Rally Documentation

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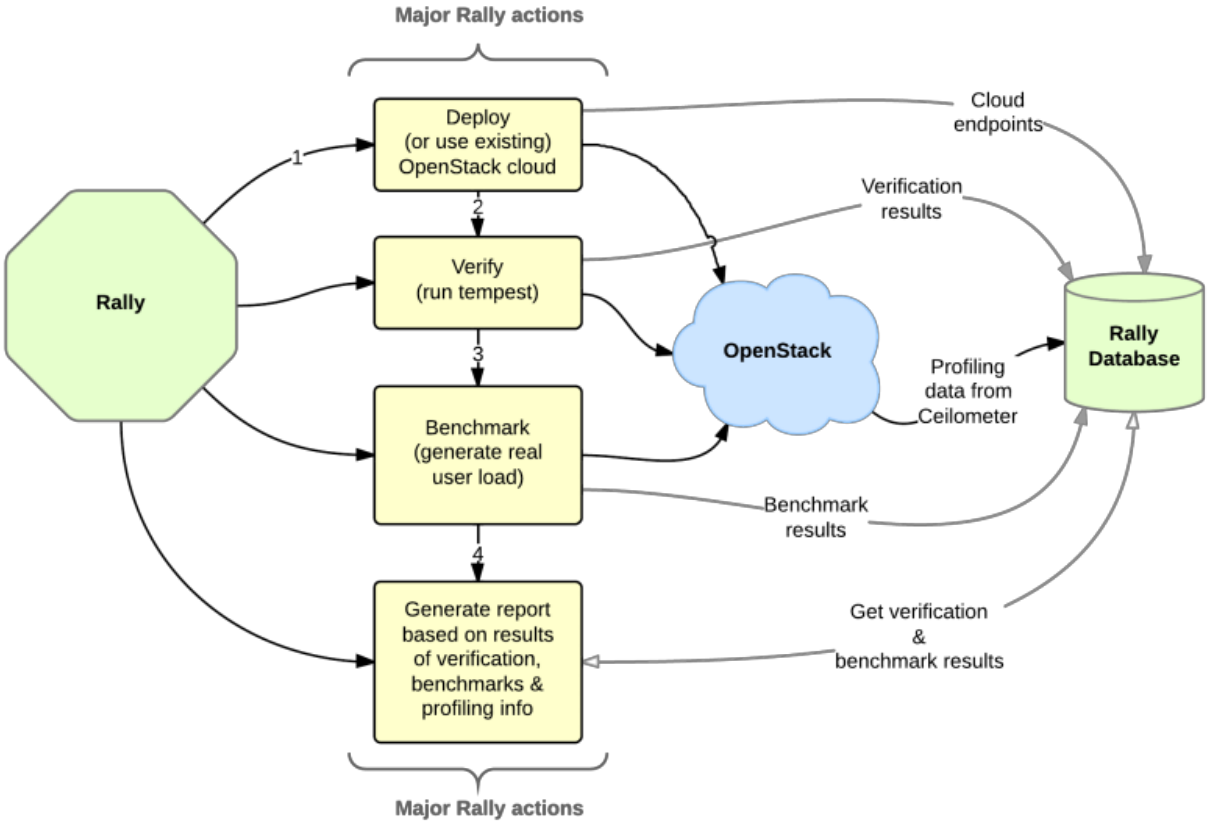
OpenStack is, undoubtedly, a really *huge* ecosystem of cooperative services. **Rally** is a **benchmarking tool** that answers the question: **"How does OpenStack work at scale?"**. To make this possible, Rally **automates** and **unifies** multi-node OpenStack deployment, cloud verification, benchmarking & profiling. Rally does it in a **generic** way, making it possible to check whether OpenStack is going to work well on, say, a 1k-servers installation under high load. Thus it can be used as a basic tool for an *OpenStack CI/CD system* that would continuously improve its SLA, performance and stability.



CHAPTER 1

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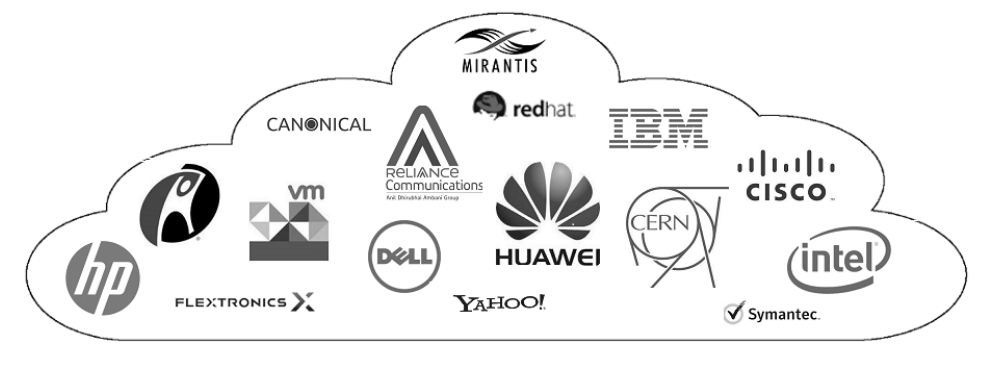
1.1 Overview

Rally is a **benchmarking tool** that **automates** and **unifies** multi-node OpenStack deployment, cloud verification, benchmarking & profiling. It can be used as a basic tool for an *OpenStack CI/CD system* that would continuously improve its SLA, performance and stability.

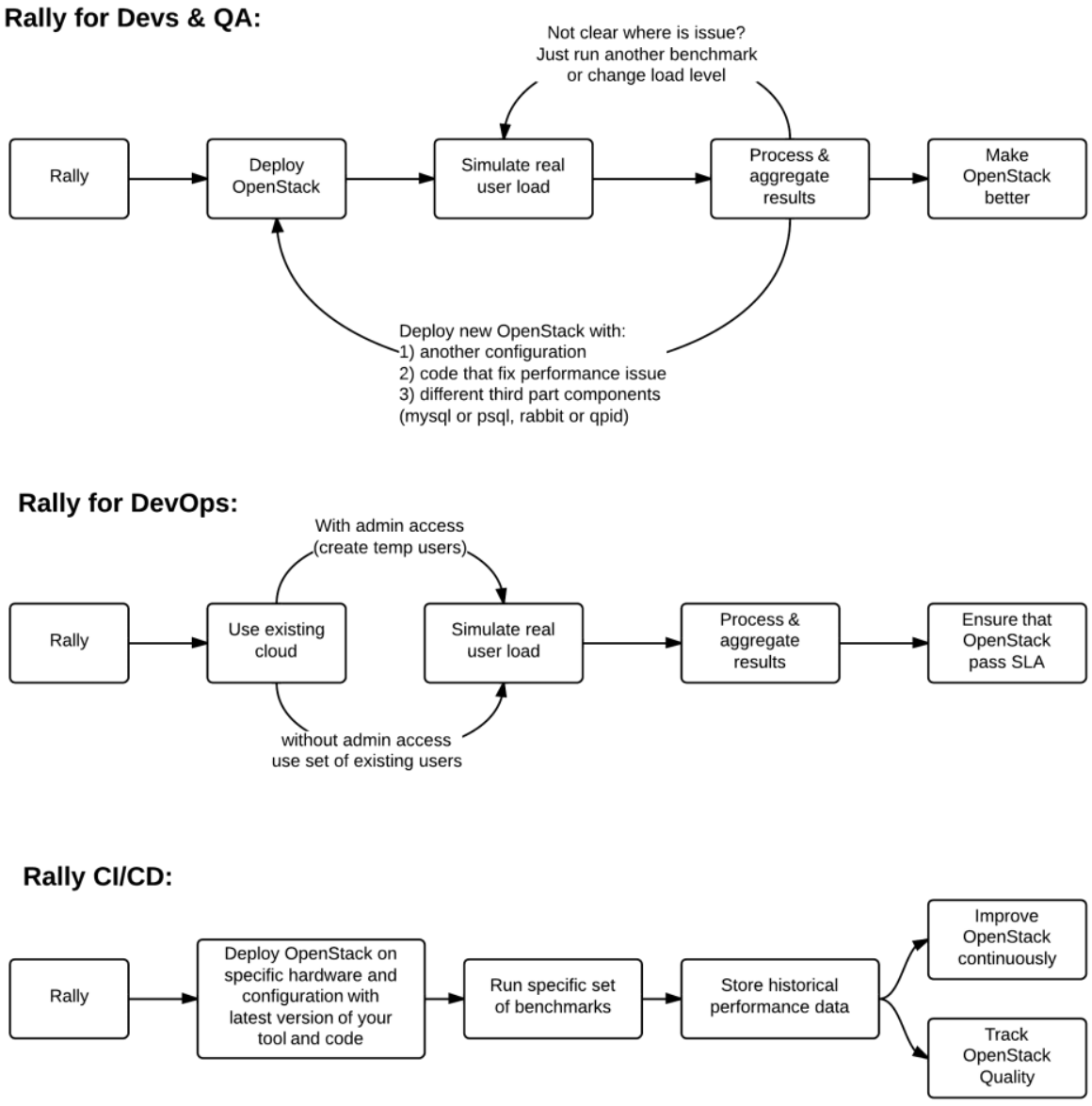
1.1.1 Who Is Using Rally

Here's a small selection of some of the many companies using Rally:



1.1.2 Use Cases

Let's take a look at 3 major high level Use Cases of Rally:



Generally, there are a few typical cases where Rally proves to be of great use:

1. Automate measuring & profiling focused on how new code changes affect the OS performance;
2. Using Rally profiler to detect scaling & performance issues;
3. Investigate how different deployments affect the OS performance:
   - Find the set of suitable OpenStack deployment architectures;
   - Create deployment specifications for different loads (amount of controllers, swift nodes, etc.);
4. Automate the search for hardware best suited for particular OpenStack cloud;

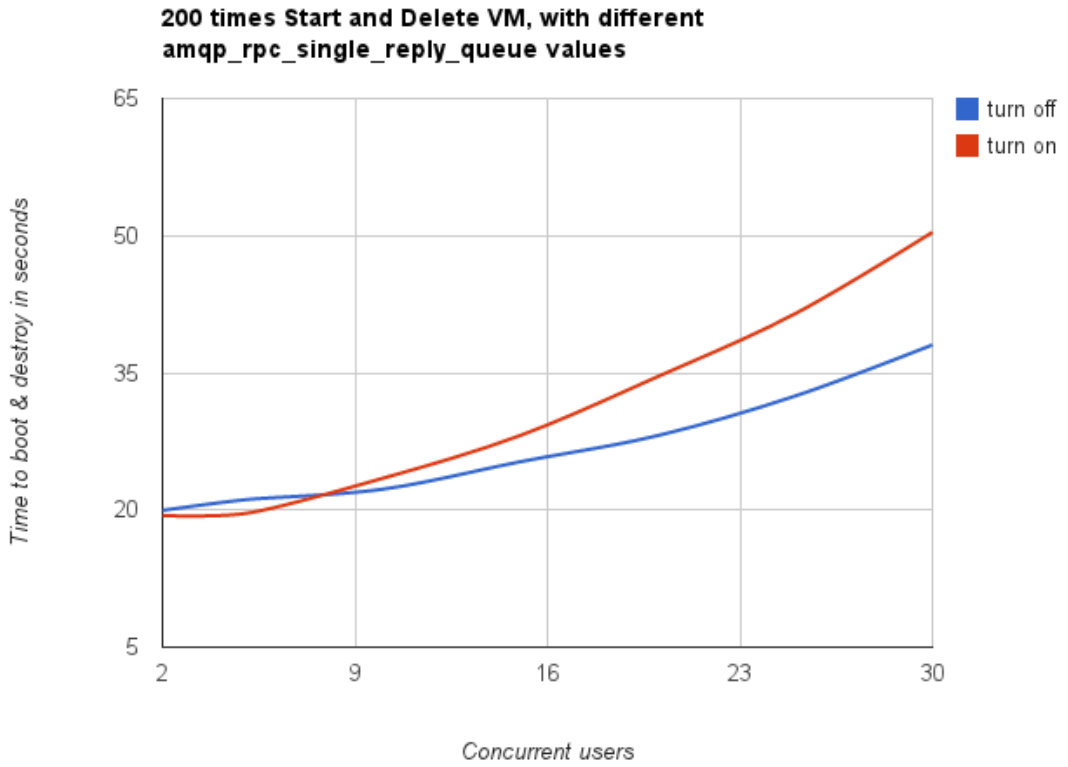
5. Automate the production cloud specification generation:
    - Determine terminal loads for basic cloud operations: VM start & stop, Block Device create/destroy & various OpenStack API methods;
    - Check performance of basic cloud operations in case of different loads.

1.1.3 Real-life examples

To be substantive, let's investigate a couple of real-life examples of Rally in action.

How does amqp_rpc_single_reply_queue affect performance?

Rally allowed us to reveal a quite an interesting fact about **Nova**. We used *NovaServers.boot_and_delete* benchmark scenario to see how the *amqp_rpc_single_reply_queue* option affects VM bootup time (it turns on a kind of fast RPC). Some time ago it was shown that cloud performance can be boosted by setting it on, so we naturally decided to check this result with Rally. To make this test, we issued requests for booting and deleting VMs for a number of concurrent users ranging from 1 to 30 with and without the investigated option. For each group of users, a total number of 200 requests was issued. Averaged time per request is shown below:



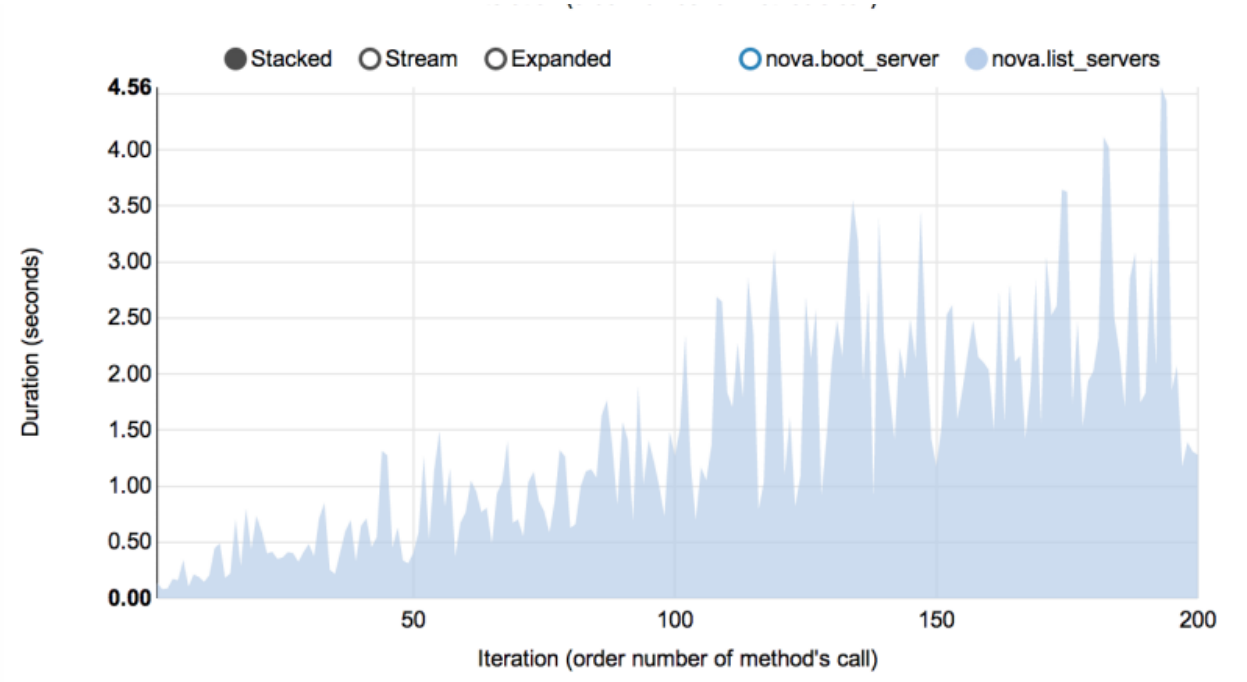
So Rally has unexpectedly indicated that setting the *amqp_rpc_single_reply_queue* option apparently affects the cloud performance, but in quite an opposite way rather than it was thought before.

Performance of Nova list command

Another interesting result comes from the *NovaServers.boot_and_list_server* scenario, which enabled us to we launched the following benchmark with Rally:

- **Benchmark environment** (which we also call **"Context"**): 1 temporary OpenStack user.
- **Benchmark scenario**: boot a single VM from this user & list all VMs.
- **Benchmark runner** setting: repeat this procedure 200 times in a continuous way.

