17 min read

Microsoft Sentinel

Mapping MDE and Windows Security Events overlap

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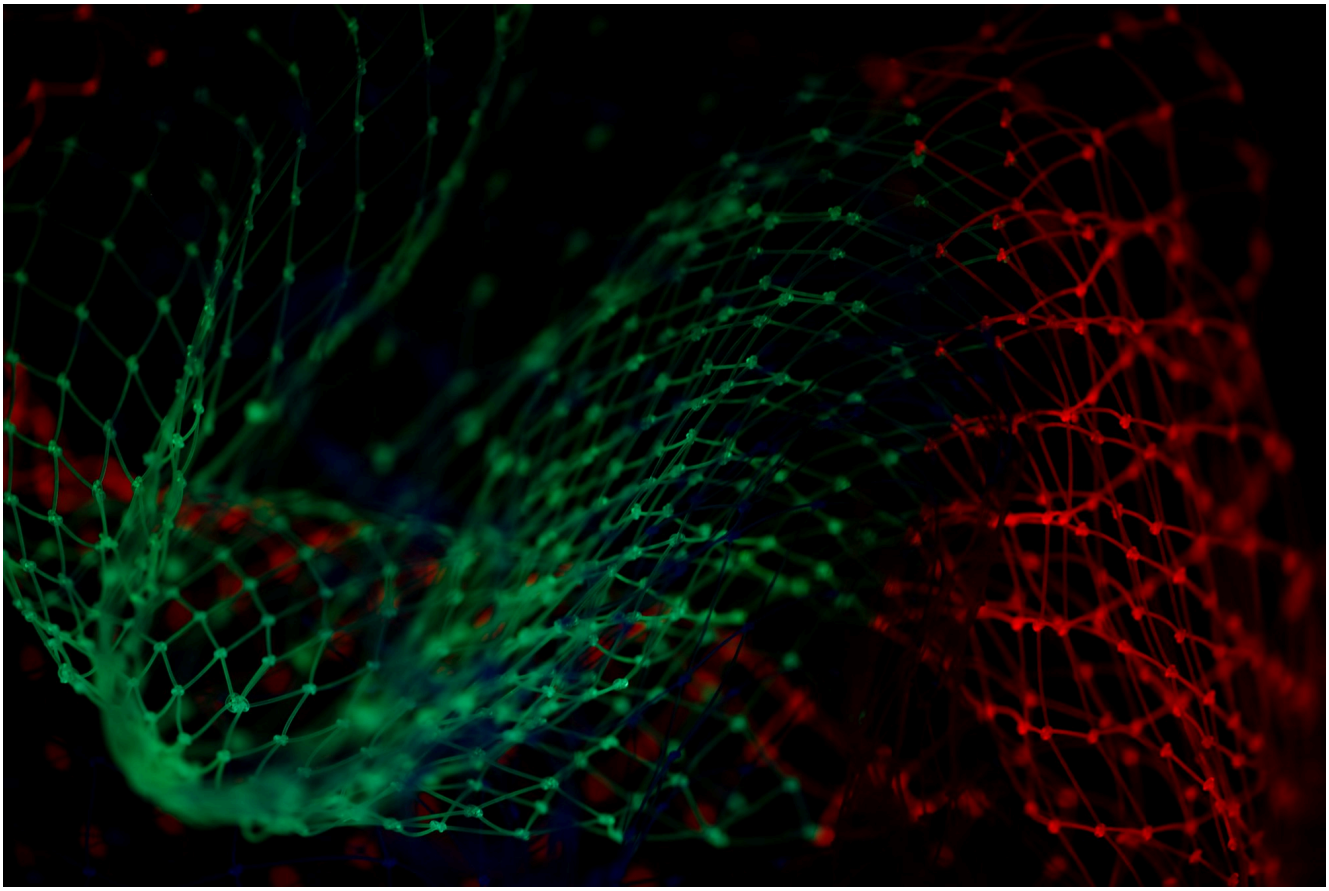

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Introduction

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Introduction

In my last blog post, I talked about using MITRE ATT&CK to support Microsoft Sentinel use cases. Today, I will be showing you how we can compare data coverage of data sources in Sentinel with MITRE ATT&CK and OSSEM. In this post you will find guidance about how to plot the MITRE ATT&CK data coverage of Windows Security Events and Microsoft Defender for Endpoint, so we can see the overlap between the two and hopefully can choose which data source to use.

Plotting MITRE ATT&CK layers for data sources

The reason I started this project was because I wondered what overlap there is between Microsoft Security Events data and Microsoft Defender for Endpoint data. When a customer has all endpoints and servers

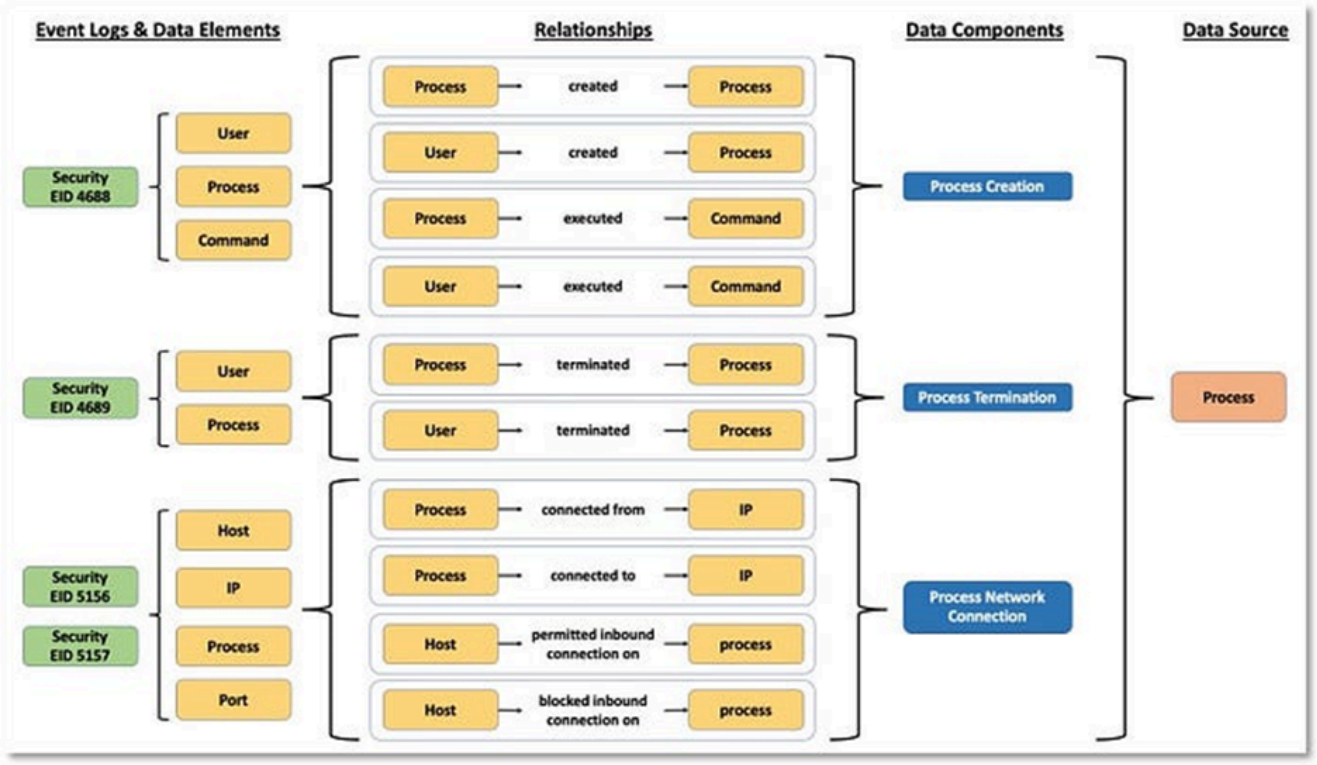
deployed in Microsoft Defender for Endpoint, is it still necessary to ingest certain Windows Security Logs in Microsoft Sentinel?

The OSSEM data model

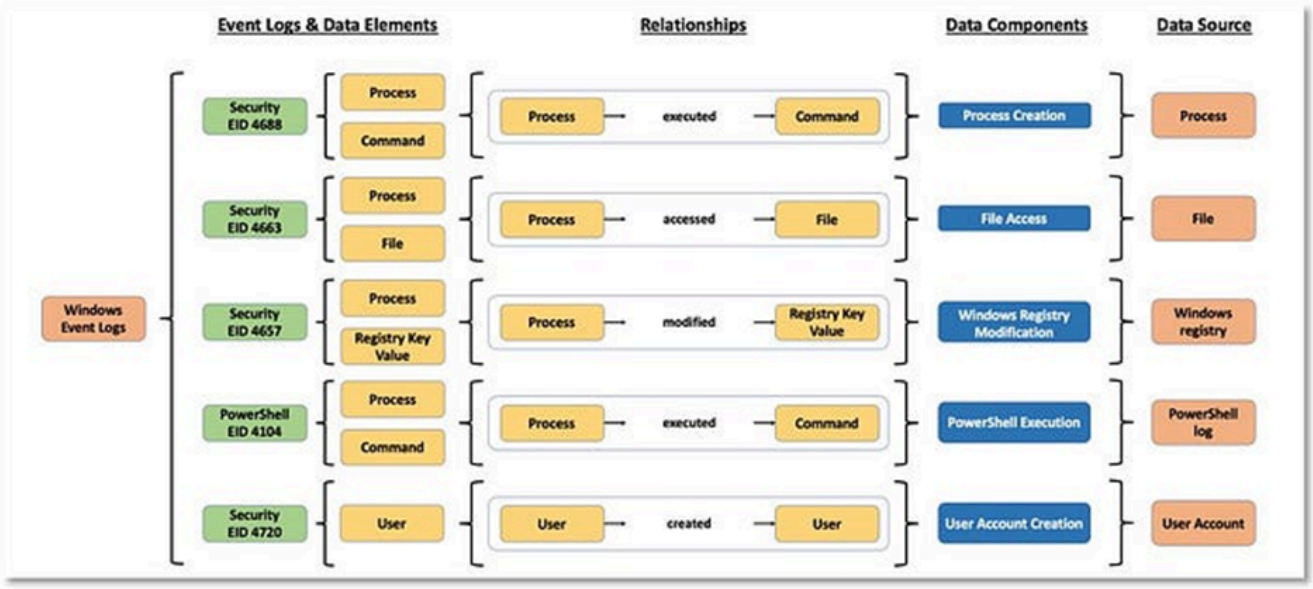
My first question was, how am I going to know which data there is available in both Windows Security Events and MDE events? After some googling, I found the awesome OSSEM project that is focusing on documenting and standardizing security event logs from diverse data sources.

In this project, you have the Detection Data Model that focuses on defining the required data in form of objects and relationships among each other, which is needed to facilitate the creation of data analytics and validate the detection of advisory techniques. On this GitHub page, you can find the techniques_to_events_mapping that contains event types from various data sources, the relationships between them, and to which MITRE Techniques to map. And guess what, Windows Security Events and MDE events are included in the mapped data sources!

