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# oct Documentation

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**karec**

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### Informations

OCT is still in beta version so use it carefully. Follow us for more informations about the next releases

**twitter** [@oct\\_py](#)



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# Introduction

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## 1.1 What is OCT

OCT is an agnostic load testing tool. What do we mean by agnostic ? It's simple : OCT provides only the needed tools to distribute and run your tests and compile the results. But the tools and programming languages for writing the tests themselves are up to you.

At this stage of development we only offer a python turret, but if you want to create your own turret implementation in any language, please do it ! We're really open to any suggestions and help.

## 1.2 Terminology

- HQ for Headquarters: it's the "server" component of OCT and it's tasked with sending start signal, stop signal, collecting results and create reports
- Turret: a turret is the "client" component of OCT. It can be written in any language and it communicates with the HQ using a zeromq PUSH socket. Each turret owns one or many cannons.
- Cannons: represent the virtual users, wich means that each cannon of the turret will run a test in parallel

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**Note:** Why do we use this terminology ? It gives a good idea of what's happening when you use OCT. Think about it like that : each turret owns X cannons that shoot at the target and report on the result to the HQ

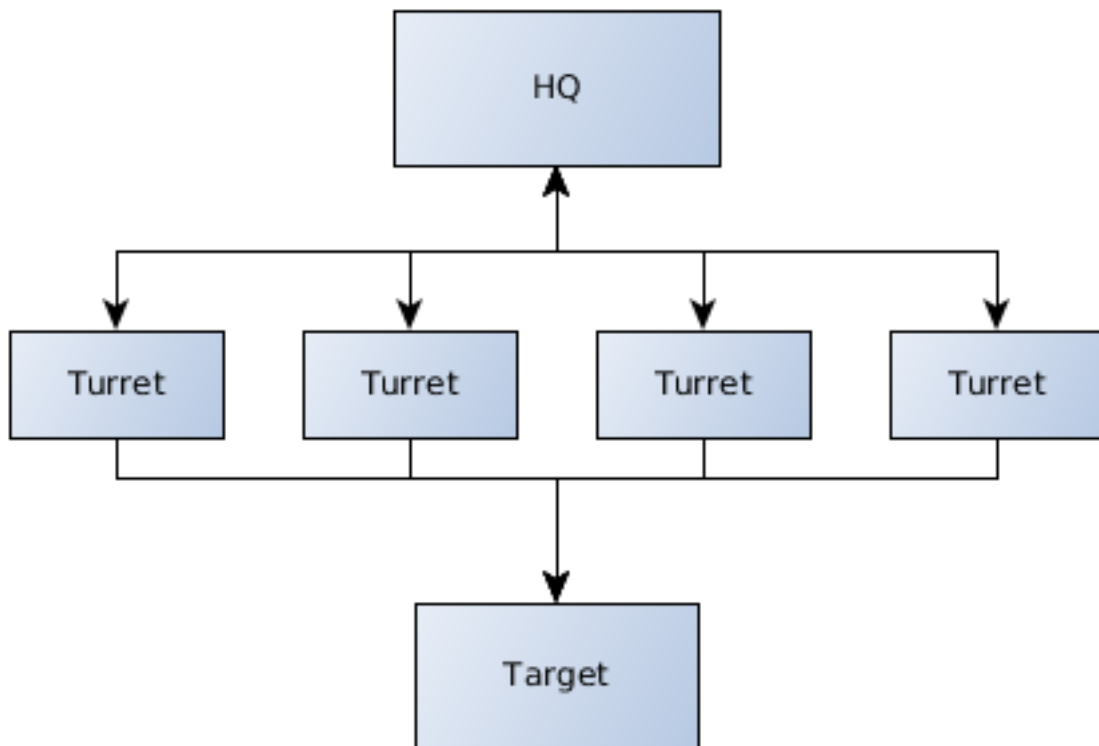
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## 1.3 How it works ?

OCT uses the power of `zeromq` to distribute test on any number of physical machines you need. When running a test the process is very simple :

- OCT starts the HQ. It sends a start message to the turrets and will later collect their results
- The turrets receive the message, start the tests and send results to the HQ
- When the test ends, the HQ sends a stop message to the turrets and process the remaining messages in queue
- OCT will then compile the results and create a html report of them

Want a graph ? Here you go :



So this is it, a bunch of turrets shooting at the target and sending information to the HQ.



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## Installation

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### 2.1 OCT-Core

OCT is available on pypi so you can install it with pip :

```
pip install oct
```

Or directly from the source :

```
python setup.py install
```

You will also need the python headers for installing some of the dependencies like `numpy`, and `build-essential` and `python-dev` to compile them

On a debian based system you can install them using `apt` for example :

```
apt-get install python-dev build-essential
```

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**Note:** The OCT core part have been developed and tested on linux based system only, at this point of the developement process we cannot guarantee you that the oct-core can be installed on a Windows system

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### 2.2 OCT-Turrets

You can actually choose any turret that you need, in any langage. But the `oct` package require the python turrets by default and the “oct-turrets” pypi package will be automatically installed with the main `oct` package.