During the execution of this benchmark scenario, the user has more and more VMs on each iteration. Rally has shown that in this case, the performance of the **VM list** command in Nova is degrading much faster than one might expect:

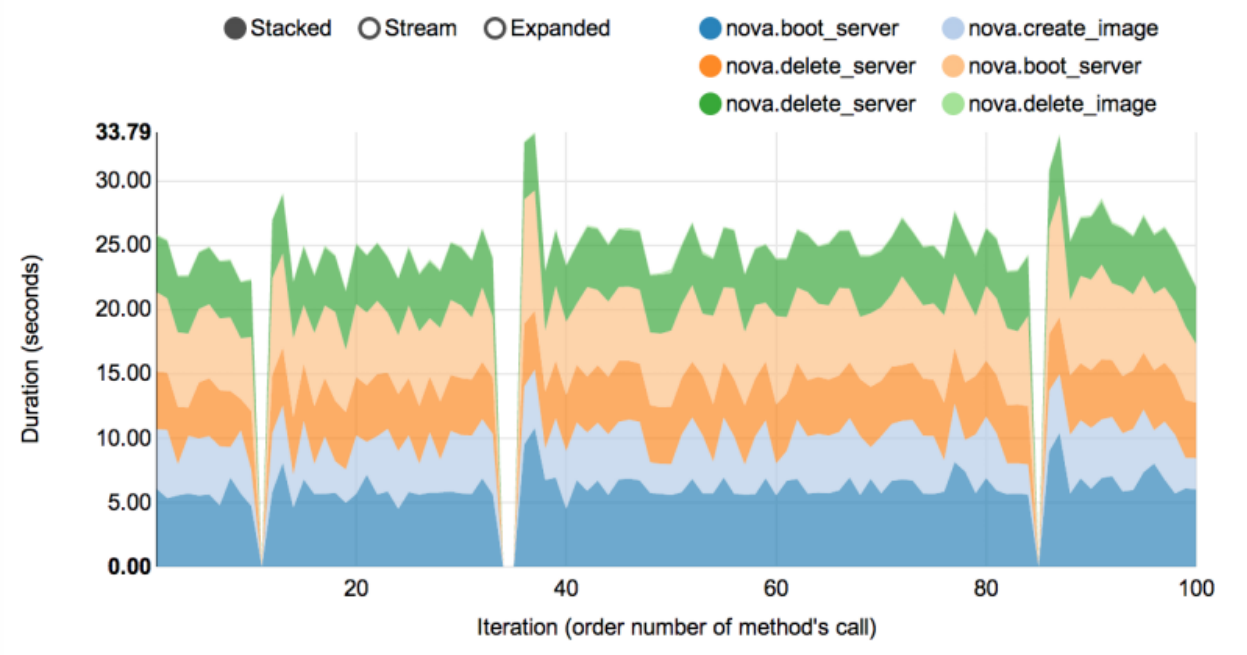


Complex scenarios

In fact, the vast majority of Rally scenarios is expressed as a sequence of **"atomic" actions**. For example, *NovaServers.snapshot* is composed of 6 atomic actions:

1. boot VM
2. snapshot VM
3. delete VM
4. boot VM from snapshot
5. delete VM
6. delete snapshot

Rally measures not only the performance of the benchmark scenario as a whole, but also that of single atomic actions. As a result, Rally also plots the atomic actions performance data for each benchmark iteration in a quite detailed way:

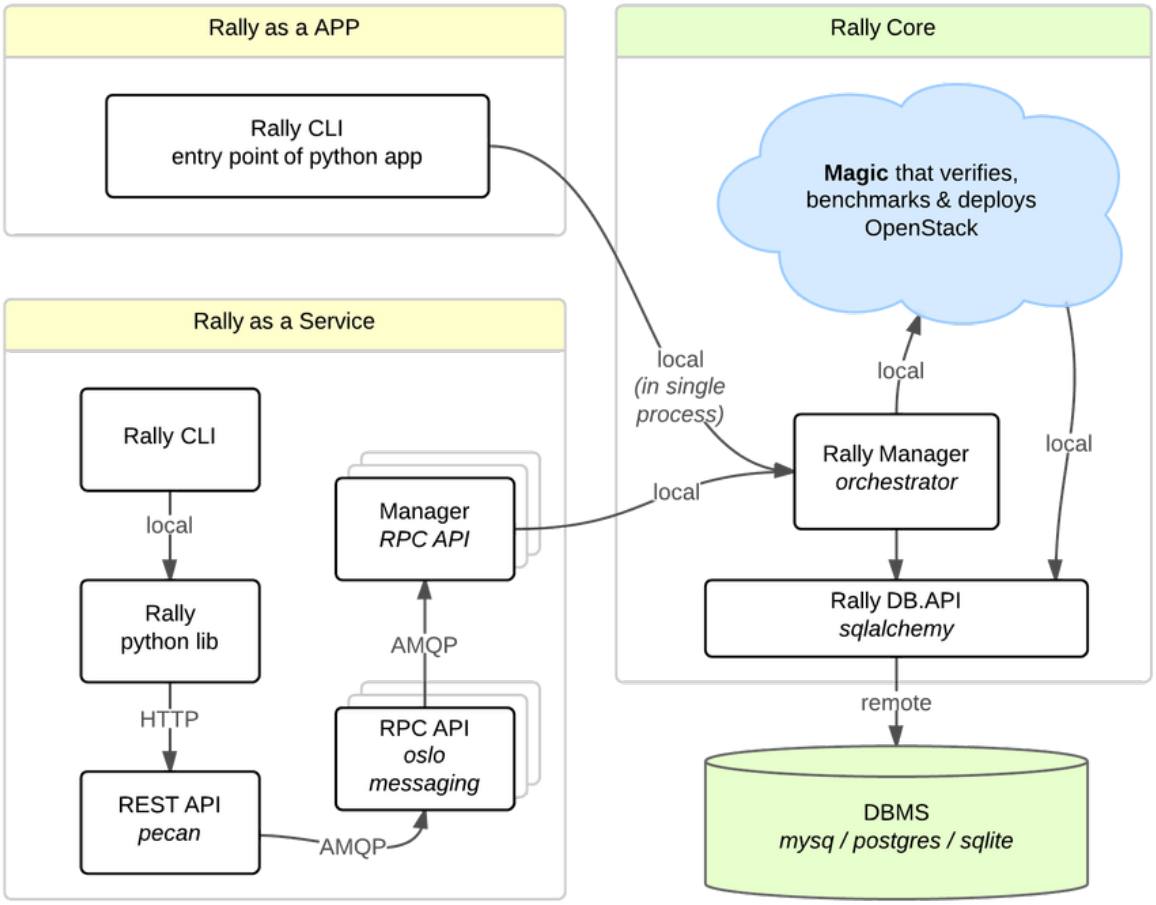


1.1.4 Architecture

Usually OpenStack projects are implemented *"as-a-Service"*, so Rally provides this approach. In addition, it implements a *CLI-driven* approach that does not require a daemon:

1. **Rally as-a-Service**: Run rally as a set of daemons that present Web UI *(work in progress)* so 1 RaaS could be used by a whole team.
2. **Rally as-an-App**: Rally as a just lightweight and portable CLI app (without any daemons) that makes it simple to use & develop.

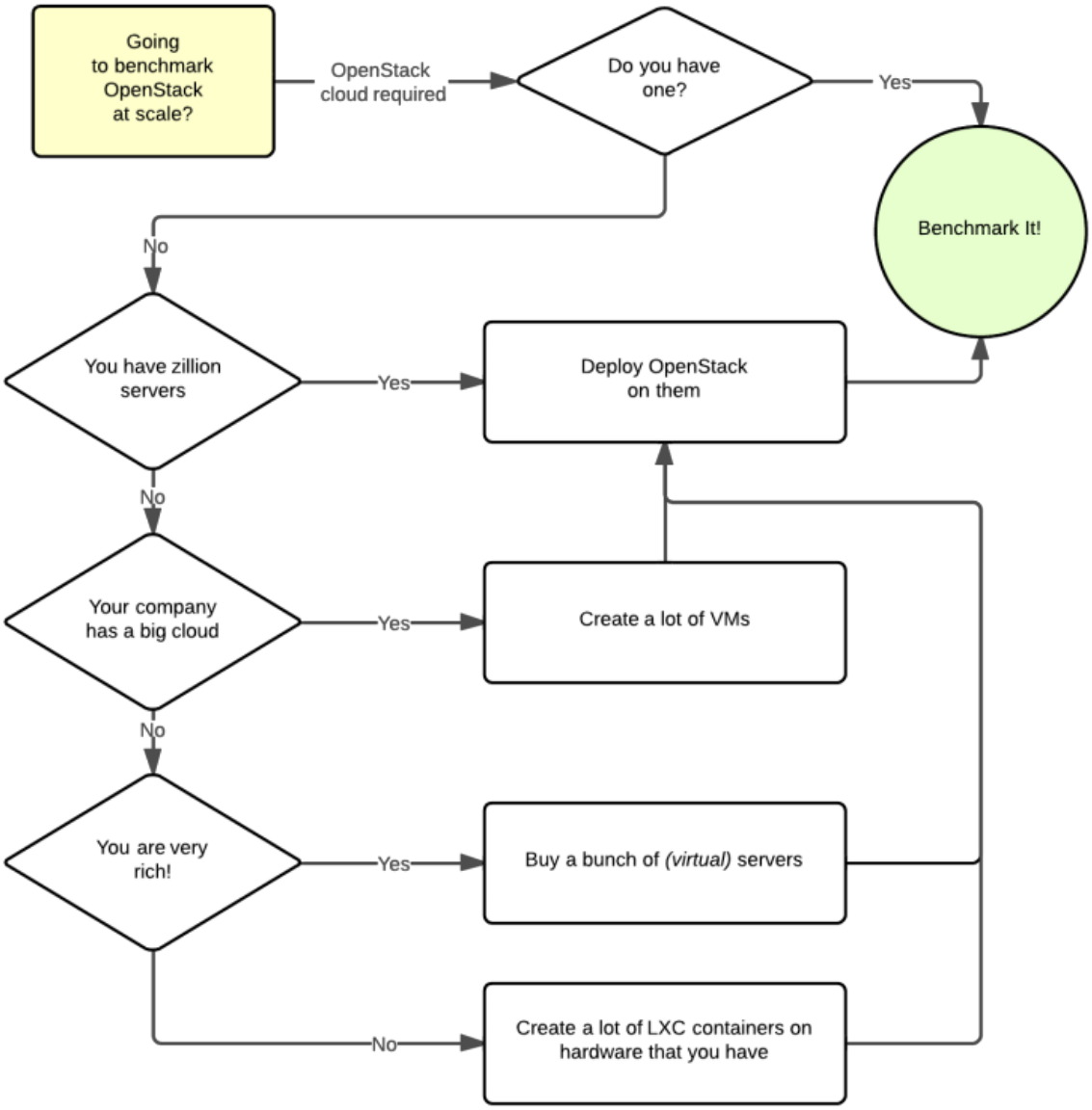
The diagram below shows how this is possible:



The actual **Rally core** consists of 4 main components, listed below in the order they go into action:

1. **Server Providers** - provide a **unified interface** for interaction with different **virtualization technologies** (*LXS*, *Virsh* etc.) and **cloud suppliers** (like *Amazon*): it does so via *ssh* access and in one *L3 network*;
2. **Deploy Engines** - deploy some OpenStack distribution (like *DevStack* or *FUEL*) before any benchmarking procedures take place, using servers retrieved from Server Providers;
3. **Verification** - runs *Tempest* (or another specific set of tests) against the deployed cloud to check that it works correctly, collects results & presents them in human readable form;
4. **Benchmark Engine** - allows to write parameterized benchmark scenarios & run them against the cloud.

It should become fairly obvious why Rally core needs to be split to these parts if you take a look at the following diagram that visualizes a rough **algorithm for starting benchmarking OpenStack at scale**. Keep in mind that there might be lots of different ways to set up virtual servers, as well as to deploy OpenStack to them.



1.2 Installation

1.2.1 Automated installation

The easiest way to install Rally is by executing its installation script

```
wget -q -O- https://raw.githubusercontent.com/openstack/rally/master/install_rally.sh | bash
# or using curl
curl https://raw.githubusercontent.com/openstack/rally/master/install_rally.sh | bash
```

The installation script will also check if all the software required by Rally is already installed in your system; if run as **root** user and some dependency is missing it will ask you if you want to install the required packages.

By default it will install Rally in a virtualenv in `~/rally` when run as standard user, or install system wide when run as root. You can install Rally in a venv by using the option `--target`:

```
./install_rally.sh --target /foo/bar
```

You can also install Rally system wide by running script as root and without `--target` option:

```
sudo ./install_rally.sh
```

Run `./install_rally.sh` with option `--help` to have a list of all available options:

```
$ ./install_rally.sh --help
Usage: install_rally.sh [options]

This script will install rally either in the system (as root) or in a virtual environment.

Options:
  -h, --help             Print this help text
  -v, --verbose          Verbose mode
  -s, --system           Instead of creating a virtualenv, install as
                         system package.
  -d, --target DIRECTORY Install Rally virtual environment into DIRECTORY.
                         (Default: $HOME/rally).
  -f, --overwrite        Remove target directory if it already exists.
  -y, --yes              Do not ask for confirmation: assume a 'yes' reply
                         to every question.
  -D, --dbtype TYPE      Select the database type. TYPE can be one of
                         'sqlite', 'mysql', 'postgres'.
                         Default: sqlite
  --db-user USER         Database user to use. Only used when --dbtype
                         is either 'mysql' or 'postgres'.
  --db-password PASSWORD Password of the database user. Only used when
                         --dbtype is either 'mysql' or 'postgres'.
  --db-host HOST         Database host. Only used when --dbtype is
                         either 'mysql' or 'postgres'
  --db-name NAME         Name of the database. Only used when --dbtype is
                         either 'mysql' or 'postgres'
  -p, --python EXE       The python interpreter to use. Default: /usr/bin/python.
```

Notes: the script will check if all the software required by Rally is already installed in your system. If this is not the case, it will exit, suggesting you the command to issue **as root** in order to install the dependencies.

You also have to set up the **Rally database** after the installation is complete:

```
rally-manage db recreate
```

1.2.2 Rally with DevStack all-in-one installation

It is also possible to install Rally with DevStack. First, clone the corresponding repositories:

```
git clone https://git.openstack.org/openstack-dev/devstack
git clone https://github.com/openstack/rally
```

Then, configure DevStack to run Rally. First, create your `local.conf` file:

```
cd devstack
cp samples/local.conf local.conf
```

Next, edit local.conf: add `enable_plugin rally https://github.com/openstack/rally master` to `[[local|localrc]]` section.

Finally, run DevStack as usually:

```
./stack.sh
```

1.2.3 Rally & Docker

First you need to install Docker; Docker supplies installation instructions for various OSes.

You can either use the official Rally Docker image, or build your own from the Rally source. To do that, change directory to the root directory of the Rally git repository and run:

```
docker build -t myrally .
```

If you build your own Docker image, substitute `myrally` for `rallyforge/rally` in the commands below.

The Rally Docker image is configured to store local settings and the database in the user's home directory. For persistence of these data, you may want to keep this directory outside of the container. This may be done by the following steps:

```
sudo mkdir /var/lib/rally_container
sudo chown 65500 /var/lib/rally_container
docker run -it -v /var/lib/rally_container:/home/rally rallyforge/rally
```

Note: In order for the volume to be accessible by the Rally user (uid: 65500) inside the container, it must be accessible by UID 65500 *outside* the container as well, which is why it is created in `/var/lib/rally`. Creating it in your home directory is only likely to work if your home directory has excessively open permissions (e.g., `0755`), which is not recommended.

All task samples, docs and certification tasks you could find at /opt/rally/. Also you may want to save the last command as an alias:

```
echo 'alias dock_rally="docker run -it -v /var/lib/rally_container:/home/rally rallyforge/rally"' >>
```

After executing `dock_rally`, or `docker run ...`, you will have bash running inside the container with Rally installed. You may do anything with Rally, but you need to create the database first:

```
user@box:~/rally$ dock_rally
rally@1cc98e0b5941:~$ rally-manage db recreate
rally@1cc98e0b5941:~$ rally deployment list
There are no deployments. To create a new deployment, use:
rally deployment create
rally@1cc98e0b5941:~$
```

In case you have SELinux enabled and Rally fails to create the database, try executing the following commands to put SELinux into Permissive Mode on the host machine

```
sed -i 's/SELINUX=enforcing/SELINUX=permissive/' /etc/selinux/config
setenforce permissive
```

Rally currently has no SELinux policy, which is why it must be run in Permissive mode for certain configurations. If you can help create an SELinux policy for Rally, please contribute!

More about docker: https://www.docker.com/

1.3 Rally step-by-step

In the following tutorial, we will guide you step-by-step through different use cases that might occur in Rally, starting with the easy ones and moving towards more complicated cases.

1.3.1 Step 0. Installation

The easiest way to install Rally is by running its installation script:

```
wget -q -O- https://raw.githubusercontent.com/openstack/rally/master/install_rally.sh | bash
# or using curl:
curl https://raw.githubusercontent.com/openstack/rally/master/install_rally.sh | bash
```

If you execute the script as regular user, Rally will create a new virtual environment in `~/rally/` and install in it Rally, and will use *sqlite* as database backend. If you execute the script as root, Rally will be installed system wide. For more installation options, please refer to the *installation* page.

