



# Corporate Memory Control (cmemc)

v21.02

Manual



# Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	About eccenca Corporate Memory Control (cmemc)	4
1.2	Scope of delivery	5
<b>2</b>	<b>Installation</b>	<b>6</b>
2.1	Installation via pip	6
2.2	Installation via release package	6
2.2.1	Linux installation	6
2.2.2	MacOS installation	7
2.2.3	Windows installation	7
<b>3</b>	<b>Configuration</b>	<b>9</b>
<b>4</b>	<b>Reference</b>	<b>12</b>
4.1	Command group: admin	12
4.1.1	Command: admin bootstrap	12
4.1.2	Command: admin showcase	13
4.1.3	Command: admin status	13
4.1.4	Command: admin token	14
4.2	Command group: config	14
4.2.1	Command: config edit	15
4.2.2	Command: config list	15
4.3	Command group: dataset	16
4.3.1	Command: dataset create	16
4.3.2	Command: dataset delete	18
4.3.3	Command: dataset download	18
4.3.4	Command: dataset inspect	19
4.3.5	Command: dataset list	19
4.3.6	Command: dataset upload	19
4.4	Command group: graph	20
4.4.1	Command: graph count	20
4.4.2	Command: graph delete	21
4.4.3	Command: graph export	21
4.4.4	Command: graph import	22
4.4.5	Command: graph list	22
4.4.6	Command: graph open	23
4.4.7	Command: graph tree	23

4.5	Command group: project . . . . .	23
4.5.1	Command: project create . . . . .	24
4.5.2	Command: project delete . . . . .	24
4.5.3	Command: project export . . . . .	25
4.5.4	Command: project import . . . . .	26
4.5.5	Command: project list . . . . .	26
4.5.6	Command: project open . . . . .	26
4.6	Command group: query . . . . .	27
4.6.1	Command: query execute . . . . .	27
4.6.2	Command: query list . . . . .	29
4.6.3	Command: query open . . . . .	29
4.6.4	Command: query status . . . . .	30
4.7	Command group: vocabulary . . . . .	30
4.7.1	Command: vocabulary cache . . . . .	31
4.7.2	Command: vocabulary cache . . . . .	31
4.7.3	Command: vocabulary install . . . . .	31
4.7.4	Command: vocabulary list . . . . .	32
4.7.5	Command: vocabulary open . . . . .	32
4.7.6	Command: vocabulary uninstall . . . . .	33
4.8	Command group: workflow . . . . .	33
4.8.1	Command: workflow execute . . . . .	33
4.8.2	Command: workflow io . . . . .	34
4.8.3	Command: workflow list . . . . .	35
4.8.4	Command: workflow open . . . . .	36
4.8.5	Command: workflow status . . . . .	36
4.9	Command group: workspace . . . . .	36
4.9.1	Command: workspace export . . . . .	37
4.9.2	Command: workspace import . . . . .	37
4.9.3	Command: workspace reload . . . . .	37

# 1 Introduction

This manual describes how to install and setup and use *eccenca Corporate Memory Control* (cmemc), the command line client for eccenca Corporate Memory. cmemc is intended for system administrators and Linked Data Expert, who wants to automate / remote control activities on Corporate Memory.

To use this manual, cmemc users should have basic knowledge on command line interfaces, terminal usage and config file creation and editing.

This system manual includes the following parts:

- Installation
- Configuration

This document covers installation and basic usage pattern of cmemc and is not intended to be complete in terms of being a reference for all available options and commands. However, cmemc provides detailed documentation for users via the `--help` option.

The main documentation resource for cmemc <https://eccenca.com/go/cmemc>.

## 1.1 About eccenca Corporate Memory Control (cmemc)

cmemc is the eccenca Corporate Memory Command Line Interface (CLI). It is developed in python and build and delivered as a stand alone single binary for Linux and Windows.

Main features of cmemc include:

- List, edit and check configurations.
- List, create, delete, inspect datasets.
- List, import, export, delete or open graphs.
- List, import, export, create or delete projects.
- List, execute or open local and remote SPARQL queries.
- List, install, uninstall and open vocabularies.
- List, execute, open or inspect workflows.
- Import or export the workspace.

## 1.2 Scope of delivery

The cmemc release package consists of the following files:

- `cmemc` - the Linux ELF 64-bit LSB executable (x86-64, version 1 (SYSV), dynamically linked), tested with Ubuntu
- `cmemc-rhel` - the Linux ELF 64-bit LSB executable (x86-64, version 1 (SYSV), dynamically linked), tested with RHEL
- `cmemc.exe` - the PE32+ executable (console, x86-64), for Microsoft Windows, tested with Windows 10
- `cmemc_vXX.YY_Manual.pdf` - this document

## 2 Installation

cmemc can be installed using the python sources, using the release package or using the docker image.

### 2.1 Installation via pip

cmemc is available as an official pypi package<sup>1</sup> so installation can be done with pip:

```
$ pip install cmem-cmemc
```

### 2.2 Installation via release package

The cmemc distribution in the release package consists of stand alone binaries, so installation is not really needed.

cmemc can be started from a local path and also from a central binary path, such as `/usr/local/bin`. The only needed installation activity is to copy the binary to a path on your system which is in the `PATH` variable.

#### 2.2.1 Linux installation

As a first step, output the content of the `PATH` variable in order to determine, the path to use:

```
user@ubuntu:/home/user/$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
```

Then unzip the distribution package and copy the binary to an acceptable path (in this example: `/usr/local/bin`)

**Note:** XXX depends on your actual version

```
user@ubuntu:/home/user/$ unzip cmemc-vXXX.zip
user@ubuntu:/home/user/$ cp cmemc-vXXX/cmemc /usr/local/bin
user@ubuntu:/home/user/$ chmod +x /usr/local/bin/cmemc
```

Finally, test your installation.

**Note:** XXX depends on your actual version

---

<sup>1</sup><https://pypi.org/project/cmem-cmemc/>

```
user@ubuntu:/home/user/$ cmemc --version
cmemc, version XXX
```

In case you are using bash or zsh as your shell, you can optionally enable tab completion for cmemc. This is documented on the [click framework homepage](#)<sup>2</sup>.

