OPSWAT

Integration Guide

Menlo Security

Menlo Security Integration Guide

MetaDefender - Menlo Middleware

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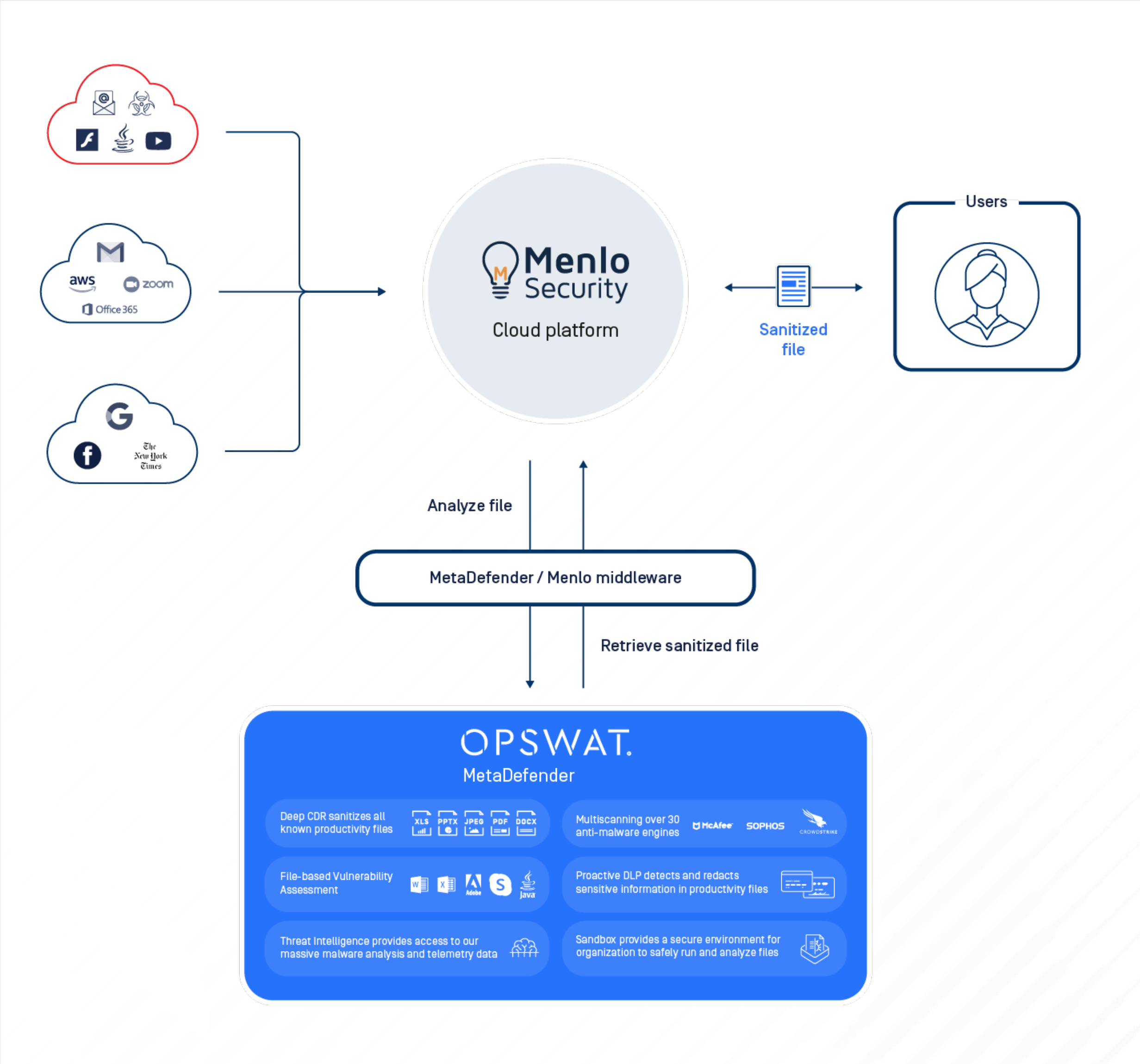
MetaDefender - Menlo Middleware

Introduction

Menlo Security offers the ability to call an External API (called Sanitization API), that will offload the downloaded file to 3rd parties for deeper analysis.

