Documentation of FastApi Medusa

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Description

This contribution aims to extend the functionality of Medusa by implementing a microservice using FastAPI.

The goal is to: - Make Medusa interactive and user-friendly. - Provide an API interface with Swagger documentation. - Reduce reliance on terminal commands.

This endpoint generates a Vault token by authenticating with the provided AppRole credentials. It accepts the `role_id` and `secret_id` to authenticate with Vault, and then returns an access token.

Normal endpoints

1. `/generate-token`

This endpoint is responsible for generating a Vault token using AppRole authentication credentials. It requires the role_id and secret_id as inputs and communicates with Vault's authentication system to obtain a client token.

Goal

This token can then be used to execute various functionalities of Medusa.

HTTP Method

`POST`

URL

`/generate-token`

Parameters

Request Body (`AuthRequest`)

Parameter Name	Type	Description
`role_id`	`str`	Role ID used for authentication with Vault
`secret_id`	`str`	Secret associated with the role for Vault authentication

Query Parameters

Parameter Name	Type	Description
`vault_url`	`str`	Vault URL for authentication (e.g., `http://vault.example.com`)

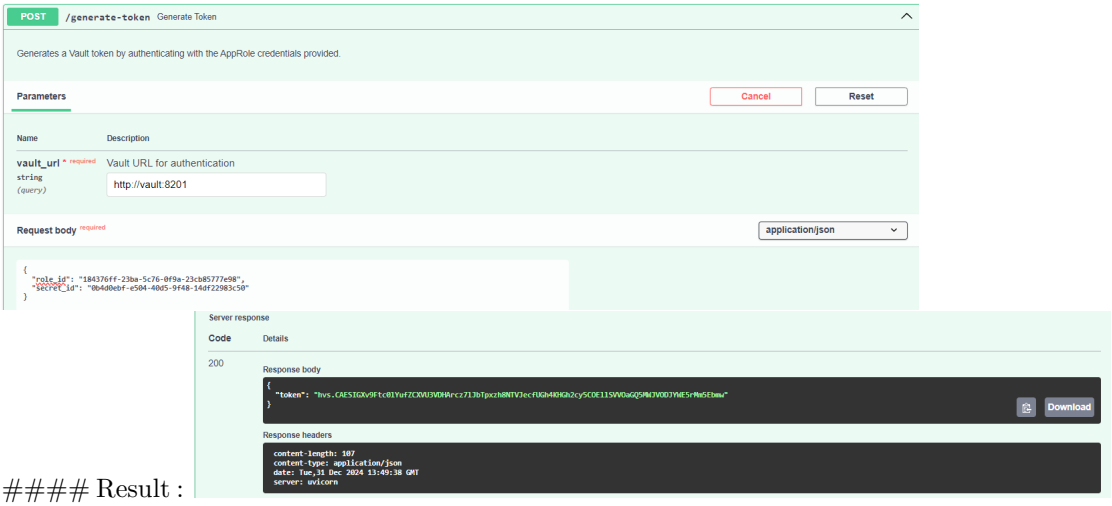
Example Request

Terminal

```
curl -X 'POST' \
  'http://localhost:8000/generate-token?vault_url=http%3A%2F%2Fvault%3A8201' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
  "role_id": "184376ff-23ba-5c76-0f9a-23cb85777e98",
  "secret_id": "0b4d0ebf-e504-40d5-9f48-14df22983c50"
}'
```

```
{
  "role_id": "my-role-id",
  "secret_id": "my-secret-id"
}
```

Swagger



Result :

2. `/get_paths`

Description

This endpoint retrieves secret paths from Vault based on the provided Vault URL, authentication token, and root secret. It interacts with the Vault server to fetch the secret paths, processes them, and returns the available paths to the user. If an error occurs during the process, a 500 HTTP error is returned with a detailed message.

Goal

The goal of this endpoint is to provide the user with all available secret paths. The user can then easily copy and paste these paths for other methods to retrieve, import, copy, move, or delete secrets, instead of manually writing them.

HTTP Method

`GET`

URL

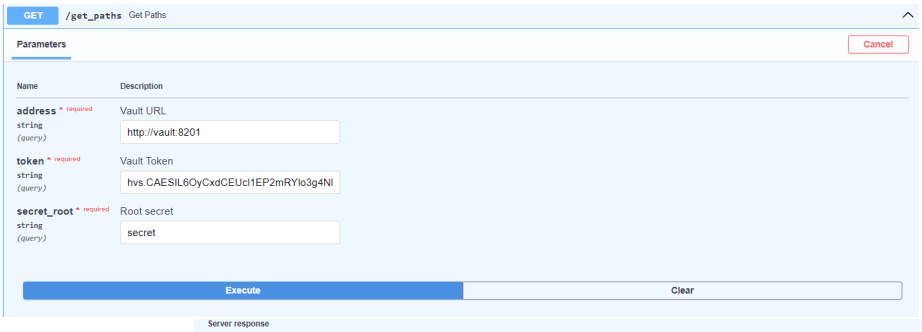
`/get_paths`

Query Parameters

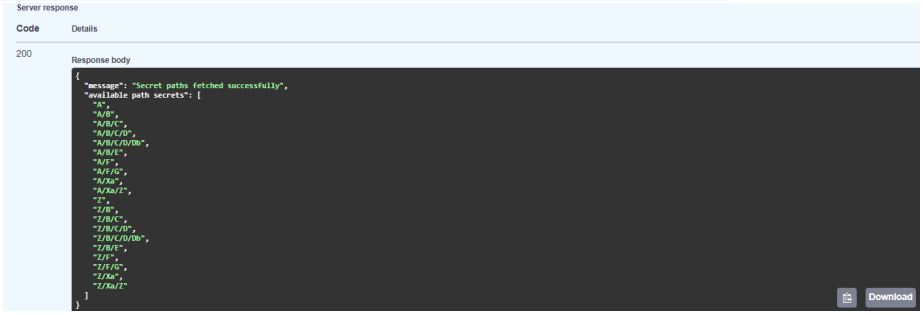
Parameter Name	Type	Description
`address`	`str`	The URL of the Vault server where secrets are stored (e.g., `http://vault.example.com`).
`token`	`str`	The authentication token required to access Vault (e.g., `s.abc123xyz`).
`secret_root`	`str`	The root path for fetching secrets (e.g., `secret/`).