In order to enable tab completion with **bash** run the following command in your shell:

```
eval "$(_CMEMC_COMPLETE=source cmemc)"
```

In order to enable tab completion with **zsh** run the following command in your shell:

```
eval "$(_CMEMC_COMPLETE=source_zsh cmemc)"
```

You may want to add the corresponding line to your `.bashrc` or `.zshrc` file for your convenience.

### 2.2.2 MacOS installation

There is no officially supported MacOS binary. Please use the installation with pip method.

As an alternative installation method, you can use brew:

```
brew install eccenca/main/cmemc
```

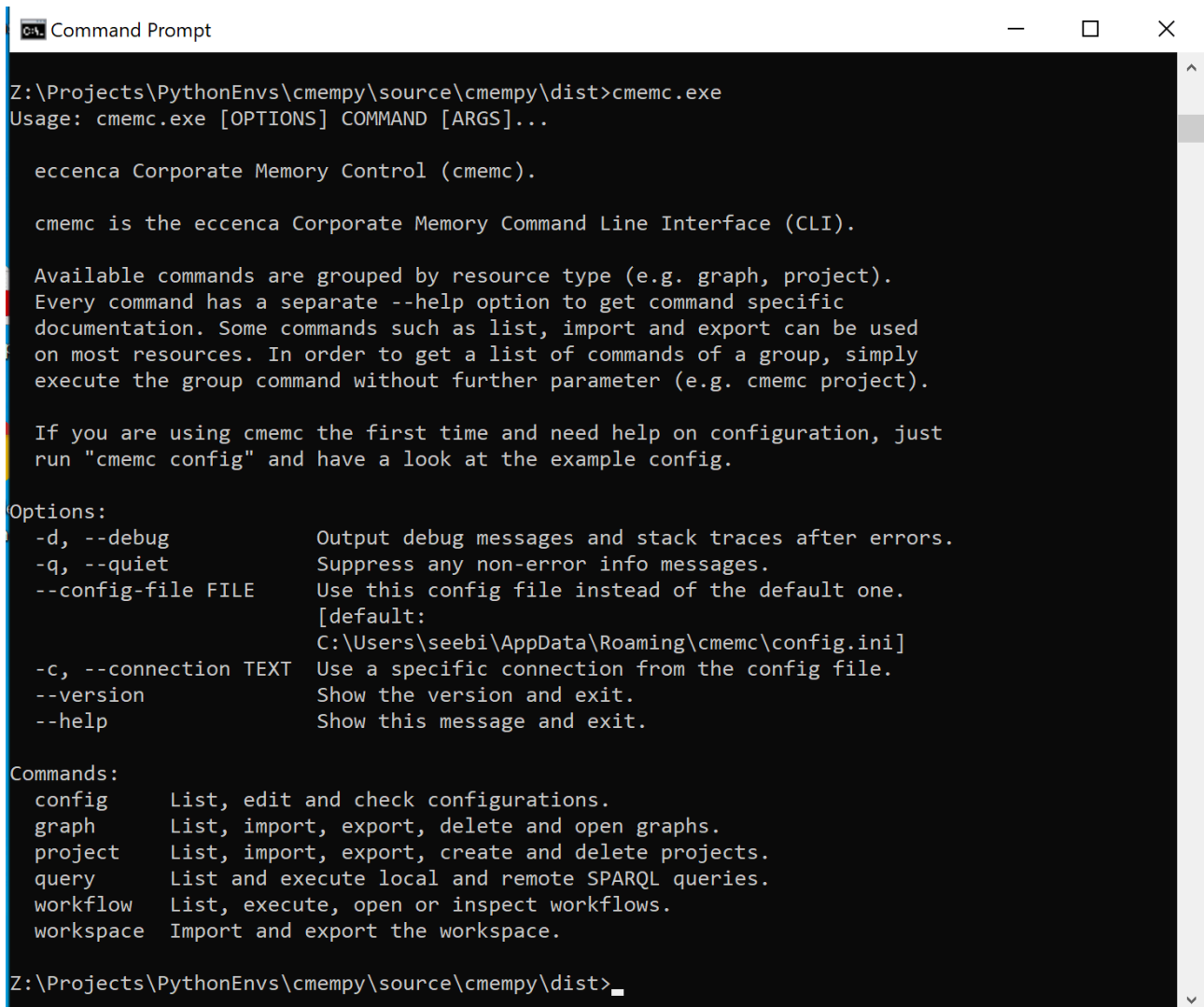
### 2.2.3 Windows installation

The installation for Windows is similar. As a first step, unzip the distribution file ( `cmemc-vXXX.zip` ), then open `cmd.exe` and go to the directory where the cmemc files are extracted. Then you can start `cmemc.exe` .

**Note:** XXX depends on your actual version

---

<sup>2</sup><https://click.palletsprojects.com/en/7.x/bashcomplete/#activation>



```
Command Prompt

Z:\Projects\PythonEnvs\cmempy\source\cmempy\dist>cmemc.exe
Usage: cmemc.exe [OPTIONS] COMMAND [ARGS]...

eccenca Corporate Memory Control (cmemc).

cmemc is the eccenca Corporate Memory Command Line Interface (CLI).

Available commands are grouped by resource type (e.g. graph, project).
Every command has a separate --help option to get command specific
documentation. Some commands such as list, import and export can be used
on most resources. In order to get a list of commands of a group, simply
execute the group command without further parameter (e.g. cmemc project).

If you are using cmemc the first time and need help on configuration, just
run "cmemc config" and have a look at the example config.

Options:
  -d, --debug          Output debug messages and stack traces after errors.
  -q, --quiet          Suppress any non-error info messages.
  --config-file FILE   Use this config file instead of the default one.
                       [default:
                       C:\Users\seebi\AppData\Roaming\cmemc\config.ini]
  -c, --connection TEXT Use a specific connection from the config file.
  --version            Show the version and exit.
  --help              Show this message and exit.

Commands:
  config    List, edit and check configurations.
  graph     List, import, export, delete and open graphs.
  project   List, import, export, create and delete projects.
  query     List and execute local and remote SPARQL queries.
  workflow  List, execute, open or inspect workflows.
  workspace Import and export the workspace.

Z:\Projects\PythonEnvs\cmempy\source\cmempy\dist>
```

Figure 2.1: Example execution of cmemc under Windows



## 3 Configuration

cmemc needs to know where your Corporate Memory is deployed. For this, you need to provide some key variables in a configuration file. Per default, cmemc looks for this configuration file on a reasonable place depending on your operating system.