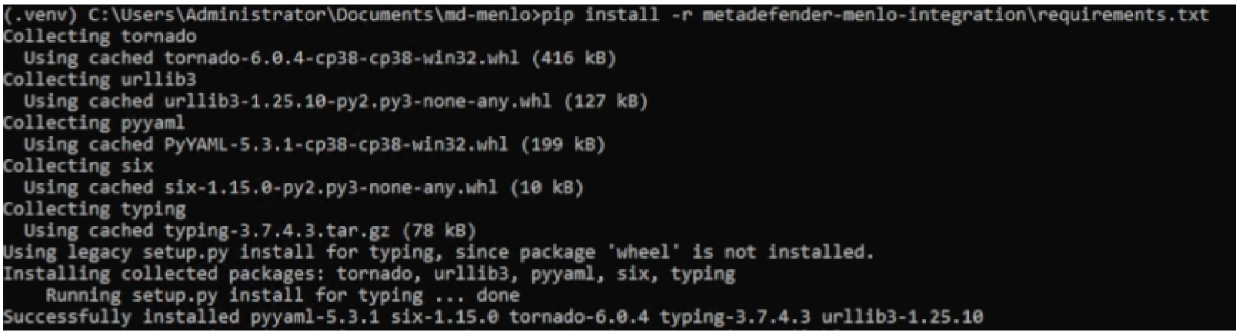

Office 365
aws
zoom
The New York Times
Menlo Security
Cloud platform
Sanitized file
Users
Analyze file
MetaDefender / Menlo middleware
Retrieve sanitized file
OPSWAT.
MetaDefender
Deep CDR sanitizes all known productivity files
XLS
PPTX
JPEG
PDF
DOCX
Multiscanning over 30 anti-malware engines
McAfee
SOPHOS
CROWDSTRIKE
File-based Vulnerability Assessment
Adobe
Java
Proactive DLP detects and redacts sensitive information in productivity files
Threat Intelligence provides access to our massive malware analysis and telemetry data
Sandbox provides a secure environment for organization to safely run and analyze files

This integration will leverage Menlo's Sanitization API and will require a middleware that will translate the Sanitization API into MetaDefender API. This is a python based stateless application that can run on both Windows and Linux. Being lightweight, it is recommended to deploy it in a container environment, using a container orchestration (for e.g., Kubernetes).

System Requirements

The Middleware was written in python and requires python 3.5 (released in Sep 2015) or above.

You can install all the required dependencies by running: python -r requirements.txt
This will install all the dependencies (preferably in a previously built virtual environment):



```
(.venv) C:\Users\Administrator\Documents\md-menlo>pip install -r metadefender-menlo-integration\requirements.txt
Collecting tornado
  Using cached tornado-6.0.4-cp38-cp38-win32.whl (416 kB)
Collecting urllib3
  Using cached urllib3-1.25.10-py2.py3-none-any.whl (127 kB)
Collecting pyyaml
  Using cached PyYAML-5.3.1-cp38-cp38-win32.whl (199 kB)
Collecting six
  Using cached six-1.15.0-py2.py3-none-any.whl (10 kB)
Collecting typing
  Using cached typing-3.7.4.3.tar.gz (78 kB)
Using legacy setup.py install for typing, since package 'wheel' is not installed.
Installing collected packages: tornado, urllib3, pyyaml, six, typing
    Running setup.py install for typing ... done
Successfully installed pyyaml-5.3.1 six-1.15.0 tornado-6.0.4 typing-3.7.4.3 urllib3-1.25.10
```

Since python's GLI won't allow it to scale vertically, low-end systems are recommended, starting with 2 vCPU and 2GB memory for Linux based systems.

It is recommended to have multiple deployments, to avoid a single point of failure and ensure a high-available and fault-tolerant system.

⚠ HTTPS configuration is required!

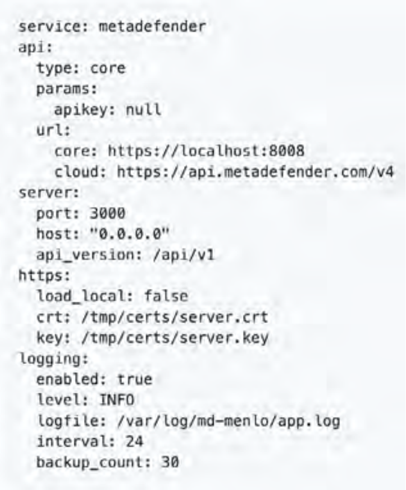
Menlo Security will only accept files for analysis over HTTPS. Since these files could contain sensitive information, you wouldn't want it any other way.

With that in mind, make sure to have the right ports open and the right certificates in place. More details available in the Deployment section.

Configurations

The middleware offers the ability to connect to either MetaDefender Cloud or MetaDefender Core.

All the customizations can be done from the config.yml file available in the middleware:



```
service: metadefender
api:
  type: core
  params:
    apikey: null
  url:
    core: https://localhost:8008
    cloud: https://api.metadefender.com/v4
server:
  port: 3000
  host: "0.0.0.0"
  api_version: /api/v1
https:
  load_local: false
  crt: /tmp/certs/server.crt
  key: /tmp/certs/server.key
logging:
  enabled: true
  level: INFO
  logfile: /var/log/md-menlo/app.log
  interval: 24
  backup_count: 30
```

MetaDefender Configuration

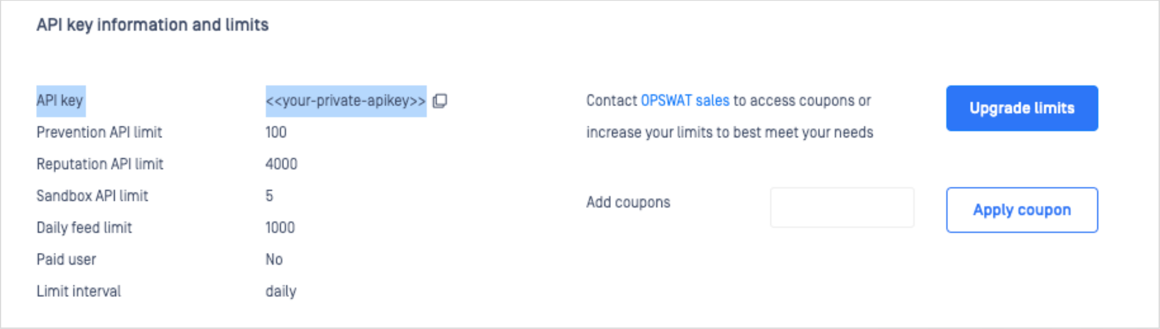
First, to select integration via either your own deployment of MetaDefender Core or the MetaDefender Cloud SaaS offering, set either core or cloud for the configuration api > type in config.yml .

