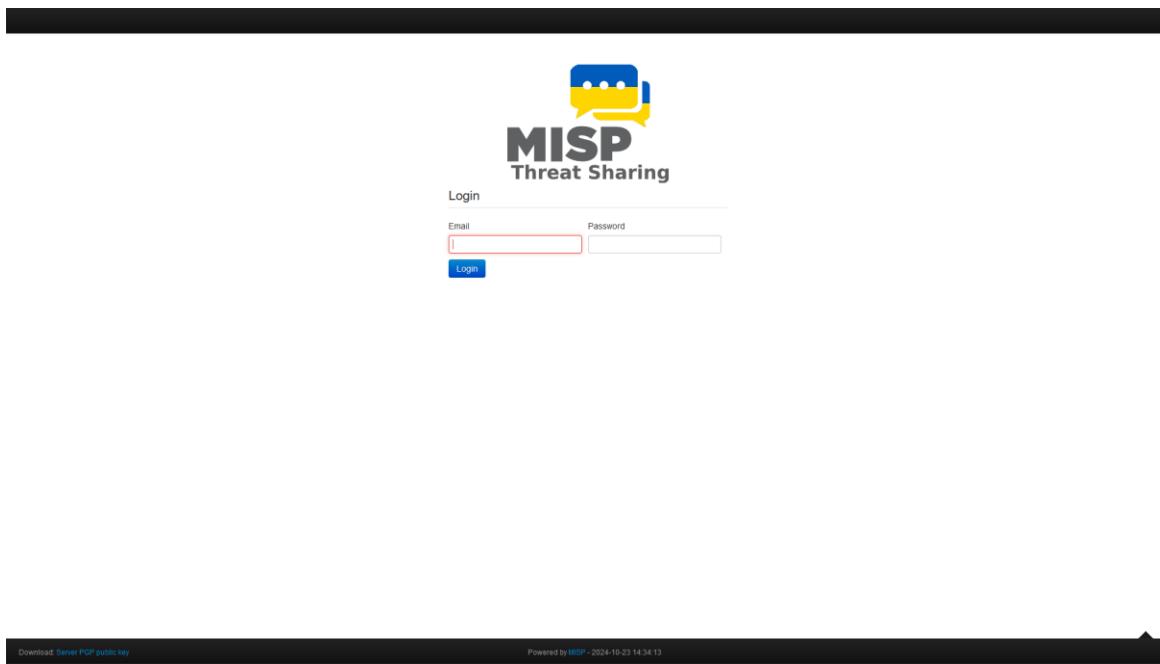
Error code: [MOZILLA_PKIX_ERROR_SELF_SIGNED_CERT](#)

[View Certificate](#)

[Go Back \(Recommended\)](#)

[Accept the Risk and Continue](#)

15. The MISP instance is now running.



16. We log in using the following credentials:

- User: admin@admin.test
- Password: admin

17. Now we should have access to our MISP Instance.

18. Since this is a public-facing server, it is highly recommended to change our admin password. This is done by clickin on **Admin** at the top-right, then going to **Change Password** and selecting new password.

19. We now have to enable the OSINT feeds. To do this, we first go to www.misp-project.org/feeds/ or directly from GitHub at <https://github.com/MISP/MISP/blob/2.4/app/files/feed-metadata/defaults.json>

20. We copy the contents of the JSON file.

```

{
    "default": false,
    "override_ids": false,
    "delete_local_file": false,
    "lookup_visible": false,
    "hide_tag": false,
    "fixed_event": false,
    "delta_merge": false,
    "publish": false,
    "override_ids": false,
    "delete_local_file": false
}

```

21. We then go back to the MISP instance, go to **Synch Actions**, and select **Feeds**

[Edit My Profile](#)

Change Password

- [My Profile](#)
- [My Settings](#)
- [Periodic summary settings](#)
- [Set Setting](#)
- [List Organisations](#)
- [Role Permissions](#)
- [List Sharing Groups](#)
- [Add Sharing Group](#)
- [List Sharing Group Blueprints](#)
- [Add Sharing Group Blueprint](#)

[Categories & Types](#)

[Terms & Conditions](#)

[Statistics](#)

[Sync Actions](#)
[Remote Servers](#)
Feeds
[SightingDB](#)
[Communities](#)
[Cerebrates](#)
[TAXII Servers](#)
[Event ID translator](#)

22. We go to the **Import Feeds from JSON** menu, paste the code we copied from GitHub and click on **Add**.

[Home](#)
[Event Actions](#)
[Dashboard](#)
[Galaxies](#)
[Input Filters](#)
[Global Actions](#)
[Sync Actions](#)
[Administration](#)
[Logs](#)
[API](#)

[List Feeds](#)

[Search Feed Caches](#)

[Add Feed](#)

Import Feeds from JSON

[Feed overlap analysis matrix](#)

[Export Feed settings](#)

Paste feed data

Paste a MISP feed metadata JSON below to add feeds.

JSON

```
[{"Feed": {"name": "ELLIO: IP Feed (Community version)", "provider": "ellio.tech", "url": "https://cdn.ellio.tech/community-feed", "rules": "[\"tags\":[\"OR\":[], \"NOT\[]], \"orgs\":[\"OR\":[], \"NOT\[]]}", "enabled": true, "distribution": "0", "default": false, "source_format": "freetext", "fixed_event": true, "delta_merge": true, "publish": true, "override_ids": false, "settings": {"\"csv\": {\"value\": \"\", \"delimiter\": \",\", \"common\": [\"excluderegex\"]}}}
```

Add

23. We now need to enable them, which is done by selecting the checkbox next to **ID** on the Feeds page that we will be automatically redirected to and clicking on **Enable selected**. We have to do this for all 5 pages individually.

Home Event Actions Dashboard Galaxies Input Filters Global Actions Sync Actions Administration Logs API Bookmarks ★ MISP Admin Log out

82 new feeds added.

Feeds

Generate feed lookup caches or fetch feed data (enabled feeds only)

Load default feed metadata Cache all feeds Cache freezed/CSV feeds Cache MISP feeds Fetch and store all feed data