Note: Rally requires Python version 2.7 or 3.4.

Now that you have rally installed, you are ready to start *benchmarking OpenStack with it*!

1.3.2 Step 1. Setting up the environment and running a benchmark from samples

- Registering an OpenStack deployment in Rally
- Benchmarking
- Report generation

In this demo, we will show how to perform some basic operations in Rally, such as registering an OpenStack cloud, benchmarking it and generating benchmark reports.

We assume that you have a *Rally installation* and an already existing OpenStack deployment with Keystone available at *<KEYSTONE_AUTH_URL>*.

Registering an OpenStack deployment in Rally

First, you have to provide Rally with an OpenStack deployment it is going to benchmark. This should be done either through OpenRC files or through deployment configuration files. In case you already have an *OpenRC*, it is extremely simple to register a deployment with the *deployment create* command:

```
$ . openrc admin admin
$ rally deployment create --fromenv --name=existing
+--------------------------------------+----------------------------+------------+------------------
| uuid                                 | created_at                 | name       | status
+--------------------------------------+----------------------------+------------+------------------
| 28f90d74-d940-4874-a8ee-04fda59576da | 2015-01-18 00:11:38.059983 | existing   | deploy->finished
+--------------------------------------+----------------------------+------------+------------------
Using deployment : <Deployment UUID>
...
```

Alternatively, you can put the information about your cloud credentials into a JSON configuration file (let's call it existing.json). The *deployment create* command has a slightly different syntax in this case:

```
$ rally deployment create --file=existing.json --name=existing
+--------------------------------------+----------------------------+------------+------------------
| uuid                                 | created_at                 | name       | status
+--------------------------------------+----------------------------+------------+------------------
| 28f90d74-d940-4874-a8ee-04fda59576da | 2015-01-18 00:11:38.059983 | existing   | deploy->finished
+--------------------------------------+----------------------------+------------+------------------
Using deployment : <Deployment UUID>
...
```

Note the last line in the output. It says that the just created deployment is now used by Rally; that means that all the benchmarking operations from now on are going to be performed on this deployment. Later we will show how to switch between different deployments.

Finally, the *deployment check* command enables you to verify that your current deployment is healthy and ready to be benchmarked:

```
$ rally deployment check
keystone endpoints are valid and following services are available:
+----------+----------------+-----------+
| services | type           | status    |
+----------+----------------+-----------+
| cinder   | volume         | Available |
| cinderv2 | volumev2       | Available |
| ec2      | ec2            | Available |
| glance   | image          | Available |
| heat     | orchestration  | Available |
| heat-cfn | cloudformation | Available |
| keystone | identity       | Available |
| nova     | compute        | Available |
| novav21  | computev21     | Available |
| s3       | s3             | Available |
+----------+----------------+-----------+
```

Benchmarking

Now that we have a working and registered deployment, we can start benchmarking it. The sequence of benchmarks to be launched by Rally should be specified in a *benchmark task configuration file* (either in *JSON* or in *YAML* format). Let's try one of the sample benchmark tasks available in samples/tasks/scenarios, say, the one that boots and deletes multiple servers (*samples/tasks/scenarios/nova/boot-and-delete.json*):

```
{
    "NovaServers.boot_and_delete_server": [
        {
            "args": {
                "flavor": {
                    "name": "m1.tiny"
                },
                "image": {
                    "name": "^cirros.*uec$"
                },
                "force_delete": false
            },
            "runner": {
                "type": "constant",
                "times": 10,
                "concurrency": 2
            },
```

```
            "context": {
                "users": {
                    "tenants": 3,
                    "users_per_tenant": 2
                }
            }
        }
    ]
}
```

To start a benchmark task, run the task start command (you can also add the *-v* option to print more logging information):

```
$ rally task start samples/tasks/scenarios/nova/boot-and-delete.json
--------------------------------------------------------------------------------
 Preparing input task
--------------------------------------------------------------------------------

Input task is:
<Your task config here>

--------------------------------------------------------------------------------
 Task  6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996: started
--------------------------------------------------------------------------------

Benchmarking... This can take a while...

To track task status use:

  rally task status
  or
  rally task detailed

--------------------------------------------------------------------------------
 Task 6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996: finished
--------------------------------------------------------------------------------

test scenario NovaServers.boot_and_delete_server
args position 0
args values:
{u'args': {u'flavor': {u'name': u'm1.tiny'},
           u'force_delete': False,
           u'image': {u'name': u'^cirros.*uec$'}},
 u'context': {u'users': {u'project_domain': u'default',
                         u'resource_management_workers': 30,
                         u'tenants': 3,
                         u'user_domain': u'default',
                         u'users_per_tenant': 2}},
 u'runner': {u'concurrency': 2, u'times': 10, u'type': u'constant'}}
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| action             | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| nova.boot_server   | 7.99      | 9.047     | 11.862    | 9.747         | 10.805        | 100.0%  |
| nova.delete_server | 4.427     | 4.574     | 4.772     | 4.677         | 4.725         | 100.0%  |
| total              | 12.556    | 13.621    | 16.37     | 14.252        | 15.311        | 100.0%  |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
Load duration: 70.1310448647
Full duration: 87.545541048
```

```
HINTS:
* To plot HTML graphics with this data, run:
    rally task report 6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996 --out output.html

* To get raw JSON output of task results, run:
    rally task results 6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996

Using task: 6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996
```

Note that the Rally input task above uses *regular expressions* to specify the image and flavor name to be used for server creation, since concrete names might differ from installation to installation. If this benchmark task fails, then the reason for that might a non-existing image/flavor specified in the task. To check what images/flavors are available in the deployment you are currently benchmarking, you might use the *rally show* command:

```
$ rally show images
+--------------------------------------+-----------------------+------------+
|                 UUID                 |          Name         |  Size (B)  |
+--------------------------------------+-----------------------+------------+
| 8dfd6098-0c26-4cb5-8e77-1ecb2db0b8ae |  CentOS 6.5 (x86_64)  | 344457216 |
| 2b8d119e-9461-48fc-885b-1477abe2edc5 | CirrOS 0.3.4 (x86_64) |  13287936 |
+--------------------------------------+-----------------------+------------+

$ rally show flavors

Flavors for user `admin` in tenant `admin`:
+----+-----------+-------+----------+-----------+-----------+
| ID | Name      | vCPUs | RAM (MB) | Swap (MB) | Disk (GB) |
+----+-----------+-------+----------+-----------+-----------+
| 1  | m1.tiny   | 1     | 512      |           | 1         |
| 2  | m1.small  | 1     | 2048     |           | 20        |
| 3  | m1.medium | 2     | 4096     |           | 40        |
| 4  | m1.large  | 4     | 8192     |           | 80        |
| 5  | m1.xlarge | 8     | 16384    |           | 160       |
+----+-----------+-------+----------+-----------+-----------+
```

Report generation

One of the most beautiful things in Rally is its task report generation mechanism. It enables you to create illustrative and comprehensive HTML reports based on the benchmarking data. To create and open at once such a report for the last task you have launched, call:

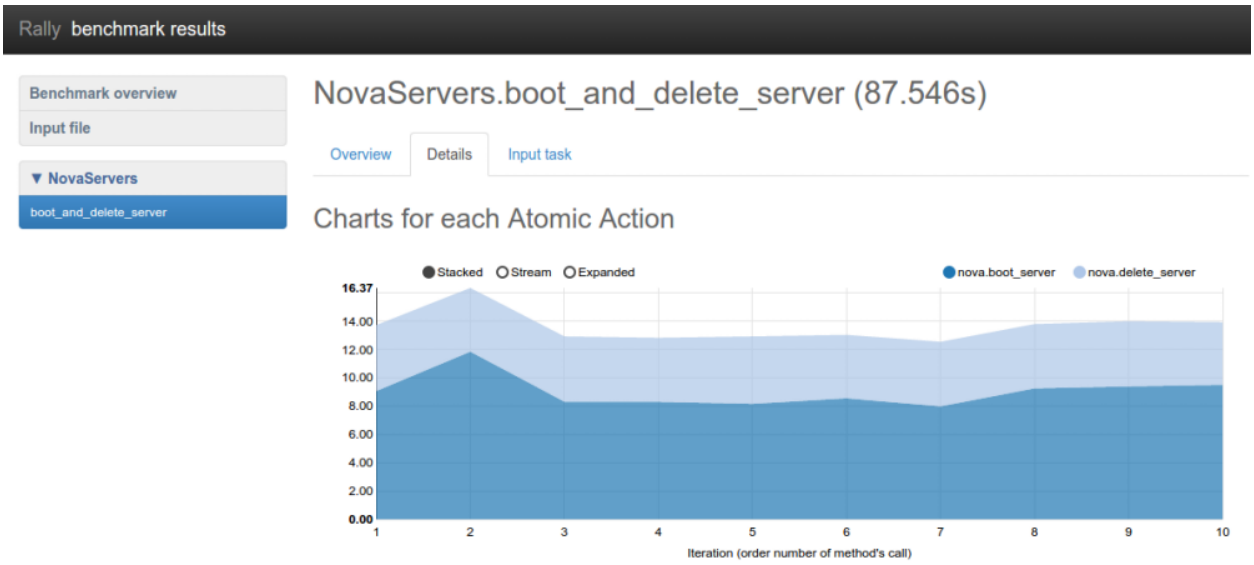
```
rally task report --out=report1.html --open
```

This will produce an HTML page with the overview of all the scenarios that you've included into the last benchmark task completed in Rally (in our case, this is just one scenario, and we will cover the topic of multiple scenarios in one task in *the next step of our tutorial*):

This aggregating table shows the duration of the load produced by the corresponding scenario (*"Load duration"*), the overall benchmark scenario execution time, including the duration of environment preparation with contexts (*"Full duration"*), the number of iterations of each scenario (*"Iterations"*), the type of the load used while running the scenario (*"Runner"*), the number of failed iterations (*"Errors"*) and finally whether the scenario has passed certain Success Criteria (*"SLA"*) that were set up by the user in the input configuration file (we will cover these criteria in *one of the next steps*).

By navigating in the left panel, you can switch to the detailed view of the benchmark results for the only scenario we included into our task, namely **NovaServers.boot_and_delete_server**:

This page, along with the description of the success criteria used to check the outcome of this scenario, shows some more detailed information and statistics about the duration of its iterations. Now, the *"Total durations"* table splits the duration of our scenario into the so-called **"atomic actions"**: in our case, the **"boot_and_delete_server"** scenario consists of two actions - **"boot_server"** and **"delete_server"**. You can also see how the scenario duration changed throughout is iterations in the *"Charts for the total duration"* section. Similar charts, but with atomic actions detalization, will arise if you switch to the *"Details"* tab of this page:



Note that all the charts on the report pages are very dynamic: you can change their contents by clicking the switches above the graph and see more information about its single points by hovering the cursor over these points.

Take some time to play around with these graphs and then move on to *the next step of our tutorial*.

1.3.3 Step 2. Rally input task format

Basic input task syntax

Rally comes with a really great collection of *plugins* and in most real-world cases you will use multiple plugins to test your OpenStack cloud. Rally makes it very easy to run **different test cases defined in a single task**. To do so, use the following syntax:

```
{
    "<ScenarioName1>": [<benchmark_config>, <benchmark_config2>, ...]
    "<ScenarioName2>": [<benchmark_config>, ...]
}
```

where <*benchmark_config*>, as before, is a dictionary:

```
{
    "args": { <scenario-specific arguments> },
    "runner": { <type of the runner and its specific parameters> },
    "context": { <contexts needed for this scenario> },
    "sla": { <different SLA configs> }
}
```

Multiple benchmarks in a single task

As an example, let's edit our configuration file from *step 1* so that it prescribes Rally to launch not only the **NovaServers.boot_and_delete_server** scenario, but also the **KeystoneBasic.create_delete_user** scenario. All we have to do is to append the configuration of the second scenario as yet another top-level key of our json file:

multiple-scenarios.json

```
{
    "NovaServers.boot_and_delete_server": [
        {
            "args": {
                "flavor": {
                    "name": "m1.tiny"
                },
                "image": {
                    "name": "^cirros.*uec$"
                },
                "force_delete": false
            },
            "runner": {
                "type": "constant",
                "times": 10,
                "concurrency": 2
            },
            "context": {
                "users": {
                    "tenants": 3,
                    "users_per_tenant": 2
                }
            }
        }
    ],
    "KeystoneBasic.create_delete_user": [
        {
            "args": {},
            "runner": {
                "type": "constant",
                "times": 10,
                "concurrency": 3
            }
        }
    ]
}
```

Now you can start this benchmark task as usually:

```
$ rally task start multiple-scenarios.json
...
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| action             | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| nova.boot_server   | 8.06      | 11.354    | 18.594    | 18.54         | 18.567        | 100.0%  |
| nova.delete_server | 4.364     | 5.054     | 6.837     | 6.805         | 6.821         | 100.0%  |
| total              | 12.572    | 16.408    | 25.396    | 25.374        | 25.385        | 100.0%  |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
Load duration: 84.1959171295
Full duration: 102.033041
--------------------------------------------------------------------------------
```

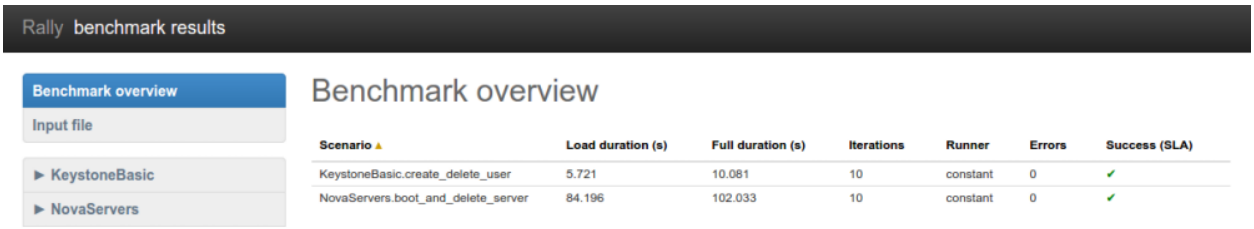
```
...

+----------------------+-----------+-----------+-----------+---------------+---------------+---------
| action               | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success
+----------------------+-----------+-----------+-----------+---------------+---------------+---------
| keystone.create_user | 0.676     | 0.875     | 1.03      | 1.02          | 1.025         | 100.0%
| keystone.delete_user | 0.407     | 0.647     | 0.84      | 0.739         | 0.79          | 100.0%
| total                | 1.082     | 1.522     | 1.757     | 1.724         | 1.741         | 100.0%
+----------------------+-----------+-----------+-----------+---------------+---------------+---------
Load duration: 5.72119688988
Full duration: 10.0808410645

...
```

Note that the HTML reports you can generate by typing **rally task report –out=report_name.html** after your benchmark task has completed will get richer as your benchmark task configuration file includes more benchmark scenarios. Let's take a look at the report overview page for a task that covers all the scenarios available in Rally:

```
rally task report --out=report_multiple_scenarios.html --open
```



Multiple configurations of the same scenario

Yet another thing you can do in Rally is to launch **the same benchmark scenario multiple times with different configurations**. That's why our configuration file stores a list for the key *"NovaServers.boot_and_delete_server"*: you can just append a different configuration of this benchmark scenario to this list to get it. Let's say, you want to run the **boot_and_delete_server** scenario twice: first using the *"m1.tiny"* flavor and then using the *"m1.small"* flavor:

multiple-configurations.json

```
{
    "NovaServers.boot_and_delete_server": [
        {
            "args": {
                "flavor": {
                    "name": "m1.tiny"
                },
                "image": {
                    "name": "^cirros.*uec$"
                },
                "force_delete": false
            },
            "runner": {...},
            "context": {...}
        },
        {
```

```
            "args": {
                "flavor": {
                    "name": "m1.small"
                },
                "image": {
                    "name": "^cirros.*uec$"
                },
                "force_delete": false
            },
            "runner": {...},
            "context": {...}
        }
    ]
}
```

That's it! You will get again the results for each configuration separately:

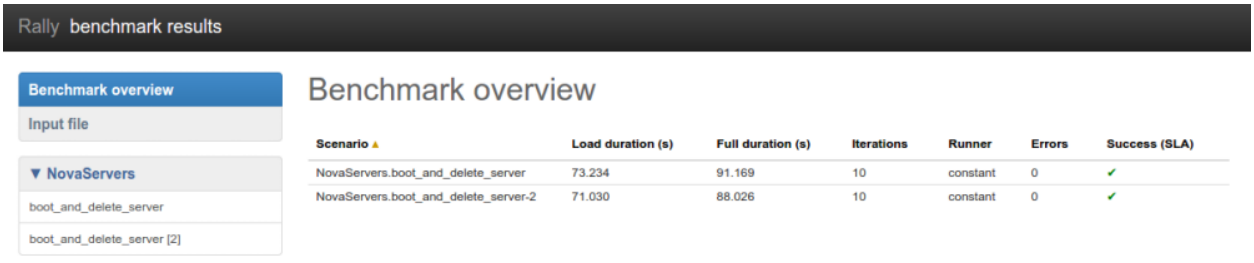
```
$ rally task start --task=multiple-configurations.json
...
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| action             | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| nova.boot_server   | 7.896     | 9.433     | 13.14     | 11.329        | 12.234        | 100.0%  |
| nova.delete_server | 4.435     | 4.898     | 6.975     | 5.144         | 6.059         | 100.0%  |
| total              | 12.404    | 14.331    | 17.979    | 16.72         | 17.349        | 100.0%  |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
Load duration: 73.2339417934
Full duration: 91.1692159176
--------------------------------------------------------------------------------

...

+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| action             | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
| nova.boot_server   | 8.207     | 8.91      | 9.823     | 9.692         | 9.758         | 100.0%  |
| nova.delete_server | 4.405     | 4.767     | 6.477     | 4.904         | 5.691         | 100.0%  |
| total              | 12.735    | 13.677    | 16.301    | 14.596        | 15.449        | 100.0%  |
+--------------------+-----------+-----------+-----------+---------------+---------------+---------+
Load duration: 71.029528141
Full duration: 88.0259010792
...
```

The HTML report will also look similar to what we have seen before:

```
rally task report --out=report_multiple_configuraions.html --open
```



1.3.4 Step 3. Benchmarking OpenStack with existing users

Motivation

There are two very important reasons from the production world of why it is preferable to use some already existing users to benchmark your OpenStack cloud:

1. *Read-only Keystone Backends:* creating temporary users for benchmark scenarios in Rally is just impossible in case of r/o Keystone backends like *LDAP* and *AD*.
2. *Safety:* Rally can be run from an isolated group of users, and if something goes wrong, this won't affect the rest of the cloud users.