Example Request

Swagger



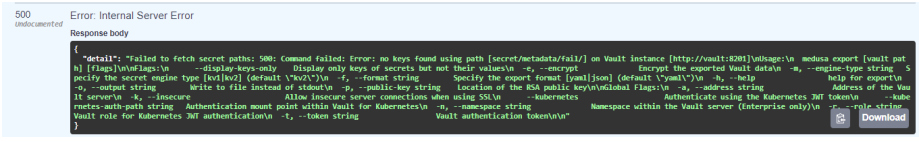
Result :



Error Handling

If an error occurs, the server will respond with a 500 Internal Server Error and a message detailing the error.

For example:



3. /import

Description

This endpoint imports files to a specified Vault path using Medusa. The method accepts multiple files, and the files are temporarily saved to the local system before being uploaded to Vault. If no files are provided, a 400 error is returned. Once the files are successfully uploaded, a message is returned with the list of imported file paths.

Goal

The goal of this endpoint is to allow users to import one or multiple files to a specific path in Vault, specifying the Vault URL, token, and engine type(vault version). This makes it easier to upload secrets, configurations, or any file-based data to Vault without manual intervention.

HTTP Method

`POST`

URL

`/import`

Query Parameters

Parameter Name	Type	Description
`address`	`str`	The URL of the Vault server where secrets are stored (e.g., `http://vault.example.com`).
`token`	`str`	The authentication token required to access Vault (e.g., `s.abc123xyz`).
`path`	`str`	The secret path where the files will be imported in Vault (e.g., `secret/my-secrets`).
`engine_type`	`str`	Specify the Vault engine type (`kv1` or `kv2`). Defaults to `kv2`.
`files`	`List[UploadFile]`	A list of files to be uploaded.

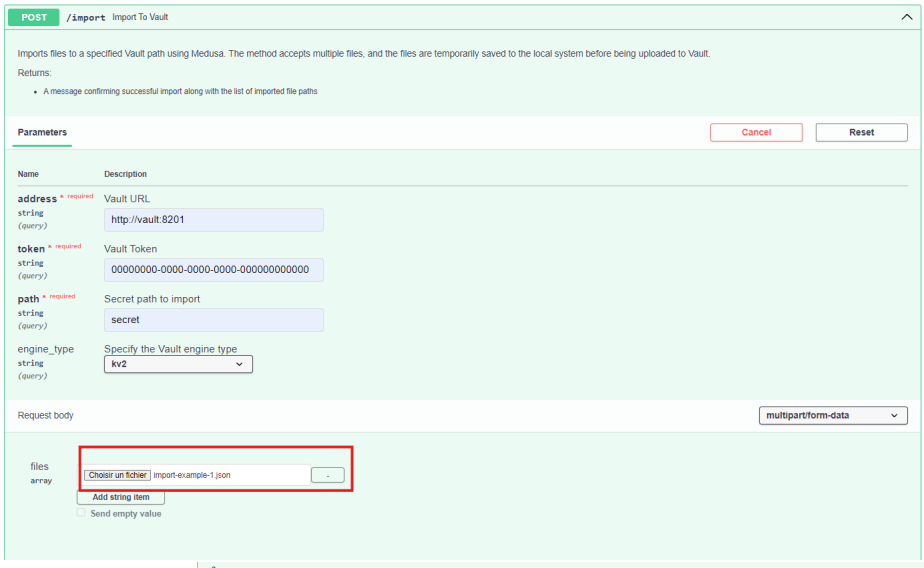
Example Request

Terminal

```
curl -X 'POST' \
  'http://localhost:8000/import?address=http%3A%2F%2Fvault%3A8201&token=00000000-0000-0000-0
```

```
-H 'accept: application/json' \
-H 'Content-Type: multipart/form-data' \
-F 'files=@import-example-1.json;type=application/json'
```

Swagger



Result :

Error Handling

If an error occurs, the server will respond with a 500 Internal Server Error and a message detailing the error.

4. `/export`

This endpoint is responsible for exporting secrets from a Vault instance to a file. It allows users to specify the file format (YAML or JSON), Vault engine type (kv1 or kv2), and optionally provide a custom file name for the exported file. If no file name is provided, a default name is generated based on the secret path.

Goal

This functionality is useful for exporting secrets from Vault for further use or backup in a structured file format. As a result a downloadable file will be returned in the format specified (either YAML or JSON).