ID	Enabled	Caching	Name	Format	Provider	Org	Source	URL	Headers	Target	Publish	Delta	Override	Distrib
1	<input checked="" type="checkbox"/>	x	CIRCL OSINT Feed	misp	CIRCL	network	https://www.circl.lu/doc/misp/feed-osint		Feed not enabled	x	x	x	All com	
2	<input checked="" type="checkbox"/>	x	The BotNij.eu Data	misp	BotNij.eu	network	https://www.botnij.eu/datafeed-osint		Feed not enabled	x	x	x	All com	
3	<input checked="" type="checkbox"/>	x	ELIOU: IP Feed (Community version)	freetext	elliot.tech	network	https://cdn.elliot.tech/community-feed		Feed not enabled	✓	✓	x	Your org	
4	<input checked="" type="checkbox"/>	x	blockrules of rules.emergingthreats.net	csv	rules.emergingthreats.net	network	https://rules.emergingthreats.net/blockrules/compromised-ips.txt		Feed not enabled	x	✓	x	Your org	
5	<input checked="" type="checkbox"/>	x	Tor exit nodes	csv	TOR Node List from dan.me.uk - careful, this feed applies a lock-out after each pull. This is shared with the "Tor ALL nodes" feed.	network	https://www.dan.me.uk/torlist/?exit		Feed not enabled	x	✓	x	Your org	
6	<input checked="" type="checkbox"/>	x	Tor ALL nodes	csv	TOR Node List from dan.me.uk - careful, this feed applies a lock-out after each pull. This is shared with the "Tor exit nodes" feed.	network	https://www.dan.me.uk/torlist/		Feed not enabled	x	✓	x	Your org	
7	<input checked="" type="checkbox"/>	x	cybercrime-tracker.net - all	freetext	cybercrime-tracker.net	network	https://cybercrime-tracker.net/all.php		Feed not enabled	x	✓	x	Your org	
8	<input checked="" type="checkbox"/>	x	PhishTank online valid phishing	csv	Phishtank	network	https://data.phishtank.com/data/online-valid.csv		Feed not enabled	x	✓	x	Your org	
9	<input checked="" type="checkbox"/>	x	ip-block-list - snort.org	freetext	https://snort.org	network	https://snort.org/downloads/ip-block-list		Feed not enabled	✓	✓	x	Your org	
10	<input checked="" type="checkbox"/>	x	diamondfor_panels	freetext	pan-unit42	network	https://githubusercontent.com/pan-unit42/ocs/master/diamondfor/diamondfor_panels.txt		Feed not enabled	✓	✓	x	Your org	
11	<input checked="" type="checkbox"/>	x	pop3/gropers	csv	home.nusig.no	network	https://home.nusig.no/~petef/pop3/gropers.txt		Feed not enabled	✓	✓	x	Your org	
12	<input checked="" type="checkbox"/>	x	Feodo IP Blocklist	csv	abuse.ch	network	https://feodotracker.abuse.ch/downloads/ipblocklist.csv		Feed not enabled	x	x	x	Your org	
13	<input checked="" type="checkbox"/>	x	OpenPhish url list	freetext	openphish.com	network	https://openphish.com/feed.txt		Feed not enabled	x	✓	x	Your org	

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24. All feeds should now have checkmarks. We then click on **Fetch and store all feed data**.

Home Event Actions Dashboard Galaxies Input Filters Global Actions Sync Actions Administration Logs API Bookmarks ★ MISP Admin Log out

4 feeds enabled.

Feeds

Generate feed lookup caches or fetch feed data (enabled feeds only)

Load default feed metadata Cache all feeds Cache freezed/CSV feeds Cache MISP feeds Fetch and store all feed data

ID	Enabled	Caching	Name	Format	Provider	Org	Source	URL	Headers	Target	Publish	Delta	Override	Distrib
1	<input checked="" type="checkbox"/>	x	CIRCL OSINT Feed	misp	CIRCL	network	https://www.circl.lu/doc/misp/feed-osint		x	x	x		All comm	
2	<input checked="" type="checkbox"/>	x	The BotNij.eu Data	misp	BotNij.eu	network	https://www.botnij.eu/datafeed-osint		x	x	x		All comm	
3	<input checked="" type="checkbox"/>	x	ELIOU: IP Feed (Community version)	freetext	elliot.tech	network	https://cdn.elliot.tech/community-feed		New feed event	✓	✓	x	Your org	
4	<input checked="" type="checkbox"/>	x	blockrules of rules.emergingthreats.net	csv	rules.emergingthreats.net	network	https://rules.emergingthreats.net/blockrules/compromised-ips.txt		New feed event	x	✓	x	Your org	
5	<input checked="" type="checkbox"/>	x	Tor exit nodes	csv	TOR Node List from dan.me.uk - careful, this feed applies a lock-out after each pull. This is shared with the "Tor ALL nodes" feed.	network	https://www.dan.me.uk/torlist/?exit		New feed event	x	✓	x	Your org	
6	<input checked="" type="checkbox"/>	x	Tor ALL nodes	csv	TOR Node List from dan.me.uk - careful, this feed applies a lock-out after each pull. This is shared with the "Tor exit nodes" feed.	network	https://www.dan.me.uk/torlist/		New feed event	x	✓	x	Your org	
7	<input checked="" type="checkbox"/>	x	cybercrime-tracker.net - all	freetext	cybercrime-tracker.net	network	https://cybercrime-tracker.net/all.php		New feed event	x	✓	x	Your org	
8	<input checked="" type="checkbox"/>	x	PhishTank online valid phishing	csv	Phishtank	network	https://data.phishtank.com/data/online-valid.csv		New feed event	x	✓	x	Your org	
9	<input checked="" type="checkbox"/>	x	ip-block-list - snort.org	freetext	https://snort.org	network	https://snort.org/downloads/ip-block-list		New feed event	✓	✓	x	Your org	
10	<input checked="" type="checkbox"/>	x	diamondfor_panels	freetext	pan-unit42	network	https://githubusercontent.com/pan-unit42/ocs/master/diamondfor/diamondfor_panels.txt		New feed event	✓	✓	x	Your org	
11	<input checked="" type="checkbox"/>	x	pop3/gropers	csv	home.nusig.no	network	https://home.nusig.no/~petef/pop3/gropers.txt		New feed event	✓	✓	x	Your org	
12	<input checked="" type="checkbox"/>	x	Feodo IP Blocklist	csv	abuse.ch	network	https://feodotracker.abuse.ch/downloads/ipblocklist.csv		New feed event	x	x	x	Your org	
13	<input checked="" type="checkbox"/>	x	OpenPhish url list	freetext	openphish.com	network	https://openphish.com/feed.txt		New feed event	x	✓	x	Your org	

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<https://4.245.4.197/feeds/fetchFromAllFeeds>

Note: Synch status of the new feeds can be checked by hovering over the **Administration** and selecting **Jobs**.

