DELPHIX

Delphix Masking Engine API Cookbook

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Delphix Masking Engine API Cookbook
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Masking API Client

This section describes the API client available on the masking engine.

Introduction

With the release of API v5 on the Masking Engine, Delphix has opened up the possibility of scripting and automation against the Masking Engine. While this is exciting for us internally at Delphix, we are sure that this will be even more exciting for the consumers of the Masking Engine. This document is intended to be a high-level overview of what to expect with API v5 as well as some helpful links to get you started.

REST

API v5 is a RESTful API. REST stands for REpresentational State Transfer. A REST API will allow you to access and manipulate a textual representation of objects and resources using a predefined set of operations to accomplish various tasks.

JSON

API v5 uses JSON (JavaScript Object Notation) to ingest and return representations of the various objects used throughout various operations. JSON is a standard format and, as such, has many tools available to help with creating and parsing the request and response payloads, respectively.

Here are some UNIX tools that can be used to parse JSON - https://stackoverflow.com/questions/1955505/parsing-json-with-unix-tools. That being said, this is only the tip of the iceberg when it comes to JSON parsing and the reader is encouraged to use their method of choice.

API Client

The various operations and objects used to interact with API v5 are defined in a specification document. This allows us to utilize various tooling to ingest that specification to generate documentation and an API Client, which can be used to generate cURL commands for all

operations.

To access the API client on your Masking Engine, go to http://myMaskingEngine.myDomain.com:8282/masking/api-client.

To see how to log into the API client and for some starter recipes, please check out API Cookbook document. Happy programming!

Supported Features

API v5 is in active development but does not currently support all features that are accessible in the GUI. The list of supported features will expand over the course of subsequent releases.

For a full list of supported APIs, the best place to look is the API client on your Masking Engine

http://myMaskingEngine.com:8282/masking/api-client.High-level operations that are not currently supported via the v5 APIs include, but are not limited to:

- Job Scheduler
- Audit and application logs
- Copybook formats
- Tokenization jobs
- Reidentification jobs

API Calls for Masking Administration

The Delphix Masking Engine supports the following two types of administrative APIs:

- Analytics APIs
    - These APIs are for including Masking performance information in the support bundle and do not need to be used unless that information is requested.

- Application Setting APIs
    - Application Setting APIs allow an administrator to change the Delphix Masking Engine settings. Presently there are five categories of settings: analytics settings, LDAP settings, general settings, mask settings and profile settings. Over time, more settings will be added to give users direct control over the product's various settings. Below are the details of currently supported settings.

Application Settings APIs

General Group Settings

Setting Group	Setting Name	Type	Description	Default Value
general	EnableMonitorRowCount	Boolean	Controls whether a job displays the total number of rows that are being masked. Setting this to false reduces the startup time of all jobs.	true
	PasswordTimeSpan	Integer [0, ∞)	The number of hours a user is locked out for before they can attempt to log in again.	23
	PasswordCount	Integer [0, ∞)	The number of incorrect password attempts before a user	3

			is locked out.	
	AllowPasswordResetRequest	Boolean	When true, users can request a password reset link be sent to the email associated with their account.	true
	PasswordResetLinkDuration	Integer [1, ∞)	Controls how many minutes the password reset link is valid for.	5

LDAP Group Settings

Setting Group	Setting Name	Type	Description	Default Value
ldap	Enable	Boolean	Used to enable and disable LDAP authentication	false
	LdapHost	String	Host of LDAP server	10.10.10.31
	LdapPort	Integer [0, ∞)	Port of LDAP server	389
	LdapBasedn	String	Base DN of LDAP server	DC=tbspune,DC=com
	LdapFilter	String	Filter for LDAP authentication	(&(objectClass=person)(sAMAccountName=?))
			MSAD	

	MsadDomain	String	Domain for LDAP authentication	AD
	LdapTlsEnable	Boolean	Enable and disable the use of TLS for LDAP connections.	false

!!! warning
In the LDAP group, once the "Enable" setting is set to "true", all users logging in will be authenticated via the LDAP server. Local authentication will no longer work. Before setting this to true set all other LDAP settings correctly and create the necessary LDAP users on the masking engine.

Mask Group Settings

Setting Group	Setting Name	Type	Description	Default Value
mask	DatabaseCommitSize	Integer [1, ∞)	Controls how many rows are updated (Batch Update) or inserted (Bulk Data) to the database before the transaction is committed.	10000
	BulkDataSeparator	String	Characters used to separate fields in a bulk data masking job.	#;#
	DefaultStreams	Integer [1, ∞)	Default number of streams for a masking job.	1
	DefaultUpdateThreads	Integer [1, ∞)	Default number of database update threads for a masking job.	1

	DefaultMaxMemory	Integer [1024, ∞)	Default maximum memory for masking jobs (in megabytes).	1024
	DefaultMinMemory	Integer [1024, ∞)	Default minimum memory for masking jobs (in megabytes).	1024

