Command Lines

OpenCGA implements three different command lines for different purposes, these are ***opencga.sh***, ***opencga-admin.sh*** and ***opencga-analysis.sh***. All of them follow the same structure, design and share many usage features:

1. **structure:** they are organised in *commands* and *subcommands,* e.g.: *./opencga.sh <command> <subcommand> [options]*
2. **authentication:** you need to be authenticated to run the command lines, only *admin* user can run *opencga-admin.sh*. *Anonymous* user can run *opencga.sh* when using public *studies.*
3. **output:** all of them follow the same usage conventions for parameters and output

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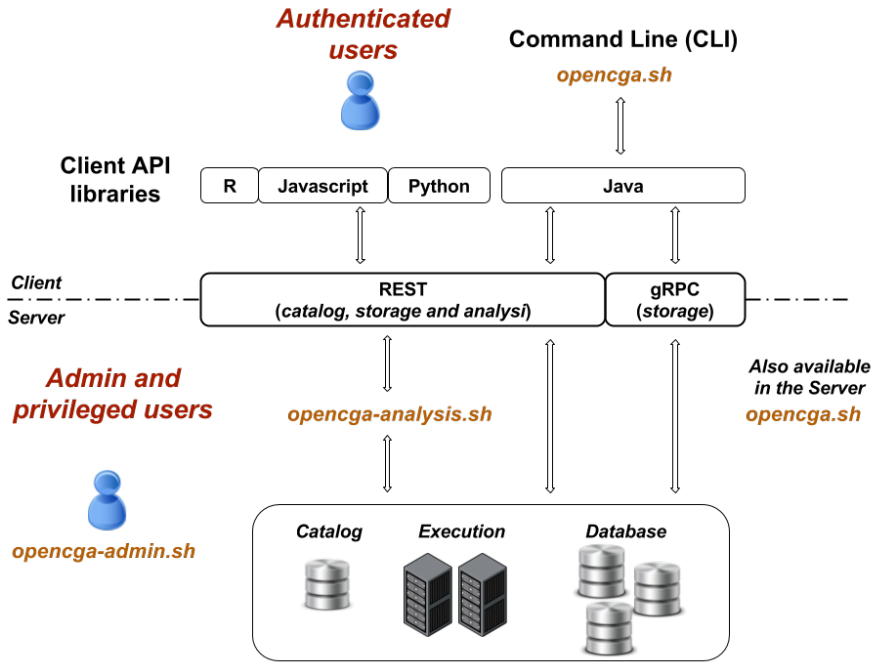
Architecture

Here you can find a diagram of the three command lines a brief description below:



opencga.sh

This is the main command line for normal users, in fact this is the only command line that everybody should use. It implements all the functionality in more than 100 *command* and *subcommands*, for example you can login, list files, search samples or query variants. The vast majority of the *subcommands* run over *RESTful* web services so this command line can run *remotely* (outside of the cluster) or *locallly* (inside the cluster) as long as you have access to the REST server, this command line uses **client-configuration.yml** file. You can find more detailed information at **Command Lines > opencga.sh**

opencga-admin.sh

This command line requires the *admin* password to be executed, it allows to install *catalog* database and indexes, create users, query the audit, ... This does not use RESTful web services and it needs direct access to the server, so it only runs in the OpenCGA cluster and it uses **configuration.yml.** You can find more detailed information at **Command Lines > opencga-admin.sh**.

opencga-analysis.sh

This command line is used by OpenCGA system itself and nobody is expected to use it unless you are debugging and you really understand how it works. It runs in the cluster and uses **configuration.yml.** No more detailed information is provided at this moment.

General Usage

In this section you will learn how to use the command lines, some examples are provided using *opencga.sh* command line.

Basic Command Line Conventions

OpenCGA follows the most standard conventions when implementing command lines, the most relevant ones are:

- **single-character** parameters start with only one *hyphen* symbol and can be either lower-case or upper-case, e.g. *-h* to print the help or *-S* to provide session id; while **multi-character** parameters start with two *hyphens* and are always lower-case, e.g. *--help* to print the help or *--name* to provide a name.
- in the *Usage* the optional parameters are written always between ***[** square brackets **]***, in the following example *help, version* and *option* are not mandatory:

  ```
  ./opencga.sh [-h|--help] [--version] <command> [options]
  ```

- in the *Usage* the mandatory parameters are written between symbols **<** and **>**, like <*command*> in the previous example.

Executing a top level command line

You can execute any of the three command lines without any argument to get the usage help (you can also provide *-h* parameter)

Executing 'opencga.sh'

```
imedina@ivory:~/appl/opencga/build/bin$
./opencga.sh

Program:     OpenCGA (OpenCB)
Version:     1.0.0-rc3
Git commit:
f42850ff3ff1acb8d0a1bac710c9ec38e084fee5
Description: Big Data platform for processing
and analysing NGS data

Usage:       opencga.sh [-h|--help] [--version]
<command> [options]

Catalog commands:
         users  User commands
      projects  Project commands
       studies  Study commands
         files  Files commands
          jobs  Jobs commands
   individuals  Individuals commands
       samples  Samples commands
     variables  Variable set commands
       cohorts  Cohorts commands
         tools  Tools commands
        panels  Panels commands

Analysis commands:
    alignments  Implement several tools for the
genomic alignment analysis
       variant  Variant commands
```

where:

- **Line 1**: executing without arguments any of the three command lines (or with *-h* or *--help*) print usage information
- **Line 3-6**: these lines show some metadata about the executable: program *name* and *version, Git commit* (in development versions there can be different commits for the same version) and a *description*.
- **Line 8**: shows the *Usage* for this command lines which the same for the three of them, as you can see there are two some optional parameters (in square brackets) *help* and *version* ; and one mandatory parameter <*command*> is required. Parameter *--help* prints this usage and parameter *--version* prints the version and Git commit.
- **Line 10**: the different *commands* for this command line are printed together with a description

Executing a specific *command*

When one *command* is executed without any other argument a specific help is shown, this specific help shows the different *subcommands* available with a brief description, as you can see in the following example

Executing 'opencga.sh users'

```
imedina@ivory:~/appl/opencga/build/bin$
./opencga.sh users

Usage:   opencga.sh users <subcommand>
[options]

Subcommands:
        create  Create a new user
          info  Get complete information of the
user together with owned and shared projects
and studies
        update  Update some user attributes
using GET method
change-password  Update some user attributes
using GET method
        delete  Delete an user [NO TESTED]
      projects  List all projects and studies
belonging to the selected user
         login  Login as a user
        logout  End user session
reset-password  Reset password
```

where:

- **Line 3**: shows the specific *Usage* for this command line, as explained above you can see there is a mandatory parameter <*subcommand*> and then some possible options (in square brackets).
- **Line 5**: here you can see the specific *subcommands* for user command, many of the *subcommands* are specific of each command although others can be quite common.

Executing a specific *subcommand*

When one *subcommand* is executed with *-h* or *--help* parameter then a specific usage help with all the *options* is printed for this *subcommand*, check next example

```
imedina@ivory:~/appl/opencga/build/bin[release-
1.0.0-rc3]$ ./opencga.sh samples update -h

Usage:   opencga.sh samples update [options]

Options:
      -C, --conf              STRING
Configuration folder that contains opencga.yml,
catalog-configuration.yaml,

storage-configuration.yml and
client-configuration.yaml files.
      -d, --description       STRING
Description
      -h, --help                          Print
this help [false]
          --individual        STRING
Individual id or name
          --log-file          STRING     Set
the file to write the log
      -L, --log-level         STRING     One of
the following: 'error', 'warn', 'info',
'debug', 'trace' [info]
      -M, --metadata
Include metadata information [false]
      -n, --name              STRING     Cohort
set name.
          --no-header                    Not
include headers in the output (not applicable
to json output-format) [false]
      --of, --output-format   STRING     Output
format. one of {JSON, JSON_PRETTY, TEXT, YAML}
[TEXT]
    *     --sample            STRING     Sample
id or name
      -S, --sid, --session-id STRING     Token
session id
          --source            STRING     Source

      -s, --study             STRING     Study
[[user@]project:]study where study and project
can be either the id or the alias.
      -v, --verbose
Increase the verbosity of logs [false]
```

where:

- **Line 3**: reminds us the *command* and *subcommand* we are executing, the only other parameter is *options,* which is not mandatory since is between square brackets.
- **Line 5**: here we can see the different *options* accepted by this *subcommand.* The options are formatted in three main columns:
    - The first column shows the short and long name of the parameters, both have the same behaviour. Options preceded by an asterisk (*****) are the mandatory

parameters of this *subcommand*, an error will be thrown unless those parameters are provided, the rest of the parameters are optional.
- The second column shows the type of input expected for that option. Most of them are STRING although INT is also quite common. When this is empty means that the parameter is a flag and this option is a *boolean,* meaning that the option will be active if parameter is present.
- The third column shows a brief description of the parameter. In some of them we can find the *default value* in square brackets.

Common options

Some of these options are available for most of the *commands* and *subcommands,* these are:

- -C, --conf: If not defined, the command line will assume that the configuration folder can be found in the parent folder where the executable is found (../conf). If that is not the case or if the user wants to use other configuration files available in a different path, the path should be provided.
- -h, --help: Shows the help with the list of options. Generally this is not necessary because there is almost always a mandatory parameter to be provided, although it is needed in a few cases if user wants to see the options.
- --log-file: By default, all the logs generated by the command lines are printed in the screen. However, the user might want to redirect the logs to another file. For those cases, the user will need to provide the file where the logs will be stored.
- -L, --log-level: There are 5 different log levels: 'error', 'warn', 'info', 'debug', 'trace'
- -M, --metadata: prints the result metadata

Autocompletion

OpenCGA command lines come with a huge number of commands and options and its very tedious for any user to type these manually. We have created auto completion scripts for each of the following command lines to make everyone's life easier.

- opencga.sh
- opencga-admin.sh
- opencga-analysis.sh

OpenCGA generates auto completetion scripts dynamically from source code to make sure we always support the latest commands and options available in our code. After installation, user will find these scripts under **"build/completion"** folder.

Please copy these scripts to the following directory and then source:

Copy Autocomplete Scripts

```
cp build/completion/opencga*
/etc/bash_completion.d/

source /etc/bash_completion.d/opencga
source /etc/bash_completion.d/opencga-admin
source /etc/bash_completion.d/opencga-analysis
```