Home Event Actions Dashboard Galaxies Input Filters Global Actions Sync Actions Administration Logs API Bookmarks ★ MISP Admin Log out

Add User
List Users
Pending registrations
User settings
Set Setting
Contact Users

Add Organisation
List Organisations

Add Role
List Roles

Server Settings & Maintenance
Update Progress

Jobs

Scheduled Tasks
Event Block Rules

Blocklists Event
Manage Event Blocklists

Blocklists Organisation
Manage Org Blocklists

Blocklists Sightings
Manage Sighting Blocklists

Purge job entries: Completed All

ID	Date created	Date modified	Process ID	Worker	Job type	Input	Message	Organisation name	Status	Progress
85	2024-10-23 15:12:53	2024-10-23 15:12:54	6f5af7a-1c72-4975-920c-90e52302dc6e	email	publish_alert_email	Event: 1	Mails sent.	ADMIN	Completed	Completed
84	2024-10-23 15:12:53	2024-10-23 15:12:53	66ca2434-4873-480e-a9cd-1fb852e37449	default	fetch_feed	Feed: 84	Starting fetch from Feed.	ADMIN	Waiting	Waiting
83	2024-10-23 15:12:53	2024-10-23 15:12:53	16093d9d-b75a-432e-ba82-91af437910	default	fetch_feed	Feed: 83	Starting fetch from Feed	ADMIN	Waiting	Waiting
82	2024-10-23 15:12:53	2024-10-23 15:12:53	316e50ec-46c1-4379-8685-5e6e644d70ff	default	fetch_feed	Feed: 82	Starting fetch from Feed.	ADMIN	Waiting	Waiting
81	2024-10-23 15:12:53	2024-10-23 15:12:53	5daea909-6468-450e-b31c-043348b9a1ad	default	fetch_feed	Feed: 81	Starting fetch from Feed	ADMIN	Waiting	Waiting
80	2024-10-23 15:12:53	2024-10-23 15:12:53	823ab9ba-1a67-4209-ba84-040fb7935320	default	fetch_feed	Feed: 80	Starting fetch from Feed	ADMIN	Waiting	Waiting
79	2024-10-23 15:12:53	2024-10-23 15:12:53	ea36d343-3679-403-8f85-b5383a4a9202	default	fetch_feed	Feed: 79	Starting fetch from Feed.	ADMIN	Waiting	Waiting
78	2024-10-23 15:12:52	2024-10-23 15:12:52	e91aa9e9-78a3-45f5-8ab-7edbf5aeed123	default	fetch_feed	Feed: 78	Starting fetch from Feed.	ADMIN	Waiting	Waiting
77	2024-10-23 15:12:52	2024-10-23 15:12:52	c459f156-4005-4e4f-e4d7-487702498598	default	fetch_feed	Feed: 77	Starting fetch from Feed.	ADMIN	Waiting	Waiting
76	2024-10-23 15:12:52	2024-10-23 15:12:52	c085eeb-309f-4865-a9d-9993138560f	default	fetch_feed	Feed: 76	Starting fetch from Feed.	ADMIN	Waiting	Waiting
75	2024-10-23 15:12:52	2024-10-23 15:12:52	15502d4-62d0-434b-9bca-983a7effbece	default	fetch_feed	Feed: 75	Starting fetch from Feed.	ADMIN	Waiting	Waiting
74	2024-10-23 15:12:52	2024-10-23 15:12:52	020e8a0e-3e27-4a0d-841a-3c785d5de00	default	fetch_feed	Feed: 74	Starting fetch from Feed.	ADMIN	Waiting	Waiting
73	2024-10-23 15:12:52	2024-10-23 15:12:52	ddcc3b12-e894-420e-9845-600987bd7	default	fetch_feed	Feed: 73	Starting fetch from Feed.	ADMIN	Waiting	Waiting
72	2024-10-23 15:12:52	2024-10-23 15:12:52	0221ecb2-104e-43d9-bca7-829407a85351	default	fetch_feed	Feed: 72	Starting fetch from Feed.	ADMIN	Waiting	Waiting
71	2024-10-23 15:12:52	2024-10-23 15:12:52	b349f05-2685-488-8111-4146ca9c939	default	fetch_feed	Feed: 71	Starting fetch from Feed.	ADMIN	Waiting	Waiting
70	2024-10-23 15:12:52	2024-10-23 15:12:52	f944d998-4919-419-93-188dbd999559	default	fetch_feed	Feed: 70	Starting fetch from Feed.	ADMIN	Waiting	Waiting
69	2024-10-23 15:12:52	2024-10-23 15:12:52	d584d-3805-498-9bta-1bc12d1073e	default	fetch_feed	Feed: 69	Starting fetch from Feed.	ADMIN	Waiting	Waiting
68	2024-10-23 15:12:52	2024-10-23 15:12:52	fa7618b-8347-4321-42d-ecfd8e6b023	default	fetch_feed	Feed: 68	Starting fetch from Feed.	ADMIN	Waiting	Waiting
67	2024-10-23 15:12:52	2024-10-23 15:12:52	8764e18d-43d2-4647-a113-9787b2054c1	default	fetch_feed	Feed: 67	Starting fetch from Feed.	ADMIN	Waiting	Waiting
66	2024-10-23 15:12:52	2024-10-23 15:12:52	ad22e161-4114-4193-b293-d95957d036c8	default	fetch_feed	Feed: 66	Starting fetch from Feed.	ADMIN	Waiting	Waiting

Page 1 of 5, showing 20 records out of 85 total, starting on record 1, ending on 20

« previous 1 2 3 4 5 next »

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25. We can also see how our **Home** page is now being populated by feeds. We can click on the ID of any of them to see more detailed information such as indicators etc.

Home Event Actions Dashboard Galaxies Input Filters Global Actions Sync Actions Administration Logs API Bookmarks ★ MISP Admin Log out

Events

Import from... REST client

List Attributes

View Proposals Events with proposals View delegation requests View periodic summary

Export Automation

My Events Org Events

« previous 1 2 3 next »