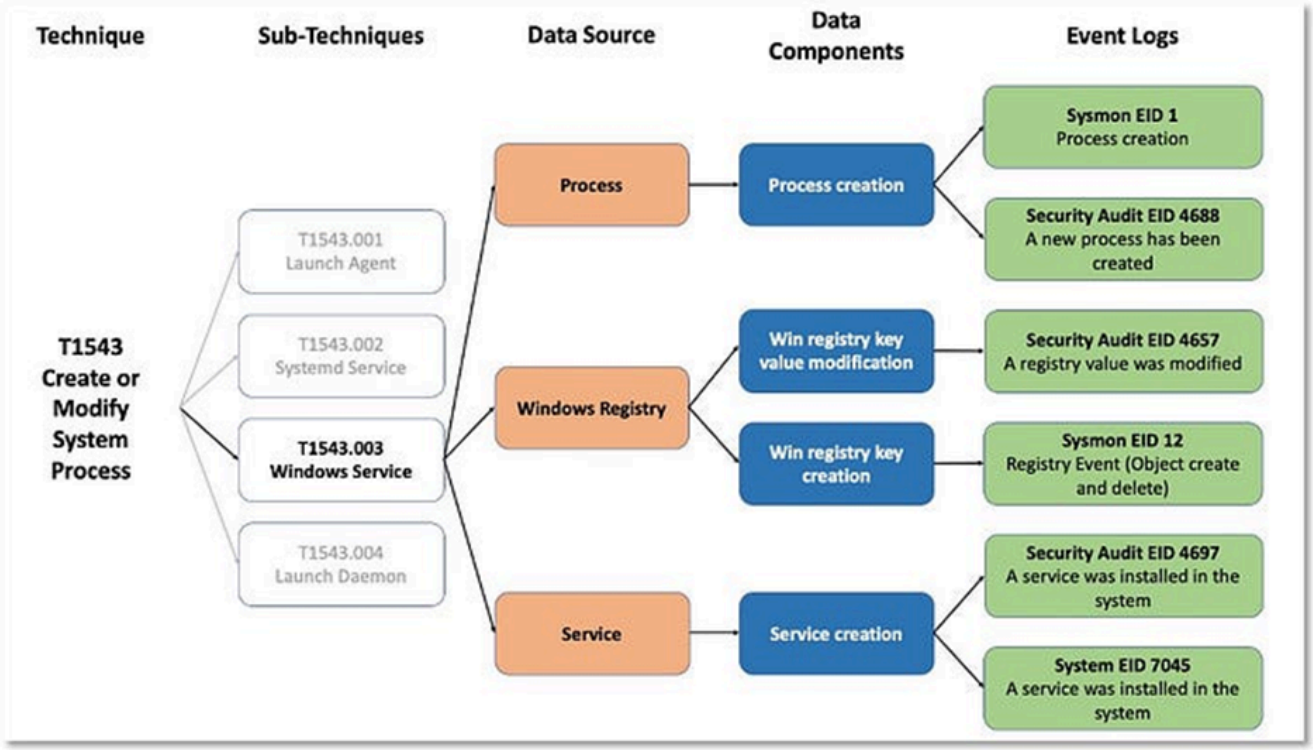
I will not go into detail about how the OSSEM model is set up and how it works, but I will cover some basics. If we use Windows Event Logs as an example, you get the following schema:



We start with the different event logs on the left side. Every event log has one or more data elements to which it relates (Processes, Commands, Files, etc.). Every data element then may have multiple relationships with each other (process created process, user created process, etc). Based on these relationships, a data component is decided (process created, process termination, etc). And finally, the data source is mapped (process, user, network, etc). Another schema of different data sources can be found below:



The data model then aligns the methodology with MITRE ATT&CK, so different sub-techniques can be mapped to the corresponding data components.



If you want to know more about the OSSEM model, make sure to check the following references:

- https://medium.com/mitre-attack/defining-attack-data-sources-part-i-4c39e581454f
- https://medium.com/mitre-attack/defining-attack-data-sources-part-ii-1fc98738ba5b
- https://github.com/OTRF/OSSEM
- https://ossemproject.com/intro.html

The yaml models

The first model I want to show is the attack_relationships model where you can find all of the events of different data sources and their relations with each other:

```yaml
- relationship_id: REL-2022-0002
  name: User created User
  contributors:
  - Jose Rodriguez @Cyb3rPandaH
  - Roberto Rodriguez @Cyb3rWard0g
  - Olaf Hartong @olafhartong
  - Ruben Bouman @rubinatorz
  attack:
    data_source: user account
    data_component: user account creation
  behavior:
    source: user
    relationship: created
    target: user
  security_events:
  - event_id: '4720'
    name: A user account was created.
    platform: windows
    audit_category: Account Management
    audit_sub_category: User Account Management
    channel: Security
    log_source: Microsoft-Windows-Security-Auditing
    event_version:
    - '0'
  - event_id: '4741'
    name: A computer account was created.
    platform: windows
    audit_category: Account Management
    audit_sub_category: Computer Account Management
    channel: Security
    log_source: Microsoft-Windows-Security-Auditing
    event_version:
    - '0'
  - event_id: DeviceEvents
    name: DeviceEvents
    platform: windows
    log_source: Microsoft Defender for Endpoint
    filter_in:
    - ActionType: UserAccountCreated
    event_version:
    - '0'
    - '1'
  references:
  - https://docs.microsoft.com/en-us/windows/security/threat-protection/auditing/event-4720
  - https://docs.microsoft.com/en-us/windows/security/threat-protection/auditing/event-4741
  notes: null
```

The second model is the model we will be using. This model is the techniques_to_events_mapping model which contains a mapping of every eventid over the different data sources to the related MITRE ATT&CK technique or sub-technique:

In the screenshot above you see a mapping of DeviceProcessEvents of Defender for Endpoint to technique T1622. Know that the file contains an enormous number of related objects where the same and other events are mapped to one or multiple techniques and sub-techniques.

Importing the data

On this page of the OSSEM website, you will find some examples of how to import the techniques to events mapping and how you can manipulate them. They are leveraging python to get the data and create insights about the mappings. In all of the examples below you will find my code that is based on the examples of the OSSEM website.

First, we have to import some libraries. These are used to get the data and transform the data into a model that is easy to manipulate and visualize.

```
# Importing library to manipulate data
import pandas as pd
# Importing library to manipulate yaml data
import yaml
# Importing library to create requests
import requests
# Import library to manipulate json data
import json
# Import library to copy objects
import copy
# Importing library for visualizations
from openhunt import visualizations as vis
```

Now that the libraries are imported, we can get the data and create the mapping to manipulate:

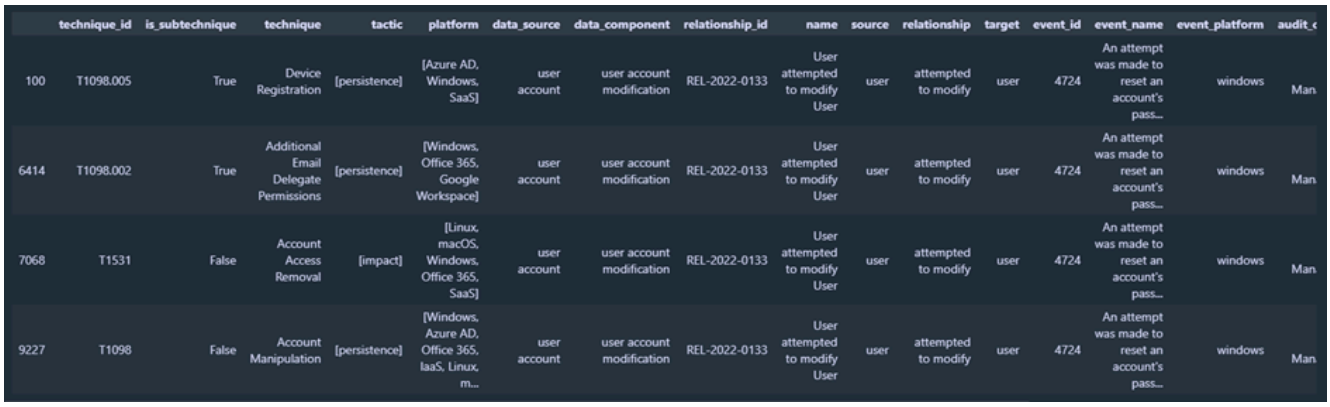
```
# Get OSSEM-DM techniques mapping file
yamlUrl = 'https://raw.githubusercontent.com/OTRF/OSSEM-DM/main/use-cases/mitre_atta
# Parse the data
yamlContent = requests.get(yamlUrl)
yamlMapping = yaml.safe_load(yamlContent.text)
# Map the data
mapping = pd.json_normalize(yamlMapping)
```

As you can see, we normalized the data model with the pandas library and saved the normalized mapping to the mapping variable. This variable will be used to create our visualizations and manipulations.

Visualizing the data

There are a couple of visualizations you can create to help troubleshoot and understand the data set more. The first one is the table representation of the data set. This really helps you to understand how the data set works, which properties there are per object, and more. You can filter on a value in a certain column, or you can combine multiple column filters. Below you find an example of a filter on one column:

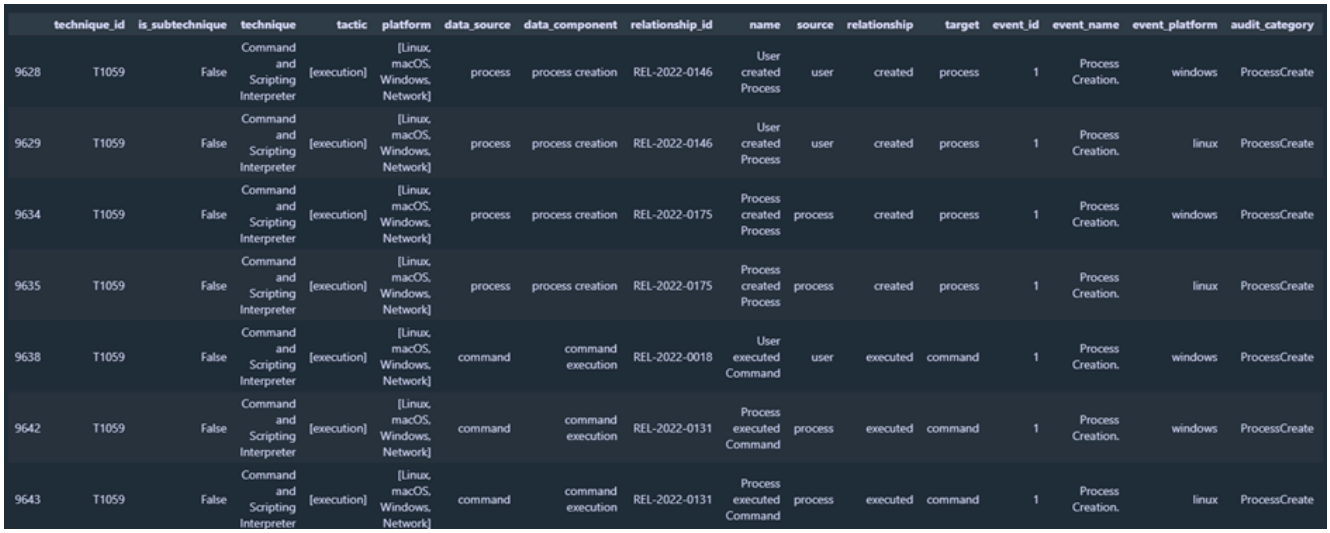
```
mapping[(mapping['event_id']=='4724')]
```



	technique_id	is_subtechnique	technique	tactic	platform	data_source	data_component	relationship_id	name	source	relationship	target	event_id	event_name	event_platform	audit_c
100	T1098.005	True	Device Registration	[persistence]	[Azure AD, Windows, SaaS]	user account	user account modification	REL-2022-0133	User attempted to modify User	user	attempted to modify	user	4724	An attempt was made to reset an account's pass...	windows	Man
6414	T1098.002	True	Additional Email Delegate Permissions	[persistence]	[Windows, Office 365, Google Workspace]	user account	user account modification	REL-2022-0133	User attempted to modify User	user	attempted to modify	user	4724	An attempt was made to reset an account's pass...	windows	Man
7068	T1531	False	Account Access Removal	[impact]	[Linux, macOS, Windows, Office 365, SaaS]	user account	user account modification	REL-2022-0133	User attempted to modify User	user	attempted to modify	user	4724	An attempt was made to reset an account's pass...	windows	Man
9227	T1098	False	Account Manipulation	[persistence]	[Windows, Azure AD, Office 365, IaaS, Linux, m...	user account	user account modification	REL-2022-0133	User attempted to modify User	user	attempted to modify	user	4724	An attempt was made to reset an account's pass...	windows	Man