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## Your first project

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OCT exposes several command-line tools to use it, write your tests or run your project.

First we're going to use the `oct new-project` command for creating our first project.

```
oct new-project my_project_name
```

This command creates a folder named `my_project_name` containing all the required files to start an OCT project.

Let's take a look at the content of this new folder :

```
|-- config.json
-- templates
|   -- css
|       -- style.css
|   -- img
|   -- report.html
|   -- scripts
-- test_scripts
    -- v_user.py
```

Those files are the minimum required by an OCT project. We will analyze them in details in this documentation but let's take it file by file.

### 3.1 Configuration

The main and more important file here is the `config.json` file, let's take a look at his default content :

```
{
  "run_time": 30,
  "results_ts_interval": 10,
  "progress_bar": true,
  "console_logging": false,
  "testing": false,
  "publish_port": 5000,
  "rc_port": 5001,
  "min_turrets": 1,
  "turrets": [
    {"name": "navigation", "cannons": 2, "rampup": 0, "script": "test_scripts/v_user.py"},
    {"name": "random", "cannons": 2, "rampup": 0, "script": "test_scripts/v_user.py"},
    {
      "name": "advanced-turret",
      "cannons": 2,
```

```
        "rampup": 0,
        "script": "test_scripts/v_user.py",
        "specific_turret_config": "my_value", // this config value will be present only in this t
        "extra_files": [
            "templates"
            // allow you to pack files and folder in turrets
        ]
    },
    "turrets_requirements": [],
    "extra_turret_config": {
        // put global turrets config key / values here
    }
}
```

Every key here is useful, but some keys are not required to run a test. Let's take a look at the main ones :

- `run_time`: This key simply sets the time of a test in seconds. So in this case the test will run for 30 seconds.
- `results_ts_interval`: Time interval between two sets of results in seconds. For example if we have a run time of 30 seconds and an interval of 10, we will have 3 results sets in the final report
- `testing`: If this key is set to `True`, the `results.sqlite` file will be created in `/tmp` folder
- `publish_port`: The port for the publishing socket of the HQ
- `rc_port`: The port for the result collector (PULL socket) of the HQ
- `min_turrets`: The minimum number of turrets that must be deployed before the HQ sends the start message
- `turrets`: a list of turrets, this key will be use to package turrets with the `oct pack-turrets` command
- `turrets_requirements`: A list of string containing the required packages for turrets (only for python turrets at this time)
- `extra_turret_config`: A nested object containing all extra turrets parameters. Each value in it will be set in each turret configuration

This configuration is simple but will allow you to run simple tests in a local environment.

Now let's take a look at the per-turret configuration :

Each turret can be configured independently, and you can setup different options for each one :

- `name`: the string representation for the turret
- `cannons`: The number of cannons for this turret (aka virtual users)
- `rampup`: Turrets can spawn their cannon progressively, not each at the same time. Rampup gives a "step" for cannon initialization. The number of cannon spawned by second is equal to the total number of cannons of the turret by `rampup` - e.g., if you have 30 cannons and a rampup of 15 seconds, it will spawn 2 cannons by seconds. If you do not want to increase the number of cannons in time but start the tests with all cannons ready to fire, leave rampup at 0, as in the exemple.
- `script`: The relative path to the associated test script
- `extra_files`: put here every file or folder that you want to ship with the turret

Any additional configuration key will be set as is in turret own configuration

## 3.2 Writing tests

By default, the `oct new-project` command will create an exemple test script under `test_scripts/v_user.py`, let's take a look at it :

```
from oct_turrets.base import BaseTransaction
from oct_turrets.tools import CustomTimer
import random
import time

class Transaction(BaseTransaction):
    def __init__(self, config):
        super(Transaction, self).__init__(config)

    def setup(self):
        """Setup data or objects here
        """
        pass

    def run(self):
        r = random.uniform(1, 2)
        time.sleep(r)
        with CustomTimer(self, 'a timer'):
            time.sleep(r)

    def tear_down(self):
        """Clear cache or reset objects, etc. Anything that must be done after
        the run method and before its next execution
        """
        pass

if __name__ == '__main__':
    trans = Transaction(None)
    trans.run()
    print(trans.custom_timers)
```

**Note:** As you can see the default test is written in python, but each turret can have its own implementation and its own way to write tests. Refer to turrets documentation for more explanations on how to write tests with the selected turret.

So this file represents a basic test that will simply wait between 1 or 2 seconds. Not really useful but it gives you an example on how to write tests and we will keep this example when running our tests in the local setup. For advanced explanations on how to write tests, please see [Writing tests](#)

## 3.3 That's all you need

And that's all you need ! Some configuration and basic tests and that's it.