#	Creator org	Owner org	ID	Custers	Tags	#Attr.	#Corr.	Creator user	Date	Info	Enter value to search	Event info	Filter
1	admin	admin	test	2024-10-23	Feed: IP Blocklist feed	1	3	admin@admin.test	2024-10-23	ELLIO IP Feed (Community version) feed		Distribution	Actions
9976			?	117	osintsource-type="Block-or-filter-list"	9976	3	admin@admin.test	2024-10-23	osintsource-type="Block-or-filter-list"		Organisation	↳ ↳ ↳
5600			?	3		5600	2	admin@admin.test	2024-10-23	pop3/gropers feed		Organisation	↳ ↳ ↳
1731			?	68	osintsource-type="Block-or-filter-list"	1731	1	admin@admin.test	2024-10-23	diamondfire_panels feed		Organisation	↳ ↳ ↳
2			?	36	osintsource-type="Block-or-filter-list"	2	2	admin@admin.test	2024-10-23	ip-block-list - snort.org feed		Organisation	↳ ↳ ↳
2119			?	33	osintsource-type="Block-or-filter-list"	2119	4	admin@admin.test	2024-10-23	Tor exit nodes feed		Organisation	↳ ↳ ↳
8700			?	2		8700	4	admin@admin.test	2024-10-23	Tor ALL nodes feed		Organisation	↳ ↳ ↳
604			?	7	osintsource-type="Block-or-filter-list"	604	1	admin@admin.test	2024-10-23	blockrules of rules emergingthreats.net feed		Organisation	↳ ↳ ↳
13			?	4	CUDESO	13	1	admin@admin.test	2015-12-01	LOWBOW - FireEye	All	All	↳ ↳ ↳
79			?	21	Ipcwhite	79	1	admin@admin.test	2015-09-15	In Pursuit of Optical Fibers and Troop Intel: Targeted Attack Distributes PlugX in Russia	All	All	↳ ↳ ↳
8			?	15	Ipcwhite	8	1	admin@admin.test	2015-11-16	WitchCoven Exploiting Web Analytics to Ensnare Victims	All	All	↳ ↳ ↳
16			?	8	Ipcwhite	16	1	admin@admin.test	2016-05-14	New Sofacy Attacks Against US Government Agency	All	All	↳ ↳ ↳
8			?	25	Ipcwhite	8	1	admin@admin.test	2021-09-11	Maloc Cybersecurity in the EU Common Security and Defense Policy	All	All	↳ ↳ ↳
66			?	72	Ipcwhite	66	1	admin@admin.test	2016-04-21	Looking Into a Cyber-Attack Facilitator in the Netherlands	All	All	↳ ↳ ↳
36			?	18	Ipcwhite	36	1	admin@admin.test	2015-10-16	Targeted Malware Attacks against NGOs Linked to Attacks on Burmese Government Websites - Citizen Lab	All	All	↳ ↳ ↳
133			?	20	Ipcwhite	133	1	admin@admin.test	2015-12-04	Pacrat Seven Years of a South American Threat Actor	All	All	↳ ↳ ↳
10			?	122	Ipcwhite	10	1	admin@admin.test	2017-07-24	Real News, Fake Flash: Mac OS X Users Targeted	All	All	↳ ↳ ↳
5			?	121	Ipcwhite	5	1	admin@admin.test	2017-07-06	New KONFI Campaign References North Korean Missile Capabilities	All	All	↳ ↳ ↳
4			?	120	Ipcwhite	4	1	admin@admin.test	2017-06-22	Following the Trail of BlackTechnet's Cyber Espionage Campaigns	All	All	↳ ↳ ↳
13			?	119	Ipcwhite	13	1	admin@admin.test	2017-05-16	McAfee Discovers Pinstriped Exploiting Infected Machines as Control Servers; Releases Free Tool to Detect, Disable Trojan	All	All	↳ ↳ ↳
15			?	118	Ipcwhite	15	1	admin@admin.test	2017-06-12	Industroyer Biggest threat to industrial control systems since Stuxnet	All	All	↳ ↳ ↳
74			?	116	Ipcwhite	74	1	admin@admin.test	2017-05-26	TrojBot6™'s bag of tricks	All	All	↳ ↳ ↳

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Task 7: Connecting our MISP data feed to Microsoft Sentinel

- We once again go to the **Content Hub** from the **Data connectors** menu in Microsoft Sentinel and download the **MISP2Sentinel** preconfigured data connector and click **Install**.

The screenshot shows the Microsoft Azure Content hub interface. At the top, there are statistics: 367 Solutions, 303 Standalone contents, 1 Installed, and 0 Updates. A search bar at the top right says "Search resources, services, and docs (G+)." Below the stats, a search bar has "MSP" typed into it. To its right are filters for Status (All), Content type (Data connector (359)), Support (All), Provider (All), Category (All), and Content sources (All). On the left, a sidebar lists "Content title" and "Status" (Not installed). In the center, a table lists one item: "MISP2Sentinel" by "MISP project" (Community) under "Aeronautics, Finance, Healthcare, Manufa...". The "Content type" column shows "Data connector". To the right of the table is a detailed view of the "MISP2Sentinel" entry. It includes a "Description" section stating: "The MISP2Sentinel solution allows you to automatically push threat indicators from MISP to Microsoft Sentinel via the Upload Indicators REST API." Below this are sections for "Data Connectors" (1), "Content type" (1 Data connector), "Category" (Aeronautics, Finance, Healthcare, Manufacturing, Retail, Security - Threat Intelligence, Security - Threat Protection), and "Pricing" (Free). At the bottom right of the detailed view is a blue "Install" button.

Note: We will now be following setup instructions from github.com/cudeyo/misp2sentinel

2. To use our new connector, we will set up the Upload Indicators API. We begin by registering a new application to our Azure tenant by going to the **App registrations** page using the main search bar and **selecting New registration**.

The screenshot shows the "App registrations" page in the Azure portal. The top navigation bar has "Home" and "App registrations". Below the navigation is a toolbar with "New registration" (highlighted in green), "Endpoints", "Troubleshoot", "Refresh", "Download", "Preview features", and "Got feedback?". A note below the toolbar states: "Starting June 30th, 2020 we will no longer add any new features to Azure Active Directory Authentication Library (ADAL) and Azure Active Directory Graph. We will continue to provide technical support and security updates but Library (MSAL) and Microsoft Graph. [Learn more](#)". The main area has tabs for "All applications", "Owned applications" (which is selected and highlighted in blue), "Deleted applications", and "Applications from personal account". Below these tabs is a search bar with placeholder text "Start typing a display name or application (client) ID to filter these ..." and a "Add filters" button. A message box in the center says: "This account isn't listed as an owner of any applications in this directory." It contains two buttons: "View all applications in the directory" and "View all applications from personal account".

3. We name our app and click on **Register**.

Home > App registrations >

Register an application

* Name
The user-facing display name for this application (this can be changed later).

MispToSentinelApp

Supported account types
Who can use this application or access this API?

Accounts in this organizational directory only (Default Directory only - Single tenant)

Accounts in any organizational directory (Any Microsoft Entra ID tenant - Multitenant)

Accounts in any organizational directory (Any Microsoft Entra ID tenant - Multitenant) and personal Microsoft accounts (e.g. Skype, Xbox)

Personal Microsoft accounts only

[Help me choose...](#)

Redirect URI (optional)
We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.

Select a platform e.g. https://example.com/auth

Register an app you're working on here. Integrate gallery apps and other apps from outside your organization by adding from [Enterprise applications](#).

By proceeding, [I agree to the Microsoft Platform Policies](#) [\[?\]](#)

[Register](#)

4. We take note of our *Application (client) ID*, *Object ID*, and *Directory (tenant) ID*.

Home > App registrations >

MispToSentinelApp

Search X < Delete Endpoints Preview features

Overview Quickstart Integration assistant Diagnose and solve problems

Manage Branding & properties Authentication Certificates & secrets

Got a second? We would love your feedback on Microsoft identity platform (previously Azure AD for developer). →

Essentials

Display name	: MispToSentinelApp
Application (client) ID	: 94640c5a-036a-49f4-b700-e9e37ab4f196
Object ID	: b31398ff-af0d-4904-bd3d-5122f0ea52b3
Directory (tenant) ID	: 1714a8fd-e656-4185-8c3d-06e3b4b615ba

Supported account types : [My organization only](#)

5. We then go to the **Certificates & secrets** page under the *Manage* blade, select **New client secret**, name it, and click on **Add**. We can leave the default expiry time.