Based on your option, you'll have to define:

- For MetaDefender Cloud:

  apikey is a mandatory field, otherwise, MetaDefender Cloud will reject requests as Unauthorized.

  - In order to retrieve a valid apikey, you'll have to register on portal.opswat.com. If you are already a registered user, you should retrieve the MetaDefender Cloud apikey either from portal.opswat.com or from MetaDefender Cloud > Account > Account Information:



API key information and limits

API key	<<your-private-apikey>>
Prevention API limit	100
Reputation API limit	4000
Sandbox API limit	5
Daily feed limit	1000
Paid user	No
Limit interval	daily

Contact OPSWAT sales to access coupons or increase your limits to best meet your needs

Add coupons

  url can remain as it is since MetaDefender Cloud API v4 is the current production API version.

- For MetaDefender Core:

  url > core You'll be required to input the IP/URL to access MetaDefender Core. Depending on your networking configuration, this could be a publicly accessible service, or you can allow it to accept requests only from the middleware.

  If MetaDefender is accessible from outside the organization, it is advisable to use the public IP/URL, instead of internal IPs since this information will be used to list a Report URL in Menlo Security reports.

Server configuration

Under the server configuration, you can modify the service's running port . Even though by default it is set as `3000`, you can modify it. If the goal is to run HTTPS using 443, it is recommended to place a reverse proxy (like nginx) in front of the middleware cluster.

The current version of Menlo Security Sanitization API is v1 , so you shouldn't modify the api_version configuration.

HTTPS Configuration

As mentioned before, HTTPS is required for the middleware.

This can be set directly in the middleware, by using the configuration under https . If you want the middleware to run in HTTPS mode, you'll have to set load_local: true . This will force the app to load the certf and key file from the locations specified in the crt and key fields. These can be relative paths.

> ❗ Self-signed certificates are allowed. But are required to be signed by a root CA.

If you would like to use self-signed certificates, it is required to have a server certificate that is signed by a rootCA. The rootCA public certificate will be uploaded in the Menlo Security Admin console. If the wrong certificate is uploaded, the requests will fail.

It is also recommended to use X509 certificates in pem format. Password protected certificates are not supported.

Logging

By default, logging is enabled at INFO level.

You should specify the absolute path for the logfile and make sure that the path exists and the write permissions are in place, otherwise, the middleware fails to initialize.

By default log rotation is set for 30 days, with a rotation interval of 1 day (24h).

Deployment

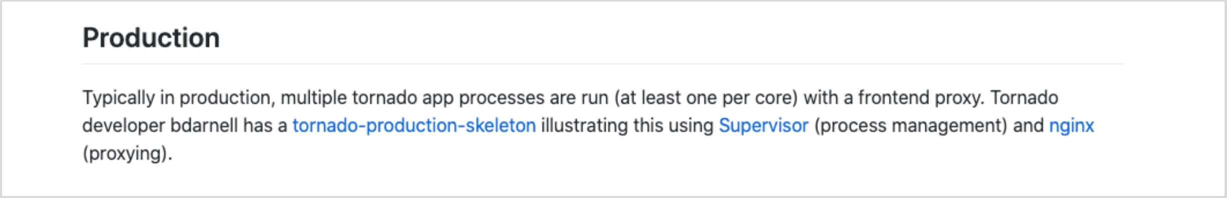
Standalone app

First, build the application.

To run the middleware is as straightforward as: `python -m metadefender_menlo`

Make sure python is version 3.5 and above.

However, in a production environment, Tornado recommends running it behind a front-end proxy, that can also handle HTTPS termination. A great example is nginx:



Production

Typically in production, multiple tornado app processes are run (at least one per core) with a frontend proxy. Tornado developer bdarnell has a tornado-production-skeleton illustrating this using Supervisor (process management) and nginx (proxying).

You'll probably want to run it as daemon/service, to be able to recover and start at boot time. You can review the official Tornado recommendation on how to achieve that.

Another great resource is eklitzke.org/production-tornado-deployment-with-systemd, which explains how to run and leverage multiple python processes and how to put them behind an nginx server.

Kubernetes

First, you're required to build a container. There's a `Dockerfile` in the repo, that you can use to build the container and push it to your registry. Once you have it, you will have to modify `deployment.yaml` and specify your own container image.

Also, check the `deploy.sh script` . It was built specifically for Google Cloud to leverage GKE (Google Kubernetes Engine). But it can be easilyadapted to run in any Kubernetes supported environment.

The GCP specific part is building the cluster and (if needed) the static IP.

Modify the deploy script to use your own cluster and certificates as needed. If you don't require self-signed certs, you can remove the entire portion with openssl and jump directly to adding your certificates as Kubernetes secrets.

Check `deployment.yaml` and place the real apikey (if you plan to use MetaDefender Cloud), or just remove that environment variable entirely if it is not going to be used. You can also set the apikey in the config file, if you prefer to have it hardcoded in the container image, instead of passing it as an environment variable.