HTTP Method

`POST`

URL

`/export`

Parameters

Query Parameters

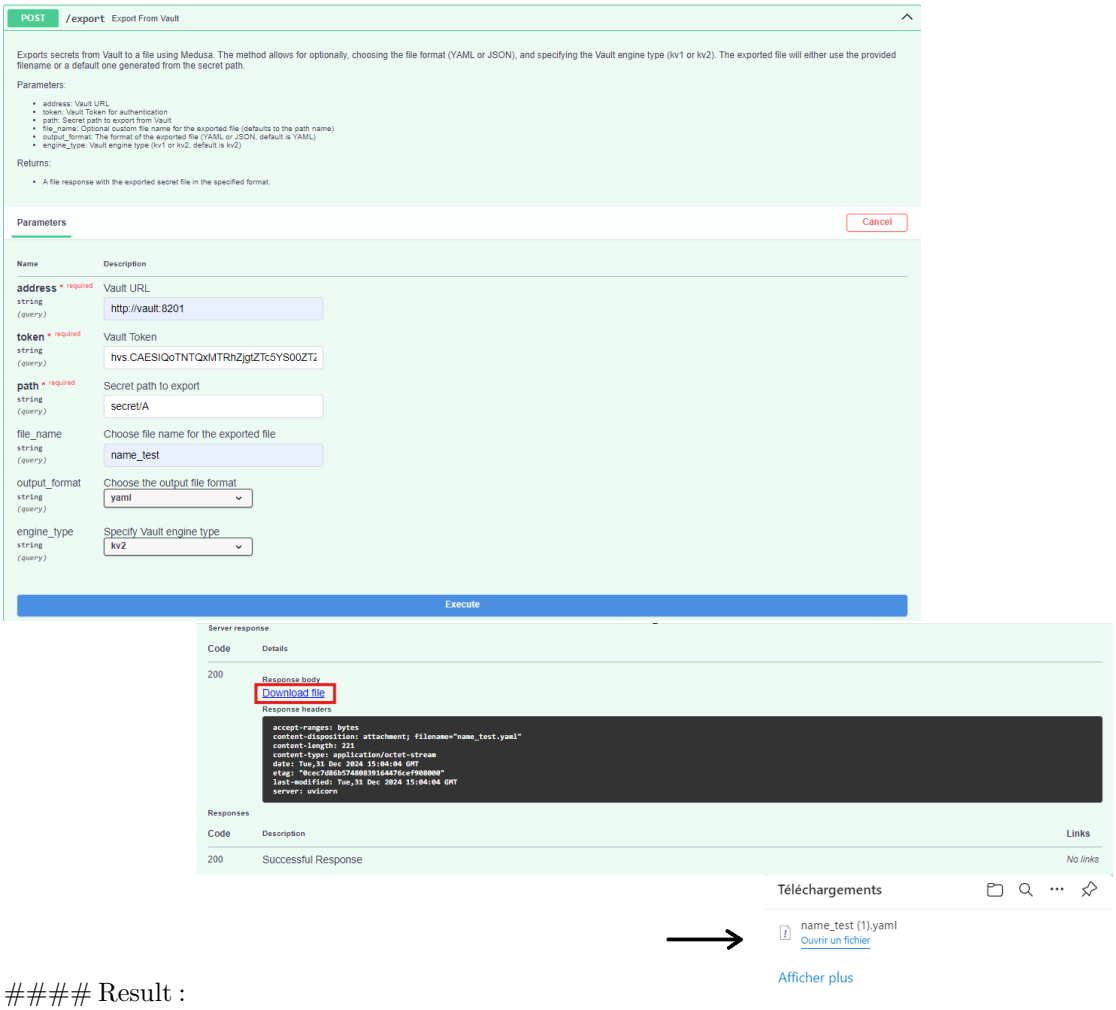
Parameter Name	Type	Description
`address`	`str`	Vault URL for accessing the instance (e.g., `http://vault.example.com`)
`token`	`str`	Vault Token for authentication with Vault
`path`	`str`	Secret path to export from Vault
`file_name`	`str`	(Optional) Custom file name for the exported file. If not provided, a default name is used based on the secret path.
`output_format`	`str`	(Optional) The format for the exported file. Can be `yaml` or `json`. Default is `yaml`.
`engine_type`	`str`	(Optional) Vault engine type, either `kv1` or `kv2`. Default is `kv2`.

Example Request

Terminal

```
curl -X 'POST' \
  'http://localhost:8000/export?address=http%3A%2F%2Fvault%3A8201&token=00000000-0000-0000-0
  -H 'accept: application/json' \
  -d ''n' \
  -H 'Content-Type: application/json'
```

Swagger



Result :

Error Handling

If an error occurs, the server will respond with a 500 Internal Server Error and a message detailing the error.

5. `/copy`

This endpoint allows copying secrets from one Vault path (`source_path`) to another (`target_path`). The method communicates with Vault using the provided Vault URL and token. It uses the Medusa tool to perform the copy operation. The engine type (kv1 or kv2) for Vault can also be specified. Upon successful execution, a confirmation message with source and target paths is returned.

Goal

This functionality allows users to copy secrets from one path to another within the same Vault instance, making it easier to manage and migrate secrets.

