

FOXDEN CLI

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CHESS R&D

FOXDEN command line tool

- ❖ FOXDEN command line tool is called ***foxden***
- ❖ It can be either downloaded from github.com/CHESSComputing/gotools repository or it is available on CHESS nodes at `/nfs/chess/sw/chessdata/foxden`
 - ❖ Github repository provides executables for different OSes and hardware
 - ❖ Linux, macOS, Windows, and amd64, arm64, power8 architectures.
- ❖ You don't need to setup anything to run the tool but there are some environment variables which may be useful
 - ❖ FOXDEN_VERBOSE to setup verbosity level of foxden output
 - ❖ FOXDEN_TOKEN, FOXDEN_WRITE_TOKEN, FOXDEN_DELETE_TOKEN to hold foxden tokens

FOXDEN CLI:

foxden *<command>* *<action>* *<options>*

shell# foxden

foxden command line tool

Complete documentation at <https://foxden.classe.cornell.edu:8344/docs>

Usage:

foxden [command]

Available Commands:

completion	Generate the autocompletion script for the specified shell
config	foxden config command
describe	foxden describe command
doi	foxden doi command
help	Help about any command
meta	foxden MetaData commands
ml	foxden ml commands
prov	foxden provenance commands
s3	foxden s3 commands
search	foxden search commands
sync	foxden sync command
token	foxden token commands
version	foxden version command
view	foxden view commands

Flags:

--config string	config file (default is \$HOME/.foxden.yaml)
-h, --help	help for foxden
--verbose int	verbosity level)

Use "foxden [command] --help" for more information about a command.

FOXDEN CLI help

foxden has comprehensive help which you can obtain quickly

```
foxden --help
```

to get help for individual command

```
foxden <command> --help
```

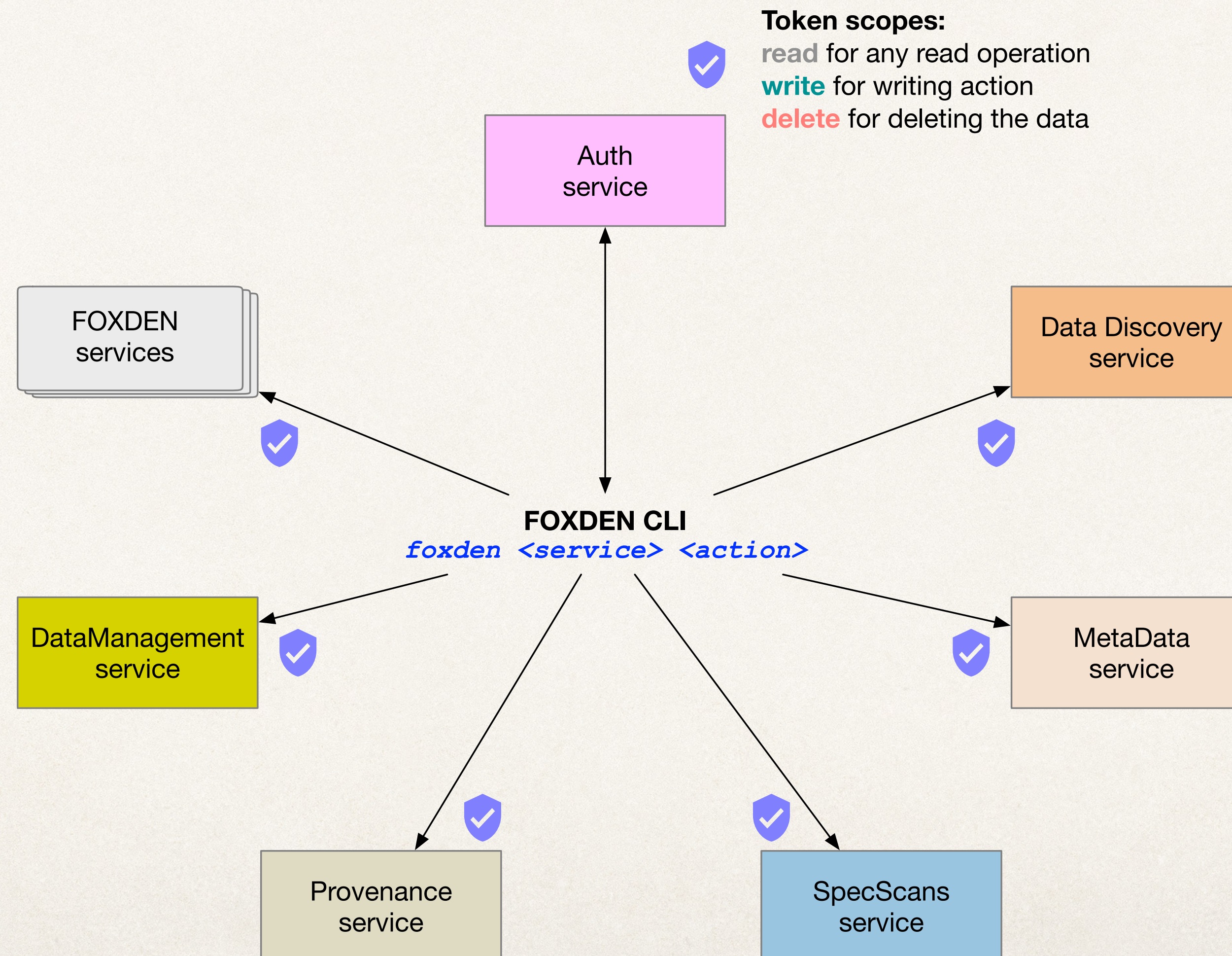
for example to get help about meta command

```
foxden meta -help
```