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with various navigation options like Overview, Quickstart, Integration assistant, Diagnose and solve problems, Manage, Certificates & secrets (which is highlighted with a green box), Token configuration, API permissions, Expose an API, App roles, Owners, Roles and administrators, and Manifest. The main content area is titled 'MisToSentinelApp | Certificates & secrets'. It has tabs for Certificates (0), Client secrets (0) (which is selected and highlighted with a blue box), and Federated credentials (0). Below the tabs, it says 'A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password.' There's a 'New client secret' button. The 'Client secrets' table has one row: Description: 'ProjectMISP', Expires: '21/04/2025', Value: 'I3d8Q~Tn-c78Gq7hJrLcEoIMq7OatA6iFc ...' (this value is highlighted with a green box), and Secret ID: 'b4774bb3-100d-4eb8-bb29-f6dd5819e ...'. At the bottom right of the modal, there are 'Add' and 'Cancel' buttons.

6. Now that it is created, we make sure to copy our secret's value, as it **will not be shown again**.

The screenshot shows the 'Certificates & secrets' section of the Azure portal. The 'Client secrets' tab is selected. It displays a single client secret entry: 'ProjectMISP' with an expiration date of '21/04/2025'. The 'Value' field contains the secret value 'I3d8Q~Tn-c78Gq7hJrLcEoIMq7OatA6iFc ...' (this value is highlighted with a green box). The 'Secret ID' is 'b4774bb3-100d-4eb8-bb29-f6dd5819e ...'. At the bottom right of the table, there are icons for copy, refresh, and delete.

7. Now we need to add the Sentinel Contributor role to the app. We do this by going into the Log Analytics workspace our Sentinel instance is in, in this case **SIEMlogs**, navigating to the **Access control (IAM)** page, and clicking on **Add role assignment**.

The screenshot shows the Microsoft Azure Log Analytics workspace titled 'SIEMlogs'. In the left sidebar, the 'Access control (IAM)' tab is selected. The main content area includes sections for 'Check access', 'Role assignments', 'Roles', 'Deny assignments', and 'Classic administrators'. A 'New! Permissions Management' section is also visible. The 'Add role assignment' button is highlighted with a green box.

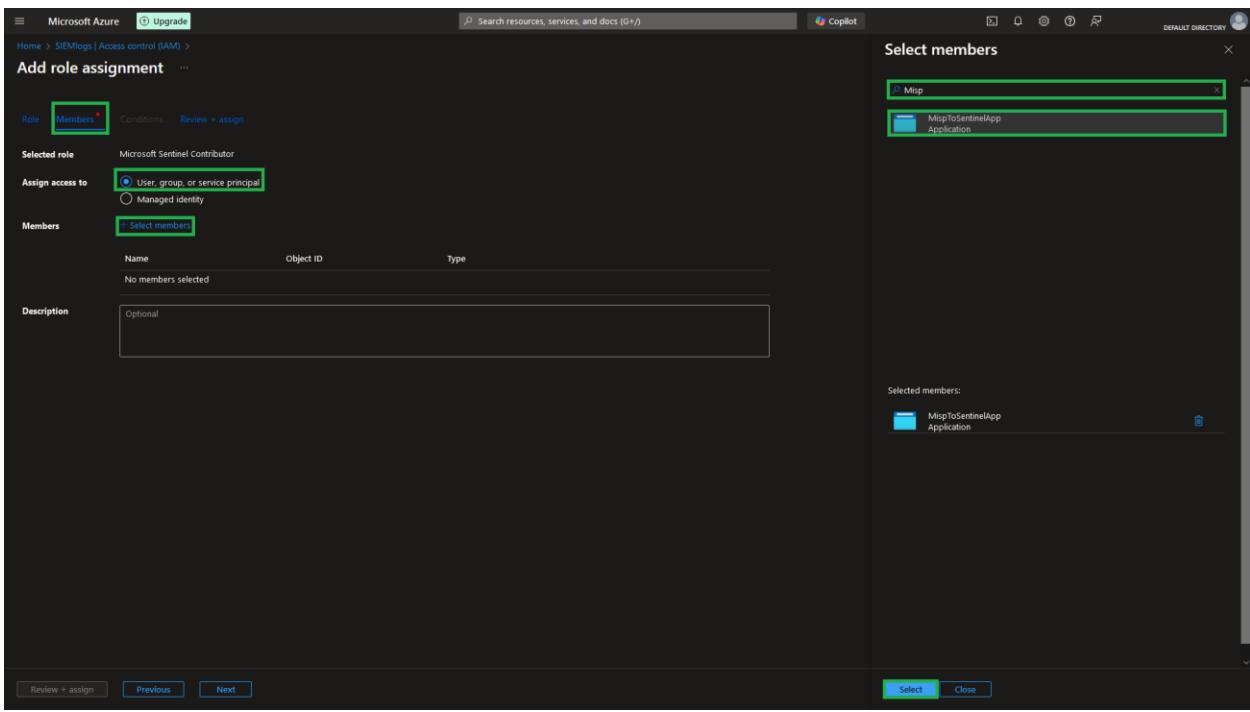
8. We now search for the Microsoft Sentinel Contributor role on the **Role** tab, select it, and click **Next**.

The screenshot shows the 'Add role assignment' blade. The 'Role' tab is selected. The 'Job function roles' dropdown is set to 'Privileged administrator roles'. The search bar contains 'Sentinel'. The results table shows three entries:

Name	Type	Category	Details
Microsoft Sentinel Contributor	BuiltInRole	Security	View
Microsoft Sentinel Reader	BuiltInRole	Security	View
Microsoft Sentinel Responder	BuiltInRole	Security	View

Showing 1 - 3 of 3 results.

9. On the **Members** tab, we leave the **User, group, or service principal** radio button selected, click on **Select members**, search for the name of our app, select it, and click on the **Select** button.



10. We then click on **Review + assign** and it should now show up on the **Access control (IAM)** page of the Log Analytics workspace.

Name	Type	Role	Scope	Condition
Owner (2)				
Microsoft Sentinel Contributor (1)	App	Microsoft Sentinel Contributor	This resource	None
MisptoSentinelApp	App	Microsoft Sentinel Contributor	This resource	None
Virtual Machine Administrator Login (1)				

11. We need to create a MISP API Key. To do this, we go back to our MISP instance, hover over **Administration**, and click on **List Auth Keys**

Afterwards, this API key should ideally be stored in an Azure Key Vault, but for the sake of brevity we will not be doing this for this project.

12. On the **Authentication key index** page, we click on **+Add authentication key**

13. On the **Add auth key** page, we have the ability to secure our key by creating an IP Allow list and setting an expiration date, but we will leave it blank for this project and click on **Submit**.

Add auth key

Auth keys are used for API access. A user can have more than one authkey, so if you would like to use separate keys per tool that queries MISP, add additional keys. Use the comment field to make identifying your keys easier.