Registering existing users in Rally

The information about existing users in your OpenStack cloud should be passed to Rally at the *deployment initialization step*. You have to use the **ExistingCloud** deployment plugin that just provides Rally with credentials of an already existing cloud. The difference from the deployment configuration we've seen previously is that you should set up the *"users"* section with the credentials of already existing users. Let's call this deployment configuration file *existing_users.json*:

```
{
    "type": "ExistingCloud",
    "auth_url": "http://example.net:5000/v2.0/",
    "region_name": "RegionOne",
    "endpoint_type": "public",
    "admin": {
        "username": "admin",
        "password": "pa55word",
        "tenant_name": "demo"
    },
    "users": [
        {
            "username": "b1",
            "password": "1234",
            "tenant_name": "testing"
        },
        {
            "username": "b2",
            "password": "1234",
            "tenant_name": "testing"
        }
    ]
}
```

This deployment configuration requires some basic information about the OpenStack cloud like the region name, auth url. admin user credentials, and any amount of users already existing in the system. Rally will use their credentials to generate load in against this deployment as soon as we register it as usual:

```
$ rally deployment create --file existings_users --name our_cloud
+--------------------------------------+----------------------------+-----------+------------------+
| uuid                                 | created_at                 | name      | status           |
+--------------------------------------+----------------------------+-----------+------------------+
| 1849a9bf-4b18-4fd5-89f0-ddcc56eae4c9 | 2015-03-28 02:43:27.759702 | our_cloud | deploy->finished |
+--------------------------------------+----------------------------+-----------+------------------+
Using deployment: 1849a9bf-4b18-4fd5-89f0-ddcc56eae4c9
~/.rally/openrc was updated
```

After that, the **rally show** command lists the resources for each user separately:

```
$ rally show images

Images for user `admin` in tenant `admin`:
+--------------------------------------+--------------------------------+------------+
| UUID                                 | Name                           | Size (B)   |
+--------------------------------------+--------------------------------+------------+
| 041cfd70-0e90-4ed6-8c0c-ad9c12a94191 | cirros-0.3.4-x86_64-uec        | 25165824   |
| 87710f09-3625-4496-9d18-e20e34906b72 | Fedora-x86_64-20-20140618-sda  | 209649664  |
| b0f269be-4859-48e0-a0ca-03fb80d14602 | cirros-0.3.4-x86_64-uec-ramdisk | 3740163   |
| d82eaf7a-ff63-4826-9aa7-5fa105610e01 | cirros-0.3.4-x86_64-uec-kernel | 4979632    |
+--------------------------------------+--------------------------------+------------+

Images for user `b1` in tenant `testing`:
+--------------------------------------+--------------------------------+------------+
| UUID                                 | Name                           | Size (B)   |
+--------------------------------------+--------------------------------+------------+
| 041cfd70-0e90-4ed6-8c0c-ad9c12a94191 | cirros-0.3.4-x86_64-uec        | 25165824   |
| 87710f09-3625-4496-9d18-e20e34906b72 | Fedora-x86_64-20-20140618-sda  | 209649664  |
| b0f269be-4859-48e0-a0ca-03fb80d14602 | cirros-0.3.4-x86_64-uec-ramdisk | 3740163   |
| d82eaf7a-ff63-4826-9aa7-5fa105610e01 | cirros-0.3.4-x86_64-uec-kernel | 4979632    |
+--------------------------------------+--------------------------------+------------+

Images for user `b2` in tenant `testing`:
+--------------------------------------+--------------------------------+------------+
| UUID                                 | Name                           | Size (B)   |
+--------------------------------------+--------------------------------+------------+
| 041cfd70-0e90-4ed6-8c0c-ad9c12a94191 | cirros-0.3.4-x86_64-uec        | 25165824   |
| 87710f09-3625-4496-9d18-e20e34906b72 | Fedora-x86_64-20-20140618-sda  | 209649664  |
| b0f269be-4859-48e0-a0ca-03fb80d14602 | cirros-0.3.4-x86_64-uec-ramdisk | 3740163   |
| d82eaf7a-ff63-4826-9aa7-5fa105610e01 | cirros-0.3.4-x86_64-uec-kernel | 4979632    |
+--------------------------------------+--------------------------------+------------+
```

With this new deployment being active, Rally will use the already existing users *"b1"* and *"b2"* instead of creating the temporary ones when launching benchmark task that do not specify the *"users"* context.

Running benchmark scenarios with existing users

After you have registered a deployment with existing users, don't forget to remove the *"users"* context from your benchmark task configuration if you want to use existing users, like in the following configuration file (*boot-and-delete.json*):

```
{
    "NovaServers.boot_and_delete_server": [
        {
            "args": {
                "flavor": {
```

```
                    "name": "m1.tiny"
                },
                "image": {
                    "name": "^cirros.*uec$"
                },
                "force_delete": false
            },
            "runner": {
                "type": "constant",
                "times": 10,
                "concurrency": 2
            },
            "context": {}
        }
    ]
}
```

When you start this task, it will use the existing users *"b1"* and *"b2"* instead of creating the temporary ones:

```
rally task start samples/tasks/scenarios/nova/boot-and-delete.json
```

It goes without saying that support of benchmarking with predefined users simplifies the usage of Rally for generating loads against production clouds.

(based on: http://boris-42.me/rally-can-generate-load-with-passed-users-now/)

1.3.5 Step 4. Adding success criteria (SLA) for benchmarks

SLA - Service-Level Agreement (Success Criteria)

Rally allows you to set success criteria (also called *SLA - Service-Level Agreement*) for every benchmark. Rally will automatically check them for you.

To configure the SLA, add the *"sla"* section to the configuration of the corresponding benchmark (the check name is a key associated with its target value). You can combine different success criteria:

```
{
    "NovaServers.boot_and_delete_server": [
        {
            "args": {
                ...
            },
            "runner": {
                ...
            },
            "context": {
                ...
            },
            "sla": {
                "max_seconds_per_iteration": 10,
```

```
                "failure_rate": {
                    "max": 25
                }
            }
        }
    ]
}
```

Such configuration will mark the **NovaServers.boot_and_delete_server** benchmark scenario as not successful if either some iteration took more than 10 seconds or more than 25% iterations failed.

Checking SLA

Let us show you how Rally SLA work using a simple example based on **Dummy benchmark scenarios**. These scenarios actually do not perform any OpenStack-related stuff but are very useful for testing the behaviors of Rally. Let us put in a new task, *test-sla.json*, 2 scenarios – one that does nothing and another that just throws an exception:

```
{
    "Dummy.dummy": [
        {
            "args": {},
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 2
            },
            "context": {
                "users": {
                    "tenants": 3,
                    "users_per_tenant": 2
                }
            },
            "sla": {
                "failure_rate": {"max": 0.0}
            }
        }
    ],
    "Dummy.dummy_exception": [
        {
            "args": {},
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 2
            },
            "context": {
                "users": {
                    "tenants": 3,
                    "users_per_tenant": 2
                }
            },
            "sla": {
                "failure_rate": {"max": 0.0}
            }
        }
    ]
}
```

Note that both scenarios in these tasks have the **maximum failure rate of 0%** as their **success criterion**. We expect that the first scenario will pass this criterion while the second will fail it. Let's start the task:

```
rally task start test-sla.json
```

After the task completes, run *rally task sla_check* to check the results again the success criteria you defined in the task:

```
$ rally task sla_check
+----------------------+-----+--------------+--------+-------------------------------------------
| benchmark            | pos | criterion    | status | detail
+----------------------+-----+--------------+--------+-------------------------------------------
| Dummy.dummy          | 0   | failure_rate | PASS   | Maximum failure rate percent 0.0% failures, r
| Dummy.dummy_exception | 0   | failure_rate | FAIL   | Maximum failure rate percent 0.0% failures, r
+----------------------+-----+--------------+--------+-------------------------------------------
```

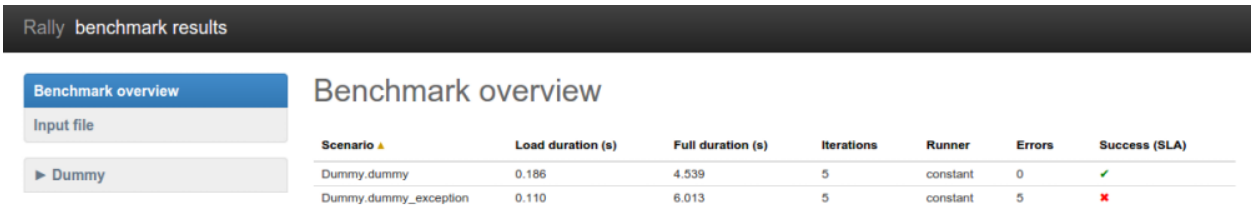
Exactly as expected.

SLA in task report

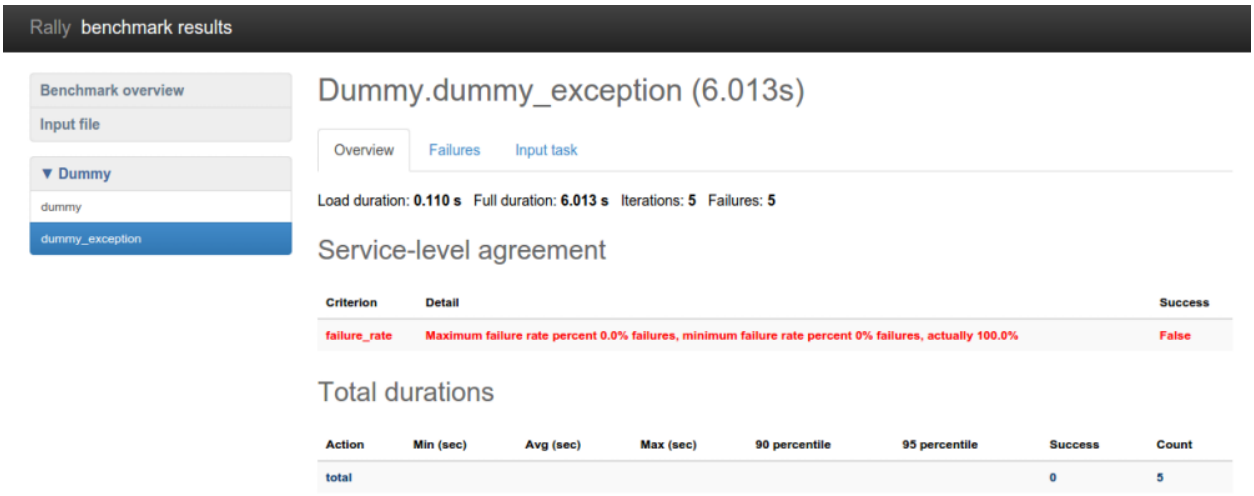
SLA checks are nicely visualized in task reports. Generate one:

```
rally task report --out=report_sla.html --open
```

Benchmark scenarios that have passed SLA have a green check on the overview page:



Somewhat more detailed information about SLA is displayed on the scenario pages:



Success criteria present a very useful concept that enables not only to analyze the outcome of your benchmark tasks, but also to control their execution. In *one of the next sections* of our tutorial, we will show how to use SLA to abort the load generation before your OpenStack goes wrong.

1.3.6 Step 5. Rally task templates

Basic template syntax

A nice feature of the input task format used in Rally is that it supports the **template syntax** based on Jinja2. This turns out to be extremely useful when, say, you have a fixed structure of your task but you want to parameterize this task in some way. For example, imagine your input task file (*task.yaml*) runs a set of Nova scenarios:

```
---
  NovaServers.boot_and_delete_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: "^cirros.*uec$"
      runner:
        type: "constant"
        times: 2
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

  NovaServers.resize_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: "^cirros.*uec$"
        to_flavor:
            name: "m1.small"
      runner:
        type: "constant"
        times: 3
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1
```

In all the three scenarios above, the *"^cirros.*uec$"* image is passed to the scenario as an argument (so that these scenarios use an appropriate image while booting servers). Let's say you want to run the same set of scenarios with

the same runner/context/sla, but you want to try another image while booting server to compare the performance. The most elegant solution is then to turn the image name into a template variable:

```
---
  NovaServers.boot_and_delete_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: {{image_name}}
      runner:
        type: "constant"
        times: 2
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

  NovaServers.resize_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: {{image_name}}
        to_flavor:
            name: "m1.small"
      runner:
        type: "constant"
        times: 3
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1
```

and then pass the argument value for **{{image_name}}** when starting a task with this configuration file. Rally provides you with different ways to do that:

1. Pass the argument values directly in the command-line interface (with either a JSON or YAML dictionary):

```
rally task start task.yaml --task-args '{"image_name": "^cirros.*uec$"}'
rally task start task.yaml --task-args 'image_name: "^cirros.*uec$"'
```

2. Refer to a file that specifies the argument values (JSON/YAML):

```
rally task start task.yaml --task-args-file args.json
rally task start task.yaml --task-args-file args.yaml
```

where the files containing argument values should look as follows:

args.json:

```
{
    "image_name": "^cirros.*uec$"
}
```

args.yaml:

```
---
  image_name: "^cirros.*uec$"
```

Passed in either way, these parameter values will be substituted by Rally when starting a task:

```
$ rally task start task.yaml --task-args "image_name: "^cirros.*uec$""
--------------------------------------------------------------------------------
 Preparing input task
--------------------------------------------------------------------------------

Input task is:
---

  NovaServers.boot_and_delete_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: ^cirros.*uec$
      runner:
        type: "constant"
        times: 2
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

  NovaServers.resize_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: ^cirros.*uec$
        to_flavor:
            name: "m1.small"
      runner:
        type: "constant"
        times: 3
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

--------------------------------------------------------------------------------
 Task  cbf7eb97-0f1d-42d3-a1f1-3cc6f45ce23f: started
--------------------------------------------------------------------------------

Benchmarking... This can take a while...
```

Using the default values

Note that the Jinja2 template syntax allows you to set the default values for your parameters. With default values set, your task file will work even if you don't parameterize it explicitly while starting a task. The default values should be

set using the *{% set ... %}* clause (*task.yaml*):

```
{% set image_name = image_name or "^cirros.*uec$" %}
---

  NovaServers.boot_and_delete_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: {{image_name}}
      runner:
        type: "constant"
        times: 2
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

    ...
```

If you don't pass the value for *{{image_name}}* while starting a task, the default one will be used:

```
$ rally task start task.yaml
--------------------------------------------------------------------------------
 Preparing input task
--------------------------------------------------------------------------------

Input task is:
---

  NovaServers.boot_and_delete_server:
    -
      args:
        flavor:
            name: "m1.tiny"
        image:
            name: ^cirros.*uec$
      runner:
        type: "constant"
        times: 2
        concurrency: 1
      context:
        users:
          tenants: 1
          users_per_tenant: 1

    ...
```

Advanced templates

Rally makes it possible to use all the power of Jinja2 template syntax, including the mechanism of **built-in functions**. This enables you to construct elegant task files capable of generating complex load on your cloud.