A filter on multiple columns is shown here:

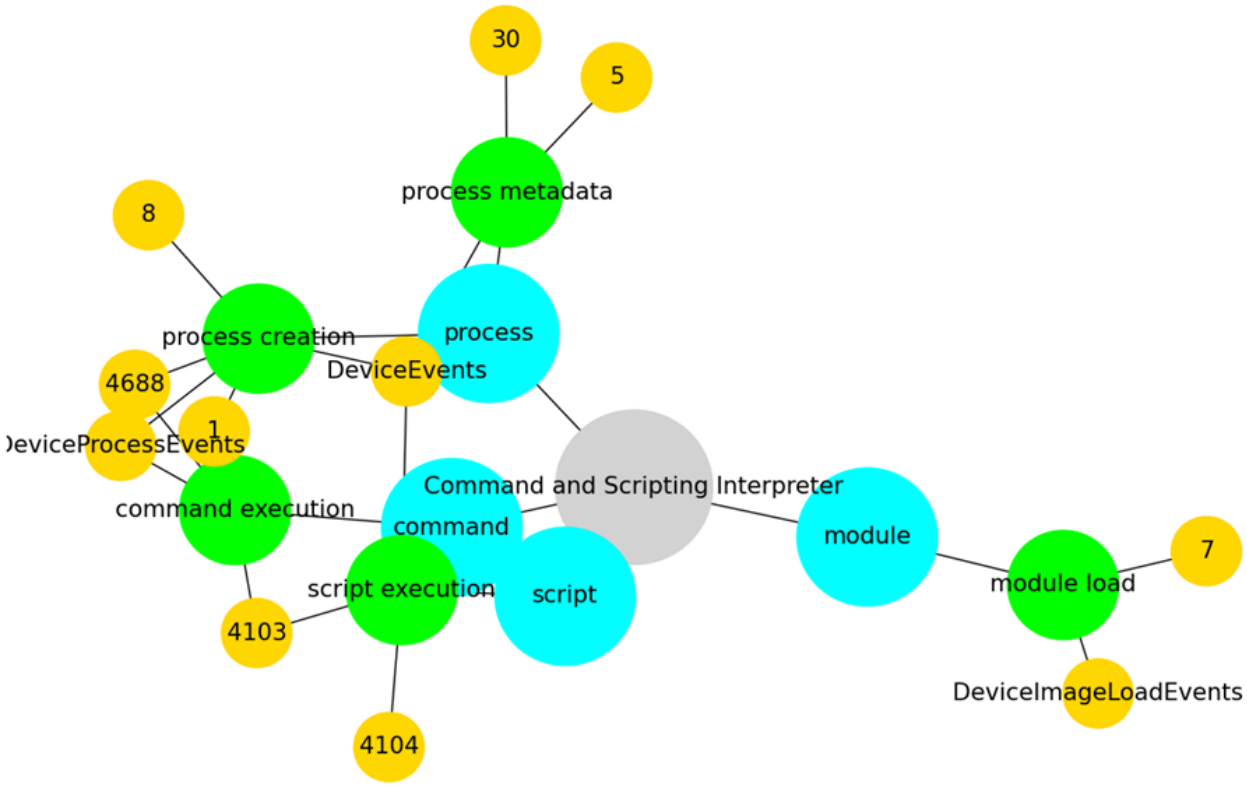
```
mapping[(mapping['technique_id']=='T1448.002')][(mapping['event_id']=='5136')]
```



	technique_id	is_subtechnique	technique	tactic	platform	data_source	data_component	relationship_id	name	source	relationship	target	event_id	event_name	event_platform	audit_category
9628	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0146	User created Process	user	created	process	1	Process Creation.	windows	ProcessCreate
9629	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0146	User created Process	user	created	process	1	Process Creation.	linux	ProcessCreate
9634	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0175	Process created Process	process	created	process	1	Process Creation.	windows	ProcessCreate
9635	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0175	Process created Process	process	created	process	1	Process Creation.	linux	ProcessCreate
9638	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0018	User executed Command	user	executed	command	1	Process Creation.	windows	ProcessCreate
9642	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0131	Process executed Command	process	executed	command	1	Process Creation.	windows	ProcessCreate
9643	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0131	Process executed Command	process	executed	command	1	Process Creation.	linux	ProcessCreate

The second one is the attack_network_graph visualization that plots the graphical connections between the different mapping objects. The following command creates the visualization of all related nodes connected to technique T1059.

```
vis.attack_network_graph(mapping[(mapping['technique_id']=='T1059')])
```



Creating MITRE layers

Now that we have covered the basics of the OSSEM model, we can create MITRE layers for certain filters. I created a python script that can manipulate the OSSEM mappings, to create relevant MITRE layers based on chosen filters. For example, let's say we want the MITRE ATT&CK layer for all the Microsoft Defender for Endpoint Events and Microsoft Windows Security Events there are. For this, I use the code below.

```
# Microsoft Defender for Endpoint layer
techniques = get_mitre_techniques_by_filter(filterType='log_source',filterString='M
create_mitre_mapping(techniques=techniques, template=mitre_layer, filename='Microso
# Microsoft-Windows-Security-Auditing layer
techniques = get_mitre_techniques_by_filter(filterType='log_source',filterString='M
create_mitre_mapping(techniques=techniques, template=mitre_layer, filename='Microso
```

As you can see, I created two functions called 'get_mitre_techniques_by_filter' and 'create_mitre_mapping'. If you are interested in the code, let me know in the comments section and maybe I will share the GitHub repository later ?.

The output you get is the MITRE layer for the relevant filter that you can import in the MITRE ATT&CK Navigator.


```
},
"hideDisabled": false,
"techniques": [
    {
        "techniqueID": "T1622",
        "tactic": "defense-evasion",
        "score": 4,
        "color": "",
        "comment": "User created Process;Process created Process;User executed Command;Process executed Command",
        "enabled": true,
        "metadata": [],
        "links": [],
        "showSubtechniques": false
    },
    {
        "techniqueID": "T1622",
        "tactic": "discovery",
        "score": 4,
        "color": "",
        "comment": "User created Process;Process created Process;User executed Command;Process executed Command",
        "enabled": true,
        "metadata": [],
        "links": [],
        "showSubtechniques": false
    },
    {
        "techniqueID": "T1621",
        "tactic": "credential-access",
        "score": 8,
        "color": "",
        "comment": "Logon Metadata;User created logon from Ip;User created logon from Port;User created Logon;User attempted to authenticate from Port;User attempted to aut
        "enabled": true,
        "metadata": [],
        "links": [],
        "showSubtechniques": false
    },
    {
        "techniqueID": "T1505.005",
        "tactic": "persistence",
        "score": 8,
        "color": "",
        "comment": "User created Process;Process created Process;User executed Command;Process executed Command;User modified File;Process modified File;User modified Regist
        "enabled": true,
        "metadata": [],
        "links": [],
        "showSubtechniques": true
    },
```


An explanation of the different parameters you can set in the get_mitre_techniques_by_filter function can be found below:

- filterType – This parameter lets you choose on which column you want to filter.
- filterString- This parameter is the string you will be searching for in the column you set in the FilterType parameter
- techniquesArray – The techniques array is an array you can provide if you already have a technique by filter array you want to reuse. This is typically empty or is an array that was created by the get_mitre_techniques_by_filter function itself.
- commentProperty – This is the column you want to include in the comments section of the techniques and will be the column that will be counted for the score of the layer

The score

Every technique that is present in the mapping layer gets a score. The score is the number of occurrences where the string in the commentProperty parameter maps to the relevant technique. For example, in the below command, we will count how many values in the 'name' column maps to the techniques that are included in the Microsoft Defender for Endpoint log source:

```
# Microsoft-Windows-Security-Auditing layer
techniques = get_mitre_techniques_by_filter(filterType='log_source',filterString='M
create_mitre_mapping(techniques=techniques, template=mitre_layer, filename='Microso
```

In the layer, we see that T1622 under Defender Evasion has a score of 4. This is because there are 4 occurrences in the 'name' column of the

mapping that relates to this technique:

When we plot this in the table form with Python, we see this is correct:

```
mapping[(mapping['technique_id']=='T1622')][(mapping['log_source']=='Microsoft-Windo
```

	technique_id	is_subtechnique	technique	tactic	platform	data_source	data_component	relationship_id	name	source	relationship	target	event_id	event_name	event_platform	audit_category	au
2	T1622	False	Debugger Evasion	[defense-evasion, discovery]	[Windows, Linux, macOS]	process	process creation	REL-2022-0146	User created Process	user	created	process	4688	A new process has been created.	windows	Detailed Tracking	
8	T1622	False	Debugger Evasion	[defense-evasion, discovery]	[Windows, Linux, macOS]	process	process creation	REL-2022-0175	Process created Process	process	created	process	4688	A new process has been created.	windows	Detailed Tracking	
12	T1622	False	Debugger Evasion	[defense-evasion, discovery]	[Windows, Linux, macOS]	command	command execution	REL-2022-0018	User executed Command	user	executed	command	4688	A new process has been created.	windows	Detailed Tracking	
16	T1622	False	Debugger Evasion	[defense-evasion, discovery]	[Windows, Linux, macOS]	command	command execution	REL-2022-0131	Process executed Command	process	executed	command	4688	A new process has been created.	windows	Detailed Tracking	

The comments

As explained in the Score section, the comments contain the values of the column that was set in the commentProperty parameter. You can choose any column you like to be included in the comments section of the techniques. However, if you would like to compare layers with each other, it makes more sense to compare them with the 'name' column since these tell what is being detected

Comparing MITRE ATT&CK layers

Now that you have a basic understanding of how I can create MITRE layers with OSSEM, it is time to gather some insights by comparing layers.