Integration with MetaDefender Cloud

For MetaDefender Cloud you'll just need to grab the `apikey` from portal.opswat.com
or metadefender.opswat.com/account.

Set that apikey in the config file (or pass it as an environment variable) and set the integration type to cloud - and you are done.

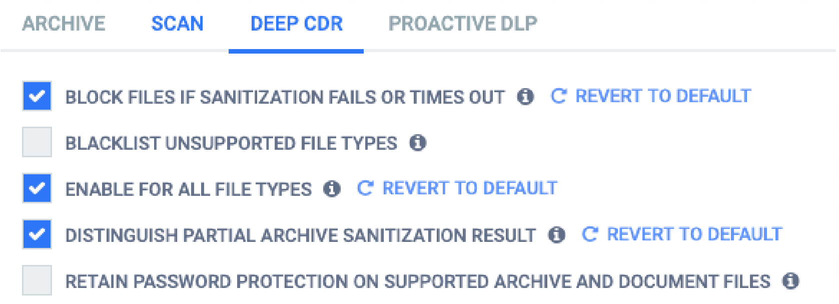
There aren't any configurations required on the MetaDefender Cloud side. The integration will automatically call MetaDefender Cloud API with sanitization rule enabled.

Integration with MetaDefender Core

In the `config.yml` you need to specify that the middleware will connect to MetaDefender Core by setting `api.type: core` and specifying the correct path to MetaDefender Core REST API in `url.core`.

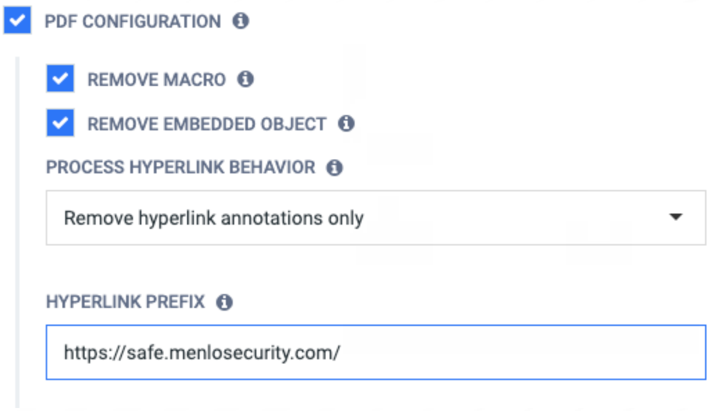
Other than that, you can rely on the existing Workflow Rule in MetaDefender Core. It is recommended to enable the following:

- **Archive processing:** this will increase the detection ratio, including for productivity files (Docx, Xlsx, etc.).
- **Multiscanning:** you can configure the maximum allowed file size for scanning and additional parameters for the scanning process.
- **Deep CDR:** we strongly recommend to check **"Enable for all file types"** and "Block files if sanitization fails or times out" (high probability that the failure is caused by invalid file structure):


ARCHIVE SCAN DEEP CDR PROACTIVE DLP

☑ BLOCK FILES IF SANITIZATION FAILS OR TIMES OUT ℹ ↻ REVERT TO DEFAULT
□ BLACKLIST UNSUPPORTED FILE TYPES ℹ
☑ ENABLE FOR ALL FILE TYPES ℹ ↻ REVERT TO DEFAULT
☑ DISTINGUISH PARTIAL ARCHIVE SANITIZATION RESULT ℹ ↻ REVERT TO DEFAULT
□ RETAIN PASSWORD PROTECTION ON SUPPORTED ARCHIVE AND DOCUMENT FILES ℹ

Another very important configuration would be to sanitize all the hyperlinks in documents. If a document is being downloaded from the internet and has a potentially bad link, it could bypass the isolation and run on the local machine. You can configure the Deep CDR engine to always sanitize the links and force them to go through Menlo Security to ensure isolation:


☑ PDF CONFIGURATION ℹ

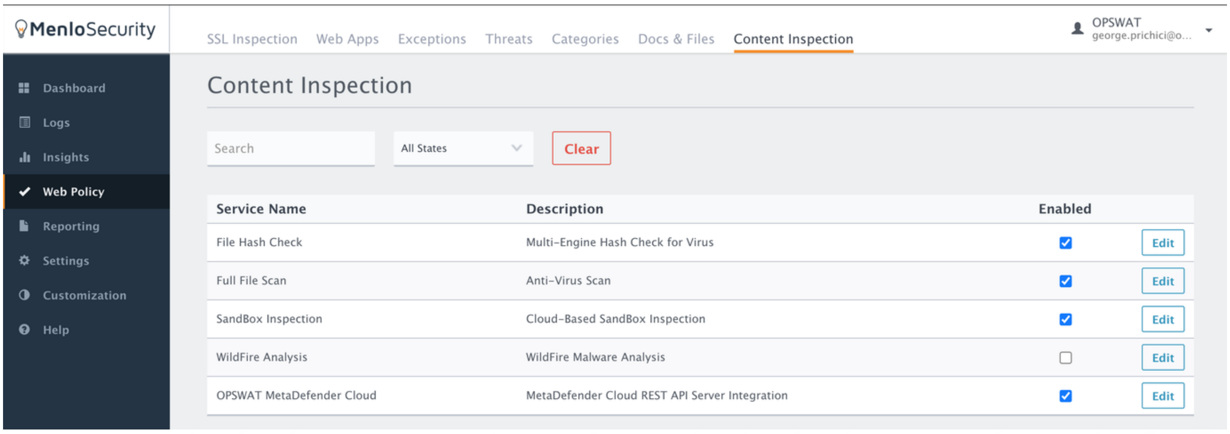
☑ REMOVE MACRO ℹ
☑ REMOVE EMBEDDED OBJECT ℹ