As an example, let us make up a task file that will create new users with increasing concurrency. The input task file (*task.yaml*) below uses the Jinja2 **for-endfor** construct to accomplish that:

```
---
  KeystoneBasic.create_user:
  {% for i in range(2, 11, 2) %}
    -
      args: {}
      runner:
        type: "constant"
        times: 10
        concurrency: {{i}}
      sla:
        failure_rate:
          max: 0
  {% endfor %}
```

In this case, you don't need to pass any arguments via *–task-args/–task-args-file*, but as soon as you start this task, Rally will automatically unfold the for-loop for you:

```
$ rally task start task.yaml
--------------------------------------------------------------------------------
 Preparing input task
--------------------------------------------------------------------------------

Input task is:
---

  KeystoneBasic.create_user:

    -
      args: {}
      runner:
        type: "constant"
        times: 10
        concurrency: 2
      sla:
        failure_rate:
          max: 0

    -
      args: {}
      runner:
        type: "constant"
        times: 10
        concurrency: 4
      sla:
        failure_rate:
          max: 0

    -
      args: {}
      runner:
        type: "constant"
        times: 10
        concurrency: 6
      sla:
        failure_rate:
          max: 0

    -
      args: {}
```

```
      runner:
        type: "constant"
        times: 10
        concurrency: 8
      sla:
        failure_rate:
          max: 0

    -
      args: {}
      runner:
        type: "constant"
        times: 10
        concurrency: 10
      sla:
        failure_rate:
          max: 0


--------------------------------------------------------------------------------
 Task  ea7e97e3-dd98-4a81-868a-5bb5b42b8610: started
--------------------------------------------------------------------------------

Benchmarking... This can take a while...
```

As you can see, the Rally task template syntax is a simple but powerful mechanism that not only enables you to write elegant task configurations, but also makes them more readable for other people. When used appropriately, it can really improve the understanding of your benchmarking procedures in Rally when shared with others.

1.3.7 Step 6. Aborting load generation on success criteria failure

Benchmarking pre-production and production OpenStack clouds is not a trivial task. From the one side it's important to reach the OpenStack cloud's limits, from the other side the cloud shouldn't be damaged. Rally aims to make this task as simple as possible. Since the very beginning Rally was able to generate enough load for any OpenStack cloud. Generating too big a load was the major issue for production clouds, because Rally didn't know how to stop the load until it was too late.

With the **"stop on SLA failure"** feature, however, things are much better.

This feature can be easily tested in real life by running one of the most important and plain benchmark scenario called *"KeystoneBasic.authenticate"*. This scenario just tries to authenticate from users that were pre-created by Rally. Rally input task looks as follows (*auth.yaml*):

```
---
  Authenticate.keystone:
  -
    runner:
      type: "rps"
      times: 6000
      rps: 50
    context:
      users:
        tenants: 5
        users_per_tenant: 10
    sla:
      max_avg_duration: 5
```

In human-readable form this input task means: *Create 5 tenants with 10 users in each, after that try to authenticate*

to Keystone 6000 times performing 50 authentications per second (running new authentication request every 20ms). Each time we are performing authentication from one of the Rally pre-created user. This task passes only if max average duration of authentication takes less than 5 seconds.

Note that this test is quite dangerous because it can DDoS Keystone. We are running more and more simultaneously authentication requests and things may go wrong if something is not set properly (like on my DevStack deployment in Small VM on my laptop).

Let's run Rally task with **an argument that prescribes Rally to stop load on SLA failure**:

```
$ rally task start --abort-on-sla-failure auth.yaml
```

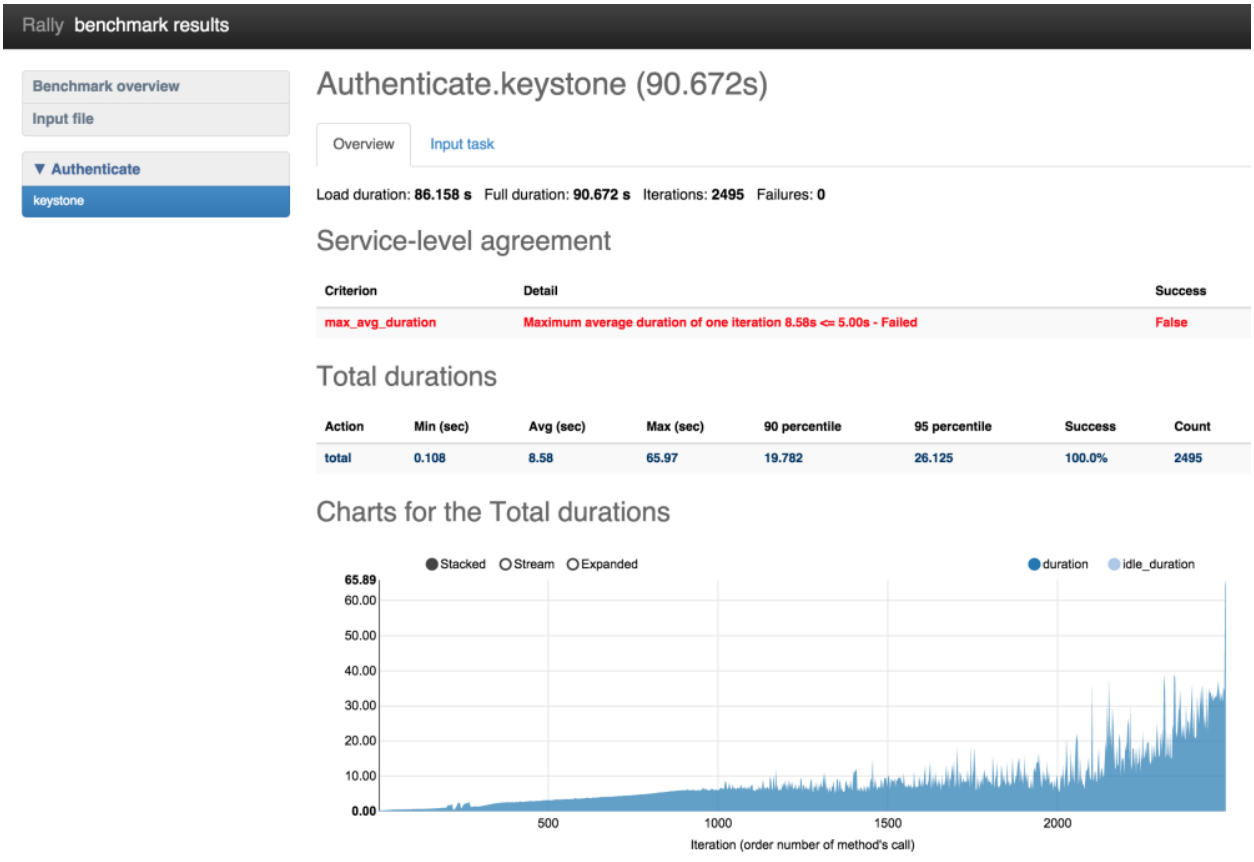
```
....
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
| action | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success | count |
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
| total  | 0.108     | 8.58      | 65.97     | 19.782        | 26.125        | 100.0%  | 2495  |
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
```

On the resulting table there are 2 interesting things:

1. Average duration was 8.58 sec which is more than 5 seconds
2. Rally performed only 2495 (instead of 6000) authentication requests

To understand better what has happened let's generate HTML report:

```
rally task report --out auth_report.html
```



On the chart with durations we can observe that the duration of authentication request reaches 65 seconds at the end of the load generation. **Rally stopped load at the very last moment just before the mad things happened. The**

reason why it runs so many attempts to authenticate is because of not enough good success criteria. We had to run a lot of iterations to make average duration bigger than 5 seconds. Let's chose better success criteria for this task and run it one more time.

```
---
  Authenticate.keystone:
  -
    runner:
      type: "rps"
      times: 6000
      rps: 50
    context:
      users:
        tenants: 5
        users_per_tenant: 10
    sla:
      max_avg_duration: 5
      max_seconds_per_iteration: 10
      failure_rate:
        max: 0
```

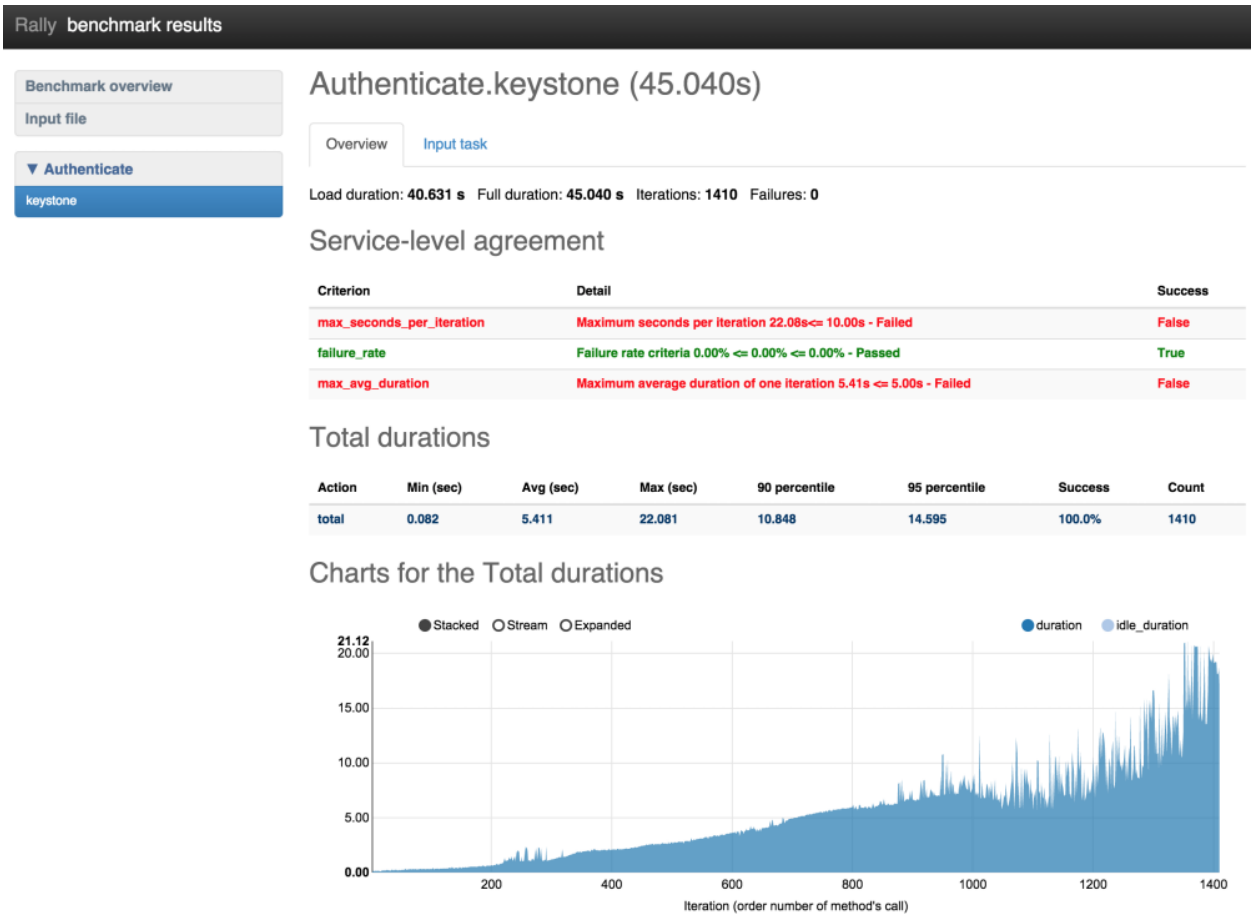
Now our task is going to be successful if the following three conditions hold:

1. maximum average duration of authentication should be less than 5 seconds
2. maximum duration of any authentication should be less than 10 seconds
3. no failed authentication should appear

Let's run it!

```
$ rally task start --abort-on-sla-failure auth.yaml

...
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
| action | min (sec) | avg (sec) | max (sec) | 90 percentile | 95 percentile | success | count |
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
| total  | 0.082     | 5.411     | 22.081    | 10.848        | 14.595        | 100.0%  | 1410  |
+--------+-----------+-----------+-----------+---------------+---------------+---------+-------+
```



This time load stopped after 1410 iterations versus 2495 which is much better. The interesting thing on this chart is that first occurrence of "> 10 second" authentication happened on 950 iteration. The reasonable question: "Why Rally run 500 more authentication requests then?". This appears from the math: During the execution of **bad** authentication (10 seconds) Rally performed about 50 request/sec * 10 sec = 500 new requests as a result we run 1400 iterations instead of 950.

(based on: http://boris-42.me/rally-tricks-stop-load-before-your-openstack-goes-wrong/)

1.3.8 Step 7. Working with multiple OpenStack clouds

Rally is an awesome tool that allows you to work with multiple clouds and can itself deploy them. We already know how to work with *a single cloud*. Let us now register 2 clouds in Rally: the one that we have access to and the other that we know is registered with wrong credentials.

```
$ . openrc admin admin  # openrc with correct credentials
$ rally deployment create --fromenv --name=cloud-1
+--------------------------------------+----------------------------+------------+------------------
| uuid                                 | created_at                 | name       | status
+--------------------------------------+----------------------------+------------+------------------
| 4251b491-73b2-422a-aecb-695a94165b5e | 2015-01-18 00:11:14.757203 | cloud-1    | deploy->finished
+--------------------------------------+----------------------------+------------+------------------
Using deployment: 4251b491-73b2-422a-aecb-695a94165b5e
~/.rally/openrc was updated
...
```

```
$ . bad_openrc admin admin  # openrc with wrong credentials
$ rally deployment create --fromenv --name=cloud-2
+--------------------------------------+----------------------------+------------+-------------------
| uuid                                 | created_at                 | name       | status
+--------------------------------------+----------------------------+------------+-------------------
| 658b9bae-1f9c-4036-9400-9e71e88864fc | 2015-01-18 00:38:26.127171 | cloud-2    | deploy->finished
+--------------------------------------+----------------------------+------------+-------------------
Using deployment: 658b9bae-1f9c-4036-9400-9e71e88864fc
~/.rally/openrc was updated
...
```

Let us now list the deployments we have created:

```
$ rally deployment list
+--------------------------------------+----------------------------+------------+-------------------
| uuid                                 | created_at                 | name       | status
+--------------------------------------+----------------------------+------------+-------------------
| 4251b491-73b2-422a-aecb-695a94165b5e | 2015-01-05 00:11:14.757203 | cloud-1    | deploy->finished
| 658b9bae-1f9c-4036-9400-9e71e88864fc | 2015-01-05 00:40:58.451435 | cloud-2    | deploy->finished
+--------------------------------------+----------------------------+------------+-------------------
```

Note that the second is marked as **"active"** because this is the deployment we have created most recently. This means that it will be automatically (unless its UUID or name is passed explicitly via the *–deployment* parameter) used by the commands that need a deployment, like *rally task start ...* or *rally deployment check*:

```
$ rally deployment check
Authentication Issues: wrong keystone credentials specified in your endpoint properties. (HTTP 401).

$ rally deployment check --deployment=cloud-1
keystone endpoints are valid and following services are available:
+----------+----------------+-----------+
| services | type           | status    |
+----------+----------------+-----------+
| cinder   | volume         | Available |
| cinderv2 | volumev2       | Available |
| ec2      | ec2            | Available |
| glance   | image          | Available |
| heat     | orchestration  | Available |
| heat-cfn | cloudformation | Available |
| keystone | identity       | Available |
| nova     | compute        | Available |
| novav21  | computev21     | Available |
| s3       | s3             | Available |
+----------+----------------+-----------+
```

You can also switch the active deployment using the **rally deployment use** command:

```
$ rally deployment use cloud-1
Using deployment: 658b9bae-1f9c-4036-9400-9e71e88864fc
~/.rally/openrc was updated
...

$ rally deployment check
keystone endpoints are valid and following services are available:
+----------+----------------+-----------+
| services | type           | status    |
+----------+----------------+-----------+
| cinder   | volume         | Available |
| cinderv2 | volumev2       | Available |
```

```
| ec2      | ec2            | Available |
| glance   | image          | Available |
| heat     | orchestration  | Available |
| heat-cfn | cloudformation | Available |
| keystone | identity       | Available |
| nova     | compute        | Available |
| novav21  | computev21     | Available |
| s3       | s3             | Available |
+----------+----------------+-----------+
```

Note the first two lines of the CLI output for the *rally deployment use* command. They tell you the UUID of the new active deployment and also say that the *~/.rally/openrc* file was updated – this is the place where the "active" UUID is actually stored by Rally.