Of course this will not be enough to test your infrastructure or website, but at this point you should better understand how OCT works and what you need to run your tests ! In the next part we will talk about writing more complex tests.



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## Writing tests

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**Warning:** This section will explain how to write tests, but only based on the **python** turret. But many turrets will have similar implementation

### 4.1 Basic example

Let's take the default `v_user.py` file :

```
from oct_turrets.base import BaseTransaction
from oct_turrets.tools import CustomTimer
import random
import time

class Transaction(BaseTransaction):
    def __init__(self, config):
        super(Transaction, self).__init__(config)

    def setup(self):
        """Setup data or objects here
        """
        pass

    def run(self):
        r = random.uniform(1, 2)
        time.sleep(r)
        with CustomTimer(self, 'a timer'):
            time.sleep(r)

    def tear_down(self):
        """Clear cache or reset objects, etc. Anything that must be done after
        the run method and before its next execution
        """
        pass

if __name__ == '__main__':
    trans = Transaction(None)
    trans.run()
    print(trans.custom_timers)
```

This raw script will test nothing as it is, so let's work on this simple use case:

We need to test a basic API over the Internet and we want to use the `requests` python library.

So first let's adapt the script to our needs:

```
import time
import requests
from oct_turrets.base import BaseTransaction

class Transaction(BaseTransaction):
    def __init__(self, config):
        super(Transaction, self).__init__(config)
        # each cannon will only instanciate Transaction once, so each property
        # in the Transaction __init__ method will be set only once so take care if you need to update
        self.url = "http://my-api/1.0/"

    def run(self):
        # For more detailed results we will setup several custom timers
        with CustomTimer(self, 'Echo service'):
            requests.get(self.url + "echo")

        with CustomTimer(self, 'other-service'):
            requests.get(self.url + "other-service")
```

So what are we doing here ? We've just imported `requests` and used it in our script. For each service we've defined a custom timer to see how much time each one will take to answer.

But how to install the dependencies needed by the turrets ? You can simply update your configuration with something like that :

```
{
    "run_time": 30,
    "results_ts_interval": 10,
    "progress_bar": true,
    "console_logging": false,
    "testing": false,
    "publish_port": 5000,
    "rc_port": 5001,
    "min_turrets": 1,
    "turrets": [
        {"name": "navigation", "cannons": 2, "rampup": 0, "script": "test_scripts/v_user.py"},
        {"name": "random", "cannons": 2, "rampup": 0, "script": "test_scripts/v_user.py"}
    ],
    "turrets_requirements": [
        "requests"
    ]
}
```

If you specify the dependencies in the “`turrets_requirements`” you will be able to install them for each turret by simply running :

```
pip install my_turret_package.tar
```



## 4.2 Setup and Tear down

The previous example is still pretty simple, but you might need things like sessions or cookies. How to manage it knowing that the transaction class will instantiate only once ?

Pretty simple too: we give you two methods in the `BaseTransaction` class to help you : `setup` and `tear_down`

How does it works ? Take a look at this example:

```
import time
import requests
from oct_turrets.base import BaseTransaction

class Transaction(BaseTransaction):
    def __init__(self, config):
        super(Transaction, self).__init__(config)
        # each cannon will only instantiate Transaction once, so each property
        # in the Transaction __init__ method will be set only once so take care if you need to update
        self.url = "http://my-api/1.0/"
        self.session = None

    def setup(self):
        self.session = requests.Session()

    def run(self):
        # For more detailed results we will setup several custom timers
        with CustomTimer(self, 'Echo service'):
            self.session.get(self.url + "echo")

        with CustomTimer(self, 'other-service'):
            self.session.get(self.url + "other-service")

    def tear_down(self):
        self.session.close()
```

And that's it ! Before each run iteration, the `setup` method is called, and you've guessed it, `tear_down` is called after the iteration.

**Note:** The `setup` and the `tear_down` method are not included in the stats sent to the HQ, so the actions will not be included in the `scriptrun_time` statistic



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## Packaging your turrets

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**Warning:** This section will explain how to package turrets, but only based on the **python** turret. But most turrets will have similar implementation

So that's it ? You've written all your tests and you're ready to start to fire at your target ? Well let's prepare your turrets for deployment !

### 5.1 Auto packaging

**Warning:** This example only works for python based turrets. Please refer to your turret documentation if you use anything else

OCT provides a simple way to package your turrets and set them ready to fire, the `oct pack-turrets` command. It generates tar files based on your configuration file. Those tar files are the turrets, ready to fire at your command.