MDE VS Windows Security Events

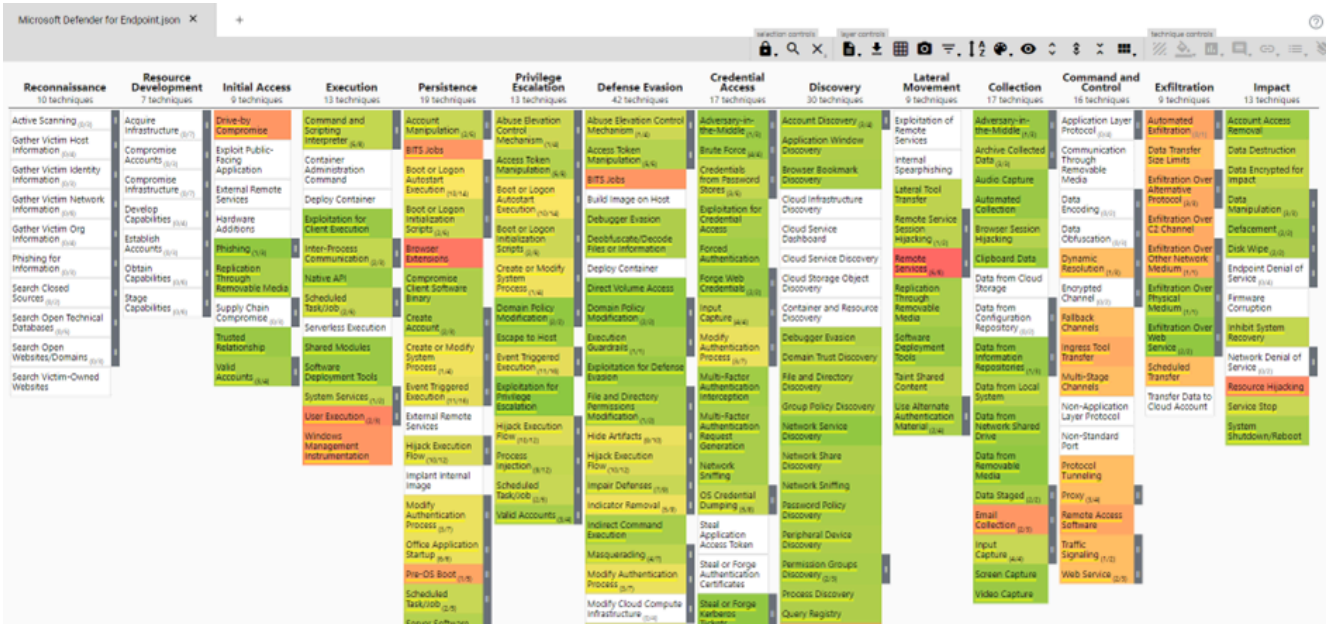
The first layers we are going to compare is the MDE and Windows Security Events layer. These layers are representations of **all the data you can log with the two data connectors, and how they are mapped to MITRE**. This does not mean that when you enable these data connectors in Sentinel, this will be your data coverage mapping. **It only shows what the potential is of both connectors**.

MDE mapping

To create the MDE mapping, I use the following commands:

```
# Microsoft Defender for Endpoint layer
techniques = get_mitre_techniques_by_filter('log_source','Microsoft Defender for En
create_mitre_mapping(techniques=techniques, template=mitre_layer, filename='Microso
```

You can download the JSON mapping below, so you can import the mapping yourself in the MITRE ATT&CK Navigator. When you open the navigator, you will see the following layer:



Mde name

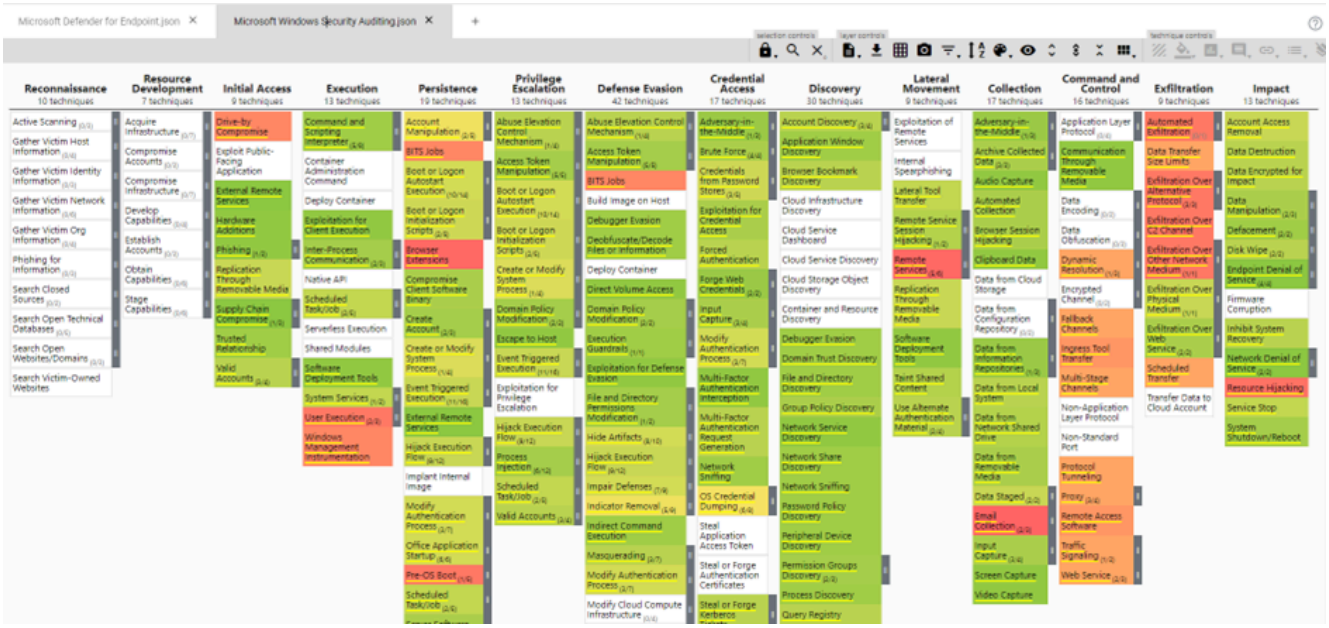
mde-name.json • 237 KB

Windows Security Events mapping

To create the Windows Security Events mapping, I use the following commands:

```
# Microsoft-Windows-Security-Auditing layer
techniques = get_mitre_techniques_by_filter('log_source','Microsoft-Windows-Security
create_mitre_mapping(techniques=techniques, template=mitre_layer, filename='Microso
```

You can download the JSON mapping below, so you can import the mapping yourself in the MITRE ATT&CK Navigator. When you open the navigator, you will see the following layer:

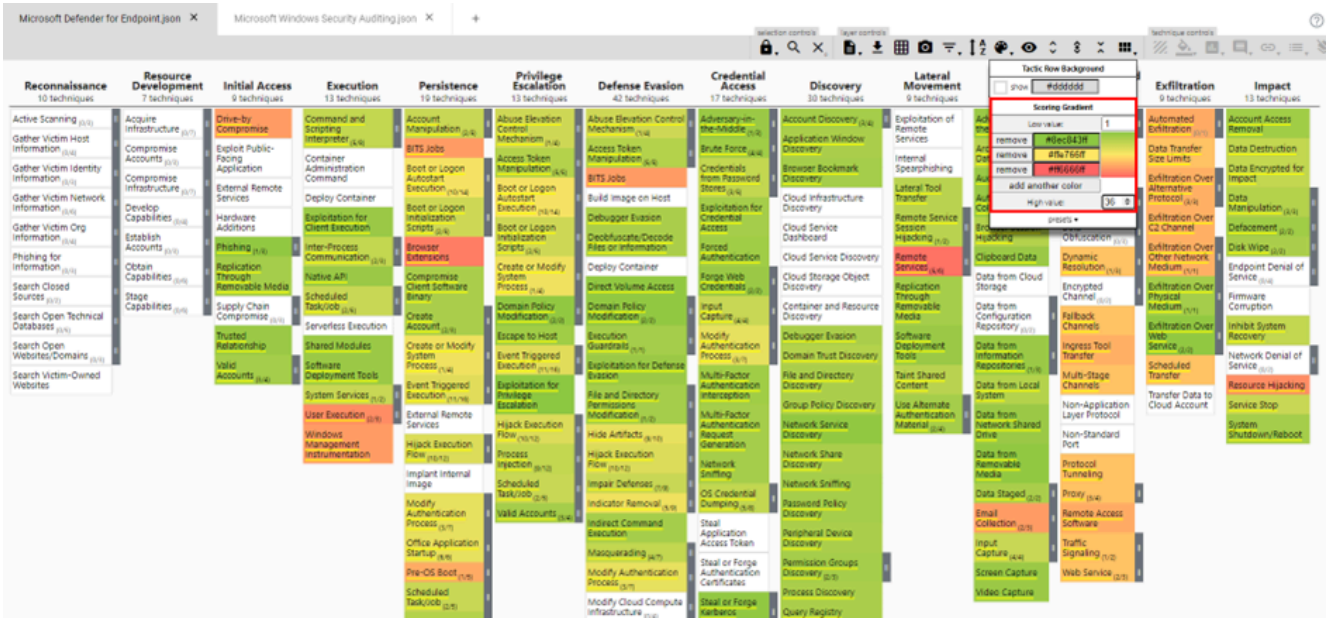


Microsoft windows security auditing name

microsoft-windows-security-auditing-name.json • 247 KB

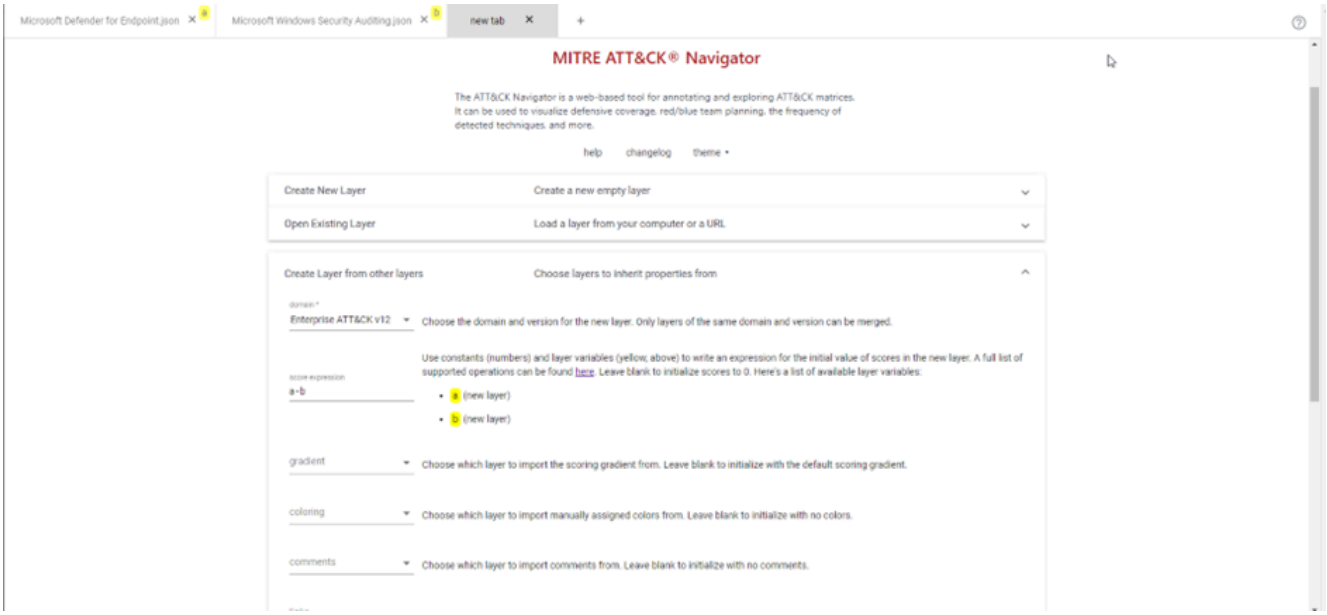
Comparing the layers

Before I start to compare the layers, I like to set the **scale in both layers to the same maximum value**. This way the colors of the techniques are comparable when you want to manually switch between the two layers. I always change the scale to the value of the layer that has the highest score. In this example, Microsoft Windows Security Logs has the highest score of 36, which means I also change the scale of the MDE layer to 36.