One last detail about managing different deployments in Rally is that the *rally task list* command outputs only those tasks that were run against the currently active deployment, and you have to provide the *–all-deployments* parameter to list all the tasks:

```
$ rally task list
+--------------------------------------+-----------------+----------------------------+--------------
| uuid                                 | deployment_name | created_at                 | duration
+--------------------------------------+-----------------+----------------------------+--------------
| c21a6ecb-57b2-43d6-bbbb-d7a827f1b420 | cloud-1         | 2015-01-05 01:00:42.099596 | 0:00:13.41922
| f6dad6ab-1a6d-450d-8981-f77062c6ef4f | cloud-1         | 2015-01-05 01:05:57.653253 | 0:00:14.16049
+--------------------------------------+-----------------+----------------------------+--------------
$ rally task list --all-deployment
+--------------------------------------+-----------------+----------------------------+--------------
| uuid                                 | deployment_name | created_at                 | duration
+--------------------------------------+-----------------+----------------------------+--------------
| c21a6ecb-57b2-43d6-bbbb-d7a827f1b420 | cloud-1         | 2015-01-05 01:00:42.099596 | 0:00:13.41922
| f6dad6ab-1a6d-450d-8981-f77062c6ef4f | cloud-1         | 2015-01-05 01:05:57.653253 | 0:00:14.16049
| 6fd9a19f-5cf8-4f76-ab72-2e34bb1d4996 | cloud-2         | 2015-01-05 01:14:51.428958 | 0:00:15.04226
+--------------------------------------+-----------------+----------------------------+--------------
```

1.3.9 Step 8. Discovering more plugins in Rally

Plugins in the Rally repository

Rally currently comes with a great collection of plugins that use the API of different OpenStack projects like **Keystone**, **Nova**, **Cinder**, **Glance** and so on. The good news is that you can combine multiple plugins in one task to test your cloud in a comprehensive way.

First, let's see what plugins are available in Rally. One of the ways to discover these plugins is just to inspect their source code. another is to use build-in rally plugin command.

CLI: rally plugin show

Rally plugin CLI command is much more convenient way to learn about different plugins in Rally. This command allows to list plugins and show detailed information about them:

```
$ rally plugin show create_meter_and_get_stats

NAME
    CeilometerStats.create_meter_and_get_stats
NAMESPACE
    default
MODULE
    rally.plugins.openstack.scenarios.ceilometer.stats
DESCRIPTION
    Meter is first created and then statistics is fetched for the same
    using GET /v2/meters/(meter_name)/statistics.
PARAMETERS
+--------+------------------------------------------------+
| name   | description                                    |
+--------+------------------------------------------------+
| kwargs | contains optional arguments to create a meter  |
|        |                                                |
+--------+------------------------------------------------+
```

In case if multiple found benchmarks found command list all matches elements:

```
$ rally plugin show NovaKeypair

Multiple plugins found:
+-------------------------------------------------+-----------+-----------------------------------
| name                                            | namespace | title
+-------------------------------------------------+-----------+-----------------------------------
| NovaKeypair.boot_and_delete_server_with_keypair | default   | Boot and delete server with keypair.
| NovaKeypair.create_and_delete_keypair           | default   | Create a keypair with random name and
| NovaKeypair.create_and_list_keypairs            | default   | Create a keypair with random name and
+-------------------------------------------------+-----------+-----------------------------------
```

CLI: rally plugin list

This command can be used to list filtered by name list of plugins.

```
$ rally plugin list --name Keystone

+-------------------------------------------------+-----------+-----------------------------------
| name                                            | namespace | title
+-------------------------------------------------+-----------+-----------------------------------
| Authenticate.keystone                           | default   | Check Keystone Client.
| KeystoneBasic.add_and_remove_user_role          | default   | Create a user role add to a user and
| KeystoneBasic.create_add_and_list_user_roles    | default   | Create user role, add it and list us
| KeystoneBasic.create_and_delete_ec2credential   | default   | Create and delete keystone ec2-crede
| KeystoneBasic.create_and_delete_role            | default   | Create a user role and delete it.
| KeystoneBasic.create_and_delete_service         | default   | Create and delete service.
| KeystoneBasic.create_and_list_ec2credentials    | default   | Create and List all keystone ec2-cre
| KeystoneBasic.create_and_list_services          | default   | Create and list services.
| KeystoneBasic.create_and_list_tenants           | default   | Create a keystone tenant with randor
| KeystoneBasic.create_and_list_users             | default   | Create a keystone user with random n
| KeystoneBasic.create_delete_user                | default   | Create a keystone user with random n
| KeystoneBasic.create_tenant                     | default   | Create a keystone tenant with randor
| KeystoneBasic.create_tenant_with_users          | default   | Create a keystone tenant and several
| KeystoneBasic.create_update_and_delete_tenant   | default   | Create, update and delete tenant.
| KeystoneBasic.create_user                       | default   | Create a keystone user with random n
| KeystoneBasic.create_user_set_enabled_and_delete | default   | Create a keystone user, enable or di
| KeystoneBasic.create_user_update_password       | default   | Create user and update password for
```

```
| KeystoneBasic.get_entities                          | default   | Get instance of a tenant, user, role
+-----------------------------------------------------+-----------+-------------------------------------
```

1.3.10 Step 9. Deploying OpenStack from Rally

Along with supporting already existing OpenStack deployments, Rally itself can **deploy OpenStack automatically** by using one of its *deployment engines*. Take a look at other deployment configuration file samples. For example, *devstack-in-existing-servers.json* is a deployment configuration file that tells Rally to deploy OpenStack with **Devstack** on the existing servers with given credentials:

```
{
    "type": "DevstackEngine",
    "provider": {
        "type": "ExistingServers",
        "credentials": [{"user": "root", "host": "10.2.0.8"}]
    }
}
```

You can try to deploy OpenStack in your Virtual Machine using this script. Edit the configuration file with your IP address/user name and run, as usual:

```
$ rally deployment create --file=samples/deployments/for_deploying_openstack_with_rally/devstack-in-e
+--------------------------+--------------------------+--------------+-------------------+
|           uuid           |         created_at       |     name     |      status       |
+--------------------------+--------------------------+--------------+-------------------+
|     <Deployment UUID>    | 2015-01-10 22:00:28.270941 | new-devstack | deploy->finished |
+--------------------------+--------------------------+--------------+-------------------+
Using deployment : <Deployment UUID>
```

1.4 Command Line Interface

1.4.1 Category: db

Commands for DB management.

rally-manage db create

Create Rally database.

rally-manage db downgrade

Downgrade Rally database.

Command arguments: *–revision <revision>* (ref)

> Downgrade to specified revision UUID. Current revision of DB could be found by calling ‘rally-manage db revision’

rally-manage db recreate

Drop and create Rally database.

This will delete all existing data.

rally-manage db revision

Print current Rally database revision UUID.

rally-manage db upgrade

Upgrade Rally database to the latest state.

1.4.2 Category: deployment

Set of commands that allow you to manage deployments.

rally deployment check

Check keystone authentication and list all available services.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of the deployment.

Type: str

rally deployment config

Display configuration of the deployment.

Output is the configuration of the deployment in a pretty-printed JSON format.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of the deployment.

Type: str

rally deployment create

Create new deployment.

This command will create a new deployment record in rally database. In the case of ExistingCloud deployment engine it will use the cloud represented in the configuration. If the cloud doesn't exist, Rally can deploy a new one for you with Devstack or Fuel. Different deployment engines exist for these cases.

If you use the ExistingCloud deployment engine you can pass a deployment config by environment variables with `--fromenv`:

OS_USERNAME OS_PASSWORD OS_AUTH_URL OS_TENANT_NAME OS_ENDPOINT OS_REGION_NAME OS_CACERT OS_INSECURE

All other deployment engines need more complex configuration data, so it should be stored in a configuration file.

You can use physical servers, LXC containers, KVM virtual machines or virtual machines in OpenStack for deploying the cloud. Except physical servers, Rally can create cluster nodes for you. Interaction with virtualization software, OpenStack cloud or physical servers is provided by server providers.

Command arguments: *–name <name>* (ref)

Name of the deployment.

Type: str

–fromenv (ref)

Read environment variables instead of config file.

–filename <path> (ref)

Path to the configuration file of the deployment.

Type: str

Default: None

–no-use (ref)

Don't set new deployment as default for future operations.

rally deployment destroy

Destroy existing deployment.

This will delete all containers, virtual machines, OpenStack instances or Fuel clusters created during Rally deployment creation. Also it will remove the deployment record from the Rally database.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of the deployment.

Type: str

rally deployment list

List existing deployments.

rally deployment recreate

Destroy and create an existing deployment.

Unlike 'deployment destroy', the deployment database record will not be deleted, so the deployment UUID stays the same.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of the deployment.

Type: str

rally deployment show

Show the credentials of the deployment.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of the deployment.

Type: str

rally deployment use

Set active deployment.

Command arguments: *–deployment <uuid>* (ref)

UUID or name of a deployment.

Type: str

1.4.3 Category: plugin

Set of commands that allow you to manage Rally plugins.

rally plugin list

List all Rally plugins that match name and namespace.

Command arguments: *–name <name>* (ref)

List only plugins that match the given name.

Type: str

Default: None

–namespace <namespace> (ref)

List only plugins that are in the specified namespace.

Type: str

Default: None

rally plugin show

Show detailed information about a Rally plugin.

Command arguments: *–name <name>* (ref)

Plugin name.

Type: str

–namespace <namespace> (ref)

Plugin namespace.

Type: str

Default: None

1.4.4 Category: show

Warning: Deprecated since 0.2.0

Show resources.

Set of commands that allow you to view resources, provided by OpenStack cloud represented by deployment.

rally show flavors

Display available flavors.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally show images

Display available images.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally show keypairs

Display available ssh keypairs.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally show networks

Display configured networks.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally show secgroups

Display security groups.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

1.4.5 Category: task

Set of commands that allow you to manage benchmarking tasks and results.

rally task abort

Abort a running benchmarking task.

Command arguments: *–uuid* <*uuid*> (ref)

UUID of task.

Type: str

–soft (ref)

Abort task after current scenario finishes execution.

rally task delete

Delete task and its results.

Command arguments: *–force* (ref)

force delete

–uuid <task-id> (ref)

UUID of task or a list of task UUIDs.

Type: str

rally task detailed

Print detailed information about given task.

Command arguments: *–uuid <uuid>* (ref)

UUID of task. If –uuid is "last" the results of the most recently created task will be displayed.

Type: str

–iterations-data (ref)

Print detailed results for each iteration.

rally task list

List tasks, started and finished.

Displayed tasks can be filtered by status or deployment. By default 'rally task list' will display tasks from the active deployment without filtering by status.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–all-deployments (ref)

List tasks from all deployments.

–status <status> (ref)

List tasks with specified status. Available statuses: aborted, aborting, cleaning up, failed, finished, init, paused, running, setting up, soft_aborting, verifying

Type: str

Default: None

–uuids-only (ref)

List task UUIDs only.

rally task report

Generate report file for specified task.

Command arguments: *–tasks <tasks>* (ref)

UUIDs of tasks, or JSON files with task results

Default: None

–out <path> (ref)

Path to output file.

Type: str

Default: None

–open (ref)

Open the output in a browser.

–html (ref)

Generate the report in HTML.

–html-static (ref)

Generate the report in HTML with embedded JS and CSS, so it will not depend on Internet availability.

–junit (ref)

Generate the report in the JUnit format.

rally task results

Display raw task results.

This will produce a lot of output data about every iteration.

Command arguments: *–uuid <uuid>* (ref)

UUID of task.

Type: str

rally task sla_check

Display SLA check results table.

Command arguments: *–uuid <uuid>* (ref)

UUID of task.

Type: str

–json (ref)

Output in JSON format.

rally task start

Start benchmark task.

If both task_args and task_args_file are specified, they will be merged. task_args has a higher priority so it will override values from task_args_file.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–task <path>, –filename <path> (ref)

Note: The default value for the `--task` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally task start`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally task use <uuid>` (ref).

Path to the input task file

–task-args <json> (ref)

Input task args (JSON dict). These args are used to render the Jinja2 template in the input task.

Default: None

–task-args-file <path> (ref)

Path to the file with input task args (dict in JSON/YAML). These args are used to render the Jinja2 template in the input task.

Default: None

–tag <tag> (ref)

Tag for this task

Default: None

–no-use (ref)

Don't set new task as default for future operations.

–abort-on-sla-failure (ref)

Abort the execution of a benchmark scenario whenany SLA check for it fails.

rally task status

Display the current status of a task.

Command arguments: *–uuid <uuid>* (ref)

UUID of task

Type: str

rally task use

Set active task.

Command arguments: *–uuid <uuid>* (ref)

UUID of the task

Type: str

–task (ref)

[Deprecated since Rally 0.2.0] Use '–uuid' instead.

Type: str

rally task validate

Validate a task configuration file.

This will check that task configuration file has valid syntax and all required options of scenarios, contexts, SLA and runners are set.

If both task_args and task_args_file are specified, they will be merged. task_args has a higher priority so it will override values from task_args_file.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–task <path>, *–filename <path>* (ref)

Note: The default value for the `--task` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally task start`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally task use <uuid>` (ref).

Path to the input task file.

–task-args <json> (ref)

Input task args (JSON dict). These args are used to render the Jinja2 template in the input task.

Default: None

–task-args-file <path> (ref)

Path to the file with input task args (dict in JSON/YAML). These args are used to render the Jinja2 template in the input task.

Default: None

1.4.6 Category: verify

Verify an OpenStack cloud via Tempest.

Set of commands that allow you to run Tempest tests.

rally verify compare

Compare two verification results.

Command arguments: *–uuid-1 <uuid_1>* (ref)

UUID of the first verification

Type: str

Default: None

–uuid-2 <uuid_2> (ref)

UUID of the second verification

Type: str

Default: None

–csv (ref)

Display results in CSV format

–html (ref)

Display results in HTML format

–json (ref)

Display results in JSON format

–output-file <output_file> (ref)

Path to a file to save results

Type: str

Default: None

–threshold <threshold> (ref)

If specified, timing differences must exceed this percentage threshold to be included in output

Type: int

Default: 0

rally verify detailed

Display results table of a verification with detailed errors.

Command arguments: *–uuid <uuid>* (ref)

Note: The default value for the `--uuid` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally verify start`, `rally verify import_results`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally %verify use <uuid>` (ref).

UUID of a verification.

Type: str

–sort-by <sort_by> (ref)

Sort results by 'name' or 'duration'

Default: name

rally verify discover

Show a list of discovered tests.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment

Type: str

–pattern <pattern> (ref)

Test name pattern which can be used to match

Type: str

Default:

rally verify genconfig

Generate Tempest configuration file.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–tempest-config <*path*> (ref)

User-specified Tempest config file location

Type: str

Default: None

–override (ref)

Override existing Tempest config file

rally verify import

Import Tempest tests results into the Rally database.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–set <*set_name*> (ref)

Name of a Tempest test set. Available sets are full, scenario, smoke, baremetal, compute, database, data_processing, identity, image, messaging, network, object_storage, orchestration, telemetry, volume

Type: str

Default:

–file <*path*> (ref)

User specified Tempest log file location. Note, Tempest log file needs to be in subunit format

Type: str

Default: None

–no-use (ref)

Don't set new task as default for future operations

rally verify install

Install Tempest.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–source <source> (ref)

Path/URL to repo to clone Tempest from

Type: str

Default: None

–system-wide (ref)

Don't create a virtual env for Tempest. Note that all Tempest requirements have to be already installed in the local env!

rally verify list

List verification runs.

rally verify reinstall

Uninstall Tempest and install again.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–tempest-config <path> (ref)

[Deprecated since Rally 0.3.2] User-specified Tempest config file location. Note that in the future this argument will be removed! Use *rally verify genconfig* instead

Type: str

Default: None

–source <source> (ref)

Path/URL to repo to clone Tempest from

Type: str

Default: None

–system-wide (ref)

Don't create a virtual env for Tempest. Note that all Tempest requirements have to be already installed in the local env!

rally verify results

Display results of a verification.

Command arguments: *–uuid <uuid>* (ref)

Note: The default value for the `--uuid` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally verify start`, `rally verify import_results`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally %verify use <uuid>` (ref).

UUID of a verification.

Type: str

–html (ref)

Display results in HTML format.

–json (ref)

Display results in JSON format.

–output-file <path> (ref)

Path to a file to save results to.

Type: str

Default: None

rally verify show

Display results table of a verification.

Command arguments: *–uuid <uuid>* (ref)

Note: The default value for the `--uuid` argument is taken from the Rally environment. Usually, the default value is

equal to the UUID of the last successful run of `rally verify start`, `rally verify import_results`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally %verify use <uuid>` (ref).

UUID of a verification

Type: str

–sort-by <*query*> (ref)

Sort results by 'name' or 'duration'

Type: str

Default: name

–detailed (ref)

Display detailed errors of failed tests

rally verify showconfig

Show configuration file of Tempest.

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally verify start

Start verification (run Tempest tests).

Command arguments: *–deployment* <*uuid*> (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

–set <set_name> (ref)

Name of a Tempest test set. Available sets are full, scenario, smoke, baremetal, compute, database, data_processing, identity, image, messaging, network, object_storage, orchestration, telemetry, volume

Type: str

Default:

–regex <regex> (ref)

Test name regular expression

Type: str

Default: None

–tests-file <path> (ref)

Path to a file with a list of Tempest tests

Type: str

Default: None

–tempest-config <path> (ref)

User-specified Tempest config file location

Type: str

Default: None

–xfails-file <path> (ref)

Path to a YAML file with a list of Tempest tests that are expected to fail

Type: str

Default: None

–no-use (ref)

Don't set the task as default for future operations

–system-wide (ref)

Don't create a virtual env when installing Tempest; use the local env instead of the Tempest virtual env when running the tests. Note that all Tempest requirements have to be already installed in the local env!