You can use it like this :

```
oct pack-turrets /path/to/oct/project
```

A successful packing should return the following output :

```
Added config.json
Added setup.py
Added test_scripts/v_user.py
Archive ./navigation.tar created
=====
Added config.json
Added setup.py
Added test_scripts/v_user.py
Archive ./random.tar created
=====
```

In addition if some optionnal keys of the configuration are not set, you could see something like that :

```
WARNING: hq_address configuration key not present, the value will be set to default value
```

You will see a WARNING line per missing key. Also if a required key is not set the command will throw an exception like that :

```
oct.core.exceptions.OctConfigurationError: Error: the required configuration key <key> is not define
```

Where <key> is the missing key

## 5.2 Installing and starting the turrets

Now that your turrets are packaged, you can install them using pip for example :

```
pip install navigation.tar
```

This command will install all required packages listed under the `turrets_requirements` configuration key, plus the `oct-turrets` package itself.

Once the installation is finished you can start your turret using the `oct-turrets-start` like that :

```
oct-turrets-start --tar navigation.tar
```

And if everything is fine you should see this message :

```
[2015-12-21 18:02:09,295: INFO | oct_turrets.turret] starting turret
```

You are now ready to fire at the target !

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## Running Tests

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So that's it ? Your turrets are running and ready to fire at the target ? Si let's do it ! Leeeeeerooooooy....

### 6.1 Configuration

Before running the tests, don't forget to update your configuration if your turrets are running on a different IP address from the master.

### 6.2 Starting the test

Just type:

```
oct run /path/to/oct/project
```

And that's it, your test will start and your turrets will now fire at the target. If everything is going ok you should see an output like:

```
Warmup
waiting for 1 turrets to connect
waiting for 0 turrets to connect
turrets: 1, elapsed: 20.0 transactions: 4906 timers: 4906 errors: 0
```

So... That's it ? And yes that's it ! You've successfully run your first OCT test !

Once the test have ended you should see the following output :

```
Processing all remaining messages...

analyzing results...

transactions: 4906
errors: 0

test start: 2015-12-21 18:23:06
test finish: 2015-12-21 18:23:26

Report generated in 2.75798082352 seconds
created: ../results/results_2015.12.21_18.23.05_162132/results.html

done.
```



## Collecting the results

The tests have ended and the report has been created ? Let's take a look at it !

### 7.1 Results.html file

This is the main and the more explicit part of the results, it will give you all major information about the tests, plus some graphs to help you read the results.

A default result page looks like this :

# Performance results report

Summary

transaction: 4906

errors: 0

run time: 20

test start: 2015-12-11 17:02:48

test finish: 2015-12-11 17:02:07

time-series interval: 10 seconds workload configuration

turret name	uuid	canons	script name	rampup	Last known status	Last status update
navigation	a93eb35e-2e79-4387-8600-889e4011b9c7	150	test_script/v_user.py	0	Running	2015-12-11 17:01:47.885980

All transactions

Transaction Response Summary (secs)

count	min	avg	80pct	90pct	95pct	max	stdev
4906	0.5	0.5	0.5	0.5	0.5	0.51	0.0

Interval Details (secs)

For each custom timer, a section will be created (like the “All transactions” section) and the associated graphs will be created.

The graphs are currently in SVG format and use javascript to make reading and interpreting the result easier.

### 7.2 Regenerate results

Sometimes you may need to regenerate the html report with all graphs from an sqlite file. OCT got a tool that allows you to do this.

You can simply use the `oct rebuild-results` like this for example:

```
oct rebuild-results . results.sqlite config.json
```

**Note:** The `oct rebuild-results` command will only work on an already created results folder that contains only the sqlite results and optionnaly the configuration.





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## Packaging your project as template

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Since version 0.4.2, you can start a new project with an existing template. It allow you to reuse or share your OCT projects for specific cases

### 8.1 Packaging your project

Since OCT wait for a tar archive as template, you can simply package your project like this :

```
$ cd my_project
$ tar -zcvf my_template_name.tar.gz *
```

To be used as a template, your project directory structure should look like this :

```
-- config.json # config file is mandatory
-- README.md
-- templates # templates directory is mandatory
|   -- css
|   |   -- style.css
|   -- img
|   -- report.html # html report template is mandatory
|   -- scripts
|       -- pygal-tooltip.min.js
-- test_scripts
    -- test_script_1.py
    -- test_script_2.py
```

---

**Note:** You can add as many files and directories as you need in your archive, they will be extracted

---

### 8.2 Using your template

OCT provide an option to `new-project` command to use a template :

```
oct new-project project_name --template path/to/template.tar.gz
```

This command will create a new directory with the content of your template



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## Writing your own turret

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You use OCT but the python turret doesn't fit your needs ? Or you need a library available only in one language ? Or maybe you just want to create a turret with your favorite programming language ? No problem, this guide is here for you !