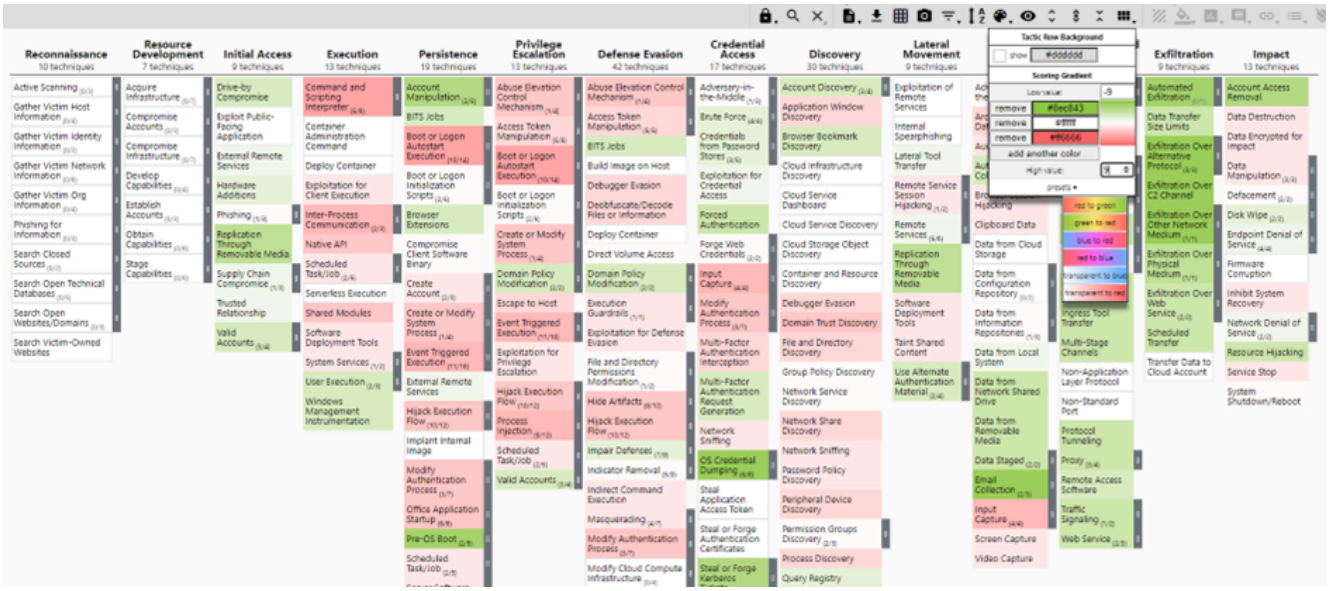
Now that the scales are the same, you can manually pivot between the two layers to compare which data source can map data to which techniques and compare which data source have most of the mappings to certain techniques. This can be very insightful information when you combine this with the most important techniques for your organization as described in my first MITRE ATT&CK blog post.

When you quickly want to find out which data source is the best for you, this process is not ideal since it can take some time. To speed things up, you can create a comparison layer between the two. To do this, create a new layer from the two other layers by choosing the v12 Enterprise layer, and create a score expression where you subtract the Windows Security Events layer from the MDE layer:



After that, you get a new layer that tells you nothing.

But we can fix this! Simply go to the score settings and change the maximal value to the positive value of the minimal (-9 and +5 become -9 and +9). Then set the -9 score to green, the middle score to white, and the +9 score to red. Fyi, if you ever create another comparison layer, just make sure both the minimal and maximal scores reflect the score of the highest absolute number.

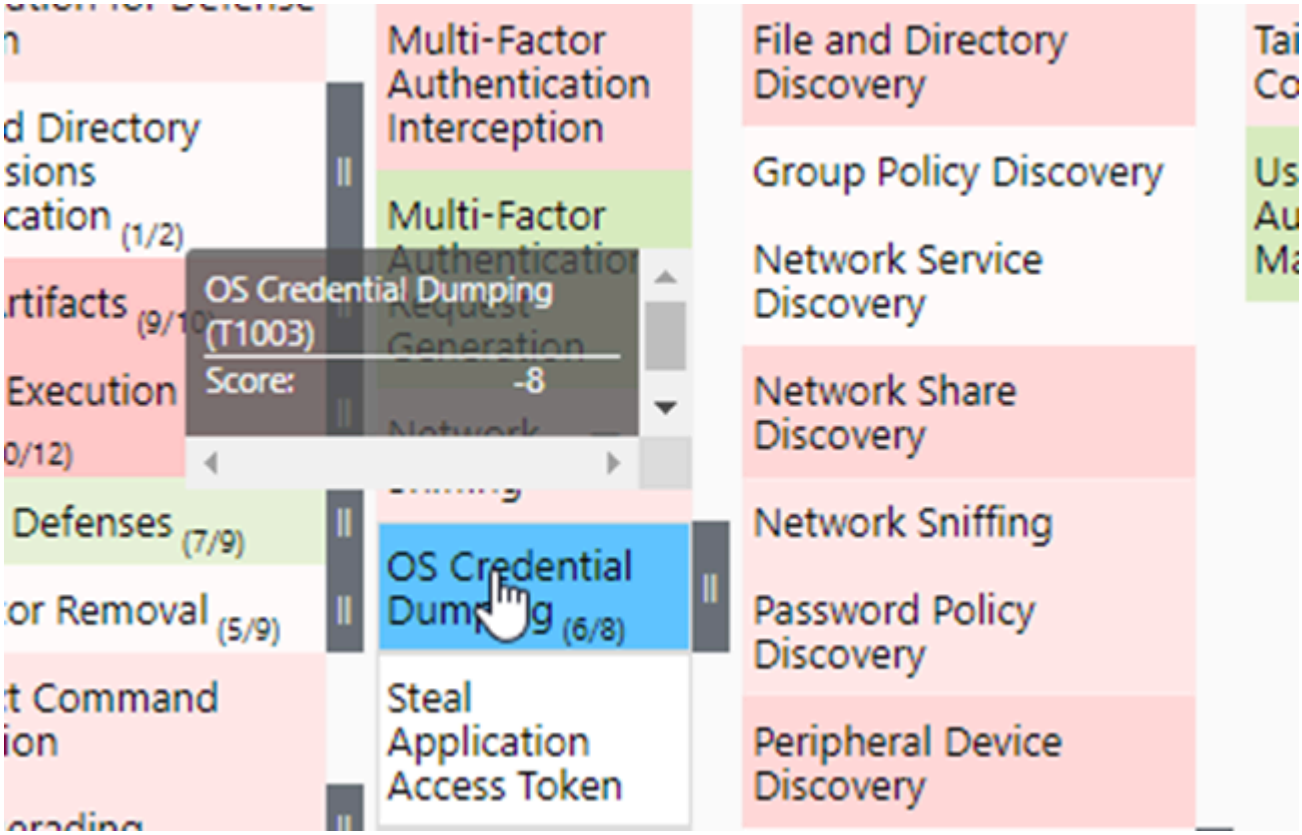


We now created a layer where **techniques that have a green color are techniques where Microsoft Security Logs have more mappings**, and **techniques that have a red color are techniques where MDE has more mappings**. This might be more useful when you try to decide which data source to use based on the techniques that matter the most to you. You can download this layer here.

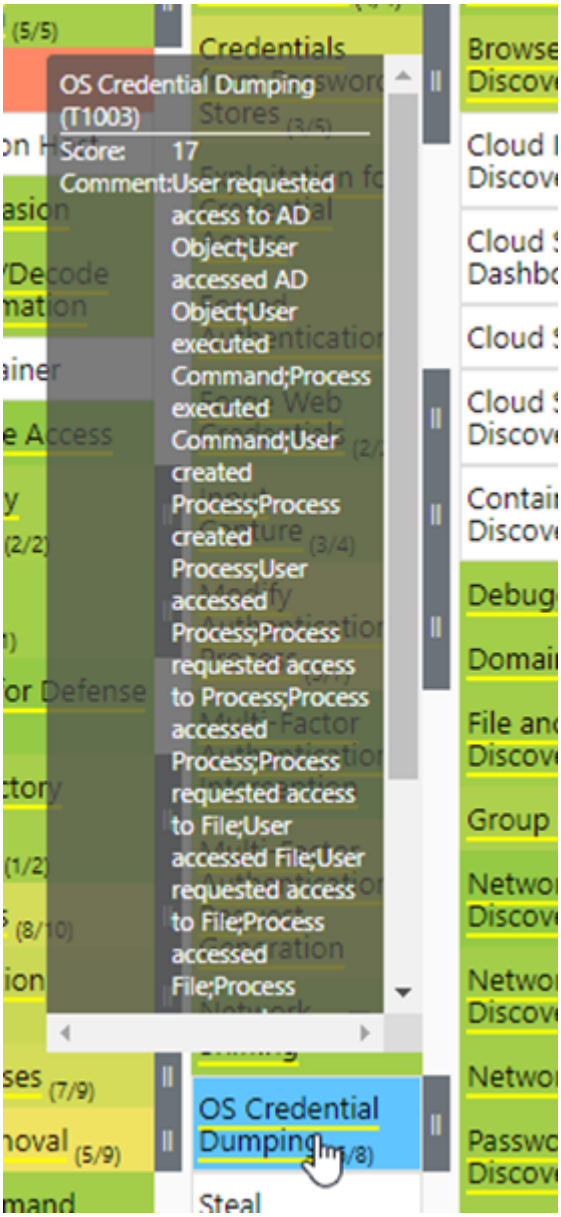
Mde vs security logs name

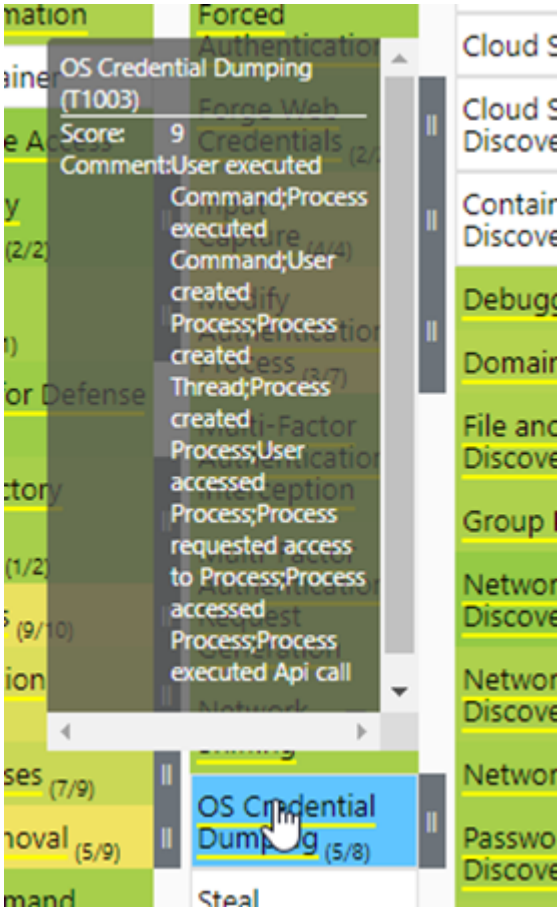
mde-vs-security-logs-name.json • 103 KB

Be careful! A technique that has a dark color does not mean that the technique does not have any mappings of the other data source. It is more like a scale representation of the differences between the data sources. Let's say you are interested in OS Credential dumping, from the comparison layer you will learn the Microsoft Security Logs have more data mapped to this technique:



If you check this out in the Windows Security Logs layer and MDE layer, you will indeed see that Windows Security Logs have 8 more mappings than MDE has:


OS Credential Dumping (T1003)
Score: 17
Comment:User requested access to AD Object;User accessed AD Object;User executed Command;Process executed Command;User created Process;Process created Process;User accessed Process;Process requested access to Process;Process accessed Process;Process requested access to File;User accessed File;User requested access to File;Process accessed File;Process
Credentials
OS Credential Dumping
Steal



However, this does not necessarily mean that you must choose Windows Security Logs over MDE logs. When you check what MDE can map to this technique in the comments, this might be enough for your needs.