Profile Group Settings

Setting Group	Setting Name	Type	Description	Default V
profile	EnableDataLevelCount	Boolean	When enabled, only profile the number of rows specified by DataLevelRows when running data level profiling jobs. When disabled, profile all rows when running data level profiling jobs.	false
	DataLevelRows	Integer [1, ∞)	The number of rows a data level profiling job samples when profiling a column. This is only used when EnableDataLevelCount is true.	100
	DataLevelPercentage	Double (0, ∞)	Percentage of rows that must match the data level regex to consider this column a match, and thus sensitive.	80.0
			Datatypes that a profiling job should ignore. Columns of	BIT,BOC

	IgnoreDatatype	String	these types will not be assigned a domain/algorithm pair.	NVARCH LOB,LOI
	DefaultStreams	Integer [1, ∞)	Default number of streams for a profiling job.	1
	DefaultMaxMemory	Integer [1024, ∞)	Default maximum memory for profiling jobs (in megabytes).	1024
	DefaultMinMemory	Integer [1024, ∞)	Default minimum memory for profiling jobs (in megabytes).	1024

API Calls for Creating and Running Masking Jobs

Below are examples of requests you might enter and responses you might receive from the Masking API client. For commands specific to your masking engine, work with your interactive client at http://<myMaskingEngine>:8282/masking/api-client/

!!! note
In all code examples, replace <myMaskingEngine> with the hostname or IP address of your virtual machine.

!!! warning
HTTPS (SSL/TLS) is recommended, but for explanatory purposes these examples use insecure HTTP.

Creating a Masking Job

Object references you will need:

- The ID of the ruleset for which you wish to create the masking job

REQUEST

```
curl -X POST --header 'Content-Type: application/json' --header 'Accept:
application/json' --header 'Authorization:
e23bad24-8760-4091-a131-34f235d9b2d6' -d '{ "jobName":
"some_masking_job", "rulesetId": 7, "jobDescription": "This example
illustrates a MaskingJob with just a handful of the possible fields set.
It is meant to exemplify a simple JSON body that can be passed to the
endpoint to create a MaskingJob.", "feedbackSize": 100000,
"onTheFlyMasking": false }'
'http://<myMaskingEngine>:8282/masking/api/masking-jobs'
```

RESPONSE

```
{ "jobId": 1, "jobName": "some_masking_job", "rulesetId": 7,
"createdBy": "Axistech", "createdTime": "2017-07-04T00:31:00.952+0000",
"environmentId": 2, "feedbackSize": 100000, "jobDescription": "This
```

```
example illustrates a MaskingJob with just a handful of the possible
fields set. It is meant to exemplify a simple JSON body that can be
passed to the endpoint to create a MaskingJob.", "maxMemory": 1024,
"minMemory": 1024, "multiTenant": false, "numInputStreams": 1,
"onTheFlyMasking": false }
```

!!! note
The response includes the ID of the newly created job (“jobId”).

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/job/createMaskingJob

Running a Masking Job

Create a new execution of a masking job.

Object references you will need:

- The ID of the job you want to run

REQUEST

```
curl -X POST --header 'Content-Type: application/json' --header 'Accept:
application/json' --header 'Authorization:
e23bad24-8760-4091-a131-34f235d9b2d6' -d '{ "jobId": 1 }'
'http://<myMaskingEngine>:8282/masking/api/executions'
```

RESPONSE

```
{ "executionId": 1, "jobId": 1, "status": "RUNNING"
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/execution/createExecution

Checking the Status of a Masking Job

Object references you will need:

- The ID of the execution you want to check (IN THE PATH)

!!! note
This execution id (1, in this example) is included in the PATH for this operation, NOT the payload.

```
The executions endpoint only returns status for the most recent job run, this is the expect
```

REQUEST

```
curl -X GET --header 'Accept: application/json' --header 'Authorization:
8935f7f7-6de6-40ba-80d8-d8956b71248b'
'http://<myMaskingEngine>:8282/masking/api/executions/1'
```

RESPONSE

```
{ "executionId": 1, "jobId": 1, "status": "SUCCEEDED"
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/execution/getExecutionById

API Calls for Creating an Inventory

Below are examples of requests you might enter and responses you might receive from the Masking API client. For commands specific to your masking engine, work with your interactive client at http://<myMaskingEngine>:8282/masking/api-client/

!!! warning
HTTPS (SSL/TLS) is recommended, but for explanatory purposes these examples use insecure HTTP

!!! info
In all code examples, replace <myMaskingEngine> with the hostname or IP address of your virtual machine.

Fetch Table Names from Database Connector

Object references you will need:

- The ID of the database connector to fetch tables for

!!! note
This database connector ID (1, in this example) is included in the PATH for this operation, NOT the payload.

REQUEST

```
curl -X GET --header 'Accept: application/json' --header 'Authorization:
7c856e3d-5b20-4261-b5fe-cc2ffcee5ae0'
'http://<myMaskingEngine>:8282/masking/api/database-connectors/1/fetch’
```

RESPONSE

```
[ "ALL_COLUMNS", "DBVERIFICATION_TABLE"]
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/databaseConnector/fetchTableMetadata

Example

See how to use this in the context of a script here.

Create Table Metadata

Object references you will need:

- The name of the table to create the metadata for
- The ruleset ID

REQUEST

```
curl -X POST --header 'Content-Type: application/json' --header 'Accept:
application/json' --header 'Authorization:
7c856e3d-5b20-4261-b5fe-cc2ffcee5ae0' -d '{ "tableName": "ALL_COLUMNS",
"rulesetId": 2 }'
'http://<myMaskingEngine>:8282/masking/api/table-metadata'
```

RESPONSE

```
{ "tableMetadataId": 2, "tableName": "ALL_COLUMNS", "rulesetId": 2
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/tableMetadata/createTableMetadata

Example

See how to use this in the context of a script

here.