HTTP Method

`POST`

URL

`/copy`

Parameters

Query Parameters

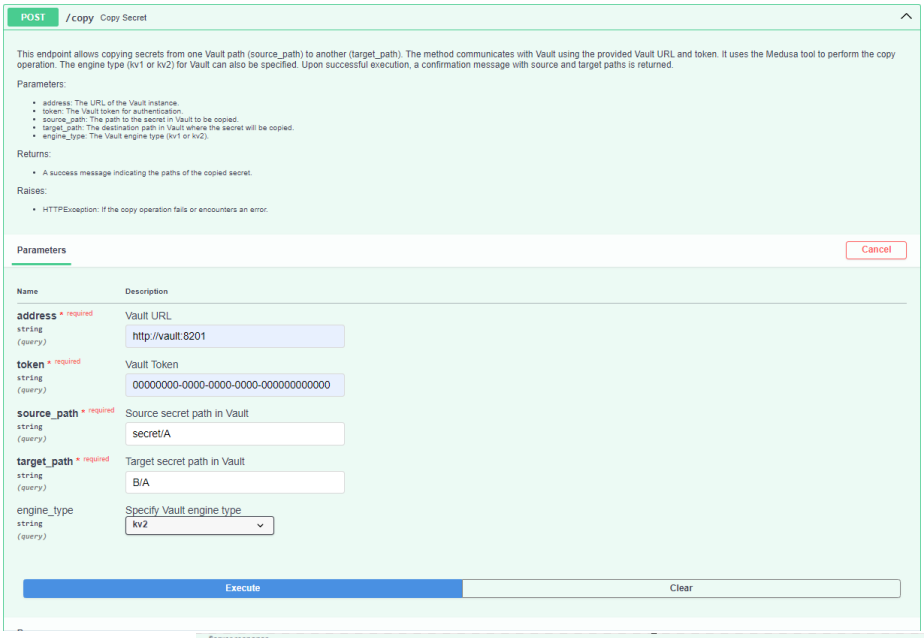
Parameter Name	Type	Description
`address`	`str`	Vault URL for accessing the instance (e.g., `http://vault.example.com`)
`token`	`str`	Vault Token for authentication with Vault
`source_path`	`str`	The source secret path in Vault to be copied
`target_path`	`str`	The target secret path in Vault where the secret will be copied
`engine_type`	`str`	(Optional) Vault engine type, either `kv1` or `kv2`. Default is `kv2`.

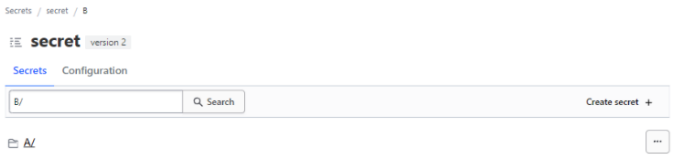
Example Request

Terminal

```
curl -X 'POST' \
  'http://localhost:8000/copy?address=http%3A%2F%2Fvault%3A8201&token=00000000-0000-0000-000
  -H 'accept: application/json' \
  -d ''
```

Swagger





Result :

6. `/move`

This endpoint allows moving secrets from one Vault path (`source_path`) to another (`target_path`). The method communicates with Vault using the provided Vault URL and token. It uses the Medusa tool to perform the move operation. After the secret is successfully moved to the target path, it is deleted from the source path. The engine type (kv1 or kv2) for Vault can also be specified. Upon successful execution, a confirmation message with source and target paths is returned.

Goal

This functionality allows users to move secrets from one path to another within the same Vault instance, enabling easier secret management and cleanup.

HTTP Method

`POST`

URL

`/move`

Parameters

Query Parameters

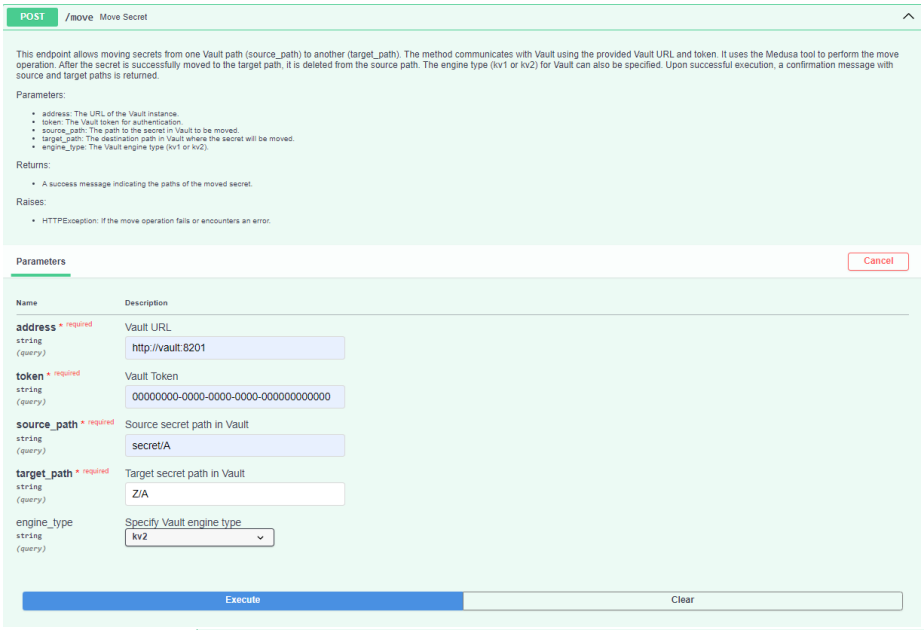
Parameter Name	Type	Description
`address`	`str`	Vault URL for accessing the instance (e.g., `http://vault.example.com`)
`token`	`str`	Vault Token for authentication with Vault
`source_path`	`str`	The source secret path in Vault to be moved
`target_path`	`str`	The target secret path in Vault where the secret will be moved
`engine_type`	`str`	(Optional) Vault engine type, either `kv1` or `kv2`. Default is `kv2`.