For Linux, this is `$HOME/.config/cmemc/config.ini`.

For Windows, this is `%APPDATA%\cmemc\config.ini`.

**Note:** `USER` is your actual user name.

Once you start cmemc the first time, it will create an empty config file at this location and will output a general introduction. In order to do so, open the terminal application of your choice.

**Note:** All further examples given here are based on Linux commands. For Windows, the output is the same, however, you need to start cmemc as `cmemc.exe`.

```
user@ubuntu:/home/user/$ cmemc
Empty config created: /home/user/.config/cmemc/config.ini
Usage: cmemc [OPTIONS] COMMAND [ARGS]...

eccenca Corporate Memory Control (cmemc).

cmemc is the eccenca Corporate Memory Command Line Interface (CLI).

Available commands are grouped by affecting resource type (such as graph,
project and query). Each command / group has a separate --help screen to
get command / group specific documentation.

In order to see possible commands in a command group, simply execute the
group command without further parameter (e.g. cmemc project). Some
commands such as list, import and export can be executed in most command
groups. Please have a look at the cmemc manual page for more
information:

    https://eccenca.com/go/cmemc

Options:
  -d, --debug          Output debug messages and stack traces after errors.
```

```
-q, --quiet          Suppress any non-error info messages.
--config-file FILE   Use this config file instead of the default one.
                     [default: /Users/seebi/Library/Application
                     Support/cmемc/config.ini]

-c, --connection TEXT Use a specific connection from the config file.
--version            Show the version and exit.
-h, --help           Show this message and exit.
```

#### Commands:

```
config      List, edit and check configurations.
dataset     List, create, delete, inspect datasets.
graph       List, import, export, delete or open graphs.
project     List, import, export, create or delete projects.
query       List, execute or open local and remote SPARQL queries.
vocabulary  List, install, uninstall and open vocabularies.
workflow    List, execute, open or inspect workflows.
workspace   Import or export the workspace.
```

You should now edit your config file and add credentials and URL parameter to your Corporate Memory deployment. You either search the config manually in your home directory or you can use the `config edit` command, which opens the config file in your default text editor.

```
user@ubuntu:/home/user/$ cmemc config edit
Open editor for config file /home/user/.config/cmемc/config.ini
```

The rules for the config file are similar to a Windows INI file and are explained in detail at [docs.python.org](https://docs.python.org/3/library/configparser.html)<sup>1</sup>. Here is an basic example:

```
[my-local]
CMEM_BASE_URI=http://localhost/
OAUTH_GRANT_TYPE=client_credentials
OAUTH_CLIENT_ID=cmem-service-account
OAUTH_CLIENT_SECRET=c9c12831-000c-464b-9b1d-2d8b7e20df6a
```

This basically creates a named section `my-local` which is a connection to a Corporate Memory deployment on `http://localhost`. The authorization will be done with a system account `cmem-service-account` and the given client secret. Using this combination of config parameter is based on a typical installation where all components are available under the same hostname.

However, if you need to fine tune all locations, the following config file parameter can be used in addition to this example:

<sup>1</sup><https://docs.python.org/3/library/configparser.html>

- `DI_API_ENDPOINT` - Data Integration API endpoint, default: `CMEM_BASE_URI/dataintegration`
- `DP_API_ENDPOINT` - Data Platform API endpoint, default: `CMEM_BASE_URI/dataplatfom`
- `OAuth_TOKEN_URI` - OAuth 2.0 Token endpoint, default: `CMEM_BASE_URI/auth/realms/cmem/protocol/openid-connect/token`
- `OAuth_GRANT_TYPE` - OAuth 2.0 grant type, default: `client_credentials`
- `OAuth_USER` - Username to retrieve the token, default: `admin` , only if `OAuth_GRANT_TYPE` is `password`
- `OAuth_PASSWORD` - Password to retrieve the token, default: `admin` , only if `OAuth_GRANT_TYPE` is `password`
- `OAuth_CLIENT_ID` - OAuth 2.0 client id, default: `cmem-service-account`
- `OAuth_CLIENT_SECRET` - OAuth 2.0 client secret, default: `secret` , only if `OAuth_GRANT_TYPE` is `client_credentials`
- `SSL_VERIFY` - Use SSL verification for requests to DP/DI default: `True`
- `OAuth_AUTH_TOKEN` - a pre-fetched auth token, only if `OAuth_GRANT_TYPE` is `prefetched_token`

In order to verify your configuration, you should try to get a list of graphs via cmemc:

```
user@ubuntu:/home/user/$ cmemc -c my-local graph list
https://ns.eccenca.com/example/data/vocabs/
https://vocab.eccenca.com/shacl/
urn:elds-backend-access-conditions-graph
https://ns.eccenca.com/data/queries/
```

If you get a similar list of graphs, you successfully configured cmemc to access your deployment.

## 4 Reference

This section lists the help texts of all commands as a reference and to search for it.

### 4.1 Command group: admin

Usage: cmemc admin [OPTIONS] COMMAND [ARGS]...

Import bootstrap data and create showcase data.

This command group consists of commands for setting up and configuring eccenca Corporate Memory.

Options:

-h, --help Show this message and exit.

Commands:

bootstrap Update/Import bootstrap data.

showcase Create showcase data.

status Output health and version information.

token Fetch and output an access token.

workspace Import, export and reload the project workspace.

#### 4.1.1 Command: admin bootstrap

Usage: cmemc admin bootstrap [OPTIONS]

Update/Import bootstrap data.

This command imports the bootstrap data needed for managing shapes, access conditions, the query catalog and the vocabulary catalog.

Note: There is currently no deletion mechanism for the bootstrap data, so you need to remove the graphs manually (or just remove all graphs).