MDE VS Common Windows Security Events

If you have some experience with ingesting Windows Security Events in Microsoft Sentinel, you know that you have the option to choose between ingesting all, common, minimal, or customer Windows events. I think we can all agree that ingesting all Windows Security events is for a lot of organizations to expensive, which is why comparing the MDE VS Windows Security Events mapping might be less useful for some organizations. To solve this, I created a mapping for the common Windows Security events.

MDE mapping

I will not go into how the MDE layer is created, since we already covered that in the MDE VS Windows Security Events section. You can download

the MDE layer below.

Mde name

mde-name.json • 237 KB

Common Windows Security Events mapping

To be able to map the common events, we first need to know which events are included in the Common mapping. You can find the included events for common at this Microsoft learn page. To create the MITRE layer I used the following code:

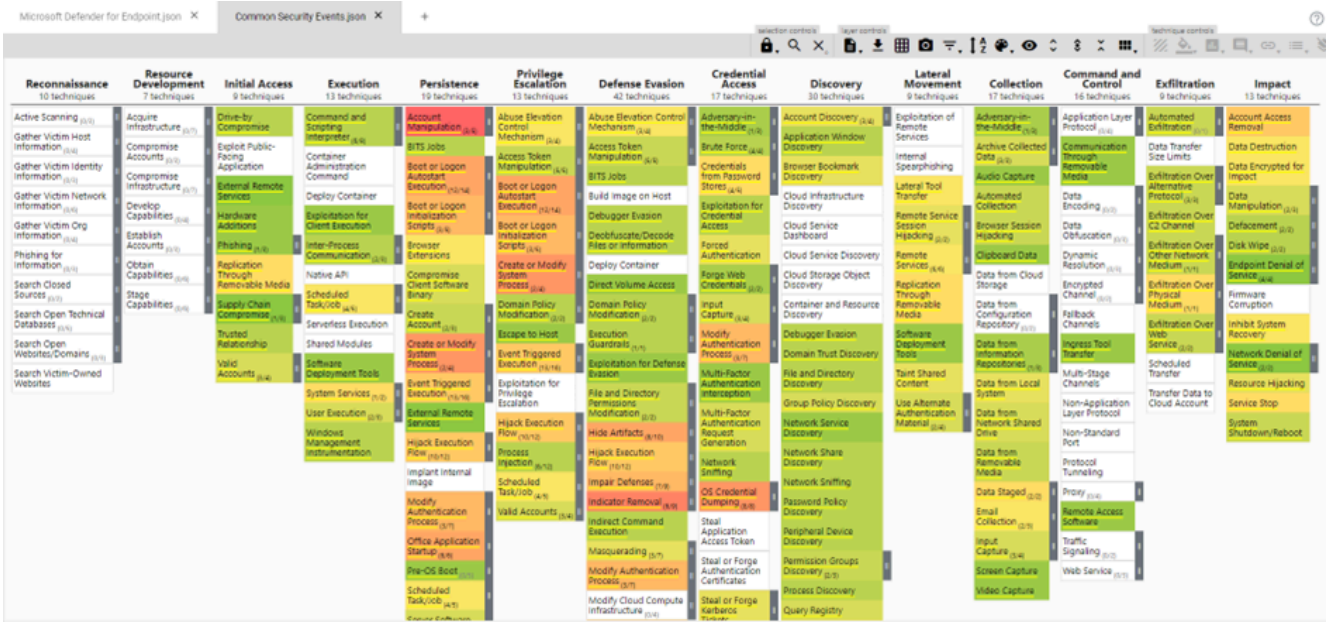
```
# Event IDs in Sentinel 'Common' Security Events
commonEvents = [1, 299, 300, 324, 340, 403, 404, 410, 411, 412, 413, 431, 500, 501,
                4647, 4648, 4649, 4657, 4661, 4662, 4663, 4665, 4666, 4667, 4688, 4
                4718, 4719, 4720, 4722, 4723, 4724, 4725, 4726, 4727, 4728, 4729, 4
                4752, 4754, 4755, 4756, 4757, 4760, 4761, 4762, 4764, 4767, 4768, 4
                4825, 4826, 4870, 4886, 4887, 4888, 4893, 4898, 4902, 4904, 4905, 4
                5140, 5145, 5632, 6144, 6145, 6272, 6273, 6278, 6416, 6423, 6424, 8

# Common events layer
techniques_local = []
for event in commonEvents:
    techniques_local = get_mitre_techniques_by_filter('event_id',str(event), techni
create_mitre_mapping(techniques=techniques_local, template=mitre_layer, filename='C
```

You can download the JSON mapping here, so you can import the mapping yourself in the MITRE ATT&CK Navigator. When you open the navigator, you will see the following layer:

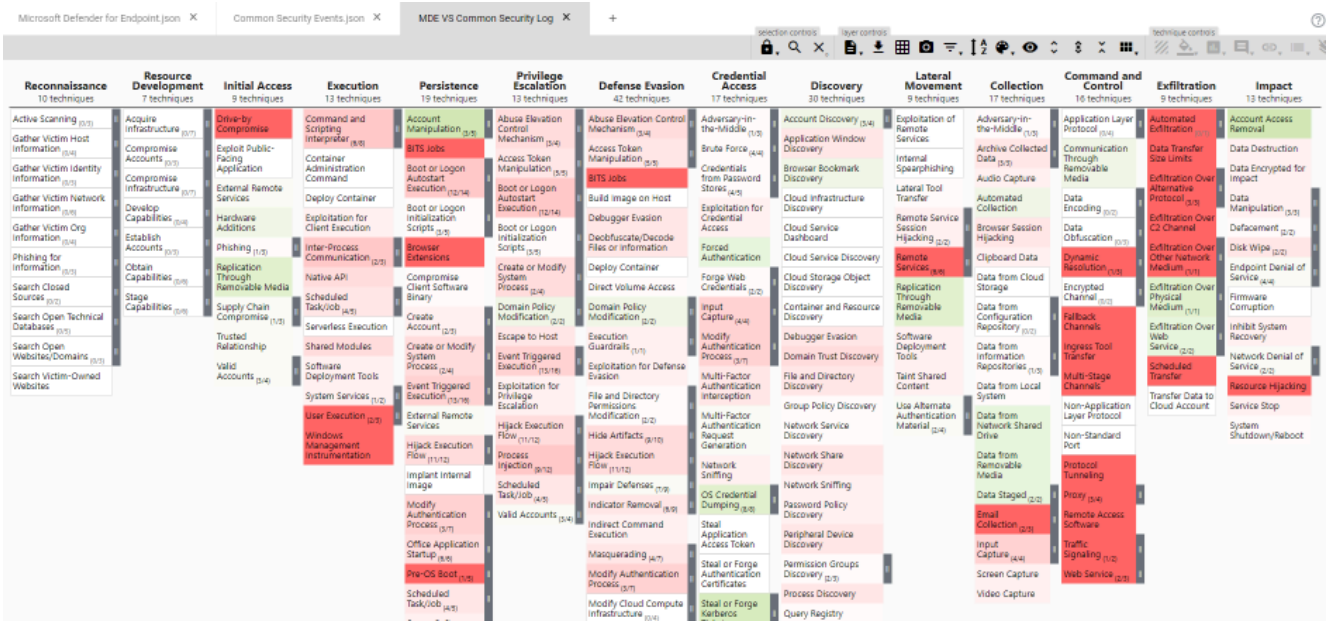
Common security events name

common-security-events-name.json • 199 KB



Comparing the layers

I will not go into detail about how to set up the layers for comparing them with each other, since I already cover this in the MDE VS Windows Security Events section. If you create a comparison layer for both, you will now see that in general MDE has more data mappings than the Common Windows Security Events does:



You can download this layer here.