Get All Column Metadata Belonging to Table Metadata

Object references you will need:

- The table metadata ID to get the columns for

!!! tip
This table metadata ID (2, in this example) is included in the QUERY STRING for this operation, NOT the payload.

REQUEST

```
curl -X GET --header 'Accept: application/json' --header 'Authorization:
7c856e3d-5b20-4261-b5fe-cc2ffcee5ae0'
'http://<myMaskingEngine>:8282/masking/api/column-metadata?table_metadata_id=2'
```

RESPONSE

```
[ { "columnMetadataId": 12, "columnName": "schoolnme",
"tableMetadataId": 2, "columnLength": 50, "isMasked": false,
"isPrimaryKey": false, "isIndex": false, "isForeignKey": false }, … ]
```

Note that the above response has been truncated due to its length for the purposes of this documentation.

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/columnMetadata/getAllColumnMetadata

Example

See how to use this in the context of a script here.

Update Column Metadata with Algorithm Assignment

Object references you will need:

- Column metadata ID for the column you wish to update

!!! tip
This column metadata ID (20, in this example) is included in the PATH for this operation, NOT the payload.

- Since the names can vary in the API and UI, you should use the names obtained through the API (these may not align with the UI).
- Algorithm name
- Domain name

REQUEST

```
curl -X PUT --header 'Content-Type: application/json' --header 'Accept:
application/json' --header 'Authorization:
7c856e3d-5b20-4261-b5fe-cc2ffcee5ae0' -d '{ "algorithmName":
"AddrLine2Lookup", "domainName": "ADDRESS_LINE2" }'
'http://<myMaskingEngine>:8282/masking/api/column-metadata/20'
```

RESPONSE

```
{ "columnMetadataId": 20, "columnName": "l2_address",
"tableMetadataId": 2, "algorithmName": "AddrLine2Lookup", "domainName":
"ADDRESS_LINE2", "columnLength": 512, "isMasked": true, "isPrimaryKey":
false, "isIndex": false, "isForeignKey": false
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/columnMetadata/updateColumnMetadata

Example

See how to use this in the context of a script here.

API Calls Involving File Upload and Download

File Download

API calls involving file download through API client are noteworthy because if the request fails, the API client will continue to show the "loading" icon indefinitely.

To avoid this, make all file download calls through CURL instead. An example of a file download call using CURL is below.

```
curl -X GET --header 'Accept: application/octet-stream' --header
'Authorization: ec443730-124e-4958-a872-324a975bb500'
-o "/home/user/downloads"
'http://<myMaskingEngine>:8282/masking/api/file-downloads/EXPORT-ZXhwb3J0X2RvY3VtZW50X2dGZU
```

The `-o` flag from above specifies the location to save the file to.

File Upload

API calls involving file upload are noteworthy because the generated
curl from the Masking API client will be missing the parameter referencing the file; as such, those commands from the Masking API
client will not work.

Instead, below are examples of working requests and responses for API
calls involving file upload.

For commands specific to your masking engine, work with your interactive
client at
http://<myMaskingEngine>:8282/masking/api-client/

!!! warning
HTTPS (SSL/TLS) is recommended, but for explanatory purposes these examples use insecure HTTP.

!!! note

In all code examples, replace <myMaskingEngine\> with the hostname or IP address of your virtual machine.

Creating a File Format

REQUEST

```
curl -X POST --header 'Content-Type: multipart/form-data' --header
'Accept: application/json' --header 'Authorization:
d1313dd8-2ed9-4699-8e88-2b6a089ae2a6' -F
fileFormat=@/path/to/file_format/delimited_format.txt -F
fileFormatType=DELIMITED
'http://<myMaskingEngine>:8282/masking/api/file-formats'
```

RESPONSE

```
{ "fileFormatId": 123, "fileFormatName": "delimited_format.txt",
"fileFormatType": "DELIMITED"
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/fileFormat/createFileFormat

Creating an SSH Key

REQUEST

```
curl -X POST --header 'Content-Type: multipart/form-data' --header
'Accept: application/json' --header 'Authorization:
d1313dd8-2ed9-4699-8e88-2b6a089ae2a6' -F
sshKey=@/path/to/ssh_key/this_file_name_is_your_ssh_key_name.txt
'http://<myMaskingEngine>:8282/masking/api/ssh-keys'
```

RESPONSE

```
{ "sshKeyName": "this_file_name_is_your_ssh_key_name.txt"
}
```

More info

http://<myMaskingEngine>:8282/masking/api-client/#!/sshKey/createSshKey

API Response Escaping

In Masking API responses, a backslash character (`\`) is escaped with an additional backslash character (`\\`). Special attention should be paid to this behavior in scenarios where an API response is passed to another system as an input, for example, an automation system.