PROCESS HYPERLINK BEHAVIOR ℹ
Remove hyperlink annotations only ▾

HYPERLINK PREFIX ℹ
https://safe.menlosecurity.com/

Menlo Security Configuration

In order to connect with the middleware, you will have to configure the connection in Menlo's Admin console. Navigate to admin.menlosecurity.com/#/policy/inspection and edit Menlo Security Sanitization API (Web Policy > Content Inspection > Menlo Security Sanitization API):



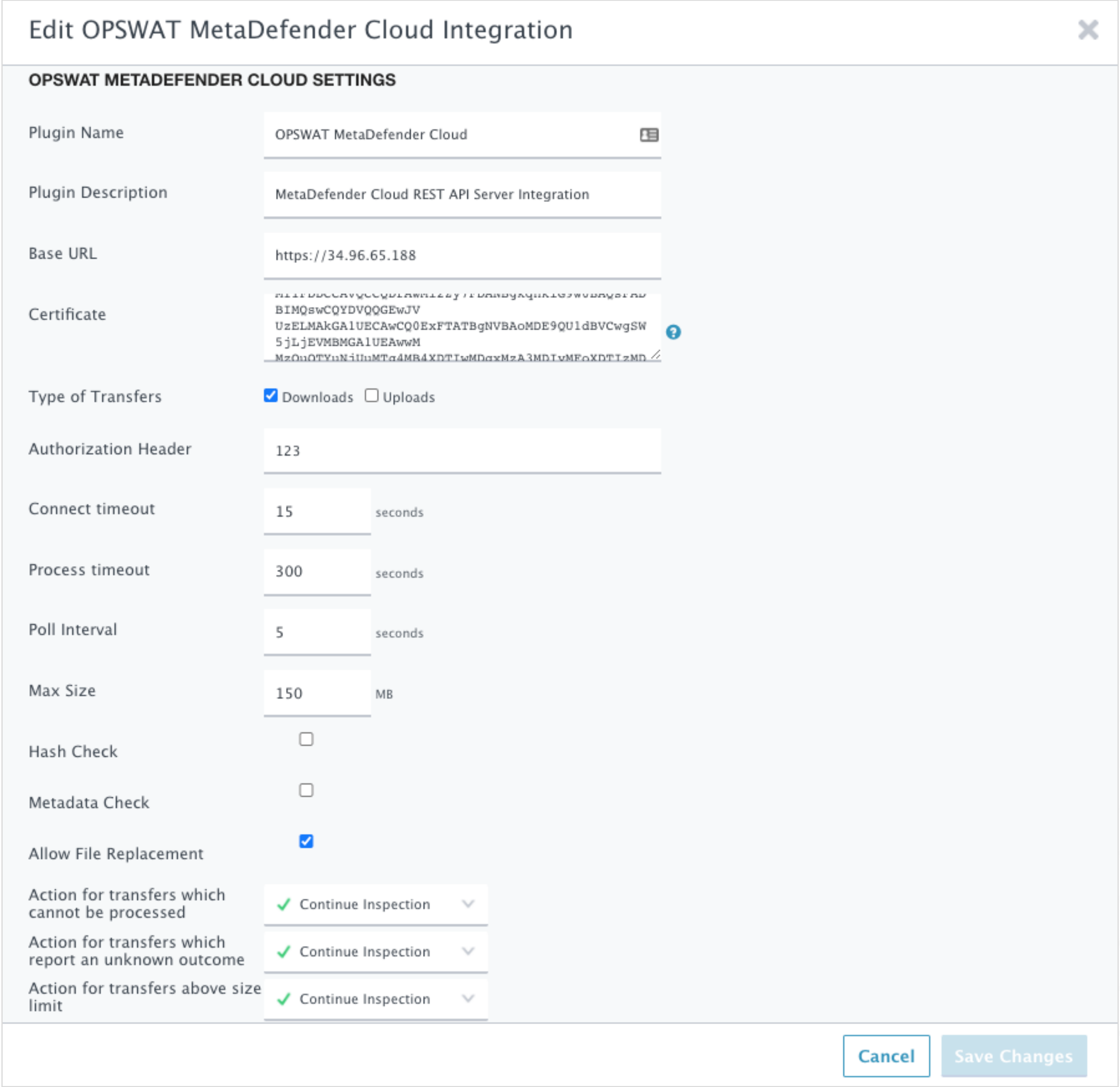
Content Inspection

Service Name	Description	Enabled	
File Hash Check	Multi-Engine Hash Check for Virus	☑	Edit
Full File Scan	Anti-Virus Scan	☑	Edit
SandBox Inspection	Cloud-Based SandBox Inspection	☑	Edit
WildFire Analysis	WildFire Malware Analysis	□	Edit
OPSWAT MetaDefender Cloud	MetaDefender Cloud REST API Server Integration	☑	Edit

You will need to configure the fields in the modal:

- **Plugin Name:** Rename the plugin to the integration type (OPSWAT MetaDefender Core or OPSWAT MetaDefender Cloud).
- **Plugin Description:** MetaDefender Core/Cloud REST API Server Integration.
- **Base URL:** This is the middleware URL (needs to be an HTTPS URL).
- **Certificate:** This should be the rootCA public certificate, that was used to sign the middleware certificate.
- **Type of Transfer:** Downloads, Uploads or both.
- **Connection Timeout:** you can leave the default as is.
- **Process Timeout:** in general the processing should happen within 1-2 seconds, but depending on the file size (or if it is an archive), could take a little longer. Balance this configuration with file size, archive handling and allowed file types configurations.
- **Poll interval:** How often Menlo will check if the analysis is completed.
- **Max Size:** For MetaDefender Core could be higher values, for MetaDefender Cloud check your max file size limit permitted for your apikey.
- **Allow File Replacement:** make sure you check this since this will allow you to replace the original file with the sanitized/redacted file.
- **Unused fields:**
  - **Authorization Header**
  - **Metadata Check**
  - **Hash check:** can be used on MetaDefender Cloud, but it will provide only the scan report, not the sanitized/redacted file. It is recommended to still submit the file.
  - Leave **Continue Inspection** for the last 3 items.

See the following example:



Edit OPSWAT MetaDefender Cloud Integration

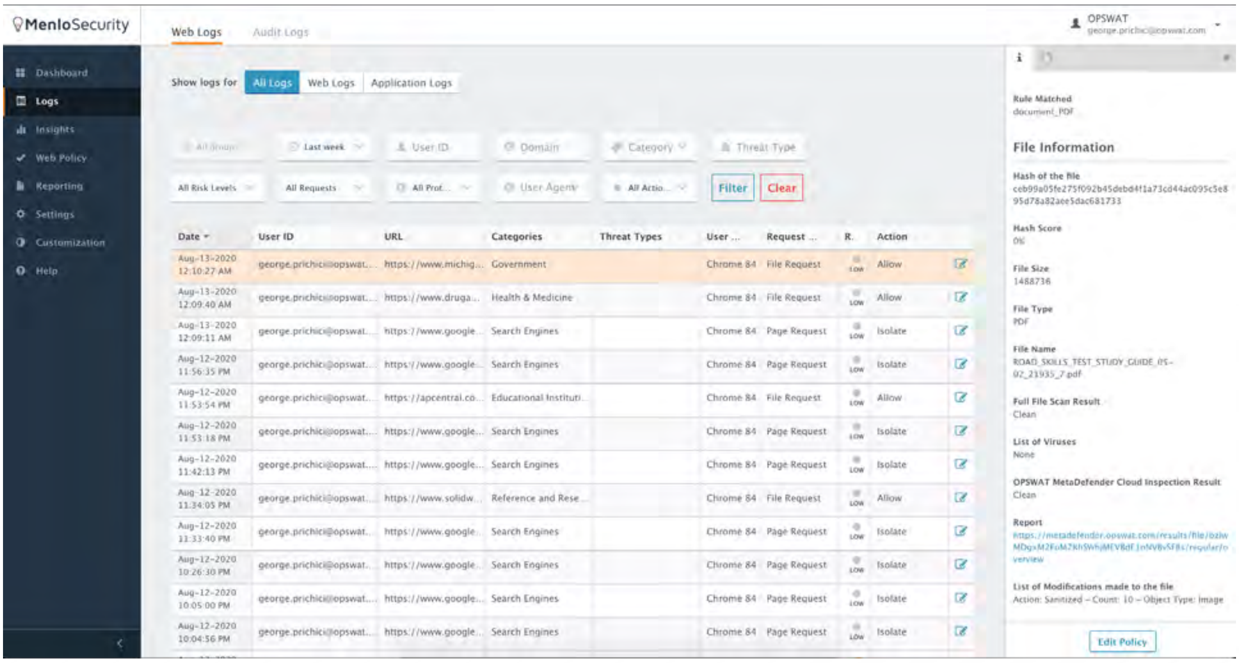
OPSWAT METADEFENDER CLOUD SETTINGS

Plugin Name	OPSWAT MetaDefender Cloud
Plugin Description	MetaDefender Cloud REST API Server Integration
Base URL	https://34.96.65.188
Certificate	BIMQswCQYDVQQGEwJV UzELMAkGA1UECAwCQ0ExFTATBgNVBAoMDE9QU1dBVCwgSW 5jLjEVMBMGA1UEAwwM MzQuOTYuNjUuMTg4MB4XDTIwMDgxMzA3MDIyMFoXDTIzMD
Type of Transfers	☑ Downloads ☐ Uploads
Authorization Header	123
Connect timeout	15 seconds
Process timeout	300 seconds
Poll Interval	5 seconds
Max Size	150 MB
Hash Check	☐
Metadata Check	☐
Allow File Replacement	☑
Action for transfers which cannot be processed	✓ Continue Inspection
Action for transfers which report an unknown outcome	✓ Continue Inspection
Action for transfers above size limit	✓ Continue Inspection

Test The Integration

Navigate to safe.menlosecurity.com and start browsing. Search for a PDF/Docx on Google and try to open it. That will trigger the Sanitization API and send the file for analysis to MetaDefender.