Example Request

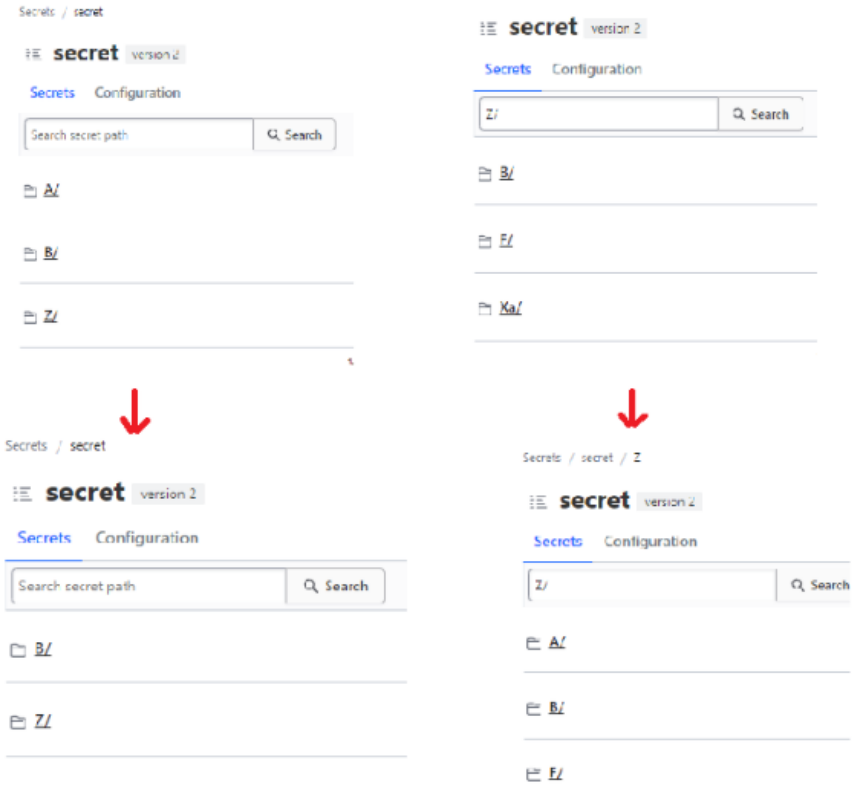
Terminal

```
curl -X 'POST' \
  'http://localhost:8000/move?address=http%3A%2F%2Fvault%3A8201&token=00000000-0000-0000-000
  -H 'accept: application/json' \
  -d ''
```

Swagger



Result :



7. `/from_old_to_new`

Description

This endpoint facilitates the migration of secrets from an old Vault instance to a new Vault instance. It uses the Medusa tool to export secrets from the old Vault and imports them into the new Vault. The migration ensures secure transfer of secrets.

Goal

The purpose of this endpoint is to automate the migration of secrets between Vault instances, reducing manual effort and minimizing errors. Users can seamlessly move secrets from an outdated or deprecated Vault instance to a new one.

HTTP Method

`POST`

URL

`/from_old_to_new`

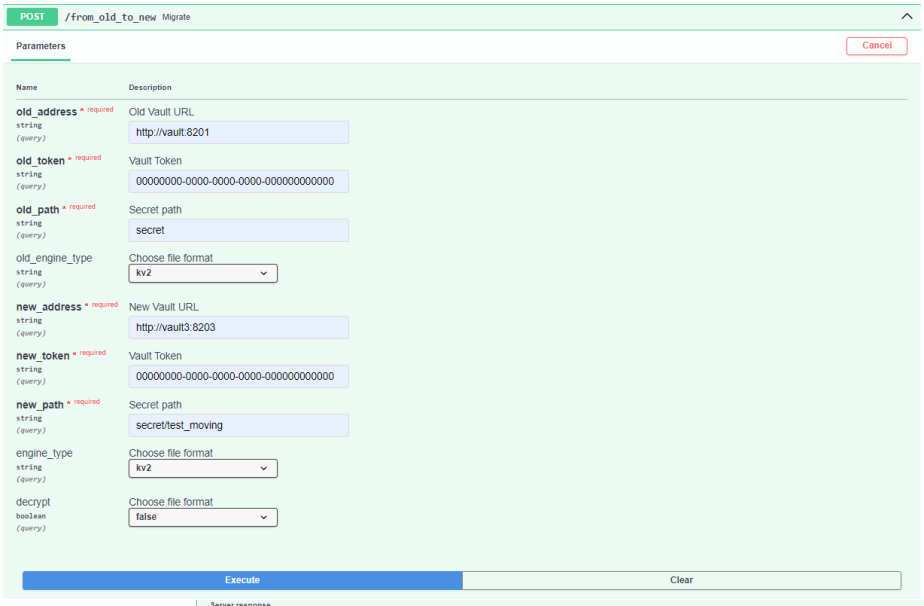
Query Parameters

Parameter Name	Type	Description
`old_address`	`str`	The URL of the old Vault instance (e.g., `http://old-vault.example.com`).
`old_token`	`str`	The authentication token for the old Vault instance.
`old_path`	`str`	The secret path in the old Vault instance to be migrated (e.g., `secret/my-old-secrets`).
`old_engine_type`	`str`	The engine type of the old Vault (`kv1` or `kv2`). Defaults to `kv2`.
`new_address`	`str`	The URL of the new Vault instance (e.g., `http://new-vault.example.com`).
`new_token`	`str`	The authentication token for the new Vault instance.
`new_path`	`str`	The secret path in the new Vault instance where secrets will be stored (e.g., `secret/my-new-secrets`).
`engine_type`	`str`	The engine type of the new Vault (`kv1` or `kv2`). Defaults to `kv2`.