Options:

--import Delete existing bootstrap data if present and import bootstrap

data which was delivered

-h, --help Show this message and exit.

#### 4.1.2 Command: admin showcase

Usage: cmemc admin showcase [OPTIONS]

Create showcase data.

This command creates a showcase scenario of multiple graphs including integration graphs, shapes, statement annotations etc.

Note: There is currently no deletion mechanism for the showcase data, so you need to remove the showcase graphs manually (or just remove all graphs).

Options:

--scale INTEGER The scale factor provides a way to set the target size of the scenario. A value of 10 results in around 40k triples, a value of 50 in around 350k triples. [default: 10]

--create Delete old showcase data if present and create new showcase databased on the given scale factor.

--delete Delete existing showcase data if present.

-h, --help Show this message and exit.

#### 4.1.3 Command: admin status

Usage: cmemc admin status [OPTIONS]

Output health and version information.

This command outputs version and health information of the selected deployment. In addition to that, this command warns you if the target version of your cmemc client is newer than the version of your backend.

To get status information of all configured deployments use this command in combination with xargs:

```
cmemc config list | xargs -i cmemc -c {} admin status
```

**Options:**

-h, --help Show this message and exit.

#### 4.1.4 Command: admin token

Usage: cmemc admin token [OPTIONS]

Fetch and output an access token.

This command can be used to check for correct authentication as well as to use the token with wget / curl or similar standard tools:

```
curl -H "Authorization: Bearer $(cmemc admin token)" https://your-cmem/dataplatform/api/custom/slug
```

**Options:**

--raw Outputs raw JSON. Note that this option will always try to fetch a new JSON token response. In case you are working with OAUTH\_GRANT\_TYPE=prefetched\_token, this may lead to an error.

-h, --help Show this message and exit.

## 4.2 Command group: config

Usage: cmemc config [OPTIONS] COMMAND [ARGS]...

List and edit configurations.

Configurations are identified by the section identifier in the config file. Each configuration represent a Corporate Memory deployment with its specific access method as well as credentials.

A minimal configuration which uses client credentials has the following entries:

[example.org]

CMEM\_BASE\_URI=https://cmem.example.org/

OAUTH\_GRANT\_TYPE=client\_credentials

OAUTH\_CLIENT\_ID=cmem-service-account

OAUTH\_CLIENT\_SECRET=my-secret-account-pass

Note that `OAuthGrantType` can be either `client_credentials`, `password` or `prefetched_token`.

In addition to that, the following config parameters can be used as well:

`SSL_VERIFY=False` - for ignoring certificate issues (not recommended)  
`DP_API_ENDPOINT=URL` - to point to a non-standard DataPlatform location  
`DI_API_ENDPOINT=URL` - to point to a non-standard DataIntegration location  
`OAuthTokenUri=URL` - to point to an external IdentityProvider location  
`OAuthUser=username` - only if `OAuthGrantType=password`  
`OAuthPassword=password` - only if `OAuthGrantType=password`  
`OAuthAccessToken=token` - only if `OAuthGrantType=prefetched_token`

In order to request passwords on start, you can use the following parameter instead the `PASSWORD` parameter: `OAuthPasswordEntry=True`  
`OAuthClientSecretEntry=True`.

#### Options:

`-h, --help` Show this message and exit.

#### Commands:

`edit` Edit the user-scope configuration file.  
`list` List configured connections.

### 4.2.1 Command: config edit

Usage: `cmemc config edit [OPTIONS]`

Edit the user-scope configuration file.

#### Options:

`-h, --help` Show this message and exit.

### 4.2.2 Command: config list

Usage: `cmemc config list [OPTIONS]`

List configured connections.

This command lists all configured connections from the currently used config file.

The connection identifier can be used with the `--connection` option in order to use a specific Corporate Memory instance.

In order to apply commands on more than one instance, you need to use typical unix gear such as `xargs` or `parallel`:

```
cmemc config list | xargs -I % sh -c 'cmemc -c % admin status'
```

```
cmemc config list | parallel --jobs 5 cmemc -c {} admin status
```

Options:

`-h, --help` Show this message and exit.

### 4.3 Command group: dataset

Usage: `cmemc dataset [OPTIONS] COMMAND [ARGS]...`

List, create, delete, inspect datasets.

This command group allows for managing workspace datasets as well as dataset file resources. Datasets can be created and deleted. File resources can be uploaded and downloaded. Details of dataset parameter can be listed with `inspect`.

Datasets are identified with a combined key of the project ID and the project internal dataset ID (e.g: `my-project:my-dataset`). To get a list of datasets, use the `list` command.

Options:

`-h, --help` Show this message and exit.

Commands:

<code>create</code>	Create a dataset.
<code>delete</code>	Delete datasets.
<code>download</code>	Download the resource file of a dataset.
<code>inspect</code>	Display meta data of a dataset.
<code>list</code>	List available datasets.
<code>upload</code>	Upload a resource file to a dataset.

#### 4.3.1 Command: dataset create

Usage: `cmemc dataset create [OPTIONS] [DATASET_FILE]`



Create a dataset.

Datasets are created in projects and can have associated file resources. Each dataset has a type (such as 'csv') and a list of parameter which can change or specify the dataset behaviour.

To get more information on possible dataset types and parameter on these types, use the '--help-types' and '--help-parameter' options.

Example: `cmemc dataset create --project my-project --type csv my-file.csv`

#### Options:

<code>-t, --type TEXT</code>	The dataset type of the dataset to create. Example types are 'csv', 'json' and 'eccencaDataPlatform' (-> Knowledge Graph).
<code>--project TEXT</code>	The project, where you want to create the dataset in. If there is only one project in the workspace, this option can be omitted.
<code>-p, --parameter &lt;TEXT TEXT&gt;...</code>	A set of key/value pairs. Each dataset type has different parameters (such as charset, arraySeparator, ignoreBadLines, ...). In order to get a list of possible parameter, use the '--help-parameter' option.
<code>--replace</code>	Replace remote file resources in case there already exists a file with the same name.
<code>--id TEXT</code>	The dataset ID of the dataset to create. The dataset ID will be automatically created in case it is not present.
<code>--help-types</code>	Lists all possible dataset types on given Corporate Memory instance. Note that this option already needs access to the instance.
<code>--help-parameter</code>	Lists all possible (optional and mandatory) parameter for a dataset type. Note that this option already needs access to the instance.
<code>-h, --help</code>	Show this message and exit.