If you enabled 'watermark' in MetaDefender Core, your rendered/downloaded file should contain a watermark. If not, go to the Menlo Security Admin console and check the Logs > Web Logs section and your first entry should have Request Type: File Request. Click on it and scroll down in the right panel to see the MetaDefender inspection results.



Date	User ID	URL	Categories	Threat Types	User ...	Request ...	R.	Action
Aug-13-2020 12:10:27 AM	george.prichici@opswat...	https://www.michig...	Government		Chrome 84	File Request	LOW	Allow
Aug-13-2020 12:09:40 AM	george.prichici@opswat...	https://www.druga...	Health & Medicine		Chrome 84	File Request	LOW	Allow
Aug-13-2020 12:09:11 AM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 11:56:35 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 11:53:54 PM	george.prichici@opswat...	https://apcentral.co...	Educational Instituti...		Chrome 84	File Request	LOW	Allow
Aug-12-2020 11:53:18 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 11:42:13 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 11:34:05 PM	george.prichici@opswat...	https://www.solidw...	Reference and Rese...		Chrome 84	File Request	LOW	Allow
Aug-12-2020 11:33:40 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 10:26:30 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 10:05:00 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate
Aug-12-2020 10:04:56 PM	george.prichici@opswat...	https://www.google...	Search Engines		Chrome 84	Page Request	LOW	Isolate

Rule Matched
document_PDF

File Information

Hash of the file
ceb99a05fe275f092b45debd4f1a73cd44ac095c5e895d78a82aee5dac681733

Hash Score
OK

File Size
1488736

File Type
PDF

File Name
ROAD_SKILLS_TEST_STUDY_GUIDE_05-02_21935_7.pdf

Full File Scan Result
Clean

List of Viruses
None

OPSWAT MetaDefender Cloud Inspection Result
Clean

Report
https://metadefender.opswat.com/results/file/bzlwMDgxM2FoM2KhSWhjMEVBdF1nNVBvSFBs/regular/overview

List of Modifications made to the file
Action: Sanitized – Count: 10 – Object Type: image

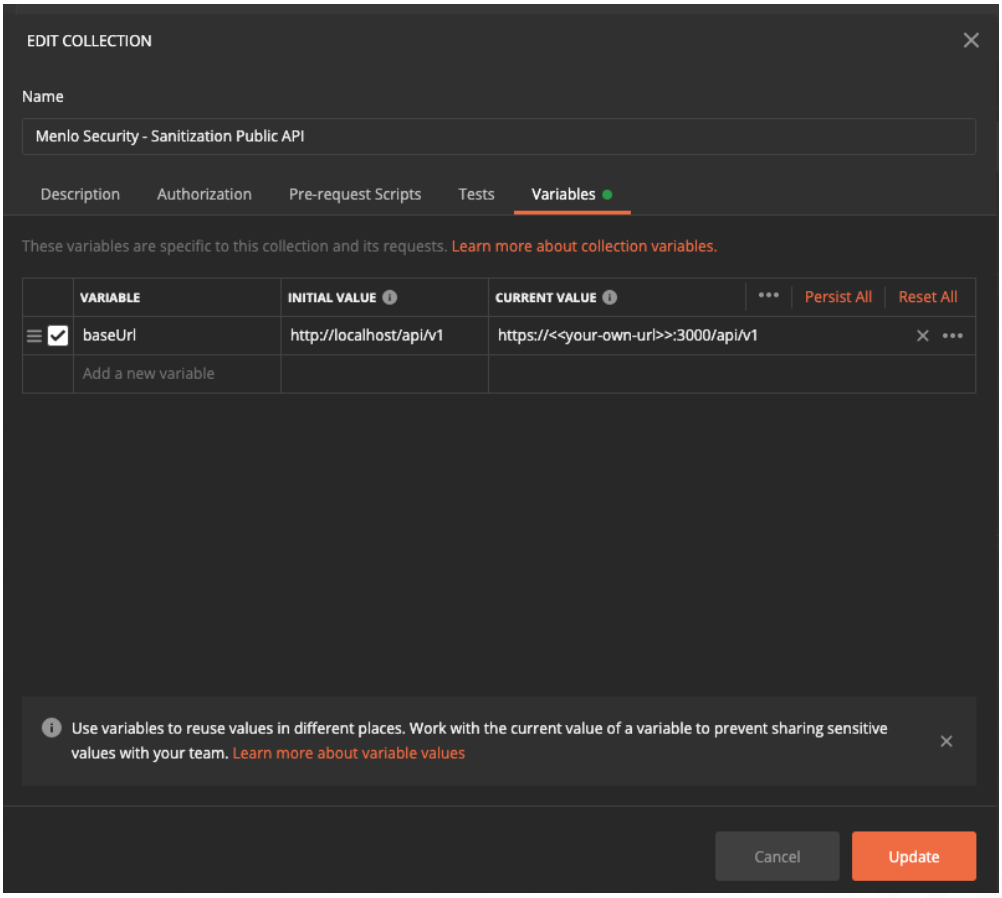
If you selected MetaDefender Cloud integration, you can view the analysis report. If it was MetaDefender Core and is being accessed by the public IP, you'll be able to do the same. Otherwise, the Report URL won't be accessible.

Troubleshooting

How can I check the Middleware is running properly?

You have a postman collection in the repository.