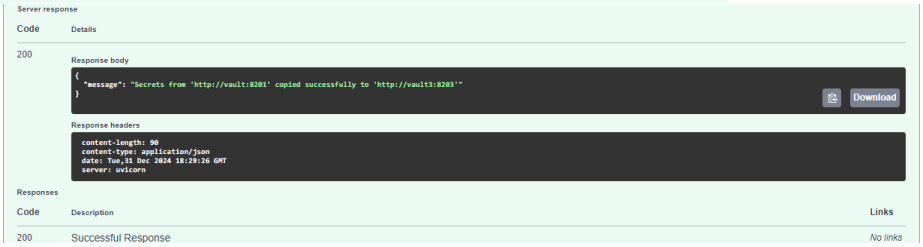
Example Request

```
curl -X 'POST' \
  'http://localhost:8000/from_old_to_new?old_address=http%3A%2F%2Fvault%3A8201&old_token=000
  -H 'accept: application/json' \
  -d ''
```

Swagger



Result :



8. `/delete`

This endpoint deletes a secret from a HashiCorp Vault instance. It uses the Medusa CLI tool to perform the deletion of the specified secret at the given path in the Vault. The operation is automatically approved and executed with the provided Vault address and authentication token.

Goal

This functionality is designed to remove secrets from a Vault instance, ensuring sensitive data can be securely deleted when it is no longer needed.

HTTP Method

`DELETE`

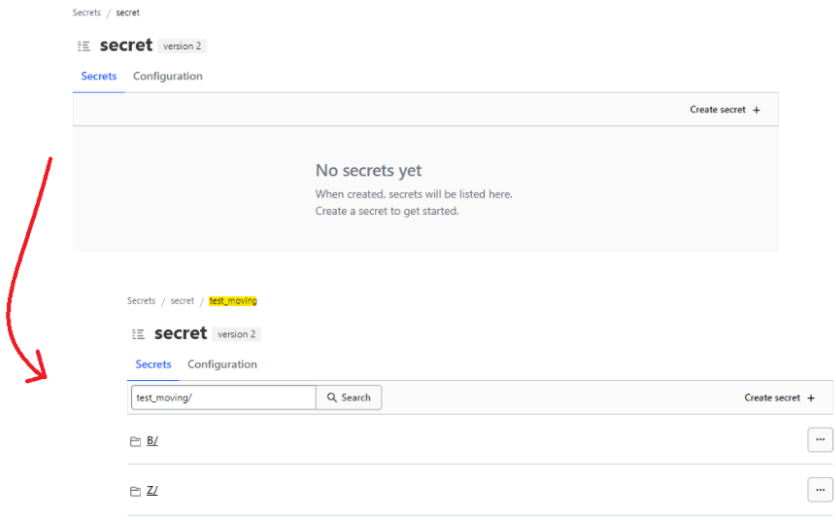


Figure 1: alt text

URL

`/delete`

Parameters

Query Parameters

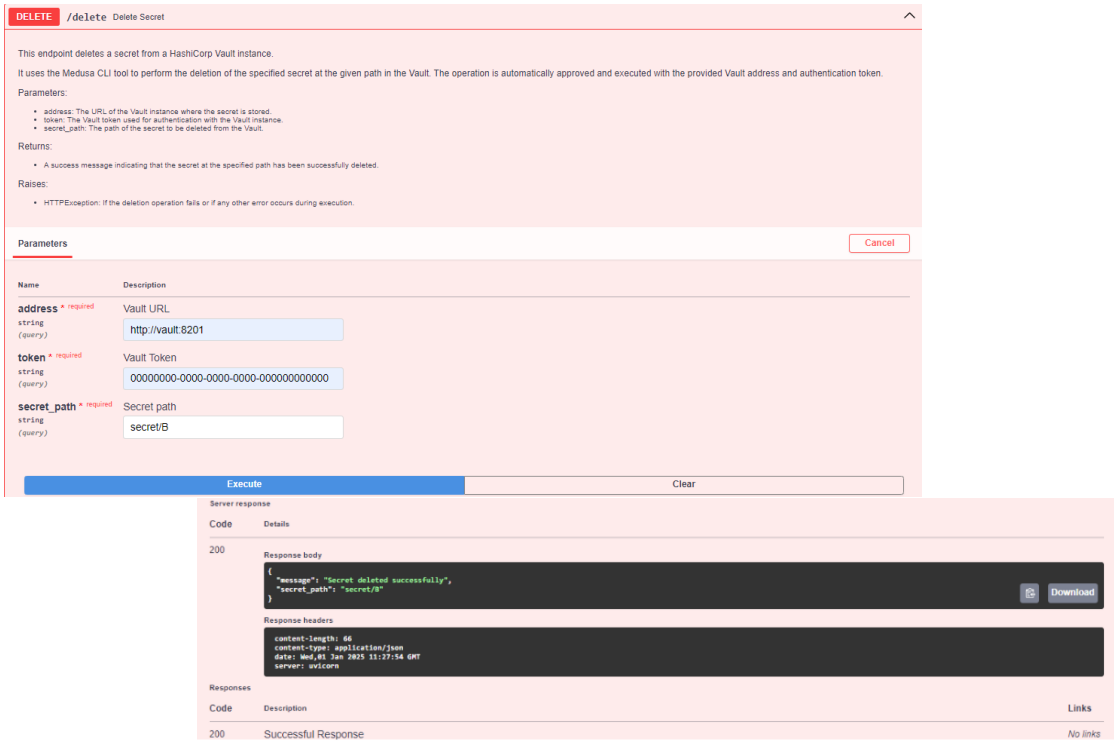
Parameter Name	Type	Description
`address`	`str`	Vault URL for accessing the instance (e.g., `http://vault.example.com`)
`token`	`str`	Vault Token for authentication with Vault
`secret_path`	`str`	The path of the secret in Vault to be deleted

Example Request

Terminal

```
curl -X 'DELETE' \
  'http://localhost:8000/delete?address=http%3A%2F%2Fvault%3A8201&token=00000000-0000-0000-0
  -H 'accept: application/json'
```

Swagger



Result :

Dynamic Endpoints with Environment Variables

To make endpoints more dynamic and avoid repeatedly entering the URL, token, and engine type, you can now create these as environment variables using the `/env` endpoint.