### 4.3.2 Command: dataset delete

Usage: `cmemc dataset delete [OPTIONS] [DATASET_IDS]...`

Delete datasets.

This deletes existing datasets in integration projects from Corporate Memory. Datasets will be deleted without prompting! Dataset resources will not be deleted.

Example: `cmemc dataset delete my_project:my_dataset`

Datasets can be listed by using the '`cmemc dataset list`' command.

Options:

- `-a, --all` Delete all datasets. This is a dangerous option, so use it with care.
- `--project TEXT` In combination with the '`--all`' flag, this option allows for deletion of all datasets of a certain project. The behaviour is similar to the '`dataset list --project`' command.
- `-h, --help` Show this message and exit.

### 4.3.3 Command: dataset download

Usage: `cmemc dataset download [OPTIONS] DATASET_ID OUTPUT_PATH`

Download the resource file of a dataset.

This command downloads the file resource of a dataset to your local file system or to standard out (-). Note that this is not possible for dataset types such as Knowledge Graph (`eccencaDataplatform`) or SQL endpoint (`sqlEndpoint`).

Without providing an output path, the output file name will be the same as the remote file resource.

Datasets can be listed by using the '`cmemc dataset list`' command.

Options:

- `--replace` Replace existing files. This is a dangerous option, so use it with care.

```
-h, --help Show this message and exit.
```

#### 4.3.4 Command: dataset inspect

```
Usage: cmemc dataset inspect [OPTIONS] DATASET_ID
```

Display meta data of a dataset.

Options:

```
--raw          Outputs raw JSON.  
-h, --help     Show this message and exit.
```

#### 4.3.5 Command: dataset list

```
Usage: cmemc dataset list [OPTIONS]
```

List available datasets.

Outputs a list of datasets IDs which can be used as reference for the dataset create and delete commands.

Options:

```
--project TEXT  The project, from which you want to list the datasets.  
                Project IDs can be listed with the 'project list' command.  
  
--raw           Outputs raw JSON objects of dataset search API response.  
--id-only       Lists only dataset identifier and no labels or other meta  
                data. This is useful for piping the ids into other cmemc  
                commands.  
  
-h, --help     Show this message and exit.
```

#### 4.3.6 Command: dataset upload

```
Usage: cmemc dataset upload [OPTIONS] DATASET_ID INPUT_PATH
```

Upload a resource file to a dataset.

This command uploads a file to a dataset. The content of the uploaded file replaces the remote file resource. The name of the remote file resource is

not changed.

Warning: If the remote file resource is used in more than one dataset, the other datasets are also affected by this command.

Warning: The content of the uploaded file is not tested, so uploading a json file to an xml dataset will result in errors.

Datasets can be listed by using the 'cmemc dataset list' command.

Example: `cmemc dataset upload cmem:my-dataset new-file.csv`

Options:

`-h, --help` Show this message and exit.

## 4.4 Command group: graph

Usage: `cmemc graph [OPTIONS] COMMAND [ARGS]...`

List, import, export, delete or open graphs.

Graphs are identified by an IRI. The get a list of existing graphs, execute the list command or use tab-completion.

Options:

`-h, --help` Show this message and exit.

Commands:

`count` Count triples in graph(s).

`delete` Delete graph(s) from the store.

`export` Export graph(s) as NTriples to stdout (-), file or directory.

`import` Import graph(s) to the store.

`list` List accessible graphs.

`open` Open / explore a graph in the browser.

`tree` Show graph tree(s) of the owl:imports hierarchy.

### 4.4.1 Command: graph count

Usage: `cmemc graph count [OPTIONS] [IRIS]...`

Count triples in graph(s).

This command lists graphs with their triple count. Counts are done without following imported graphs.

Options:

- a, --all           Count all graphs
- s, --summarize    Display only a sum of all counted graphs together
- h, --help         Show this message and exit.

#### 4.4.2 Command: graph delete

Usage: cmemc graph delete [OPTIONS] [IRIS]...

Delete graph(s) from the store.

Options:

- a, --all           Delete all writeable graphs.
- include-imports   Delete selected graph(s) and all writeable graphs which are imported from these selected graph(s).
- h, --help         Show this message and exit.

#### 4.4.3 Command: graph export

Usage: cmemc graph export [OPTIONS] [IRIS]...

Export graph(s) as NTriples to stdout (-), file or directory.

In case of file export, data from all selected graphs will be concatenated in one file. In case of directory export, .graph and .ttl files will be created for each graph.

Options:

- a, --all           Export all readable graphs.
- include-imports   Export selected graph(s) and all graphs which are imported from these selected graph(s).
- create-catalog    In addition to the .ttl and .graph files, cmemc will create an XML catalog file (catalog-v001.xml) which can be used by applications such as Protégé.
- output-dir DIRECTORY   Export to this directory.

```

--output-file FILE          Export to this file. [default: -]
-t, --filename-template TEXT Template for the export file name(s). Used
                             together with --output-dir. Possible
                             placeholders are (Jinja2): {{hash}} - sha256
                             hash of the graph IRI, {{iriname}} - graph IRI
                             converted to filename, {{connection}} - from
                             the --connection option and {{date}} - the
                             current date as YYYY-MM-DD. The file suffix
                             will be appended. Needed directories will be
                             created. [default: {{hash}}]

-h, --help                  Show this message and exit.

```

#### 4.4.4 Command: graph import

Usage: cmemc graph import [OPTIONS] INPUT\_PATH [IRI]

Import graph(s) to the store.

If input is an directory, it scans for file-pairs such as xxx.ttl and xxx.ttl.graph where xxx.ttl is the actual triples file and xxx.ttl.graph contains the graph IRI as one string: "https://mygraph.de/xxx/". If input is a file, content will be uploaded to IRI. If --replace is set, the data will be overwritten, if not, it will be added.

Options:

```

--replace  Replace (overwrite) original graph data.
-h, --help Show this message and exit.