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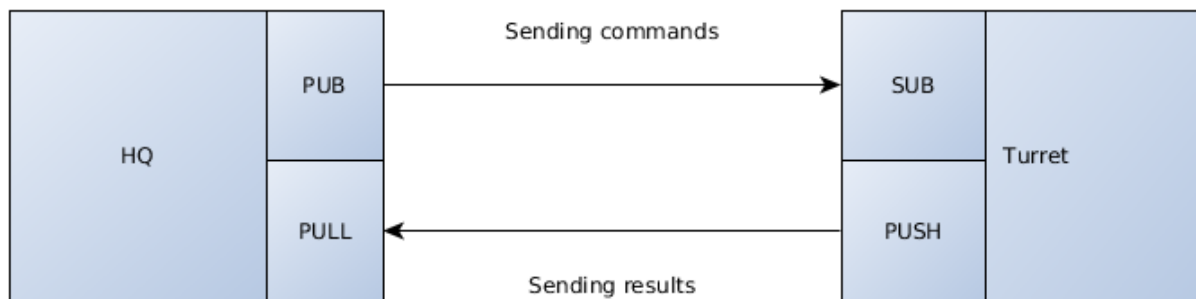
**Note:** You can base your turret on the python turret, source code available [here](#)

---

### 9.1 Global workflow

OCT uses zeromq for communication between the HQ and the turrets. That means that you can write a turret in any language with a zeromq binding ([zeromq bindings](#))

But before writing your code, you need to understand how turrets must communicate with the HQ. Here is a schema to explain it :



So as you can see this is pretty simple, the HQ send orders to the turrets using a PUB/SUB pattern, and the turrets will send results to the master using a PUSH/PULL pattern.

---

**Note:** The python turret also uses a push/pull pattern to enable communication between cannons and the turret itself. All cannons have an inproc socket connected to the turret process

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### 9.2 Requirements

Before going any further, you need to know what a turret must be able to do :

- Reading a turret configuration file (see below)
- Spawning N number of cannons (set in the configuration file)
- Managing rampup
- Importing test files and run it
- Sending well formatted json messages to the HQ

## 9.3 The turret configuration

As you can see in the python-turret example (in the GitHub repository), a turret must be able to read and understand this type of configuration file :

```
{
  "name": "navigation",
  "cannons": 50,
  "rampup": 10,
  "script": "v_user.py",
  "hq_address": "127.0.0.1",
  "hq_publisher": 5000,
  "hq_rc": 5001
}
```

The configuration is pretty simple - and yes this is the full configuration needed for a turret to run.

Let's explain all keys :

- name: the display name of the turret for the report
- cannons: the number of cannons to spawn (remember, cannons == virtual users)
- rampup: the rampup value in seconds
- script: the path/name of the test script to load
- hq\_address: the IP address of the HQ
- hq\_publisher: the port of the PUB socket of the HQ
- hq\_rc: the port of the PULL socket of the HQ

All keys are required.

## 9.4 Sockets configuration

To communicate with the headquarters, you will need only two zmq sockets :

- A sub socket listening on the general, empty string '' channel and on '<turret\_uniq\_id>' channel (for direct orders)
- A push socket to send results to the master

For example, in the python turret the sockets are created this way :

```
self.context = zmq.Context()

self.master_publisher = self.context.socket(zmq.SUB)
self.master_publisher.connect("tcp://{}:{ {}".format(self.config['hq_address'], self.config['hq_publisher']
```

```
self.master_publisher.setsockopt_string(zmq.SUBSCRIBE, '')
self.master_publisher.setsockopt_string(zmq.SUBSCRIBE, self.uuid)

self.result_collector = self.context.socket(zmq.PUSH)
self.result_collector.connect("tcp://{}:{:}".format(self.config['hq_address'], self.config['hq_rc']))
```

You need to listen to the `master_publisher` socket to retrieve commands from the master. These commands can be :

- `start`: tells the turret to start the tests
- `status_request`: headquarters ask for the status of the turret (RUNNING, WAITING, etc.)
- `kill`: tells the turret to shutdown
- `stop`: tells the turret to stop tests and clean everything to be in ready status again

## 9.5 HQ commands format

The HQ will send commands in JSON format. All command messages will contain 2 keys : `command` and `msg`.

For example :

```
{
  "command": "stop",
  "msg": "premature stop"
}
```

## 9.6 Tell the HQ that your turret is ready to fire

The master need to know if your turret is ready or not. Why ? Because the HQ can be set up to wait for n number of turrets before starting the tests.

But don't worry, it's pretty simple to tell the master that your turret is ready, you only need to send a json message with the `PUSH` socket of your turret.