In such cases, a response might need special handling to convert the double backslash sequence (`\\`) back to a single backslash (`\`).

For example, consider the `POST /ssh-key` API for creating/installing an SSH Key. The result when the `POST /ssh-key` API is called with a file name that contains `\` , such as `\key.txt` , is shown below.

Response Body:

```
{
  "errorMessage": "SSH Key file name should not contain [\\, ;, %, ?, :]"
}
```

Backwards Compatibility API Usage

!!! note
In all examples, replace <myMaskingEngine> with the hostname or IP address of your virtual machine. |

In all examples, replace <myMaskingEngine> with the hostname or IP address of your virtual machine.

API Versioning Context

The Masking API being shipped with the 5.2 series of releases of the Delphix Masking Engine is version v5.0.0 in accordance with the Semantic Versioning format:
http://semver.org/.
In subsequent maintenance and major releases of the Masking product, the Masking API may be updated and a new API version will be released *(e.g. v5.0.1, v5.1.0, etc).* As scripts using the new Masking API are being written, they must reference an explicit API version or else there are no guarantees that the scripts will work on future releases of the Masking product.

Pinning Down a Version Number To Guarantee Backwards-Compatibility

'http://<myMaskingEngine>:8282/masking/api/v5.0.0/environments'

This is the format for specifying a version in the URL of an API request targeting the environments endpoints. The only possible version value for the Masking API in the first 5.2 release is v5.0.0. As more releases of the Masking product are shipped in the future, the set of possible versions will expand.

Scripts that specifically pin down the version of the Masking API in the URL will continue to work upon future upgrades of the Masking product--even if a newer version of the API is available in the future Masking product–with the exception that
Incubating API Endpoints
are never guaranteed to be backwards-compatible.

For example, consider the scenario where a script is being developed today with a pinned down version v5.0.0 in the URL of the API requests. Upon upgrade to a future release of the Masking product that has the API v5.1.0 available, the same, untouched script that was developed with the pinned down version v5.0.0 in the URL of the API requests is expected to continue working. That said, in order to leverage any new features of the API v5.1.0, the original script will need to be updated to specify the new API version in the URL, and the requests may need to be updated to conform to the new API specification.

Omitted Version Numbers

'http://<myMaskingEngine>:8282/masking/api/environments'

This is the format for not specifying a version in the URL of an API request targeting the environments endpoints. When the API version number is omitted, the latest API version is taken as a default. In the first 5.2 release, an API request with an omitted version number will be interpreted as a request against the v5.0.0 version of the API. In a future release that hypothetically has the API v5.3.0 available, an API request with an omitted version number will be interpreted as a request against the v5.3.0 version of the API.

Scripts that omit the version of the Masking API in the URL are not guaranteed to work upon future upgrades of the Masking product because the API specification may change between versions, and requests that conform to the old API specification may not work on the new API specification.

Incubating API Endpoints

Context

APIs that are released across the industry are expected to have a stable specification that consumers can depend on when writing scripts and automation. This notion of a stable API specification is at odds with the natural process of iteration and refinement that a newly released feature is expected to undergo. As such, in order to accommodate the anticipated iteration and refinement of this newly released Masking API, Delphix is introducing the notion of Incubating API endpoints.

Definition

An Incubating API endpoint is available for immediate use, but the specification of an Incubating API endpoint is subject to change in the future *(i.e. the specification is not stable)*.

Backwards-Compatibility of Incubating API Endpoints

There are no backwards-compatibility guarantees when using Incubating API endpoints, even when pinning down the API version number.

That said, it is not the case that an Incubating API will *always* change in a future release, but rather that it *might* change in a future release such that any scripts that were developed to use an Incubating API would need to be updated to work against a future release of the API.

!!! note All changes to the API *(not just backwards-incompatible changes)* will be documented and distributed with future releases of the API.

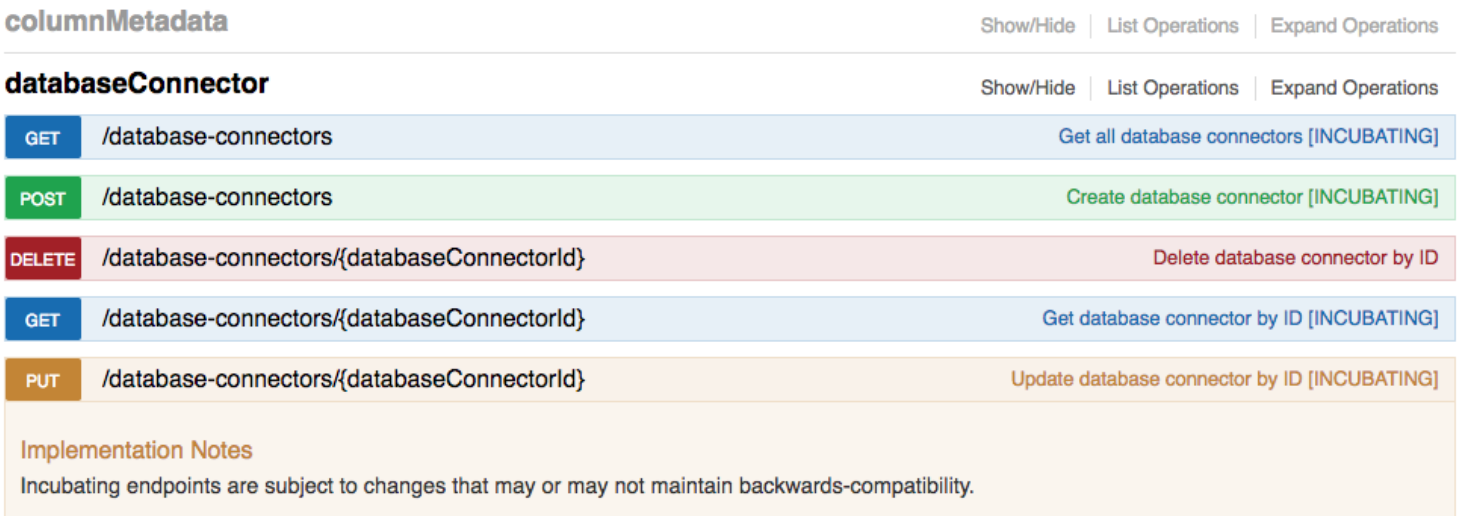
Backwards-incompatible changes to the API are known to be disruptive to automation built around the API, and therefore changes to Incubating APIs will be carefully considered and minimized.