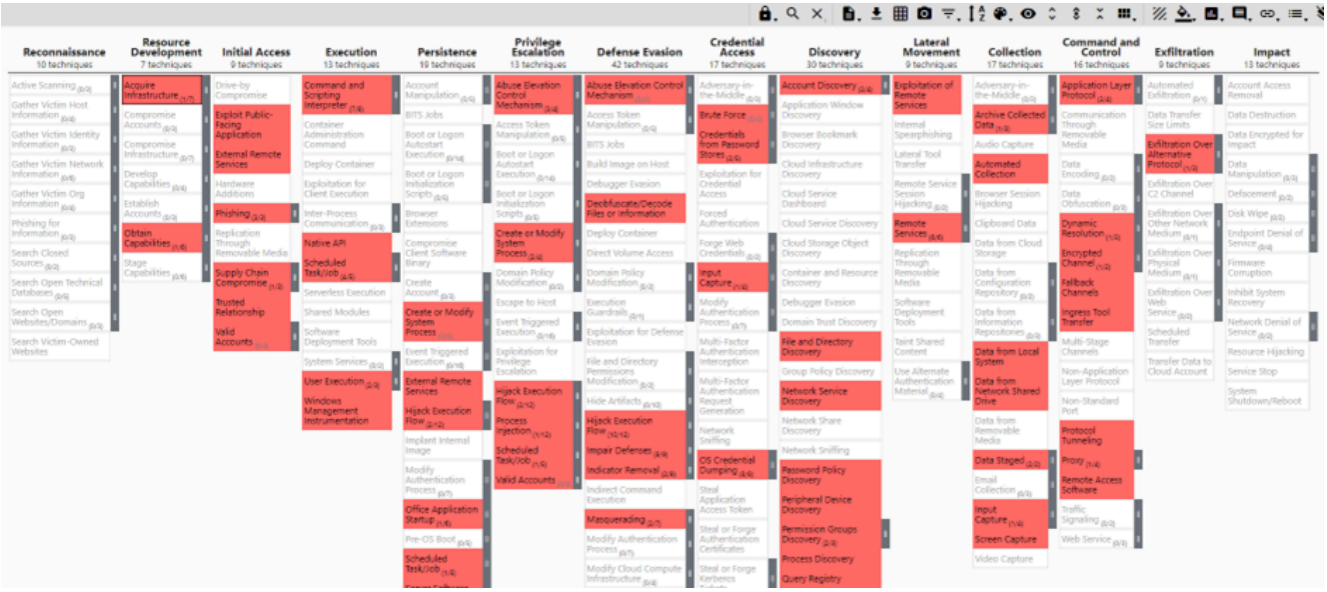
Mde vs common security log name

mde-vs-common-security-log-name.json • 110 KB

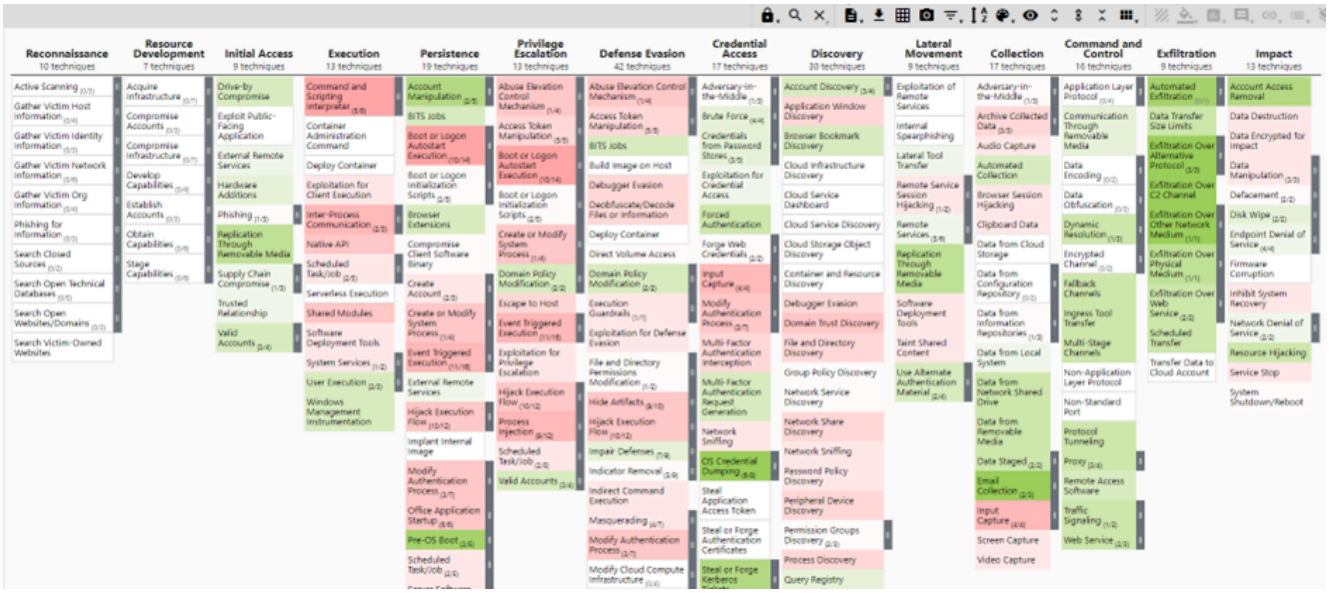
Comparing and prioritizing layers

When you compare layers and create new ones as we did in the previous chapters, it might be interesting to weigh these layers with the techniques you are interested in. If you want to learn how to decide which techniques are the most important for your organization, make sure to read the first MITRE ATT&CK blog post of HybridBrothers.

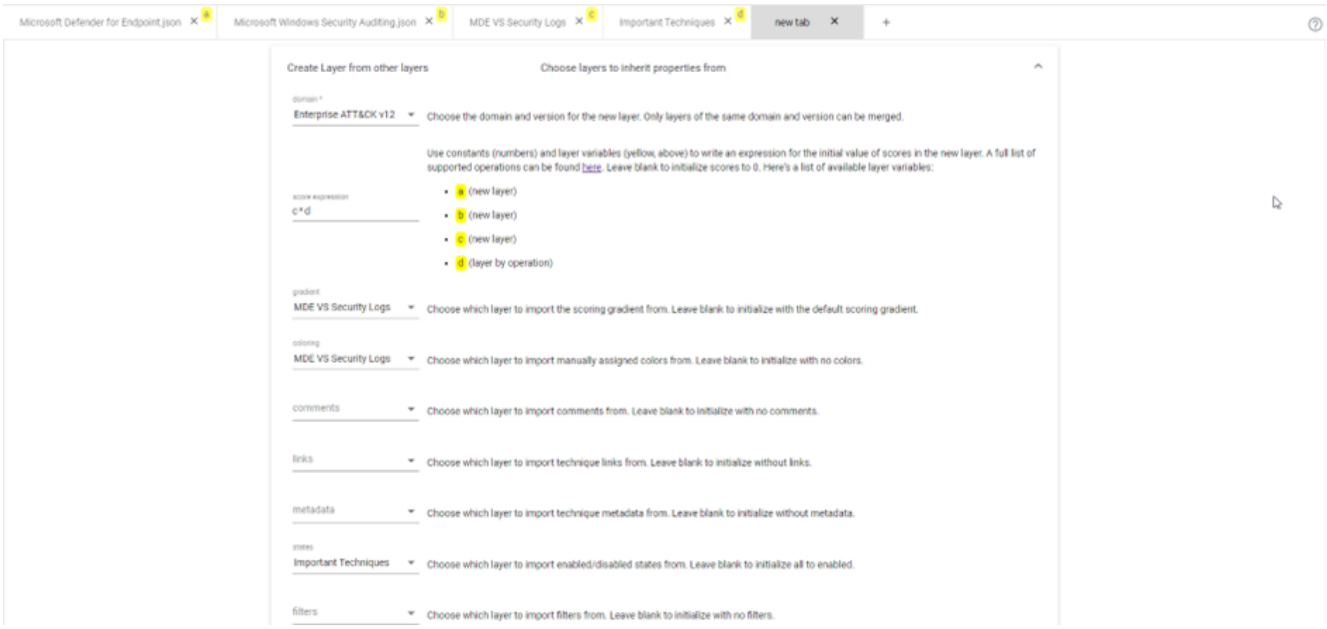
Let's say you have a simple MITRE layer where every relevant technique for your organization has a score of 1, and all other techniques that are not relevant are disabled.



In this example we will be using the comparison layer of MDE and Windows Security Event logs:

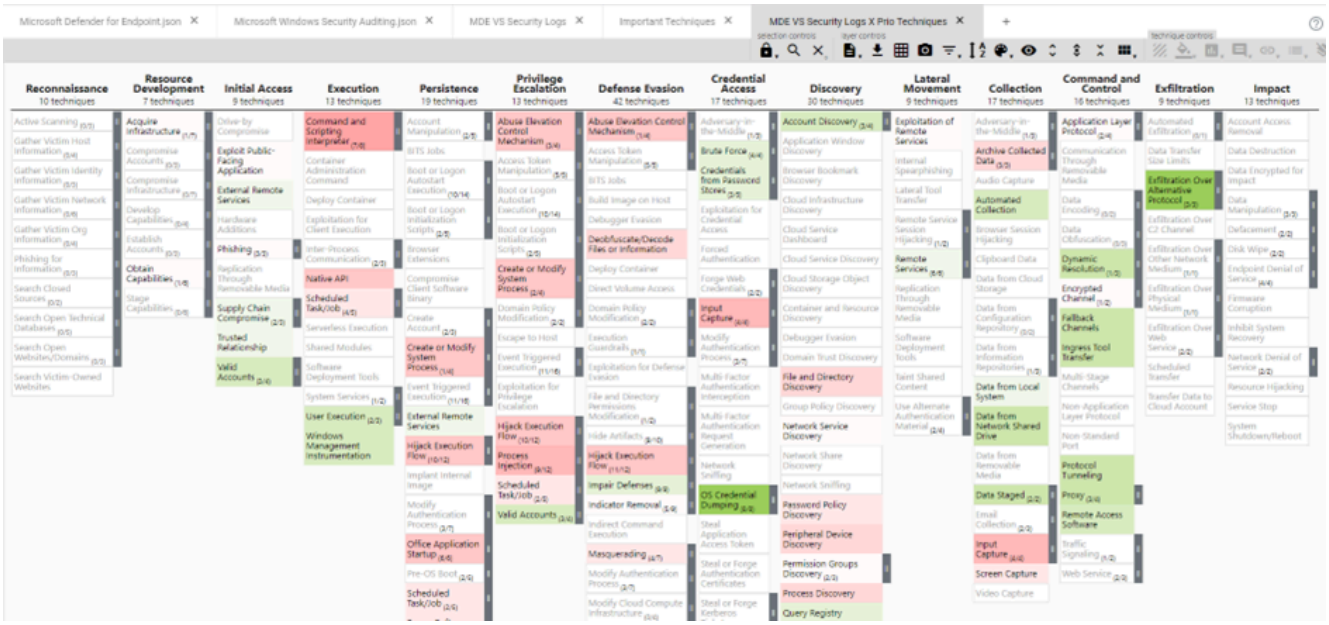


To create a new layer of a comparison layer that has the weighting of the above prioritization layer, you need the following settings:



By doing this, we will reuse the score of the techniques in the comparison layer if the prioritization layer also has a score of 1 (since we multiply the two layers). When a technique does not have a score of 1 in the prioritization layer, the technique will get an empty score regardless of the score in the comparison layer. We reuse the gradient and colors of the comparison layer, so we get the same look and feel. Finally, we take the

states of the prioritization layer since we always want to map techniques that are in the prioritization layer. When you do this, you will get something like the below:



This layer only shows you the techniques of the prioritization layer, with the weighting and score of the comparison layer. By doing this, you **only check techniques that are relevant for you**. Keep in mind that the disabled techniques are techniques that were not present in the prioritization layer, and that enabled techniques without a score are techniques that were present in the prioritization layer but had empty scores in the comparison layer.

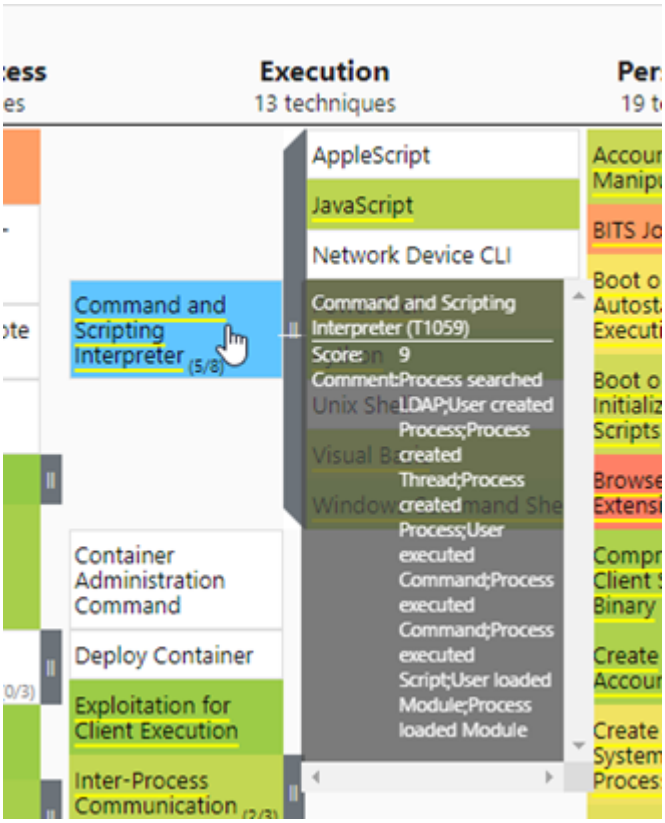
Finding MDE tables and Windows Event IDs based on MITRE layers

Now that we are able to create MITRE ATT&CK layers for MDE and specific Windows Security Event IDs, we can query the mapping data source in our Python script to look up tables and event IDs. Let's say that

data related to 'Command and Scripting Interpreter' or detecting misuse of it is very important for your organization. By using the python script as explained in the 'Visualizing data' section of this post, you can find out in which table of MDE this data resides, or which event ids in Windows Security Logs relate to this data.