`/env`

The `/env` endpoint takes the following parameters: - **Vault URL**: The address of your Vault instance. - **Token**: Your authentication token. - **Engine Type**: The type of engine you are working with.

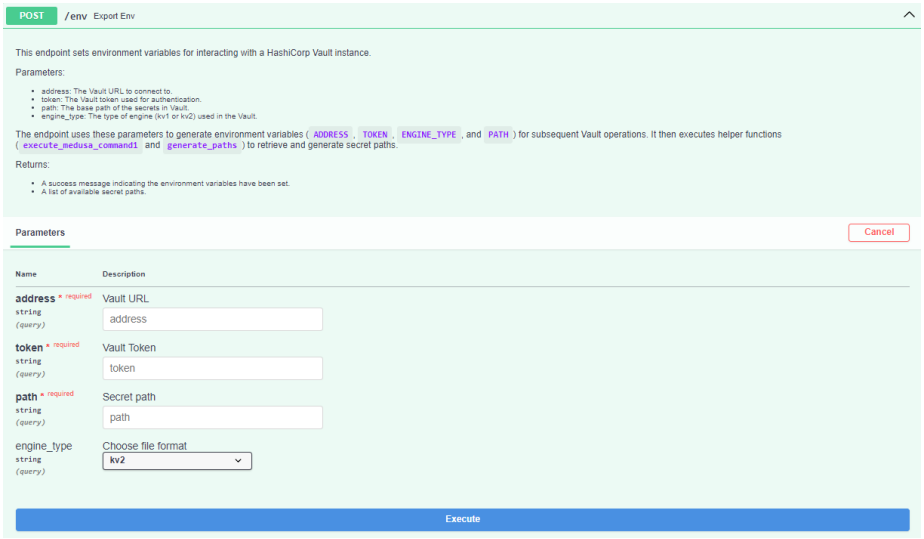
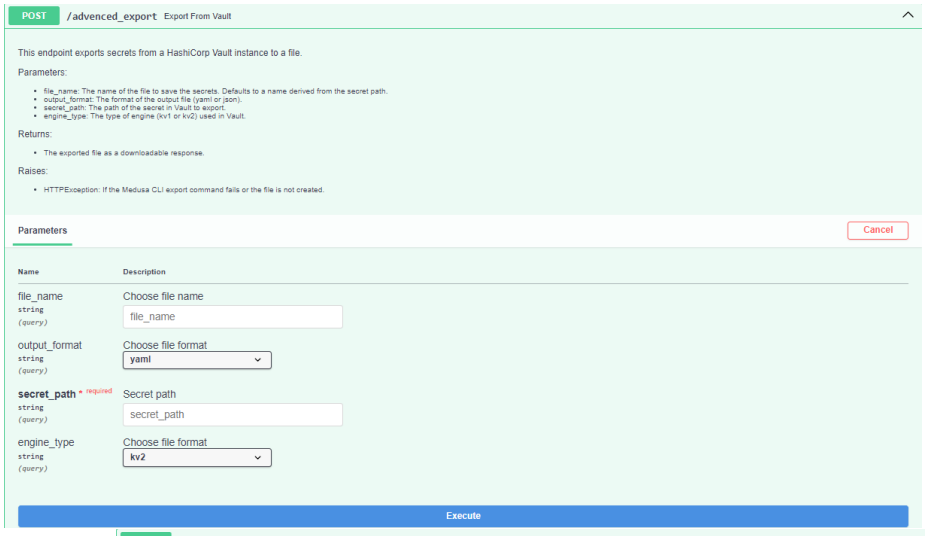