List of Incubating API Endpoints

Refer to the The Masking API Client [Need to add link] to see the list of Incubating API endpoints.

All Incubating API endpoints are labeled with **INCUBATING** in their description, and they are also accompanied by an **Implementation Note** explaining the implications of an Incubating endpoint with respect to backwards-

compatibility.



Algorithm Extensions

Models

Algorithm

> **algorithmName (maxLength=500)**
>
> *String* Equivalent to the algorithm name saved by the user through the GUI. For out of the box algorithms, this will be a similar name as that in the GUI, but presented in a more user-friendly format.
>
> **algorithmType**
>
> *String* The type of algorithm
>
> **Enum:**
>
> *BINARY_LOOKUP*
>
> *CLEANSING*
>
> *LOOKUP*
>
> *MAPPLET*
>
> *MAPPING*
>
> *MINMAX*
>
> *REDACTION*
>
> *SEGMENT*
>
> *TOKENIZATION*
>
> **createdBy (optional; readOnly; maxLength=255)**
>
> *String* The name of the user that created the algorithm
>
> **description (optional; maxLength=255)**

String The description of the algorithm

algorithmExtension (optional)

Object

AlgorithmExtension

BinaryLookupExtension

fileReferenceIds (optional; maxLength=36)

array[String] A list of file reference UUID values returned from the endpoint for uploading files to the Masking Engine.

DataCleansingExtension

fileReferenceId (optional)

String The reference UUID value returned from the endpoint for uploading files to the Masking Engine. The file should contain a newline separated list of {value, replacement} pairs separated by the delimiter. No extraneous whitespace should be present.

delimiter (optional; minLength=1; maxLength=50; default="=")

String The delimiter string used to separate {value, replacement} pairs in the uploaded file

FreeTextRedactionExtension

blackListRedaction (optional; default=true)

Boolean Black list redaction if true, white list redaction if false.

lookupFileReferenceId (optional; maxLength=36)

String The reference UUID value returned from the endpoint for uploading the lookup file to the Masking Engine.

lookupRedactionValue (optional; maxLength=255)

String The value to use to redact items matching entries specified in the lookup file.

profileSetId (optional)

Integer The ID number of the profile set for defining the pattern matching to use for identifying values for redaction. format: int32

profileSetRedactionValue (optional; maxLength=255)

String The value to use to redact items matching patterns defined by the profile set.

MappingExtension

fileReferenceId (optional)

String The reference UUID value returned from the endpoint for uploading files to the Masking Engine. The file should contain a newline separated list of mapping values.

ignoreCharacters (optional; minimum=32; maximum=126)

array[Integer] The integer ASCII values of characters to ignore in the column data to map

MappletExtension

mappletInput (optional; maxLength=500)

String The name of the input variable for the custom algorithm

mappletOutput (optional; maxLength=500)

String The name of the output variable for the custom algorithm

fileReferenceId (optional; maxLength=36)

String The reference UUID value returned from the endpoint for uploading files to the Masking Engine.

MinMaxExtension

minValue (optional; minimum=0)

Integer The minimum value for a Number range used in conjunction with maxValue. This field cannot be combined with minDate or maxDate. format: int32

maxValue (optional; minimum=1)

Integer The maximum value for a Number range used in conjunction with and must be greater than minValue. This field cannot be combined with minDate or maxDate. format: int32

minDate (optional)

date The minimum value for a Date range used in conjunction with maxDate. The Date must be specified in one of the following formats according to RFC 3339 Section 5.6: "yyyy-MM-dd", "yyyy-MM-dd'T'HH:mm:ss.SSSZ", "yyyy-MM-dd'T'HH:mm:ss.SSS'Z'", or "EEE, dd MMM yyyy HH:mm:ss zzz". If a timezone is not specified, the Date will be interpreted as UTC. This field cannot be combined with minValue or maxValue. format: date

maxDate (optional)

date The maximum value for a Date range used in conjunction with and must be greater than minDate. The Date must be specified in one of the following formats according to RFC 3339 Section 5.6: "yyyy-MM-dd", "yyyy-MM-dd'T'HH:mm:ss.SSSZ", "yyyy-MM-dd'T'HH:mm:ss.SSS'Z'", or "EEE, dd MMM yyyy HH:mm:ss zzz". If a timezone is not specified, the Date will be interpreted as UTC. This field cannot be combined with minValue or maxValue. format: date

outOfRangeDefaultValue (optional; maxLength=255)

String The default replacement value for any value that is out-of-range.