```

#### 4.4.5 Command: graph list

Usage: cmemc graph list [OPTIONS]

List accessible graphs.

Options:

```

--raw          Outputs raw JSON of the graphs list API response.
--id-only      Lists only graph identifier (IRIs) and no labels
               or other meta data. This is useful for piping the
               IRIs into other commands.

--filter <CHOICE TEXT>... Filter graphs based on effective access

```

conditions or import closure. First parameter CHOICE can be 'access' or 'imported-by'. The second parameter can be 'readonly' or 'writeable' in case of 'access' or any readable graph in case of 'imported-by'.

-h, --help Show this message and exit.

#### 4.4.6 Command: graph open

Usage: cmemc graph open [OPTIONS] IRI

Open / explore a graph in the browser.

Options:

-h, --help Show this message and exit.

#### 4.4.7 Command: graph tree

Usage: cmemc graph tree [OPTIONS] [IRIS]...

Show graph tree(s) of the owl:imports hierarchy.

You can output one or more trees of the import hierarchy.

Imported graphs which do not exist are shown as [missing: IRI]. Imported graphs which will result in an import cycle are shown as [ignored: IRI]. Otherwise each graph is shown with label and IRI or only as IRI (in case of --id-only usage).

Options:

-a, --all Show tree of all (readable) graphs.  
--raw Outputs raw JSON of the graph importTree API response.  
--id-only Shows only graph IRIs in the tree and no labels.  
-h, --help Show this message and exit.

### 4.5 Command group: project

Usage: cmemc project [OPTIONS] COMMAND [ARGS]...

List, import, export, create or delete projects.

Projects are identified by an PROJECTID. To get a list of existing projects, execute the list command or use tab-completion.

Options:

-h, --help Show this message and exit.

Commands:

create Create empty new project(s).  
delete Delete project(s).  
export Export project(s) to file(s).  
import Import a project from a file.  
list List available projects.  
open Open projects in the browser.

#### 4.5.1 Command: project create

Usage: cmemc project create [OPTIONS] PROJECT\_IDS...

Create empty new project(s).

This creates one or more new projects. Existing projects will not be overwritten.

Example: cmemc project create my\_project

Projects can be listed by using the 'cmemc project list' command.

Options:

-h, --help Show this message and exit.

#### 4.5.2 Command: project delete

Usage: cmemc project delete [OPTIONS] [PROJECT\_IDS]...

Delete project(s).

This deletes existing data integration projects from Corporate Memory. Projects will be deleted without prompting!

Example: cmemc project delete my\_project



Projects can be listed by using the 'cmemc project list' command.

Options:

- a, --all Delete all projects. This is a dangerous option, so use it with care.
- h, --help Show this message and exit.

### 4.5.3 Command: project export

Usage: cmemc project export [OPTIONS] [PROJECT\_IDS]...

Export project(s) to file(s).

Projects can be exported with different export formats. The default type is a zip archive which includes meta data as well as dataset resources. If more than one project is exported, a file is created for each project. By default, these files are created in the current directory and with a descriptive name (see --template option default).

Example: cmemc project export my\_project

Available projects can be listed by using the 'cmemc project list' command.

You can use the template string to create subdirectories as well: cmemc config list | parallel -I% cmemc -c % project export --all -t "dump/{{connection}}/{{date}}-{{id}}.project"

Options:

- a, --all Export all projects.
- o, --overwrite Overwrite existing files. This is a dangerous option, so use it with care.
- output-dir DIRECTORY Directory, where the project files will be created. This directory will be created as well it does not exists. [default: .]
- type TEXT Type of the exported project file(s). [default: xmlZip]
- t, --filename-template TEXT Template for the export file name(s). Possible placeholders are (Jinja2): {{id}} (the project

```
ID), {{connection}} (from the --connection
option) and {{date}} (the current date as
YYYY-MM-DD). The file suffix will be appended.
Needed directories will be created. [default:
{{date}}-{{connection}}-{{id}}.project]
```

```
-h, --help          Show this message and exit.
```

#### 4.5.4 Command: project import

```
Usage: cmemc project import [OPTIONS] FILE PROJECT_ID
```

Import a project from a file.

Example: `cmemc project import my_project.zip my_project`

Options:

```
-h, --help  Show this message and exit.
```

#### 4.5.5 Command: project list

```
Usage: cmemc project list [OPTIONS]
```

List available projects.

Outputs a list of project IDs which can be used as reference for the project create, delete, export and import commands.

Options:

```
--raw      Outputs raw JSON.
--id-only   Lists only project identifier and no labels or other meta data.
            This is useful for piping the IDs into other commands.
```

```
-h, --help  Show this message and exit.
```

#### 4.5.6 Command: project open

```
Usage: cmemc project open [OPTIONS] PROJECT_IDS...
```

Open projects in the browser.

With this command, you can open a project in the workspace in your browser to change them.

The command accepts multiple projects IDs which results in opening multiple browser tabs.

Options:

-h, --help Show this message and exit.

## 4.6 Command group: query

Usage: cmemc query [OPTIONS] COMMAND [ARGS]...

List, execute or open local and remote SPARQL queries.

Queries are identified either by a file path, an URI from the query catalog or a shortened URI (qname, using a default namespace).

In order to get a list of queries from the query catalog, use the list command. One or more queries can be executed one after the other with the execute command. With open command you can jump to the query editor in your browser.

Queries can use a mustache like syntax to specify placeholder for parameter values (e.g. {{resourceUri}}). These parameter values need to be given as well, before the query can be executed (use the -p option).

Options:

-h, --help Show this message and exit.

Commands:

execute	Execute queries which are loaded from files or the query catalog.
list	List available queries from the catalog.
open	Open queries in the editor of the query catalog in your browser.
status	Get status information of executed and running queries.

### 4.6.1 Command: query execute

Usage: cmemc query execute [OPTIONS] QUERIES...

Execute queries which are loaded from files or the query catalog.

Queries are identified either by a file path, an URI from the query catalog, or a shortened URI (qname, using a default namespace).

If multiple queries are executed one after the other, the first failing query stops the whole execution chain.