to increase verbosity of CLI tool setup FOXDEN_VERBOSE env

```
export FOXDEN_VERBOSE=1
```


FOXDEN authentication and tokens



FOXDEN authentication & Kerberos

FOXDEN authentication depends on valid Kerberos ticket

setup proper kerberos cache file,
export KRB5CCNAME=FILE:\$HOME/krb5cc_ccache

obtain kerberos ticket
kinit <username>@CLASSE.CORNELL.EDU

list existing kerberos tickets
klist

ticket cache: FILE:/home/user/krb5cc_ccache
Default principal: user@CLASSE.CORNELL.EDU

Valid starting	Expires	Service principal
05/04/2024 14:41:02	05/05/2024 14:40:58	<u>krbtgt/CLASSE.CORNELL.EDU@CLASSE.CORNELL.EDU</u>

FOXDEN tokens

```
foxden token --help
```

```
# obtain FOXDEN token (will use your default kerberos ticket)
foxden token create read
```

```
# obtain FOXDEN token with specific kerberos file
foxden token create read --kfile=$HOME/krb5cc_ccache
```

```
# obtain write token
foxden token create write
```

```
# view existing token
foxden token view
```

```
# or use specific file where FOXDEN token is stored
# FOXDEN token is stored to $HOME/.foxden.access file
foxden token view --token=`cat $HOME/.foxden.access`
```


FOXDEN token review

```
# use specific file where FOXDEN token is stored
```

```
foxden token view --token=`cat /home/user/.foxden.access`
```

```
ERROR      : invalid token
```

```
AccessToken :
```

```
eyJhbGciOiJIUzUxMiIsInR5cCI6IkpXVCJ9.eyJpc3MiOiJDSEVTUyBBdXRoeiBzZXJ2ZXIiLCJzdBWII  
OiIzNGJkMDVlYmM5NDQ0ZDg1OTk4Y2ZkYWE1OTM0MTU5MSIsImF1ZCI6WyI5ZDg4NWE5MmZmNjI0Mjd1Y  
jk1ZjZlNzMzNGQ5MDI2NiJdLCJleHAiOjE3MTQ4NTUyODAsIm1hdCI6MTcxNDg0ODA4MCwiY3VzdG9tX2  
NsYWltcyI6eyJ1c2VyIjoiaWVrMyIsInNjb3BlIjoicmVhZCI6ImtpbmQiOiJjbGllbnRfY3JlZGVudGl  
hbHMiLCJyb2x1cyI6bnVsbCwiYXBwbGljYXRpb24iOiJBdXRoeiJ9fQ.UMAcM7RToOfVnKW9pOS18qXVC  
4EgoxwvSCZKm2eiQS3yvticettjD-qvVGALwZVK8rBfsRiU6xXTFZL_QuCB1w
```

```
Issuer      : CHESSE Authz server
```

```
Subject     : 34bd05ebc9444d85998cfdaa59341591
```

```
Audience   : [9d885a92ff62427eb95f6e7334d90266]
```

```
ExpiresAt   : 2024-05-04 16:41:20 -0400 EDT
```

```
Custom Claims: User:user, Scope:read, Kind:client_credentials, Application:Authz
```