SecureLookupExtension

fileReferenceId (optional; maxLength=36)

String The reference UUID value returned from the endpoint for uploading files to the Masking Engine.

SegmentMappingExtension

preservedRanges (optional)

array[SegmentMappingPreservedRange] List of character {offset, length} values specifying ranges of the real value to preserve. Offsets begin at 0

ignoreCharacters (optional)

array[Integer] List of decimal values specifying ASCII characters to ignore (not mask, not count as part of any segment) in the real value. For example, 65 would ignore 'A'

segments (optional; minItems=2; maxItems=36)

array[SegmentMappingSegment]

SegmentMappingPreservedRange

offset (optional)

Integer The character offset of the range of input to preserve

length (optional)

Integer The character length of the range of input to preserve

SegmentMappingSegment

length (optional; minimum=1; maximum=4)

Integer The length of the segment in digits. This must be 1 for alpha-numeric segments

minInt (optional; minimum=0; maximum=9999)

Integer The minimum value of the integer output range of the mapping function

maxInt (optional; minimum=0; maximum=9999)

Integer The maximum value of the integer output range of the mapping function

minChar (optional; minLength=1; maxLength=1)

String The minimum value of the character output range of the mapping function

maxChar (optional; minLength=1; maxLength=1)

String The maximum value of the character output range of the mapping function

explicitRange (optional)

String Explicitly specify the output range. Format depends on segment type and size

minRealInt (optional; minimum=0; maximum=9999)

Integer The minimum value of the integer range specifying which real values will be masked

maxRealInt (optional; minimum=0; maximum=9999)

Integer The maximum value of the integer range specifying which real values will be masked

minRealChar (optional; minLength=1; maxLength=1)

String The minimum value of the character range specifying which real values will be masked

maxRealChar (optional; minLength=1; maxLength=1)

String The maximum value of the character range specifying which real values will be masked

explicitRealRange (optional)

String Explicitly specify the range of input values that should be masked. Format depends on segment type and size

loginCredentials

Login credentials for the Masking Engine.

```
USERNAME="myUsername"
PASSWORD="myPassword"
```

helpers

```
#!/bin/bash

#
# This file contains helpers for the various Masking API cookbook scripts.
# This script uses jq to process JSON. More information can be found here - https://stedola
#

# Login and set the correct $AUTH_HEADER.
login() {
    echo "* logging in..."
    LOGIN_RESPONSE=$(curl -s $SSL_CERT -X POST -H 'Content-Type: application/json' -H 'Acce
{
  "username": "$USERNAME",
  "password": "$PASSWORD"
}
EOF)
    check_error "$LOGIN_RESPONSE"
    TOKEN=$(echo $LOGIN_RESPONSE | jq -r '.Authorization')
    AUTH_HEADER="Authorization: $TOKEN"
}

# Get all applications and select the first one. Place the applicationName in $APPLICATION_
get_application_id() {
    echo "* getting all applications and selecting first one"
    APPLICATIONS_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type
    check_error "$APPLICATIONS_RESPONSE"
    NUM_APPLICATIONS=$(echo $APPLICATIONS_RESPONSE | jq -r '._pageInfo.total')
    check_empty $NUM_APPLICATIONS "found no applications to use"
    APPLICATION_ID=$(echo $APPLICATIONS_RESPONSE | jq -r '.responseList[0].applicationName'
    echo "using application '$APPLICATION_ID'"
}
# Get all environments and select the first one. Place the environmentId in $ENVIRONMENT_ID
get_environment_id() {
    echo "* getting all environments and selecting first one"
    ENVIRONMENTS_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type
    check_error "$ENVIRONMENTS_RESPONSE"
    NUM_ENVIRONMENTS=$(echo $ENVIRONMENTS_RESPONSE | jq -r '._pageInfo.total')
    check_empty $NUM_ENVIRONMENTS "found no environments to use"
    ENVIRONMENT_ID=$(echo $ENVIRONMENTS_RESPONSE | jq -r '.responseList[0].environmentId')
    echo "using environment '$ENVIRONMENT_ID'"
}
# Get all database connectors and select the first one. Place the databaseConnectorId in $C
get_connector_id() {
    echo "* getting all database connectors and selecting first one"
    CONNECTORS_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type:
    check_error "$CONNECTORS_RESPONSE"
    NUM_CONNECTORS=$(echo $CONNECTORS_RESPONSE | jq -r '._pageInfo.total')
    check_empty $NUM_CONNECTORS "found no db connectors to use"
    CONNECTOR_ID=$(echo $CONNECTORS_RESPONSE | jq -r '.responseList[0].databaseConnectorId'
```

```
    echo "using database connector '$CONNECTOR_ID'"
}

# Get all database rulesets and select the first one. Place the databaseRulesetId in $RULES
get_ruleset_id() {
    echo "* getting all database rulesets and selecting first one"
    RULESETS_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type: ap
    check_error "$RULESETS_RESPONSE"
    NUM_RULESETS=$(echo $RULESETS_RESPONSE | jq -r '._pageInfo.total')
    check_empty $NUM_RULESETS "found no db rulesets to use"
    RULESET_ID=$(echo $RULESETS_RESPONSE | jq -r '.responseList[0].databaseRulesetId')
    echo "using database ruleset '$RULESET_ID'"
}
# Get all database tables for a database connector specificed by $CONNECTOR_ID. Select the
get_table() {
    echo "* getting all tables for connector '$CONNECTOR_ID' and selecting first one"
    TABLES_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type: appl
    check_error "$TABLES_RESPONSE"
    NUM_TABLES=$(echo $TABLES_RESPONSE | jq -r '. | length')
    check_empty $NUM_TABLES "found no tables to use"
    TABLE_NAME=$(echo $TABLES_RESPONSE | jq -r '.[0]')
    echo "using table '$TABLE_NAME'"
}

# Get all column metadata for table metadata specified by $TABLE_METADATA_ID. Select the fi
get_column_metadata_id() {
    echo "* getting all column metadata belonging to table metadata '$TABLE_METADATA_ID' an
    COLUMNS_RESPONSE=$(curl -s $SSL_CERT -X GET -H ''"$AUTH_HEADER"'' -H 'Content-Type: app
    check_error "$COLUMNS_RESPONSE"
    NUM_COLUMNS=$(echo $COLUMNS_RESPONSE | jq -r '. | length')
    check_empty $NUM_COLUMNS "found no columns to use"
    COLUMN_METADATA=$(echo $COLUMNS_RESPONSE | jq -r '.responseList[0]')
    COLUMN_METADATA_ID=$(echo $COLUMN_METADATA | jq -r '.columnMetadataId')
    echo "using column '$COLUMN_METADATA_ID'"
}

# Check if $1 is equal to 0. If so print out message specified in $2 and exit.
check_empty() {
    if [ $1 -eq 0 ]; then
        echo $2
        exit 1
    fi
}

# Check if $1 is an object and if it has an 'errorMessage' specified. If so, print the obje
check_error() {
    # jq returns a literal null so we have to check againt that...
    if [ "$(echo "$1" | jq -r 'if type=="object" then .errorMessage else "null" end')" != '
        echo $1
        exit 1
    fi
}
```