Limitations: All optional parameters (e.g. accept, base64, ...) are provided for ALL queries in an execution chain. If you need different parameters for each query in a chain, run cmemc multiple times and use the logical operators && and || of your shell instead.

#### Options:

<code>--accept TEXT</code>	Accept header for the HTTP request(s). Setting this to 'default' means that cmemc uses an appropriate accept header for terminal output (text/csv for tables, text/turtle for graphs, * otherwise). Please refer to the Corporate Memory system manual for a list of accepted mime types. [default: default]
<code>--no-imports</code>	Graphs which include other graphs (using owl:imports) will be queried as merged overall-graph. This flag disables this default behaviour. The flag has no effect on update queries.
<code>--base64</code>	Enables base64 encoding of the query parameter for the SPARQL requests (the response is not touched). This can be useful in case there is an aggressive firewall between cmemc and Corporate Memory.
<code>-p, --parameter &lt;TEXT TEXT&gt;...</code>	In case of a parameterized query (placeholders with the '{{key}}' syntax), this option fills all placeholder with a given value before the query is executed. Pairs of placeholder/value need to be given as a tuple 'KEY VALUE'. A key can be used only once.
<code>--limit INTEGER</code>	Override or set the LIMIT in the executed SELECT query. Note that this option will never give you more results than the LIMIT

	given in the query itself.
<code>--offset INTEGER</code>	Override or set the OFFSET in the executed SELECT query.
<code>--distinct</code>	Override the SELECT query by make the result set DISTINCT.
<code>--timeout INTEGER</code>	Set max execution time for query evaluation (in milliseconds).
<code>-h, --help</code>	Show this message and exit.

#### 4.6.2 Command: query list

Usage: `cmemc query list [OPTIONS]`

List available queries from the catalog.

Outputs a list of query URIs which can be used as reference for the query execute command.

Options:

`--id-only` Lists only query identifier and no labels or other meta data.  
This is useful for piping the ids into other cmemc commands.

`-h, --help` Show this message and exit.

#### 4.6.3 Command: query open

Usage: `cmemc query open [OPTIONS] QUERIES...`

Open queries in the editor of the query catalog in your browser.

With this command, you can open (remote) queries from the query catalog in the query editor in your browser (e.g. in order to change them). You can also load local query files into the query editor, in order to import them into the query catalog.

The command accepts multiple query URIs or files which results in opening multiple browser tabs.

**Options:**

-h, --help Show this message and exit.

#### 4.6.4 Command: query status

Usage: cmemc query status [OPTIONS] [QUERY\_UUID]

Get status information of executed and running queries.

With this command, you can access the latest executed SPARQL queries on the DataPlatform. These queries are identified by UUIDs and listed ordered by starting timestamp.

You can filter queries based on status and runtime in order to investigate slow queries. In addition to that, you can get the details of a specific query by using the UUID as a parameter.

Known Issue: Timeouted queries are currently shown as running queries (means: they have no runtime and no ending timestamp). This will be fixed in a future release.

**Options:**

--id-only	Lists only query identifier and no labels or other meta data. This is useful for piping the ids into other cmemc commands.
--raw	Outputs raw JSON response of the query status API.
--filter <CHOICE TEXT>...	Filter queries based on execution status and time. First parameter CHOICE can be 'status' or 'slower-than'. The second parameter has to be a status in case of 'status' or a time in milliseconds in case of 'slower-than' filter.
-h, --help	Show this message and exit.

#### 4.7 Command group: vocabulary

Usage: cmemc vocabulary [OPTIONS] COMMAND [ARGS]...

List, install, uninstall and open vocabularies.

**Options:**

-h, --help Show this message and exit.

**Commands:**

cache List und update the vocabulary cache.  
install Install one or more vocabularies from the catalog.  
list Output a list of vocabularies.  
open Open / explore a vocabulary graph in the browser.  
uninstall Uninstall one or more vocabularies.

#### 4.7.1 Command: vocabulary cache

Usage: cmemc vocabulary cache [OPTIONS] COMMAND [ARGS]...

List und update the vocabulary cache.

**Options:**

-h, --help Show this message and exit.

**Commands:**

list Output the content of the global vocabulary cache.  
update Reload / updates the data integration cache for a vocabulary.

#### 4.7.2 Command: vocabulary cache

Usage: cmemc vocabulary cache [OPTIONS] COMMAND [ARGS]...

List und update the vocabulary cache.

**Options:**

-h, --help Show this message and exit.

**Commands:**

list Output the content of the global vocabulary cache.  
update Reload / updates the data integration cache for a vocabulary.

#### 4.7.3 Command: vocabulary install

Usage: cmemc vocabulary install [OPTIONS] [IRIS]...

Install one or more vocabularies from the catalog.

Vocabularies are identified by their graph IRI. Installable vocabularies can be listed with the "vocabulary list --filter installable" command.

Options:

- a, --all Install all vocabularies from the catalog.
- h, --help Show this message and exit.

#### 4.7.4 Command: vocabulary list

Usage: cmemc vocabulary list [OPTIONS]

Output a list of vocabularies.

Vocabularies are graphs (see 'cmemc graph' command group) which consists of class and property descriptions.

Options:

- id-only Lists only vocabulary identifier (IRIs) and no labels or other meta data. This is useful for piping the ids into other cmemc commands.
- filter [all|installed|installable] Filter list based on status. [default: installed]
- raw Outputs raw JSON.
- h, --help Show this message and exit.

#### 4.7.5 Command: vocabulary open

Usage: cmemc vocabulary open [OPTIONS] IRI

Open / explore a vocabulary graph in the browser.

Vocabularies are identified by their graph IRI. Installed vocabularies can be listed with the "vocabulary list" command.

Options:

- h, --help Show this message and exit.



## 4.7.6 Command: vocabulary uninstall

Usage: `cmemc vocabulary uninstall [OPTIONS] [IRIS]...`

Uninstall one or more vocabularies.

Vocabularies are identified by their graph IRI. Already installed vocabularies can be listed with the "vocabulary list --filter installed" command.

Options:

- a, --all Uninstall all installed vocabularies.
- h, --help Show this message and exit.