–concurrency N (ref)

How many processes to use to run Tempest tests. The default value (0) auto-detects your CPU count

Type: int

Default: 0

–failing (ref)

Re-run the tests that failed in the last execution

rally verify uninstall

Remove the deployment's local Tempest installation.

Command arguments: *–deployment <uuid>* (ref)

Note: The default value for the `--deployment` argument is taken from the Rally environment. Usually, the default value is equal to the UUID of the last successful run of `rally deployment create`, if the `--no-use` argument was not used.

Hint: You can set the default value by executing `rally deployment use <uuid>` (ref).

UUID or name of a deployment.

Type: str

rally verify use

Set active verification.

Command arguments: *–uuid <uuid>* (ref)

UUID of a verification

Type: str

1.5 User stories

Many users of Rally were able to make interesting discoveries concerning their OpenStack clouds using our benchmarking tool. Numerous user stories presented below show how Rally has made it possible to find performance bugs and validate improvements for different OpenStack installations.

1.5.1 4x performance increase in Keystone inside Apache using the token creation benchmark

(Contributed by Neependra Khare, Red Hat)

Below we describe how we were able to get and verify a 4x better performance of Keystone inside Apache. To do that, we ran a Keystone token creation benchmark with Rally under different load (this benchmark scenario essentially just authenticate users with keystone to get tokens).

Goal

- Get the data about performance of token creation under different load.
- Ensure that keystone with increased public_workers/admin_workers values and under Apache works better than the default setup.

Summary

- As the concurrency increases, time to authenticate the user gets up.
- **Keystone is CPU bound process and by default only one thread of keystone-all process get started. We can increase the pa**

    1. increasing public_workers/admin_workers values in keystone.conf file
    2. running keystone inside Apache

- We configured Keystone with 4 public_workers and ran Keystone inside Apache. In both cases we got upto 4x better performance as compared to default keystone configuration.

Setup

Server : Dell PowerEdge R610

CPU make and model : Intel(R) Xeon(R) CPU X5650 @ 2.67GHz

CPU count: 24

RAM : 48 GB

Devstack - Commit#d65f7a2858fb047b20470e8fa62ddaede2787a85

Keystone - Commit#455d50e8ae360c2a7598a61d87d9d341e5d9d3ed

Keystone API - 2

To increase public_workers - Uncomment line with public_workers and set public_workers to 4. Then restart keystone service.

To run keystone inside Apache - Added *APACHE_ENABLED_SERVICES=key* in localrc file while setting up OpenStack environment with devstack.

Results

1. Concurrency = 4

```
{'context': {'users': {'concurrent': 30,
                       'tenants': 12,
                       'users_per_tenant': 512}},
                       'runner': {'concurrency': 4, 'times': 10000, 'type': 'constant'}}
```

action	min (sec)	avg (sec)	max (sec)	90 percentile	95 percentile	success	count	apache enabled keystone	public_workers
total	0.537	0.998	4.553	1.233	1.391	100.0%	10000	N	1
total	0.189	0.296	5.099	0.417	0.474	100.0%	10000	N	4
total	0.208	0.299	3.228	0.437	0.485	100.0%	10000	Y	NA

2. Concurrency = 16

```
{'context': {'users': {'concurrent': 30,
                       'tenants': 12,
                       'users_per_tenant': 512}},
                       'runner': {'concurrency': 16, 'times': 10000, 'type': 'constant'}}
```

action	min (sec)	avg (sec)	max (sec)	90 percentile	95 percentile	success	count	apache enabled keystone	public_workers
total	1.036	3.905	11.254	5.258	5.700	100.0%	10000	N	1
total	0.187	1.012	5.894	1.61	1.856	100.0%	10000	N	4
total	0.515	0.970	2.076	1.113	1.192	100.0%	10000	Y	NA

3. Concurrency = 32

```
{'context': {'users': {'concurrent': 30,
                       'tenants': 12,
                       'users_per_tenant': 512}},
                       'runner': {'concurrency': 32, 'times': 10000, 'type': 'constant'}}
```

action	min (sec)	avg (sec)	max (sec)	90 percentile	95 percentile	success	count	apache enabled keystone	public_workers
total	1.493	7.752	16.007	10.428	11.183	100.0%	10000	N	1
total	0.198	1.967	8.54	3.223	3.701	100.0%	10000	N	4
total	1.115	1.986	6.224	2.133	2.244	100.0%	10000	Y	NA

1.5.2 Finding a Keystone bug while benchmarking 20 node HA cloud performance at creating 400 VMs

(Contributed by Alexander Maretskiy, Mirantis)

Below we describe how we found a bug in keystone and achieved 2x average performance increase at booting Nova servers after fixing that bug. Our initial goal was to benchmark the booting of a significant amount of servers on a cluster (running on a custom build of Mirantis OpenStack v5.1) and to ensure that this operation has reasonable performance and completes with no errors.

Goal

- Get data on how a cluster behaves when a huge amount of servers is started
- Get data on how good the neutron component is good in this case

Summary

- Creating 400 servers with configured networking
- Servers are being created simultaneously - 5 servers at the same time

Hardware

Having a real hardware lab with 20 nodes:

Vendor	SUPERMICRO SUPERSERVER
CPU	12 cores, Intel(R) Xeon(R) CPU E5-2620 v2 @ 2.10GHz
RAM	32GB (4 x Samsung DDRIII 8GB)
HDD	1TB

Cluster

This cluster was created via Fuel Dashboard interface.

Deployment	Custom build of Mirantis OpenStack v5.1
OpenStack release	Icehouse
Operating System	Ubuntu 12.04.4
Mode	High availability
Hypervisor	KVM
Networking	Neutron with GRE segmentation
Controller nodes	3
Compute nodes	17

Rally

Version

For this benchmark, we use custom rally with the following patch:

https://review.openstack.org/#/c/96300/

Deployment

Rally was deployed for cluster using ExistingCloud type of deployment.

Server flavor

```
$ nova flavor-show ram64
+----------------------------+--------------------------------------+
| Property                   | Value                                |
+----------------------------+--------------------------------------+
| OS-FLV-DISABLED:disabled   | False                                |
| OS-FLV-EXT-DATA:ephemeral  | 0                                    |
| disk                       | 0                                    |
| extra_specs                | {}                                   |
| id                         | 2e46aba0-9e7f-4572-8b0a-b12cfe7e06a1 |
| name                       | ram64                                |
| os-flavor-access:is_public | True                                 |
| ram                        | 64                                   |
| rxtx_factor                | 1.0                                  |
| swap                       |                                      |
| vcpus                      | 1                                    |
+----------------------------+--------------------------------------+
```

Server image

```
$ nova image-show TestVM
+----------------------------+-------------------------------------------------+
| Property                   | Value                                           |
+----------------------------+-------------------------------------------------+
| OS-EXT-IMG-SIZE:size       | 13167616                                        |
| created                    | 2014-08-21T11:18:49Z                            |
| id                         | 7a0d90cb-4372-40ef-b711-8f63b0ea9678            |
| metadata murano_image_info | {"title": "Murano Demo", "type": "cirros.demo"} |
| minDisk                    | 0                                               |
| minRam                     | 64                                              |
| name                       | TestVM                                          |
| progress                   | 100                                             |
| status                     | ACTIVE                                          |
```

```
| updated                     | 2014-08-21T11:18:50Z                                 |
+-----------------------------+------------------------------------------------------+
```

Task configuration file (in JSON format):

```
{
   "NovaServers.boot_server": [
       {
           "args": {
               "flavor": {
                   "name": "ram64"
               },
               "image": {
                   "name": "TestVM"
               }
           },
           "runner": {
               "type": "constant",
               "concurrency": 5,
               "times": 400
           },
           "context": {
               "neutron_network": {
                   "network_ip_version": 4
               },
               "users": {
                   "concurrent": 30,
                   "users_per_tenant": 5,
                   "tenants": 5
               },
               "quotas": {
                   "neutron": {
                       "subnet": -1,
                       "port": -1,
                       "network": -1,
                       "router": -1
                   }
               }
           }
       }
   ]
}
```

The only difference between first and second run is that runner.times for first time was set to 500

Results

First time - a bug was found:

Starting from 142 server, we have error from novaclient: Error <class 'novaclient.exceptions.Unauthorized'>: Unauthorized (HTTP 401).

That is how a bug in keystone was found.

action	min (sec)	avg (sec)	max (sec)	90 percentile	95 percentile	success	count
nova.boot_server	6.507	17.402	100.303	39.222	50.134	26.8%	500
total	6.507	17.402	100.303	39.222	50.134	26.8%	500

Second run, with bugfix:

After a patch was applied (using RPC instead of neutron client in metadata agent), we got **100% success and 2x improved average perfomance**:

action	min (sec)	avg (sec)	max (sec)	90 percentile	95 percentile	success	count
nova.boot_server	5.031	8.008	14.093	9.616	9.716	100.0%	400
total	5.031	8.008	14.093	9.616	9.716	100.0%	400

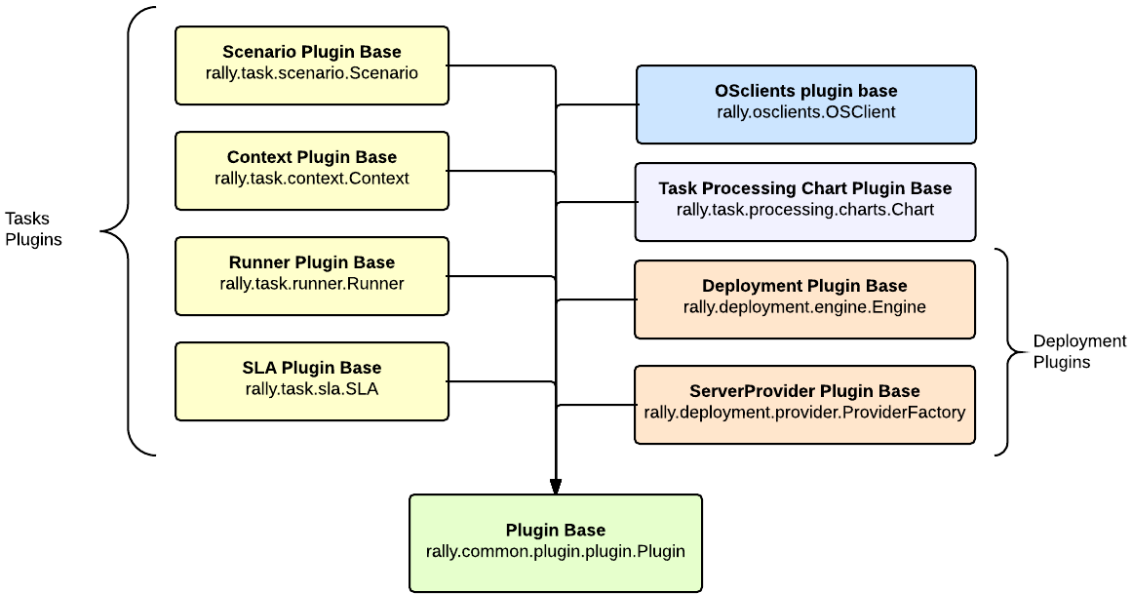
1.6 Rally Plugins

1.6.1 Rally Plugin Reference

Rally has a plugin oriented architecture - in other words Rally team is trying to make all places of code pluggable. Such architecture leds to the big amount of plugins. *Rally Plugins Reference page* contains a full list with detailed descriptions of all official Rally plugins.

1.6.2 How plugins work

Rally provides an opportunity to create and use a **custom benchmark scenario, runner, SLA, deployment or context** as a **plugin**:



1.6.3 Placement

Plugins can be quickly written and used, with no need to contribute them to the actual Rally code. Just place a python module with your plugin class into the `/opt/rally/plugins` or `~/.rally/plugins` directory (or its subdirectories), and it will be autoloaded. Additional paths can be specified with the `--plugin-paths` argument, or with the `RALLY_PLUGIN_PATHS` environment variable, both of which accept comma-delimited lists.

Both `--plugin-paths` and `RALLY_PLUGIN_PATHS` can list either plugin module files, or directories containing plugins. For instance, both of these are valid:

```
rally --plugin-paths /rally/plugins ...
rally --plugin-paths /rally/plugins/foo.py,/rally/plugins/bar.py ...
```

You can also use a script `unpack_plugins_samples.sh` from `samples/plugins` which will automatically create the `~/.rally/plugins` directory.

1.6.4 How to create a plugin

To create your own plugin you need to inherit your plugin class from plugin.Plugin class or its subclasses. Also you need to decorate your class with `rally.task.scenario.configure`

```
from rally.task import scenario

@scenario.configure(name="my_new_plugin_name")
class MyNewPlugin(plugin.Plugin):
    pass
```

Context as a plugin

So what are contexts doing? These plugins will be executed before scenario iteration starts. For example, a context plugin could create resources (e.g., download 10 images) that will be used by the scenarios. All created objects must be put into the *self.context* dict, trhough which they will be available in the scenarios. Let's create a simple context plugin that adds a flavor to the environment before the benchmark task starts and deletes it after it finishes.

Creation

Inherit a class for your plugin from the base *Context* class. Then, implement the Context API: the *setup()* method that creates a flavor and the *cleanup()* method that deletes it.

```
from rally.task import context
from rally.common import logging
from rally import consts
from rally import osclients

LOG = logging.getLogger(__name__)


@context.configure(name="create_flavor", order=1000)
class CreateFlavorContext(context.Context):
    """This sample creates a flavor with specified options before task starts
    and deletes it after task completion.

    To create your own context plugin, inherit it from
    rally.task.context.Context
    """

    CONFIG_SCHEMA = {
        "type": "object",
        "$schema": consts.JSON_SCHEMA,
        "additionalProperties": False,
        "properties": {
            "flavor_name": {
```

```
                "type": "string",
            },
            "ram": {
                "type": "integer",
                "minimum": 1
            },
            "vcpus": {
                "type": "integer",
                "minimum": 1
            },
            "disk": {
                "type": "integer",
                "minimum": 1
            }
        }
    }

    def setup(self):
        """This method is called before the task starts."""
        try:
            # use rally.osclients to get necessary client instance
            nova = osclients.Clients(self.context["admin"]["credential"]).nova()
            # and than do what you need with this client
            self.context["flavor"] = nova.flavors.create(
                # context settings are stored in self.config
                name=self.config.get("flavor_name", "rally_test_flavor"),
                ram=self.config.get("ram", 1),
                vcpus=self.config.get("vcpus", 1),
                disk=self.config.get("disk", 1)).to_dict()
            LOG.debug("Flavor with id '%s'" % self.context["flavor"]["id"])
        except Exception as e:
            msg = "Can't create flavor: %s" % e.message
            if logging.is_debug():
                LOG.exception(msg)
            else:
                LOG.warning(msg)

    def cleanup(self):
        """This method is called after the task finishes."""
        try:
            nova = osclients.Clients(self.context["admin"]["credential"]).nova()
            nova.flavors.delete(self.context["flavor"]["id"])
            LOG.debug("Flavor '%s' deleted" % self.context["flavor"]["id"])
        except Exception as e:
            msg = "Can't delete flavor: %s" % e.message
            if logging.is_debug():
                LOG.exception(msg)
            else:
                LOG.warning(msg)
```

Usage

You can refer to your plugin context in the benchmark task configuration files in the same way as any other contexts:

```
{
    "Dummy.dummy": [
        {
```

```
            "args": {
                "sleep": 0.01
            },
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 1
            },
            "context": {
                "users": {
                    "tenants": 1,
                    "users_per_tenant": 1
                },
                 "create_flavor": {
                    "ram": 1024
                }
            }
        }
    ]
}
```

Scenario runner as a plugin

Let's create a scenario runner plugin that runs a given benchmark scenario a random number of times (chosen at random from a given range).

Creation

Inherit a class for your plugin from the base *ScenarioRunner* class and implement its API (the *_run_scenario()* method):

```
import random

from rally.task import runner
from rally import consts


@runner.configure(name="random_times")
class RandomTimesScenarioRunner(runner.ScenarioRunner):
    """Sample scenario runner plugin.

    Run scenario random number of times, which is chosen between min_times and
    max_times.
    """

    CONFIG_SCHEMA = {
        "type": "object",
        "$schema": consts.JSON_SCHEMA,
        "properties": {
            "type": {
                "type": "string"
            },
            "min_times": {
                "type": "integer",
                "minimum": 1
```

```
            },
            "max_times": {
                "type": "integer",
                "minimum": 1
            }
        },
        "additionalProperties": True
    }

    def _run_scenario(self, cls, method_name, context, args):
        # runners settings are stored in self.config
        min_times = self.config.get('min_times', 1)
        max_times = self.config.get('max_times', 1)

        for i in range(random.randrange(min_times, max_times)):
            run_args = (i, cls, method_name,
                        runner._get_scenario_context(context), args)
            result = runner._run_scenario_once(run_args)
            # use self.send_result for result of each iteration
            self._send_result(result)
```

Usage

You can refer to your scenario runner in the benchmark task configuration files in the same way as any other runners. Don't forget to put your runner-specific parameters in the configuration as well (*"min_times"* and *"max_times"* in our example):

```
{
    "Dummy.dummy": [
        {
            "runner": {
                "type": "random_times",
                "min_times": 10,
                "max_times": 20,
            },
            "context": {
                "users": {
                    "tenants": 1,
                    "users_per_tenant": 1
                }
            }
        }
    ]
}
```

Different plugin samples are available here.