apiHostInfo

```
#!/bin/bash

#
# This file contains all the host information for the masking engine. Additionally,
# this file allows configuration of SSL if desired.
#


# update host name
HOST="myMaskingEngine.com"
API_PATH="masking/api"

# To connect via SSL, set $SSL to "on" and update the port if necessary (default 8443
).
# Additionally, you must update the path to the ssl certificate.
SSL="off"
SSL_PORT="8443"
# update cert name
SSL_CERT_PATH="self-signed.cer"

if [ "$SSL" = "on" ]
then
    MASKING_ENGINE="https://$HOST:$SSL_PORT/$API_PATH"
    SSL_CERT="--cacert $SSL_CERT_PATH"
else
    MASKING_ENGINE="http://$HOST:8282/$API_PATH"
    SSL_CERT=""
fi
```

createApplication

```
#!/bin/bash

#
# This script will login and create an application. It depends on helpers in the helpers sc
# information found in apiHostInfo and loginCredentials, respectively.
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

echo "* creating application 'App123'..."
curl $SSL_CERT -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type: application/json' -H 'Accept
{
    "applicationName": "App123"
}
EOF

echo
```

createInventory

```
#!/bin/bash

#
# This script will login, create table metadata for a given table name and ruleset, and the
# inventory (i.e. assign an algorithm and domain to a specific column of the table). It dep
# in the helpers script as well as host and login information found in apiHostInfo and logi
# This script uses jq to process JSON. More information can be found here - https://stedola
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

#
# When deciding which connector, ruleset, and table to use we simply use the first ones fou
# encouraged to modify this to suit your needs. Please see the respective functions in help
#
get_connector_id
get_ruleset_id
get_table

echo "* creating table metadata for ruleset id '$RULESET_ID' with table '$TABLE_NAME'..."
TABLE_METADATA_RESPONSE=$(curl $SSL_CERT -s -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type:
{
    "tableName": "$TABLE_NAME",
    "rulesetId": $RULESET_ID
}
EOF)
check_error "$TABLE_METADATA_RESPONSE"
TABLE_METADATA_ID=$(echo $TABLE_METADATA_RESPONSE | jq -r '.tableMetadataId')
echo "using table metadata '$TABLE_METADATA_ID'"

get_column_metadata_id

curl $SSL_CERT -X PUT -H ''"$AUTH_HEADER"'' -H 'Content-Type: application/json' -H 'Accept:
{
    "algorithmName": "AddrLine2Lookup",
    "domainName": "ADDRESS_LINE2"
}
EOF

echo
```