The status message **SHOULD** contain all of the following fields:

- `turret`: the name of the turret (eg: navigation, connection, etc.)
- `status`: the current status of the turret (ready, waiting, running, etc.)
- `uuid`: the unique identifier of the turret
- `rampup`: the rampup setting of the turret
- `script`: the test script associated with the turret
- `cannons`: the number of cannons on the turret

A complete json status message will look like this:

```
{
  "turret": "navigation",
  "status": "READY",
  "uuid": "d7b8a1cc-639a-405c-9b16-62ce5cd66f36",
  'rampup': "30",
  'script': "tests/navigation.py",
```

```
'cannons': "250"
}
```

---

**Note:** The status messages are not fixed, since it will only be used in the final html report for displaying the latest known status of each turret. But it's important to update it, since a crashing turret will obviously impact final results

---

## 9.7 Results messages format

All results messages that will be sent to the HQ should have the same pattern. Note that if the HQ receive a badly formatted message, it will fail silently and you will lose those data.

But don't worry, once again the pattern of the message is pretty simple :

```
{
  "turret_name": "my_turret"
  "elapsed": 12.48, // total elapsed time in seconds
  "epoch": 1453731738 // timestamp
  "scriptrun_time": 1.2, // the time it took to execute the current transaction (aka the response t
  "error": "My custom error", // the error string. Empty if there are no errors
  "custom_timers": {
    "Example_timer": 0.6, // An example custom timer
    "Other timer": 0.8
  }
}
```

See ? Pretty simple, isn't it ?

This message will be sent through the push socket of the turret and will be received by the pull socket of the master.

**Warning:** The master use the `recv_json()` method to retrieve messages coming from the turret, so take care to sent message using the appropriate `send_json()` method

## 9.8 Error management

The way turrets must manage errors is pretty simple :

- If the error is inside the test scripts, the turret should keep running
- If the error happens at the turret level, the turret should send a notification to the master before dying

So, what happens when an error is thrown inside the test script ? Simple, your turret should log it and send it to the master in the `error` key of the reponse message. This way, the user could be informed if something went wrong, but the test will continue to run.

And now, if the error appears at the turret level, how to tell the HQ that your turret is dead ? Pretty simple again, a simple status message with the new status of your turret :

```
{
  "turret": "navigation",
  "status": "Aborted",
  "uuid": "d7b8a1cc-639a-405c-9b16-62ce5cd66f36",
  'rampup': "30",
```

```
'script': "tests/navigation.py",  
'cannons': "250"  
}
```

If you sent this message, in the final html report the user will be able to see that one turret is dead and at what moment the turret as stopped

## 9.9 Writing your own packaging system

For this you're pretty free to implement it the way you want / need it. But don't forget that the goal of the packaging system is to provide simple way to distribute turret in one command line.

Don't forget to document the way your user can packages their turrets and how they can run it !

Plus, the packaging available in the core of OCT will be rewritten to be more generic as soon as possible.

## 9.10 Document your turret

Simply put: please, document your turret !

We expect to create a list to reference all available turrets, and if your turrets doesn't have a documentation, we will refuse to list it.

But keep in mind that for many case, a simple README is enough. At the very least, tell your users how to install and start your turret.





---

## Commands reference

---

### 10.1 Global

Since the 0.4.0 version, OCT only provide one entry points for all commands. To see all available sub-commands type:

```
oct -h
```

You should see :

```
usage: oct [-h]
           {to-csv,rebuild,pack,rebuild-results,new,results-to-csv,run,new-project,pack-turrets}
           ...

positional arguments:
  {to-csv,rebuild,pack,rebuild-results,new,results-to-csv,run,new-project,pack-turrets}
                                sub commands available
  new-project (new)           create a new oct project
  pack-turrets (pack)         create turrets packages from a given oct project
  run                         run an oct project
  rebuild-results (rebuild)   Rebuild the html report from result dir
  results-to-csv (to-csv)     Create a csv file from a sqlite results file

optional arguments:
  -h, --help                 show this help message and exit
```

Each sub command has its own help

### 10.2 New project

Create a new OCT project

aliases :

- new-project
- new

usage :

```
oct new-project [-h] [-t TEMPLATE] <project_path>
```

Arguments :

name	type	mandatory	description
project	str	yes	path of the new project
-t, --template	str	no	path of existing project template

## 10.3 Pack turrets

Create all turrets package from config file

aliases :

- pack-turrets
- pack

usage :

```
oct pack-turrets <path-to-project>
```

Arguments :

name	type	mandatory	description
path	str	yes	path of the project

## 10.4 Run

Run an OCT project

aliases :

- run

usage :

```
oct run <path-to-project>
```

Arguments :

name	type	mandatory	description
project	str	yes	path of the project
-r, --results	str	no	specify a custom directory for the results
-d, --directyory	str	no	specify the project directory if not current

## 10.5 Rebuild results

Rebuild html results and graph from existing sqlite result file

aliases :

- rebuild-results
- rebuild

usage :

```
oct rebuild-results <path-to-results> <path-to-sqlite> <path-to-config>
```