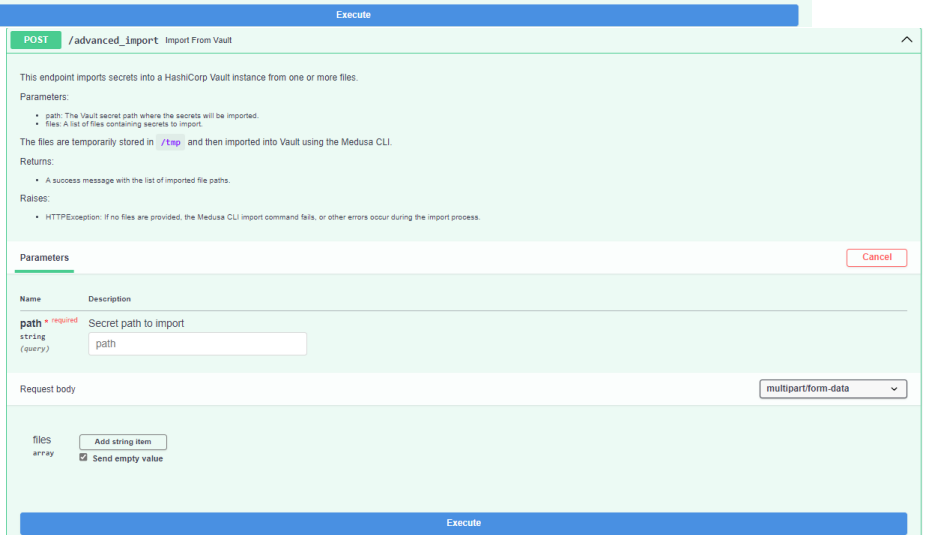
Figure 2: alt text

Result

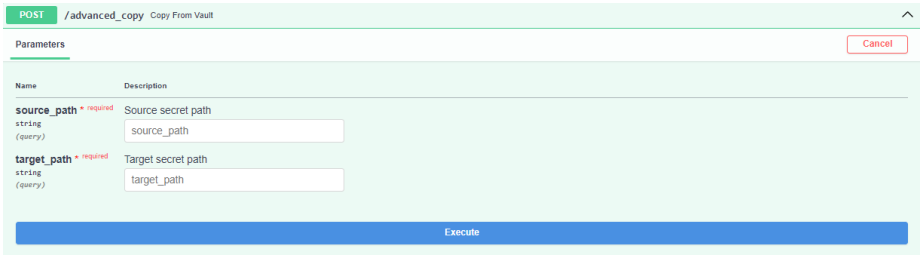
Endpoints Once the `/env` endpoint is executed, you can seamlessly use the advanced endpoints for all Medusa operations, such as: - **Export**


POST /advenced_export Export From Vault
This endpoint exports secrets from a HashiCorp Vault instance to a file.
Parameters:
file_name: The name of the file to save the secrets. Defaults to a name derived from the secret path.
output_format: The format of the output file (yaml or json).
secret_path: The path of the secret in Vault to export.
engine_type: The type of engine (kv1 or kv2) used in Vault.
Returns:
The exported file as a downloadable response.
Raises:
HTTPException: If the Medusa CLI export command fails or the file is not created.
Parameters
Cancel
Name
Description
file_name
string
(query)
Choose file name
file_name
output_format
string
(query)
Choose file format
yaml
secret_path * required
string
(query)
Secret path
secret_path
engine_type
string
(query)
Choose file format
kv2
Execute

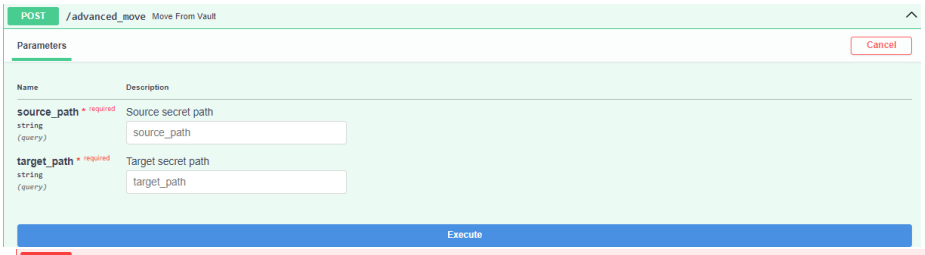
- **Import**


POST /advanced_import Import From Vault
This endpoint imports secrets into a HashiCorp Vault instance from one or more files.
Parameters:
path: The Vault secret path where the secrets will be imported.
files: A list of files containing secrets to import.
The files are temporarily stored in /tmp and then imported into Vault using the Medusa CLI.
Returns:
A success message with the list of imported file paths.
Raises:
HTTPException: If no files are provided, the Medusa CLI import command fails, or other errors occur during the import process.
Parameters
Cancel
Name
Description
path * required
string
(query)
Secret path to import
path
Request body
multipart/form-data
files
array
Add string item
Send empty value
Execute

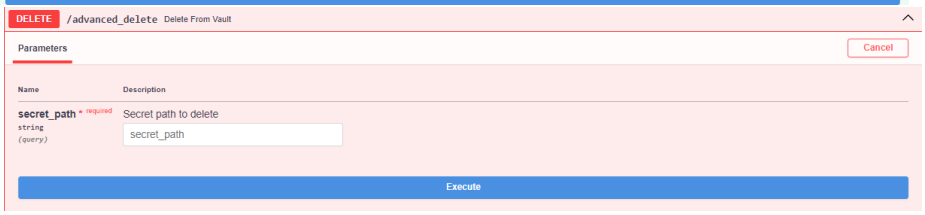
- **Copy**


POST /advanced_copy Copy From Vault
Parameters
Cancel
Name
Description
source_path * required
string
(query)
Source secret path
source_path
target_path * required
string
(query)
Target secret path
target_path
Execute

- **Move**



- **Delete**



These advanced endpoints are built on top of the standard ones but are more dynamic, removing the need to repeatedly input parameters manually.

Docker Setup for Running Medusa and FastAPI Container

To run the container that includes both Medusa and FastAPI, follow these steps:

Note: The Medusa client is already built into the container, so you can directly use the CLI through the container's terminal.

1. Prerequisites:

Make sure you have Docker installed on your machine.

2. Build the Image

To build the Medusa container image, use the following command:

```
1- cd medusa/api
2- docker build -t medusa-api -f Dockerfile ../
```

3. Run the Medusa Container

To run the container, use the following command:

```
docker run -d -p 8000:8000 -p 8080:8080 --name medusa-app --network vault medusa-api
```

The Dockerfile ensures that Python, Go, and all the necessary dependencies are installed. It also builds the Medusa application and sets FastAPI as the entry point to make the application ready for use.

4.Accessing the Swagger UI

Once the container is running, you can access the Swagger UI for executing the endpoints at:

```
http://localhost:8000/docs
```