createEnvironment

```
#!/bin/bash

#
# This script will login and create an environment with an application. It depends on helpe
# script as well as host and login information found in apiHostInfo and loginCredentials, r
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

#
# When deciding which application to place the environment in we simply choose the first ap
# encouraged to modify this to suit your needs. Please see get_application_id in helpers fo
#
get_application_id

echo "* creating environment 'newEnv' in application '$APPLICATION_ID'..."
curl $SSL_CERT -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type: application/json' -H 'Accept
{
    "environmentName": "newEnv",
    "application": "$APPLICATION_ID",
    "purpose": "MASK"
}
EOF

echo
```

create DatabaseConnector

```
#!/bin/bash

#
# This script will login and create a database connector in an environment. It depends on h
# script as well as host and login information found in apiHostInfo and loginCredentials, r
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

#
# When deciding which environment to place the connector in we simply choose the first envi
# encouraged to modify this to suit your needs. Please see get_environment_id in helpers fo
#
get_environment_id

echo "* creating database connector 'connector' in environment '$ENVIRONMENT_ID'..."
curl $SSL_CERT -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type: application/json' -H 'Accept
{
    "connectorName": "connector",
    "databaseType": "ORACLE",
    "environmentId": $ENVIRONMENT_ID,
    "host": "myHost",
    "password": "myPassword",
    "port": 1234,
    "schemaName": "MYSCHEMA",
    "sid": "mySID",
    "username": "MYUSERNAME"
}
EOF

echo
```

create DatabaseRuleset

```
#!/bin/bash

#
# This script will login and create a database ruleset for a database connector. It depends
# script as well as host and login information found in apiHostInfo and loginCredentials, r
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

#
# When deciding which database connector we will use, we simply choose the first database c
# encouraged to modify this to suit your needs. Please see get_connector_id in helpers for
#
get_connector_id

echo "* creating database ruleset 'myRuleset' in db connector '$CONNECTOR_ID'..."
curl $SSL_CERT -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type: application/json' -H 'Accept
{
    "rulesetName": "myRuleset",
    "databaseConnectorId": $CONNECTOR_ID
}
EOF

echo
```

getSyncableObjects

```
#!/bin/bash

#
# This script is an "out of the box" script that goes through
# Login and GET /syncable-objects with the authentication
# token from Login
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

echo "* GET /syncable-objects from $EXPORT_ENGINE"
EXPORT_RESPONSE=$(curl $SSL_CERT -X GET -H '"$AUTH_HEADER"' -H 'Accept: application/json'
echo $EXPORT_RESPONSE
```

getSyncableObjectsExport

```
#!/bin/bash

#
# This script will log in and get all syncable objects on
# the Masking Engine and then, given a grouping command, save the
# exported document in a file and export all syncable objects
# in the indicated group
#
# Grouping command:
# algoType: -t <LOOKUP | BINARYLOOKUP | SEGMENT | TOKENIZATION | MAPPLET | KEY>
# algoCd: -n <RegexForAlgoName>
#
# Currently the response from GET /syncable-objects is saved
# to getobj_response.json, and the grouped input for /export
# in grouped_export_list.json, and the final export response
# into export_response.json. But of course, this can script
# can be modified to save to other specified places.
#

source apiHostInfo
eval $(cat loginCredentials)
source helpers

login

echo "* GET /syncable-objects"
GETOBJ_RESPONSE=$(curl $SSL_CERT -X GET -H '"$AUTH_HEADER"' -H 'Content-Type: application
echo $GETOBJ_RESPONSE > "./getobj_response.json"

# Create a temporary export list file
GROUPED_EXPORT_LIST="./grouped_export_list.json"
echo "[]" > $GROUPED_EXPORT_LIST

if [[ $1 == "-t" ]]; then
   ALGO_TYPE=$2
   echo "* Filter for all syncable objects of algorithm type $ALGO_TYPE"

   jq -c '.responseList[]' getobj_response.json | while read i; do
      if [[ $(echo $i | jq '.objectType') == \"$ALGO_TYPE\" ]]; then
         # The key to getting the correct json format here was to use
         # the --argjson instead of --arg. --arg will stringify everything
         # and escape all special characters like {, ", etc.
         echo $(cat $GROUPED_EXPORT_LIST | jq --argjson obj "$i" '. |= . + [$obj]') > $GROU
      fi
   done
elif [[ $1 == "-n" ]]; then
   ALGO_NAME_REGEX=$2
   echo "* Filter for all syncable objects where algorithmCd matches the regex $ALGO_NAME_R
```

```
    jq -c '.responseList[]' getobj_response.json | while read i; do
       if [[ "$(echo $i | jq '.objectIdentifier.algorithmName')" =~ \"$ALGO_NAME_REGEX\" ]];
           echo $(cat $GROUPED_EXPORT_LIST | jq --argjson obj "$i" '. |= . + [$obj]') > $GRO
       fi
    done
fi

echo "* Export syncable objects from $GROUPED_EXPORT_LIST"
EXPORT_RESPONSE=$(curl $SSL_CERT -X POST -H ''"$AUTH_HEADER"'' -H 'Content-Type: applicatio

# Save the grouped export response into a file
echo $EXPORT_RESPONSE > export_response.json
echo '* Completed exporting. Check "export_response.json" for the export document. This exp
```