Arguments :

name	type	mandatory	description
results_dir	str	yes	results directory to rebuild
results_file	str	yes	sqlite result file to use
config_file	str	yes	json config file of the project

## 10.6 Results to csv

Convert sqlite results to csv

aliases :

- results-to-csv
- to-csv

usage :

```
oct results-to-csv [-h] [-d DELIMITER] <result_file> <output_file>
```

Arguments :

name	type	mandatory	description
results_file	str	yes	sqlite result file to use
output_file	str	yes	csv output file
-d, --delimiter	str	no	specify custom delimiter for csv file



---

## API Reference

---

### 11.1 oct.core package

#### 11.1.1 Submodules

#### 11.1.2 oct.core.exceptions module

**exception** `oct.core.exceptions.FormNotFoundException`

Bases: `exceptions.Exception`

Raised in case of FormNotFound with browser

**exception** `oct.core.exceptions.LinkNotFound`

Bases: `exceptions.Exception`

Raised in case of link not found in current html document

**exception** `oct.core.exceptions.NoFormWaiting`

Bases: `exceptions.Exception`

Raised in case of action required form if no form selected

**exception** `oct.core.exceptions.NoUrlOpen`

Bases: `exceptions.Exception`

Raised in case of no url open but requested inside browser class

**exception** `oct.core.exceptions.OctConfigurationError`

Bases: `exceptions.Exception`

Provide an oct configuration error

**exception** `oct.core.exceptions.OctGenericException`

Bases: `exceptions.Exception`

Provide generic exception for reports

#### 11.1.3 oct.core.hq module

**class** `oct.core.hq.HightQuarter` (*publish\_port, rc\_port, stats\_handler, config*)

Bases: `object`

The main hight quarter that will receive informations from the turrets and send the start message

**Parameters**

- **publish\_port** (*int*) – the port for publishing information to turrets
- **rc\_port** (*int*) – the result collector port for collecting results from the turrets
- **stats\_handler** (*StatsHandler*) – the stats handler writer
- **config** (*dict*) – the configuration of the test

**run** ()

Run the hight quarter, lunch the turrets and wait for results

**wait\_turrets** (*wait\_for*)

Wait until wait\_for turrets are connected and ready

#### 11.1.4 oct.core.main module

#### 11.1.5 oct.core.test\_loader module

#### 11.1.6 Module contents

### 11.2 oct.results package

#### 11.2.1 Submodules

#### 11.2.2 oct.results.models module

**class** oct.results.models.**Result** (*\*args, \*\*kwargs*)

Bases: peewee.Model

Define a result model

**DoesNotExist**

alias of ResultDoesNotExist

**custom\_timers** = <peewee.TextField object>

**elapsed** = <peewee.FloatField object>

**epoch** = <peewee.FloatField object>

**error** = <peewee.TextField object>

**id** = <peewee.PrimaryKeyField object>

**scriptrun\_time** = <peewee.FloatField object>

**to\_dict** ()

**turret\_name** = <peewee.CharField object>

**class** oct.results.models.**Turret** (*\*args, \*\*kwargs*)

Bases: peewee.Model

Define a turret model

**DoesNotExist**

alias of TurretDoesNotExist

**cannons** = <peewee.IntegerField object>

**id** = <peewee.PrimaryKeyField object>

```

name = <peewee.TextField object>
rampup = <peewee.IntegerField object>
save (*args, **kwargs)
script = <peewee.TextField object>
status = <peewee.TextField object>
to_dict ()
updated_at = <peewee.DateTimeField object>
uuid = <peewee.TextField object>

```

```
oct.results.models.set_database(db_path, proxy, config)
```

Initialize the peewee database with the given configuration

#### Parameters

- **db\_path** (*str*) – the path of the sqlite database
- **proxy** (*peewee.Proxy*) – the peewee proxy to initialise
- **config** (*dict*) – the configuration dictionary

### 11.2.3 oct.results.report module

```
class oct.results.report.ReportResults(run_time, interval)
```

Bases: object

Represent a report containing all tests results

#### Parameters

- **run\_time** (*int*) – the run\_time of the script
- **interval** (*int*) – the time interval between each group of results

```
compile_results()
```

Compile all results for the current test

### 11.2.4 oct.results.writer module

```
class oct.results.writer.ReportWriter(results_dir, parent)
```

Bases: object

A class representing a report, used to output the result

#### Parameters

- **results\_dir** (*str*) – the output directory for the report
- **parent** (*str*) – the parent directory

```
set_statics()
```