FOXDEN search, describe and view records

```
foxden search --help
```

```
# list all available search keys
```

```
foxden search keys
```

```
# describe meaning of search key, e.g. what is pi key means
```

```
foxden describe pi
```

```
# search CHESS data using query language, e.g. empty query match all records
```

```
foxden search {}
```

```
# search query: use quotes to pass query dictionary
```

```
foxden search '{"pi":"name"}'
```

```
# search using key:value pairs, e.g. pi:name
```

```
foxden search pi:name
```

```
# view existing DID record
```

```
foxden view <DID>
```


FOXDEN meta command

add, view and remove meta-data records

```
foxden meta --help
```

```
# list existing meta-data records
```

```
foxden meta ls
```

```
# view specific meta-data record, you must pass valid DID
```

```
foxden meta view <DID>
```

```
# add new meta-data record (you will need FOXDEN_WRITE_TOKEN)
```

```
foxden meta add <schema> <file.json>
```

```
# for example add meta-data record for ID3A schema
```

```
foxden meta add ID3A /path/file.json
```

```
# add meta-data record with specific did attributes
```

```
foxden meta add ID3A /path/file.json --did-attrs=beamline,btr,cycle,sample
```

```
# remove meta-data record (you will need FOXDEN_DELETE_TOKEN)
```

```
foxden meta rm <DID>
```


FOXDE provenance command: add, view and remove provenance records

```
foxden prov --help
```

```
# list provenance records either datasets or files  
foxden prov ls <datasets|files>
```

```
# list all dataset records for specific DID  
foxden prov ls datasets --did=<DID>
```

```
# list all file records for specific DID  
foxden prov ls files --did=<DID>
```

```
# add provenance data record:  
foxden prov add /path/provenance.json
```


FOXDEN ML commands:

upload ML model, predict commands

```
foxden ml --help
```

```
# upload new ML model:
```

```
foxden ml upload --file=/path/file.tar.gz --model=model --type=TensorFlow --  
backend=GoFake
```

```
# delete model:
```

```
foxden ml delete --model=model --type=TensorFlow <--version=latest>
```

```
# ML inference for input specified via JSON payload:
```

```
foxden ml predict --file=/path/input.json
```

```
# ML inference for input via submission, e.g. image prediction
```

```
foxden ml predict --file=/path/img.png --model=model --type=TensorFlow --  
backend=TFaaS
```


FOXDEN S3 commands:

list, upload and delete file/buckets

```
foxden s3 --help
```

```
# create new bucket:
```

```
foxden s3 create Cornell/bucket
```

```
# remove bucket or file:
```

```
foxden s3 delete Cornell/bucket
```

```
# upload new file to a bucket:
```

```
foxden s3 upload Cornell/bucket file.txt
```

```
# upload all files from given directory to a bucket:
```

```
foxden s3 upload Cornell/bucket someDirectory
```

```
# list content of s3 storage:
```

```
foxden s3 ls Cornell
```

```
# list specific bucket on s3 storage:
```

```
foxden s3 ls Cornell/bucket
```


FOXDEN doi commands:

publish your work via foxden CLI

```
foxden doi --help
```

```
# create new document (new document with some ID, e.g. 12345678, will be created)
```

```
foxden doi create
```

```
Document is created: id=123456789 URL=https://zenodo.org/deposit/123456789
```

```
# add file to document id:
```

```
foxden doi add <id> </path/regular/file>
```

```
# update document id with publish data record:
```

```
foxden doi update <id> /path/record.json
```

```
# publish document id:
```

```
foxden doi publish <id>
```

```
# list existing documents:
```

```
foxden doi ls <id>
```

```
# get details of document id:
```

```
foxden doi view <id>
```


FOXDEN CLI summary

- ❖ One tool ***foxden*** serves different needs
 - ❖ it communicates with FOXDEN services
 - ❖ it handles different commands, like get new token, send meta-data record, view records or get ML predictions

foxden ***<command>*** ***<action>*** ***<options>***

- ❖ Existing commands: *config, describe, doi, meta, ml, prov, s3, search, sync, token, version, view*
- ❖ Available on all major OSes / architectures, including Linux, macOS, Windows.

FOXDEN CLI demos

- ❖ [FOXDEN CLI demo](#) shows how to use different FOXDEN CLI commands
- ❖ [FOXDEN CLI run demo](#) shows how to create tokens, add meta-data and provenance records, etc.
- ❖ [FOXDEN doi demo](#) shows how to publish your work (datasets) via FOXDEN CLI