Import it in your Postman app and set the proper base URL.



EDIT COLLECTION

Name

Menlo Security - Sanitization Public API

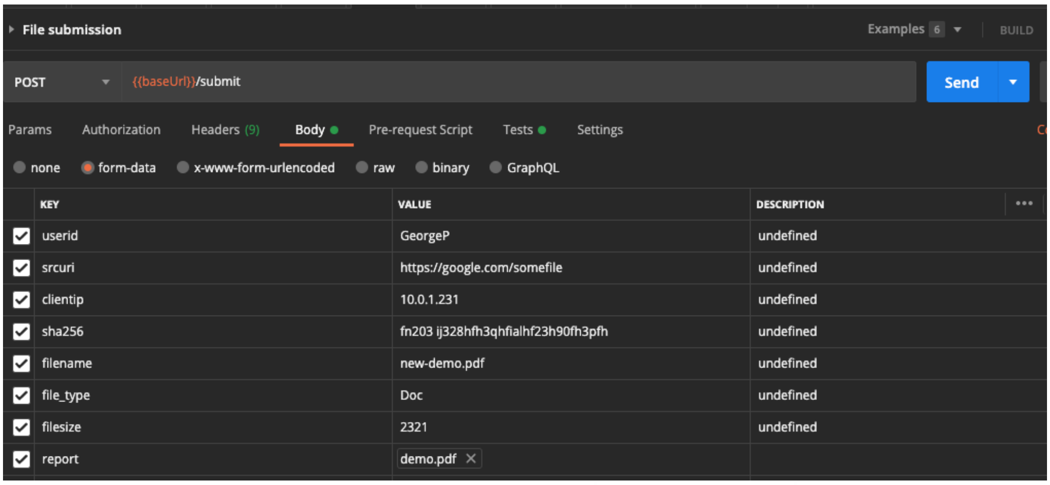
These variables are specific to this collection and its requests. Learn more about collection variables.

	VARIABLE	INITIAL VALUE	CURRENT VALUE
☑	baseUrl	http://localhost/api/v1	https://<<your-own-url>>:3000/api/v1
	Add a new variable		

Use variables to reuse values in different places. Work with the current value of a variable to prevent sharing sensitive values with your team. Learn more about variable values

You should either import the certificate in Settings > Certificates > CA Certificates or disable SSL certificate verification in Settings >General

Then do a quick check to see that file submission and analysis results work properly. You should also try to retrieve the sanitized file, to make sure that the MetaDefender configuration was set properly and CDR configuration is enabled.

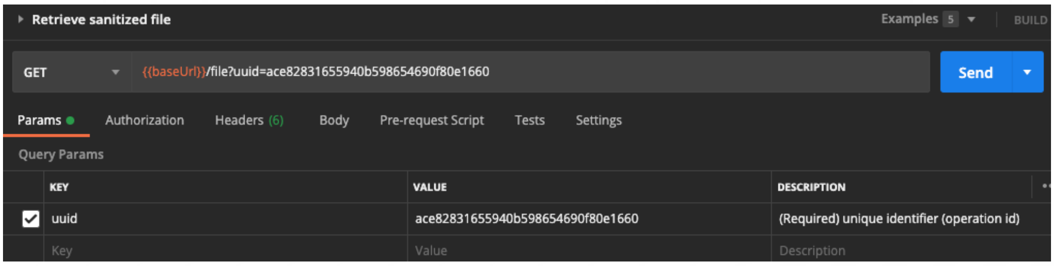


File submission

POST {{baseUrl}}/submit

○ none ● form-data ○ x-www-form-urlencoded ○ raw ○ binary ○ GraphQL

	KEY	VALUE	DESCRIPTION
☑	userid	GeorgeP	undefined
☑	srcuri	https://google.com/somefile	undefined
☑	clientip	10.0.1.231	undefined
☑	sha256	fn203 ij328hfh3qhfialhf23h90fh3pfh	undefined
☑	filename	new-demo.pdf	undefined
☑	file_type	Doc	undefined
☑	filesize	2321	undefined
☑	report	demo.pdf ✕	



Retrieve sanitized file

GET {{baseUrl}}/file?uuid=ace82831655940b598654690f80e1660

Query Params

	KEY	VALUE	DESCRIPTION
☑	uuid	ace82831655940b598654690f80e1660	(Required) unique identifier (operation id)
	Key	Value	Description

If any of the requests fail, check the middleware app logs.

Middleware is available, but it shows “Skipped” in Menlo logs

You can try to validate the integration by trying to mimic Menlo’s behavior.

In order to make sure the request is completed successfully, you should try to run the following (or similar):

```
curl --cacert rootCA.crt https://middleware.your-corporate.com:<<port>>/api/v1/health
```

In case the following request fails, you probably either specified the wrong URL or provided the wrong rootCA.crt. Check the error message for hints.

Make sure that:

- You are using X509 certificates;
- CA Cert is in PEM format.

How do I get the CA certificate?

You can try to retrieve the rootCA by using the following command:

```
openssl s_client -showcerts -servername server -connect server:443 >cacert.pem
```

Resources

Find out more about Menlo Security at www.menlosecurity.com.

Connect with an OPSWAT technical expert at www.opswat.com/get-started to schedule a demo and see how the Metadefender platform can help enhance the security of your organization. Learn more at www.opswat.com.