Create statics directory and copy files in it

```
write_report(template)
```

Write the compiled jinja template to the results file

**Parameters** **str** (*template*) – the compiled jinja template

## 11.2.5 oct.results.ouput module

## 11.2.6 oct.results.stats\_handler module

**class** `oct.results.stats_handler.StatsHandler(output_dir, config)`

Bases: `object`

This class will handle results and stats coming from the turrets

**Parameters** `output_dir` (*str*) – the output directory for the results

**write\_remaining()**

Write the remaning stack content

**write\_result** (*data*)

Write the results received to the database

**Parameters** `data` (*dict*) – the data to save in database

**Returns** `None`

**write\_turret** (*data*)

Write the turret information in database

**Parameters** `data` (*dict*) – the data of the turret to save

**Returns** The turret object after save

## 11.2.7 oct.results.graphs module

`oct.results.graphs.get_local_time(index)`

Localize datetime for better output in graphs

**Parameters** `index` (*pandas.DatetimeIndex*) – pandas datetime index

**Returns** aware time objet

**Return type** `datetime.time`

`oct.results.graphs.resp_graph(dataframe, image_name, dir='.')`

Response time graph for bucketed data

**Parameters**

- **dataframe** (*pandas.DataFrame*) – dataframe containing all data
- **image\_name** (*str*) – the output file name
- **dir** (*str*) – the output directory

**Returns** `None`

`oct.results.graphs.resp_graph_raw(dataframe, image_name, dir='.')`

Response time graph for raw data

**Parameters**

- **dataframe** (*pandas.DataFrame*) – the raw results dataframe
- **image\_name** (*str*) – the output file name
- **dir** (*str*) – the output directory

**Returns** `None`



```
oct.results.graphs.tp_graph(dataframe, image_name, dir='.')
```

Throughput graph

**Parameters**

- **dataframe** (*pandas.DataFrame*) – dataframe containing all data
- **dir** (*str*) – the output directory

**Returns** None

## 11.2.8 Module contents

# 11.3 oct.tools package

## 11.3.1 Submodules

## 11.3.2 oct.tools.rebuild\_results module

```
oct.tools.rebuild_results.rebuild(args)
```

```
oct.tools.rebuild_results.rebuild_results(sp)
```

## 11.3.3 oct.tools.results\_to\_csv module

```
oct.tools.results_to_csv.results_to_csv(sp)
```

```
oct.tools.results_to_csv.to_csv(args)
```

Take a sqlite filled database of results and return a csv file

**Parameters**

- **result\_file** (*str*) – the path of the sqlite database
- **output\_file** (*str*) – the path of the csv output file
- **delimiter** (*str*) – the desired delimiter for the output csv file

## 11.3.4 Module contents

# 11.4 oct.utilities package

## 11.4.1 Submodules

## 11.4.2 oct.utilities.configuration module

```
oct.utilities.configuration.cleanup_turret_config(config)
```

Remove useless keys from turret configuration

**Parameters** **config** (*dict*) – the configuration to cleanup

**Returns** the cleaned configuration

**Return type** dict

`oct.utilities.configuration.configure` (*project\_name*, *cmd\_opts*, *config\_file=None*)

Get the configuration of the test and return it as a config object

**Returns** the configured config object

**Return type** Object

`oct.utilities.configuration.configure_for_turret` (*project\_name*, *config\_file*)

Load the configuration file in python dict and check for keys that will be set to default value if not present

**Parameters**

- **project\_name** (*str*) – the name of the project
- **config\_file** (*str*) – the path of the configuration file

**Returns** the loaded configuration

**Return type** dict

### 11.4.3 oct.utilities.newproject module

`oct.utilities.newproject.check_template` (*members*)

`oct.utilities.newproject.create_project` (*args*)

`oct.utilities.newproject.from_oct` (*args*)

Create a new oct project

**Parameters** **args** (*Namespace*) – the command line arguments

`oct.utilities.newproject.from_template` (*args*)

Create a new oct project from existing template

**Parameters** **args** (*Namespace*) – command line arguments

`oct.utilities.newproject.new_project` (*sp*)

### 11.4.4 oct.utilities.pack module

`oct.utilities.pack.cleanup_temp_files` (*turret*, *files*)

`oct.utilities.pack.get_files_and_content` (*turret*, *is\_python=False*)

`oct.utilities.pack.pack` (*args*)

`oct.utilities.pack.pack_turret` (*turret*, *temp\_files*, *base\_config\_path*, *path=None*)

pack a turret into a tar file based on the turret configuration

**Parameters**

- **turret\_config** (*dict*) – the turret configuration to pack
- **tmp\_config\_file** (*str*) – the path of the temp config file
- **base\_config\_path** (*str*) – the base directory of the main configuration file

`oct.utilities.pack.pack_turrets` (*sp*)

`oct.utilities.pack.write_temp_files` (*turret*, *files*)

### 11.4.5 oct.utilities.run module

`oct.utilities.run.run(cmd_args)`

Start an oct project

**Parameters** `cmd_args` (*Namespace*) – the commande-line arguments

`oct.utilities.run.run_command(sp)`

Main function to run oct tests.

### 11.4.6 Module contents



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