User

Comment

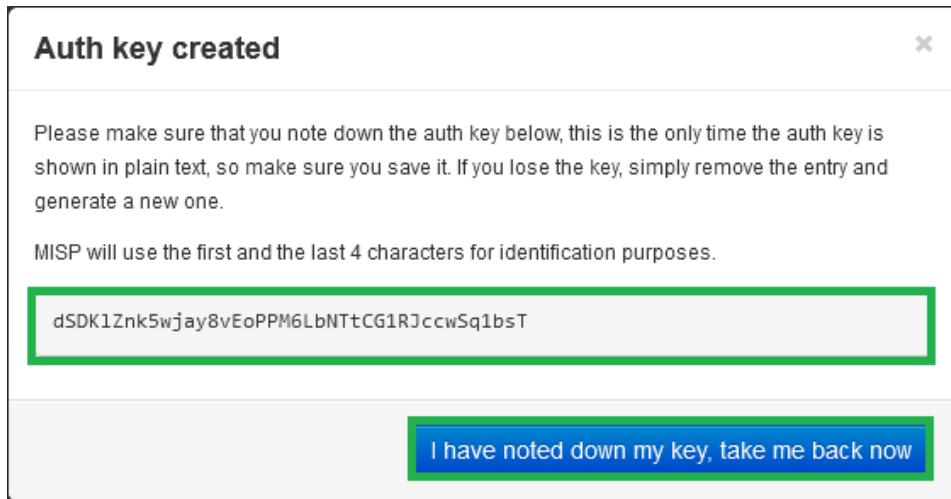
Allowed IPs

Expiration (keep empty for indefinite)

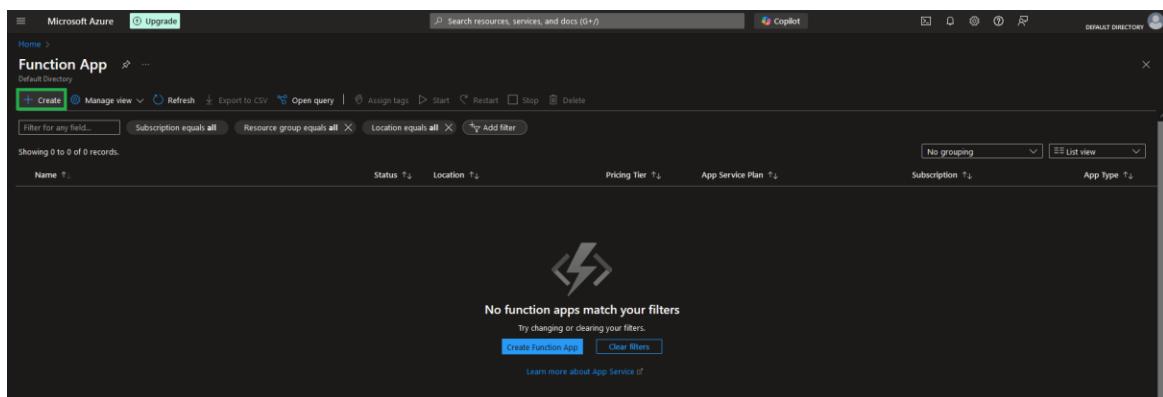
Read only (it will unset all permissions. This should not be used for sync users)

Submit **Cancel**

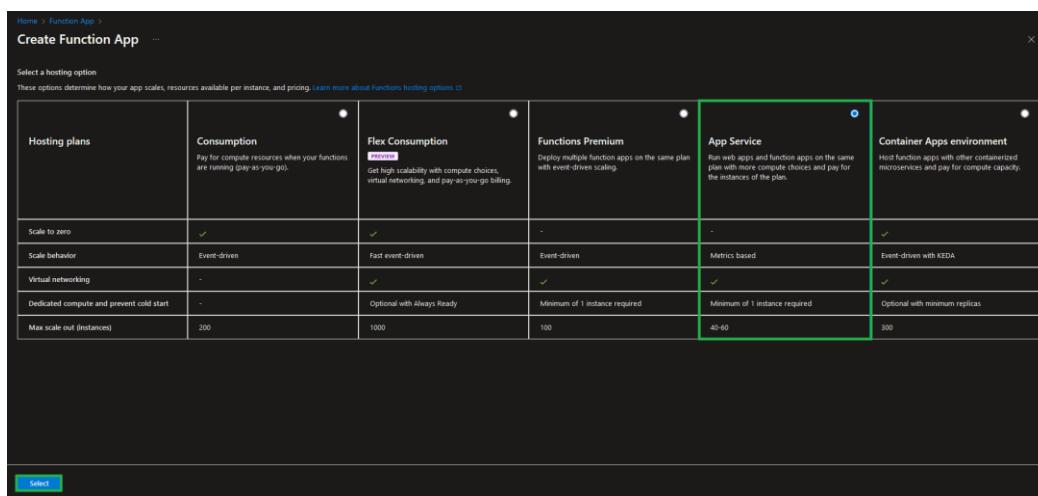
14. We take a note of our key, as it will not be shown in full again later and click on **I have noted down my key, take me back now**.



15. We now go back to the Azure Portal and create a Function app. We go to the **Function app** page through the search bar and click on **Create**.



16. We then select the **App Service** hosting option.



17. We select the following configuration on the **Basics** tab and click on **Review + create**:

Field	Value
Subscription	Our current subscription.
Resource group	SIEMproject
Function App name	Enter a unique name, such as MISP2Sentinel .
Region	Select the same region as previous resources
Runtime stack	Python
Availability zone	3.11 (Any Python 3)
Size	Premium V3 P1V3 (Can be left default)

Home >

Create Function App (App Service) ...

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ Azure subscription 1

Resource Group * ⓘ SIEMproject

Create new

Instance Details

Function App name * MISP2Sentinel .azurewebsites.net

Do you want to deploy code or container image? *

Code Container Image

Runtime stack * Python

Version * 3.11

Region * West Europe

i Not finding your App Service Plan? Try a different region or select your App Service Environment.

Operating System * Linux Windows

Environment details

Linux Plan (West Europe) * ⓘ (New) ASP-SIEMproject-92d3

Create new

Pricing plan Premium V3 P1V3 (195 minimum ACU/vCPU, 8 GB memory, 2 vCPU)

Explore pricing plans

Zone redundancy

An App Service plan can be deployed as a zone redundant service in the regions that support it. This is a deployment time only decision. You can't make an App Service plan zone redundant after it has been deployed [Learn more ↗](#)