MDE

MITRE Layer:



Mapping query in Python:

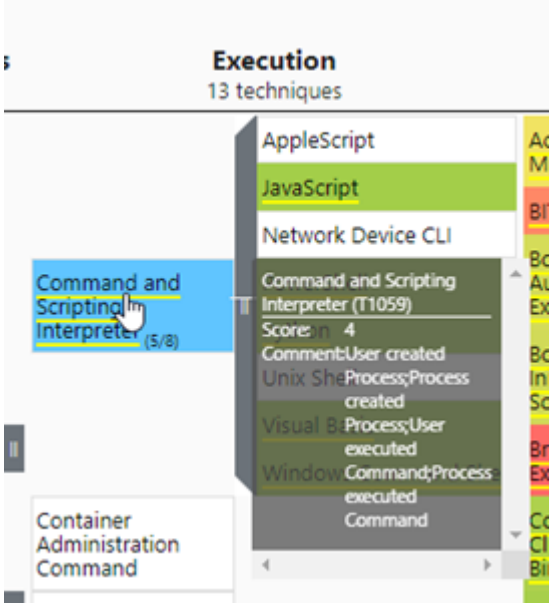
```
mapping[(mapping['log_source']=='Microsoft Defender for Endpoint')][(mapping['techn
```

Output:

	technique_id	is_subtechnique	technique	tactic	platform	data_source	data_component	relationship_id	name	source	relationship	target	event_id	event_name	event_p
9626	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process metadata	REL-2022-0073	Process searched LDAP	process	searched	ldap	DeviceEvents	DeviceEvents	
9630	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0146	User created Process	user	created	process	DeviceProcessEvents	DeviceProcessEvents	
9632	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0153	Process created Thread	process	created	thread	DeviceEvents	DeviceEvents	
9636	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0175	Process created Process	process	created	process	DeviceProcessEvents	DeviceProcessEvents	
9640	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0018	User executed Command	user	executed	command	DeviceProcessEvents	DeviceProcessEvents	
9645	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0131	Process executed Command	process	executed	command	DeviceProcessEvents	DeviceProcessEvents	
9648	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	script	script execution	REL-2022-0066	Process executed Script	process	executed	script	DeviceEvents	DeviceEvents	
9649	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	script	script execution	REL-2022-0066	Process executed Script	process	executed	script	DeviceEvents	DeviceEvents	
9650	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	script	script execution	REL-2022-0066	Process executed Script	process	executed	script	DeviceEvents	DeviceEvents	
9652	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	module	module load	REL-2022-0014	User loaded Module	user	loaded	module	DeviceImageLoadEvents	DeviceImageLoadEvents	

Windows Security Events

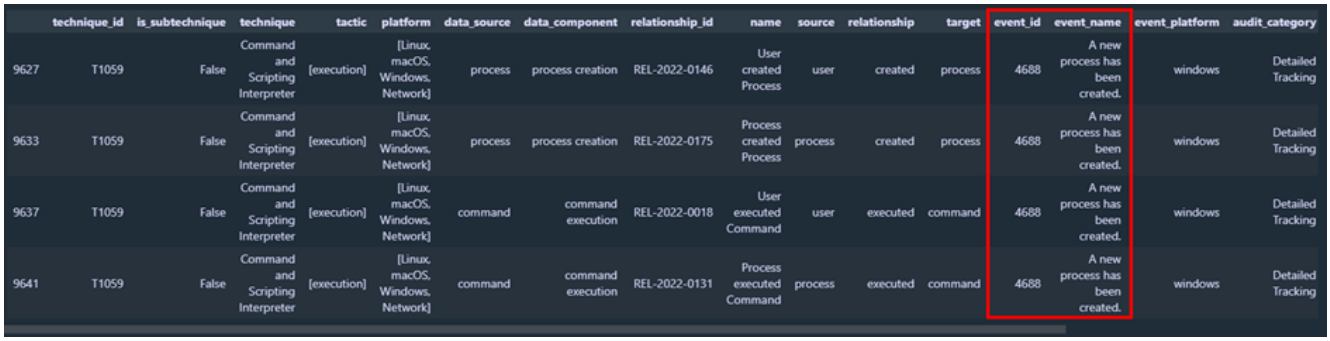
MITRE layer:



Mapping query in Python:

```
mapping[(mapping['log_source']=='Microsoft-Windows-Security-Auditing')][(mapping['te
```

Output:



	technique_id	is_subtechnique	technique	tactic	platform	data_source	data_component	relationship_id	name	source	relationship	target	event_id	event_name	event_platform	audit_category
9627	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0146	User created Process	user	created	process	4688	A new process has been created.	windows	Detailed Tracking
9633	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	process	process creation	REL-2022-0175	Process created Process	process	created	process	4688	A new process has been created.	windows	Detailed Tracking
9637	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0018	User executed Command	user	executed	command	4688	A new process has been created.	windows	Detailed Tracking
9641	T1059	False	Command and Scripting Interpreter	[execution]	[Linux, macOS, Windows, Network]	command	command execution	REL-2022-0131	Process executed Command	process	executed	command	4688	A new process has been created.	windows	Detailed Tracking

Conclusion, findings, and next steps

By following this blog post, you should have an understanding of how I was able to create MITRE mappings of the data coverage for both Microsoft Defender for Endpoints data and all or specific Microsoft Security Events using the OSSEM model.

Lessons learned

What we have learned during this post is that there are some overlaps of data in both MDE and Windows Security Events. This means that **enabling both MDE raw logs and Windows Security Events logs in Microsoft Sentinel might not be a good idea** without a proper reason to do so, since you will have **duplicate data**.

Another thing we learned is which **data source has the most mappings to a certain technique**. This might help in deciding which

data source you will be using in your Sentinel environment, considering the types of events you will find in the data sources.

Once you correlate a comparison layer (for example, MDE VS Windows Security Events) and your prioritization layer with techniques that are important to you, you will have a **better understanding of which data source to choose for the techniques that matter** to you. You can also pivot back to the MITRE layers of the data sources themselves to find which data types are logged in the comments section of the technique, and you can use the table or graph mapping in the python script to find which event ids or tables you need to ingest the data you want.

Another valuable insight you might learn is **which extra event ids you need to enable** if you for example choose to rely on MDE data and want to fill gaps with Microsoft Security Events. You can use your prioritization layer and python graph or table mapping to find the needed event ids.

What we didn't learn

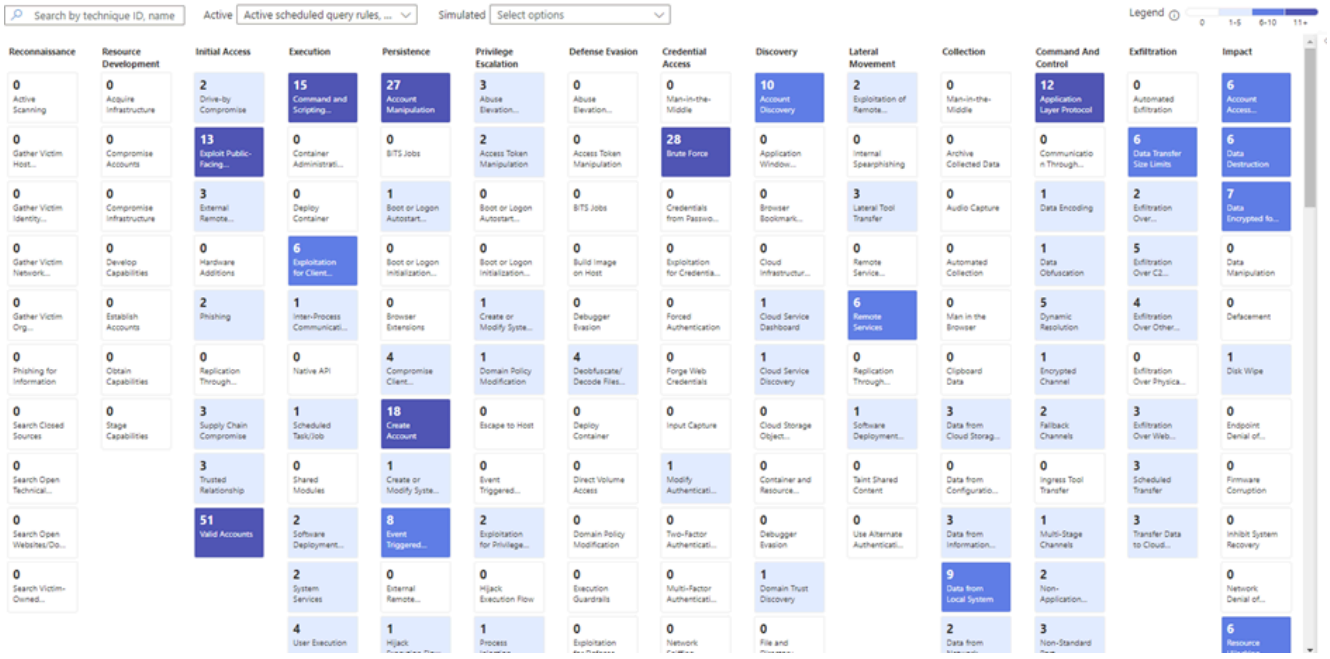
The most important one I want you to keep in mind is that we have **mapped the RAW data capabilities** of both data sources to the MITRE layer, which means we **did not map the available detections in Microsoft Sentinel** for each data source.

There might be **reasons other than data coverage to choose a certain data source**. Examples are the **cost price of data ingestion** and **detection coverage of the data source**. When you want to ingest MDE logs in Microsoft Sentinel, you are not able to choose for which devices you want to ingest the logs. This might lead to high costs when you for example only want to ingest MDE logs of servers but also have MDE deployed on client devices. When there are more analytic rules for Windows Security Events than MDE logs, the data coverage of MDE logs

might be less relevant if it were to be that MDE has better data coverage, but Windows Security Events data coverage is acceptable for you.

Next related projects

As mentioned before, there are other reasons to choose a certain data source. One of them is the detection coverage of the data source. In Microsoft Sentinel, there is a MITRE blade that shows you the MITRE coverage of your current active analytic rules and the template analytics rules.

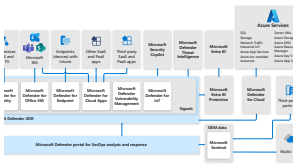


The thing I am missing in this blade is the possibility to filter on certain data connectors. To solve this issue, we are developing a script that is able to create the **MITRE ATT&CK coverage for the template rules of specific data connectors**. Once we have this, we will be able to create a much better decision on whether to use the MDE log in Sentinel, the Windows Security Events logs, or a combination of both.

If you are interested in the complete python code to create MITRE ATT&CK mappings based on the OSSEM model, let me know in the

comment section below! If there is enough interest, I might share the GitHub repository where you can find:

- A Jupyter notebook with all the examples and code to map OSSEM to MITRE layers
- The MITRE layers discussed in this blog posts
- MITRE layers for Minimal Windows Security events in Windows Security events that are used in current out-of-the-box analytic rules
- A script that checks if you are ingesting all of the Windows Security Events that are used in out-of-the-box or custom-created analytic rules



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