## 4.8 Command group: workflow

Usage: `cmemc workflow [OPTIONS] COMMAND [ARGS]...`

List, execute, open or inspect workflows.

Workflows are identified by a `WORKFLOW_ID`. The get a list of existing workflows, execute the list command or use tab-completion. The `WORKFLOW_ID` is a concatenation of an `PROJECT_ID` and a `TASK_ID`, such as "my-project:my-workflow".

Options:

- h, --help Show this message and exit.

Commands:

- execute Execute workflow(s).
- io Execute a workflow with file input/output.
- list List available workflow ids.
- open Open a workflow in your browser.
- status Get status information of workflow(s).

### 4.8.1 Command: workflow execute

Usage: `cmemc workflow execute [OPTIONS] [WORKFLOW_IDS]...`

Execute workflow(s).

With this command, you can start one or more workflows at the same time or

in a sequence, depending on the result of the predecessor.

Executing a workflow can be done in two ways: Without `--wait` just sends the starting signal and does not look for the workflow and its result (fire and forget). Starting workflows in this way, starts all given workflows at the same time.

The optional `--wait` option starts the workflows in the same way, but also polls the status of a workflow until it is finished. In case of an error of a workflow, the next workflow is not started.

#### Options:

<code>-a, --all</code>	Execute all available workflows.
<code>--wait</code>	Wait until all executed workflows are completed.
<code>--polling-interval INTEGER RANGE</code>	How many seconds to wait between status polls. Status polls are cheap, so a higher polling interval is most likely not needed. [default: 1]
<code>-h, --help</code>	Show this message and exit.

### 4.8.2 Command: workflow io

Usage: `cmemc workflow io [OPTIONS] WORKFLOW_ID`

Execute a workflow with file input/output.

With this command, you can execute a workflow that uses variable datasets as input, output or for configuration. Use the input parameter to feed data into the workflow. Likewise use output for retrieval of the workflow result. Workflows without a variable dataset will throw an error.

#### Options:

<code>-i, --input FILE</code>	From which file the input is taken: note that the maximum file size to upload is limited to a server configured value. If the workflow has no defined variable input dataset, this can be ignored.
<code>-o, --output FILE</code>	To which file the result is written to: use

```

        '-' in order to output the result to stdout.
        If the workflow has no defined variable
        output dataset, this can be ignored. Please
        note that the io command will not warn you
        on overwriting existing output files.

--input-mimetype [guess|application/xml|application/json|text/csv]
        Which input format should be processed: If
        not given, cmemc will try to guess the mime
        type based on the file extension or will
        fail

--output-mimetype
    [guess|application/xml|application/json|application/n-triples|application/vnd.openxmlformats-officedoc
        Which output format should be requested: If
        not given, cmemc will try to guess the mime
        type based on the file extension or will
        fail. In case of an output to stdout, a
        default mime type will be used (currently
        xml).

-h, --help                Show this message and exit.

```

### 4.8.3 Command: workflow list

```

Usage: cmemc workflow list [OPTIONS]

List available workflow ids.

Options:
  --raw                Outputs raw JSON objects of workflow task search
                        API response.

  --id-only            Lists only workflow identifier and no labels or
                        other meta data. This is useful for piping the
                        IDs into other commands.

  --filter <CHOICE TEXT>... Filter workflows based on project or suitability
                        for the io command .First parameter CHOICE can be
                        'project' or 'io'. The second parameter has to be
                        a project ID in case of 'project' or 'input-
                        only|output-only|input-output|any' in case of
                        'io' filter.

```

-h, --help                      Show this message and exit.

#### 4.8.4 Command: workflow open

Usage: cmemc workflow open [OPTIONS] WORKFLOW\_ID

Open a workflow in your browser.

Options:

-h, --help   Show this message and exit.

#### 4.8.5 Command: workflow status

Usage: cmemc workflow status [OPTIONS] [WORKFLOW\_IDS]...

Get status information of workflow(s).

Options:

--project TEXT	The project, from which you want to list the workflows. Project IDs can be listed with the 'project list' command.
--raw	Output raw JSON info.
--filter [Idle Not executed Finished Cancelled Failed Successful Canceling Running Waiting]	Show only workflows of a specific status.
-h, --help	Show this message and exit.

### 4.9 Command group: workspace

Usage: cmemc workspace [OPTIONS] COMMAND [ARGS]...

Import, export and reload the project workspace.

Options:

-h, --help   Show this message and exit.

Commands:

export	Export the complete workspace (all projects) to a ZIP file.
import	Import the workspace from a file.
reload	Reload the workspace from the backend.

### 4.9.1 Command: workspace export

Usage: `cmemc workspace export [OPTIONS] [FILE]`

Export the complete workspace (all projects) to a ZIP file.

Depending on the requested type, this ZIP contains either a turtle file for each project (type `rdfTurtle`) or a substructure of resource files and XML descriptions (type `xmlZip`).

The file name is optional and will be generated with by the template if absent.

Options:

- |   |   |
|---|---|
| <code>-o, --overwrite</code>              | Overwrite existing files. This is a dangerous option, so use it with care.  |
| <code>--type TEXT</code>                  | Type of the exported workspace file.<br>[default: <code>xmlZip</code> ]   |
| <code>-t, --filename-template TEXT</code> | Template for the export file name. Possible placeholders are (Jinja2): <code>{{connection}}</code> (from the <code>--connection</code> option) and <code>{{date}}</code> (the current date as YYYY-MM-DD). The file suffix will be appended. Needed directories will be created. [default: <code>{{date}}-{{connection}}.workspace</code> ] |
| <code>-h, --help</code>                   | Show this message and exit.   |

### 4.9.2 Command: workspace import

Usage: `cmemc workspace import [OPTIONS] FILE`

Import the workspace from a file.

Options:

- |                          |  |
|--------------------------|--|
| <code>--type TEXT</code> | Type of the exported workspace file. [default: <code>xmlZip</code> ] |
| <code>-h, --help</code>  | Show this message and exit.  |

### 4.9.3 Command: workspace reload

Usage: cmemc workspace reload [OPTIONS]

Reload the workspace from the backend.

Options:

-h, --help Show this message and exit.