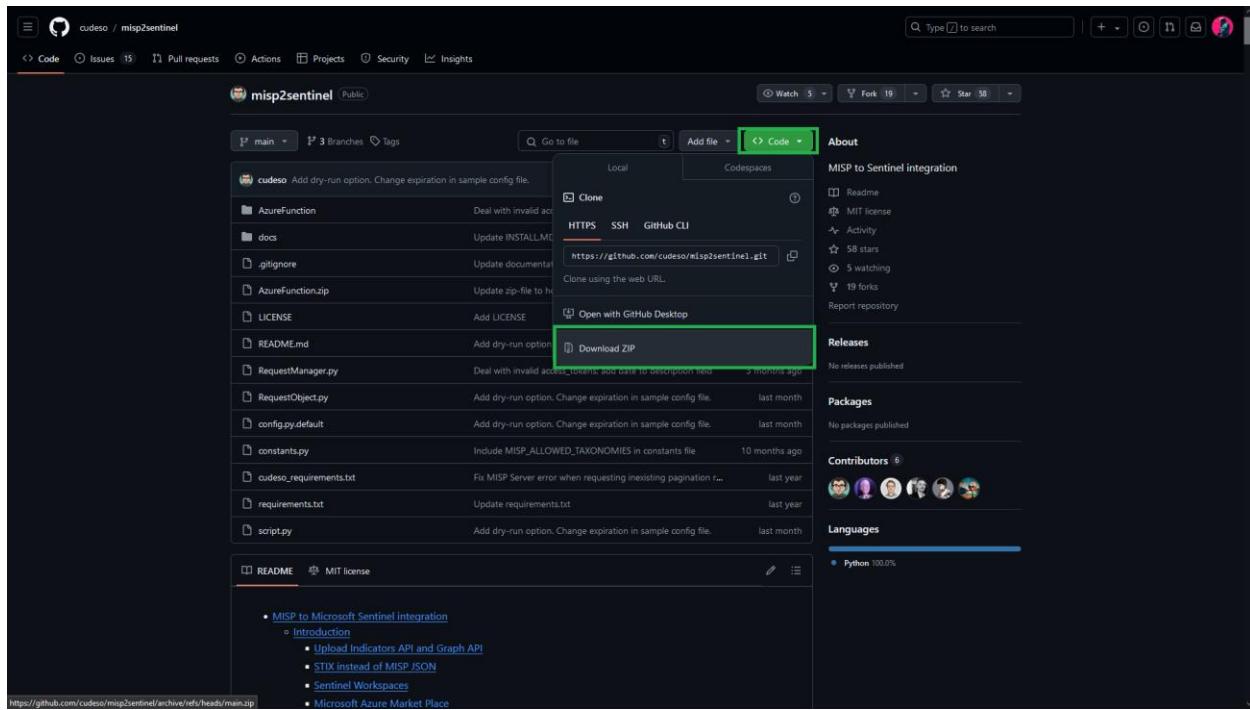
Zone redundancy

Enabled: Your App Service plan and the apps in it will be zone redundant. The minimum App Service plan instance count will be three.

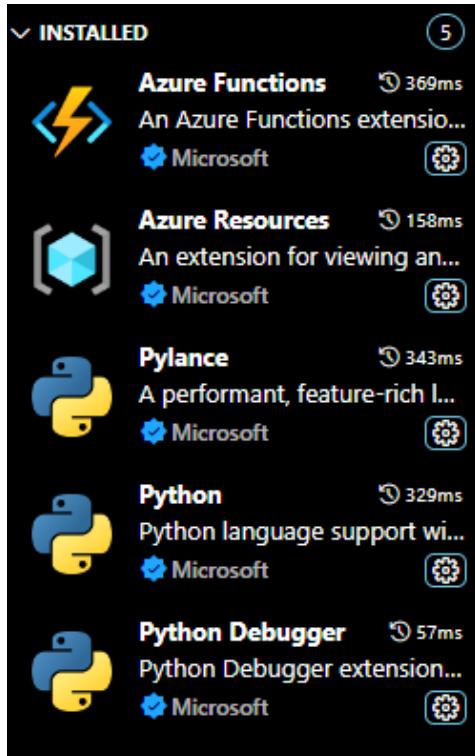
Disabled: Your App Service Plan and the apps in it will not be zone redundant. The minimum App Service plan instance count will be one.

[Review + create](#) < Previous Next : Networking >

18. We now go to github.com/cudeso/misp2sentinel, click on **Code**, and then the **Download ZIP** option.



Note: We need to have Visual Studio Code and the Python, Pylance, Python Debugger, Azure Resources, and Azure Functions extensions installed for the following steps.



19. We extract the .zip file and open the extracted folder with Microsoft Visual Studio Code. We select the Azure icon, click on **Sign in to Azure..**, and choose **Allow** when prompted.

```

1  from pyMISP import PyMISP
2  import MISPSentinel.config as config
3  from requests import Session
4  from MISPSentinel.RequestManager import RequestManager
5  from MISPSentinel.RequestObject import RequestObject, RequestObject_Event, RequestObject_Indicator
6  from MISPSentinel.constants import *
7  import sys
8  from functools import reduce
9  import os
10 import datetime
11 from pytz import timezone, timedelta, timezone
12 import simplejson
13 import azure.functions as func
14 import requests
15 import json
16 from misp_stix_converter import MISPToSTIX2Parser
17 from stix2.base import STIXJSONEncoder
18
19 if config.misp_verifycert is False:
20     import urllib3
21     urllib3.disable_warnings(urllib3.exceptions.InsecureRequestWarning)
22
23 def get_misp_events_stix():
24     logging.info("Using the following values for MISP API call: domain: %s, misp API key: %s" % (config.misp_domain, config.misp_key[-5:] + '*' * 5))
25     misp = PyMISP(config.misp_domain, config.misp_key, config.misp_verifycert, False)
26     result_set = []
27     logging.debug("Query MISP for events...")
28     remaining_misp_pages = True
29     misp_page = 1
30     misp_indicator_ids = []
31
32     while remaining_misp_pages:
33         try:
34             if "list" in config.misp_event_filters:
35                 result = misp.search(controller='events', return_format='json', **config.misp_event_filters)
36             else:
37                 result = misp.search(controller='events', return_format='json', **config.misp_event_filters, limit=config.misp_event_limit_per_page, page=misp_page)
38
39             if len(result) > 0:
40                 logging.info("Received MISP events page {} with {} events".format(misp_page, len(result)))
41                 for event in result:
42                     misp_event = RequestObject_Event(event["Event"])
43                     parser = MISPToSTIX2Parser()
44                     parser.parse_misp_event(misp_event)
45                     stix_objects = parser.get_stix_objects()
46                     for element in stix_objects:
47                         if element.type in UPLOAD_INDICATOR_API_ACCEPTED_TYPES and \
48                             element.id not in misp_indicator_ids:
49                             misp_indicator = RequestObject_Indicator(element, misp_event)
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```

20. We no go back into the Python scripts as there are two changes we need to make to the code.

I. We go to the config.py file and change 'MISP-Key' to 'mispkey'

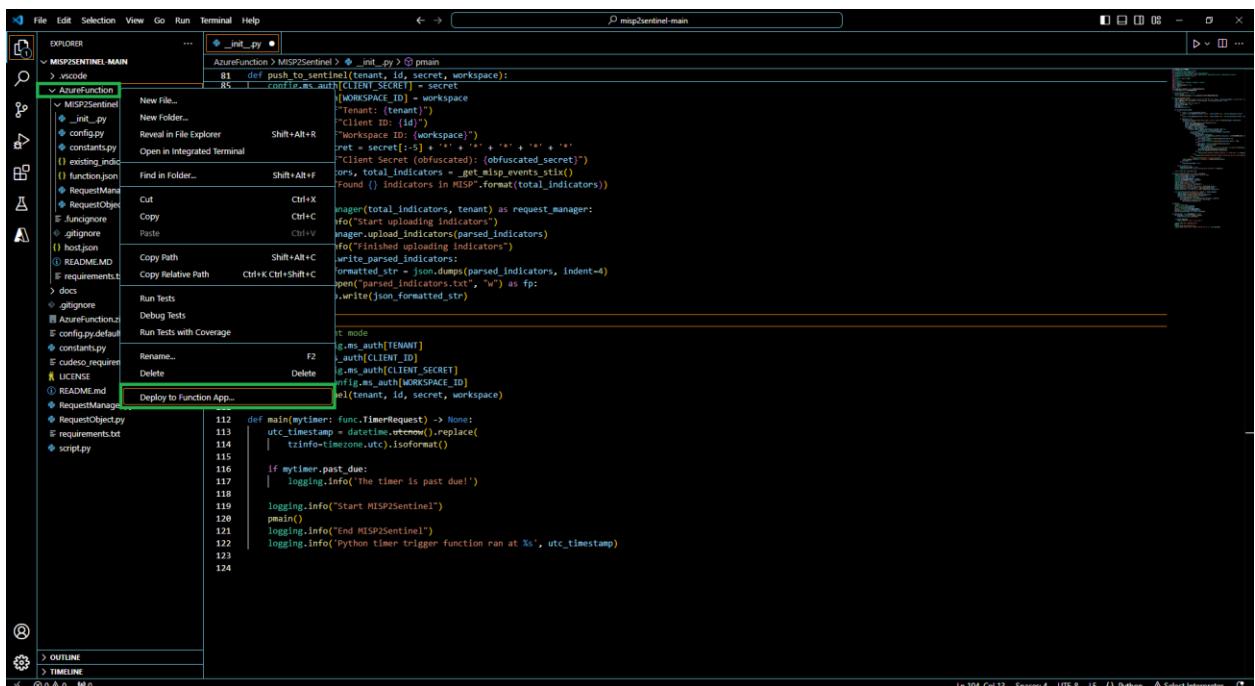
```

1  # Log in with the virtual machines managed identity
2  credential = DefaultAzureCredential()
3  client = SecretClient(vault_url=KEYVUL, credential=credential)
4
5  # Retrieve values from KV (client_secret, MISP-key most importantly)
6  retrieved_mispkey = client.get_secret('MISP-Key')
7  retrieved_clientsecret = client.get_secret('ClientSecret')
8
9  # Set values with
10 mispkey = retrieved_mispkey.value
11 ms_auth['client_secret'] = retrieved_clientsecret.value
12
13 else:
14     print('key.vault_name env variable not set, falling back to env variable for config values...')
15     mispkey = os.getenv('mispkey')
16
17 #####
18 # Microsoft Section #
19 #####
20
21
22
23 ms_max_indicators_request = 100      # Throttle max: 100 indicators per request
24 ms_max_requests_minute = 100          # Throttle max: 100 requests per minute
25 ms_username = 'MISP-1.0'
26 ms_target_product = 'Azure Sentinel'  # Target Product
27 ms_api_version = '2022-07-01'        # Upload Indicators API Version
28
29 # Graph API only settings
30 ms_passiveonly = False               # passiveOnly
31 ms_action = 'alert'                  # action
32
33 #####
34 # MISP Section #
35 #####
36
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```

II. We then go to the _init_.py file and delete the code block under the ## Multi-tenant mode comment.

III. We then right-click on **AzureFunction** and select **Deploy to Function App**



21. The function should now be visible under the **Functions** tab on the **Overview** page.

{ } Set up local environment Refresh

Filter by name...

Name	Trigger
MISP2Sentinel	Timer

22. We then go to **Environment variables** under the *Settings* blade and click on **Add** on the **App settings** tab.

Name	Value
APPLICATIONINSIGHTS_CONNECTION_STRING	Show value
AzureWebJobsStorage	Show value
BUILD_FLAGS	Show value
ENABLE_ORYX_BUILD	Show value
FUNCTIONS_EXTENSION_VERSION	Show value
FUNCTIONS_WORKER_RUNTIME	Show value
SCM_DO_BUILD_DURING_DEPLOYMENT	Show value
XDG_CACHE_HOME	Show value

23. We create the following variables that are expected in our MISP2Sentinel python code:

```

6  mispkey = ''
7  mispurl=os.getenv('mispurl')
8
9  local_mode=os.getenv('local_mode', 'False')
10 keyVaultName=os.getenv('key_vault_name', '')
11
12 tenant_id=os.getenv('tenant_id', '')
13 workspace_id=os.getenv('workspace_id', '')
14 client_id=os.getenv('client_id', '')
15 client_secret=os.getenv('client_secret', '')
16
17 # MS API settings
18 ms_auth = [
19     'tenant': tenant_id,
20     'client_id': client_id,
21     'client_secret': client_secret,
22     'scope': 'https://management.azure.com/.default',
23     'graph_api': False,
24     'workspace_id': workspace_id
25 ]

```

tenant_id
client_id
clinet_secret

They can be found on the app registration page we made earlier.

workspace_id

It can be found on the **Overview** page of the workspace our Sentinel instance is in.

mispkey

The key we generated on the **Authentication key index** page of our MISP instance.

mispurl

The public IP address of our Ubuntu server, can be found on our VMs **Connect** page

24. We also need to add a *timerTriggerSchedule* variable with a value of:

0 */2 * * *

This is so that the function can run every 2 hours.

25. We then click **Appy**

App settings		Connection strings
Name	Value	
APPLICATIONINSIGHTS_CONNECTION_STRING		Show value
AzureWebJobsStorage		Show value
BUILD_FLAGS		Show value
client_id		Show value
client_secret		Show value
ENABLE_ORYX_BUILD		Show value
FUNCTIONS_EXTENSION_VERSION		Show value
FUNCTIONS_WORKER_RUNTIME		Show value
mispkey		Show value
mispurl		Show value
SCM_DO_BUILD_DURING_DEPLOYMENT		Show value
tenant_id		Show value
workspace_id		Show value
XDG_CACHE_HOME		Show value

Apply **Discard**

26. Once we run the Function App, it should take a couple of hours for it to update in Sentinel. If we are successful, the status of our MISP2Sentinel Connector should change to **Connected**.

MISP2Sentinel		
...		
 Delete		
 MISP2Sentinel		«

27. We should also now have our new threat intelligence indicators available.

28. We should also now have threat intelligence indicators available as a table that we could use to create alerts in Sentinel

Tables Queries Functions ... <

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