Scenario as a plugin

Let's create a simple scenario plugin that list flavors.

Creation

Inherit a class for your plugin from the base *Scenario* class and implement a scenario method inside it. In our scenario, we'll first list flavors as an ordinary user, and then repeat the same using admin clients:

```
from rally.task import atomic
from rally.task import scenario


class ScenarioPlugin(scenario.Scenario):
    """Sample plugin which lists flavors."""

    @atomic.action_timer("list_flavors")
    def _list_flavors(self):
        """Sample of usage clients - list flavors

        You can use self.context, self.admin_clients and self.clients which are
        initialized on scenario instance creation"""
        self.clients("nova").flavors.list()

    @atomic.action_timer("list_flavors_as_admin")
    def _list_flavors_as_admin(self):
        """The same with admin clients"""
        self.admin_clients("nova").flavors.list()

    @scenario.configure()
    def list_flavors(self):
        """List flavors."""
        self._list_flavors()
        self._list_flavors_as_admin()
```

Usage

You can refer to your plugin scenario in the benchmark task configuration files in the same way as any other scenarios:

```
{
    "ScenarioPlugin.list_flavors": [
        {
            "runner": {
                "type": "serial",
                "times": 5,
            },
            "context": {
                "create_flavor": {
                    "ram": 512,
                }
            }
        }
    ]
}
```

This configuration file uses the *"create_flavor"* context which we created in *Context as a plugin*.

SLA as a plugin

Let's create an SLA (success criterion) plugin that checks whether the range of the observed performance measurements does not exceed the allowed maximum value.

Creation

Inherit a class for your plugin from the base *SLA* class and implement its API (the *add_iteration(iteration)*, the *details()* method):

```
from rally.task import sla
from rally.common.i18n import _

@sla.configure(name="max_duration_range")
class MaxDurationRange(sla.SLA):
    """Maximum allowed duration range in seconds."""

    CONFIG_SCHEMA = {
        "type": "number",
        "minimum": 0.0,
    }

    def __init__(self, criterion_value):
        super(MaxDurationRange, self).__init__(criterion_value)
        self._min = 0
        self._max = 0

    def add_iteration(self, iteration):
        # Skipping failed iterations (that raised exceptions)
        if iteration.get("error"):
            return self.success   # This field is defined in base class

        # Updating _min and _max values
        self._max = max(self._max, iteration["duration"])
        self._min = min(self._min, iteration["duration"])

        # Updating successfulness based on new max and min values
        self.success = self._max - self._min <= self.criterion_value
        return self.success

    def details(self):
        return (_("%s - Maximum allowed duration range: %.2f%% <= %.2f%%") %
                (self.status(), self._max - self._min, self.criterion_value))
```

Usage

You can refer to your SLA in the benchmark task configuration files in the same way as any other SLA:

```
{
    "Dummy.dummy": [
        {
            "args": {
                "sleep": 0.01
            },
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 1
            },
            "context": {
                "users": {
                    "tenants": 1,
```

```
                    "users_per_tenant": 1
                }
            },
            "sla": {
                "max_duration_range": 2.5
            }
        }
    ]
}
```

1.7 Rally Plugins Reference

Contents

1.7.1 Task Scenario Runners

constant [scenario runner]

Creates constant load executing a scenario a specified number of times.

This runner will place a constant load on the cloud under test by executing each scenario iteration without pausing between iterations up to the number of times specified in the scenario config.

The concurrency parameter of the scenario config controls the number of concurrent scenarios which execute during a single iteration in order to simulate the activities of multiple users placing load on the cloud under test.

Namespace: default

Module: rally.plugins.common.runners.constant

constant_for_duration [scenario runner]

Creates constant load executing a scenario for an interval of time.

This runner will place a constant load on the cloud under test by executing each scenario iteration without pausing between iterations until a specified interval of time has elapsed.

The concurrency parameter of the scenario config controls the number of concurrent scenarios which execute during a single iteration in order to simulate the activities of multiple users placing load on the cloud under test.

Namespace: default

Module: rally.plugins.common.runners.constant

serial [scenario runner]

Scenario runner that executes benchmark scenarios serially.

Unlike scenario runners that execute in parallel, the serial scenario runner executes scenarios one-by-one in the same python interpreter process as Rally. This allows you to benchmark your scenario without introducing any concurrent operations as well as interactively debug the scenario from the same command that you use to start Rally.

Namespace: default

Module: rally.plugins.common.runners.serial

rps [scenario runner]

Scenario runner that does the job with specified frequency.

Every single benchmark scenario iteration is executed with specified frequency (runs per second) in a pool of processes. The scenario will be launched for a fixed number of times in total (specified in the config).

An example of a rps scenario is booting 1 VM per second. This execution type is thus very helpful in understanding the maximal load that a certain cloud can handle.

Namespace: default

Module: rally.plugins.common.runners.rps

1.7.2 Task SLAs

max_seconds_per_iteration [SLA]

Maximum time for one iteration in seconds.

Namespace: default

Module: rally.plugins.common.sla.iteration_time

max_avg_duration [SLA]

Maximum average duration of one iteration in seconds.

Namespace: default

Module: rally.plugins.common.sla.max_average_duration

outliers [SLA]

Limit the number of outliers (iterations that take too much time).

The outliers are detected automatically using the computation of the mean and standard deviation (std) of the data.

Namespace: default

Module: rally.plugins.common.sla.outliers

failure_rate [SLA]

Failure rate minimum and maximum in percents.

Namespace: default

Module: rally.plugins.common.sla.failure_rate

1.7.3 Task Contexts

users [context]

Context class for generating temporary users/tenants for benchmarks.

Namespace: default

Module: rally.plugins.openstack.context.keystone.users

existing_users [context]

This context supports using existing users in Rally.

It uses information about deployment to properly initialize context[”users”] and context[”tenants”]

So there won’t be big difference between usage of “users” and “existing_users” context.

Namespace: default

Module: rally.plugins.openstack.context.keystone.existing_users

flavors [context]

Context creates a list of flavors.

Namespace: default

Module: rally.plugins.openstack.context.nova.flavors

api_versions [context]

Context for specifying OpenStack clients versions and service types.

Some OpenStack services support several API versions. To recognize the endpoints of each version, separate service types are provided in Keystone service catalog.

Rally has the map of default service names - service types. But since service type is an entity, which can be configured manually by admin(via keystone api) without relation to service name, such map can be insufficient.

Also, Keystone service catalog does not provide a map types to name (this statement is true for keystone < 3.3).

This context was designed for not-default service types and not-default API versions usage.

An example of specifying API version:

```
# In this example we will launch NovaKeypair.create_and_list_keypairs
# scenario on 2.2 api version.
{
    "NovaKeypair.create_and_list_keypairs": [
        {
```

```
            "args": {
                "key_type": "x509"
            },
            "runner": {
                "type": "constant",
                "times": 10,
                "concurrency": 2
            },
            "context": {
                "users": {
                    "tenants": 3,
                    "users_per_tenant": 2
                },
                "api_versions": {
                    "nova": {
                        "version": 2.2
                    }
                }
            }
        }
    ]
}
```

An example of specifying API version along with service type:

```
# In this example we will launch CinderVolumes.create_and_attach_volume
# scenario on Cinder V2
{
    "CinderVolumes.create_and_attach_volume": [
        {
            "args": {
                "size": 10,
                "image": {
                    "name": "^cirros.*uec$"
                },
                "flavor": {
                    "name": "m1.tiny"
                },
                "create_volume_params": {
                    "availability_zone": "nova"
                }
            },
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 1
            },
            "context": {
                "users": {
                    "tenants": 2,
                    "users_per_tenant": 2
                },
                "api_versions": {
                    "cinder": {
                        "version": 2,
                        "service_type": "volumev2"
                    }
                }
            }
```

```
        }
    ]
}
```

Also, it possible to use service name as an identifier of service endpoint, but an admin user is required (Keystone can return map of service names - types, but such API is permitted only for admin). An example:

```
# Similar to the previous example, but `service_name` argument is used
# instead of `service_type`
{
    "CinderVolumes.create_and_attach_volume": [
        {
            "args": {
                "size": 10,
                "image": {
                    "name": "^cirros.*uec$"
                },
                "flavor": {
                    "name": "m1.tiny"
                },
                "create_volume_params": {
                    "availability_zone": "nova"
                }
            },
            "runner": {
                "type": "constant",
                "times": 5,
                "concurrency": 1
            },
            "context": {
                "users": {
                    "tenants": 2,
                    "users_per_tenant": 2
                },
                "api_versions": {
                    "cinder": {
                        "version": 2,
                        "service_name": "cinderv2"
                    }
                }
            }
        }
    ]
}
```

Namespace: default

Module: rally.plugins.openstack.context.api_versions

fuel_environments [context]

Context for generating Fuel environments.

Namespace: default

Module: rally.plugins.openstack.context.fuel

keypair [context]

Namespace: default

Module: rally.plugins.openstack.context.nova.keypairs

servers [context]

Context class for adding temporary servers for benchmarks.

Servers are added for each tenant.

Namespace: default

Module: rally.plugins.openstack.context.nova.servers

manila_share_networks [context]

This context creates resources specific for Manila project.

Namespace: default

Module: rally.plugins.openstack.context.manila.manila_share_networks

roles [context]

Context class for adding temporary roles for benchmarks.

Namespace: default

Module: rally.plugins.openstack.context.keystone.roles

quotas [context]

Context class for updating benchmarks' tenants quotas.

Namespace: default

Module: rally.plugins.openstack.context.quotas.quotas

tempest [context]

Namespace: default

Module: rally.plugins.openstack.context.not_for_production.tempest

lbaas [context]

Namespace: default

Module: rally.plugins.openstack.context.neutron.lbaas

custom_image [context]

Base class for the contexts providing customized image with.

Every context class for the specific customization must implement the method *_customize_image* that is able to connect to the server using SSH and e.g. install applications inside it.

This is used e.g. to install the benchmark application using SSH access.

This base context class provides a way to prepare an image with custom preinstalled applications. Basically, this code boots a VM, calls the *_customize_image* and then snapshots the VM disk, removing the VM afterwards. The image UUID is stored in the user["custom_image"]["id"] and can be used afterwards by scenario.

Namespace: default

Module: rally.plugins.openstack.context.vm.custom_image

image_command_customizer [context]

Context class for generating image customized by a command execution.

Run a command specified by configuration to prepare image.

Use this script e.g. to download and install something.

Namespace: default

Module: rally.plugins.openstack.context.vm.image_command_customizer

stacks [context]

Context class for create temporary stacks with resources.

Stack generator allows to generate arbitrary number of stacks for each tenant before test scenarios. In addition, it allows to define number of resources (namely OS::Heat::RandomString) that will be created inside each stack. After test execution the stacks will be automatically removed from heat.

Namespace: default

Module: rally.plugins.openstack.context.heat.stacks

cleanup [context]

Context class for user resources cleanup.

Namespace: default

Module: rally.plugins.openstack.context.cleanup.user

admin_cleanup [context]

Context class for admin resources cleanup.

Namespace: default

Module: rally.plugins.openstack.context.cleanup.admin

ceilometer [context]

Context for creating samples and collecting resources for benchmarks.

Namespace: default

Module: rally.plugins.openstack.context.ceilometer.samples

swift_objects [context]

Namespace: default

Module: rally.plugins.openstack.context.swift.objects

zones [context]

Context to add *zones_per_tenant* zones for each tenant.

Namespace: default

Module: rally.plugins.openstack.context.designate.zones

ec2_servers [context]

Context class for adding temporary servers for benchmarks.

Servers are added for each tenant.

Namespace: default

Module: rally.plugins.openstack.context.ec2.servers

allow_ssh [context]

Sets up security groups for all users to access VM via SSH.

Namespace: default

Module: rally.plugins.openstack.context.network.allow_ssh

existing_network [context]

This context supports using existing networks in Rally.

This context should be used on a deployment with existing users.

Namespace: default

Module: rally.plugins.openstack.context.network.existing_network

network [context]

Namespace: default

Module: rally.plugins.openstack.context.network.networks

volumes [context]

Context class for adding volumes to each user for benchmarks.

Namespace: default

Module: rally.plugins.openstack.context.cinder.volumes

sahara_image [context]

Context class for adding and tagging Sahara images.

Namespace: default

Module: rally.plugins.openstack.context.sahara.sahara_image

sahara_input_data_sources [context]

Context class for setting up Input Data Sources for an EDP job.

Namespace: default

Module: rally.plugins.openstack.context.sahara.sahara_input_data_sources

sahara_output_data_sources [context]

Context class for setting up Output Data Sources for an EDP job.

Namespace: default

Module: rally.plugins.openstack.context.sahara.sahara_output_data_sources

sahara_job_binaries [context]

Context class for setting up Job Binaries for an EDP job.

Namespace: default

Module: rally.plugins.openstack.context.sahara.sahara_job_binaries

sahara_cluster [context]

Context class for setting up the Cluster an EDP job.

Namespace: default

Module: rally.plugins.openstack.context.sahara.sahara_cluster

murano_packages [context]

Context class for uploading applications for murano.

Namespace: default

Module: rally.plugins.openstack.context.murano.murano_packages

images [context]

Context class for adding images to each user for benchmarks.

Namespace: default

Module: rally.plugins.openstack.context.glance.images

dummy_context [context]

Dummy context.

Namespace: default

Module: rally.plugins.common.context.dummy

1.7.4 Task Scenarios

NovaAvailabilityZones.list_availability_zones [scenario]

List all availability zones.

Measure the "nova availability-zone-list" command performance.

Namespace: default

Parameters:

- **detailed: True if the availability-zone listing should contain** detailed information about all of them

Module: rally.plugins.openstack.scenarios.nova.availability_zones

NovaFlavors.list_flavors [scenario]

List all flavors.

Measure the "nova flavor-list" command performance.

Namespace: default

Parameters:

- **detailed: True if the flavor listing** should contain detailed information
- kwargs: Optional additional arguments for flavor listing

Module: rally.plugins.openstack.scenarios.nova.flavors

NovaImages.list_images [scenario]

List all images.

Measure the "nova image-list" command performance.

Namespace: default

Parameters:

- **detailed: True if the image listing** should contain detailed information
- kwargs: Optional additional arguments for image listing

Module: rally.plugins.openstack.scenarios.nova.images

NovaHypervisors.list_hypervisors [scenario]

List hypervisors.

Measure the "nova hypervisor-list" command performance.

Namespace: default

Parameters:

- **detailed: True if the hypervisor listing should contain** detailed information about all of them

Module: rally.plugins.openstack.scenarios.nova.hypervisors

NovaNetworks.create_and_list_networks [scenario]

Create nova network and list all networks.

Namespace: default

Parameters:

- start_cidr: IP range
- kwargs: Optional additional arguments for network creation

Module: rally.plugins.openstack.scenarios.nova.networks

NovaNetworks.create_and_delete_network [scenario]

Create nova network and delete it.

Namespace: default

Parameters:

- start_cidr: IP range
- kwargs: Optional additional arguments for network creation

Module: rally.plugins.openstack.scenarios.nova.networks

NovaSecGroup.create_and_delete_secgroups [scenario]

Create and delete security groups.

This scenario creates N security groups with M rules per group and then deletes them.

Namespace: default

Parameters:

- security_group_count: Number of security groups
- rules_per_security_group: Number of rules per security group

Module: rally.plugins.openstack.scenarios.nova.security_group

NovaSecGroup.create_and_list_secgroups [scenario]

Create and list security groups.

This scenario creates N security groups with M rules per group and then lists them.

Namespace: default

Parameters:

- security_group_count: Number of security groups
- rules_per_security_group: Number of rules per security group

Module: rally.plugins.openstack.scenarios.nova.security_group

NovaSecGroup.create_and_update_secgroups [scenario]

Create and update security groups.

This scenario creates 'security_group_count' security groups then updates their name and description.

Namespace: default

Parameters:

- security_group_count: Number of security groups

Module: rally.plugins.openstack.scenarios.nova.security_group

NovaSecGroup.boot_and_delete_server_with_secgroups [scenario]

Boot and delete server with security groups attached.

Plan of this scenario:

- create N security groups with M rules per group vm with security groups)
- boot a VM with created security groups
- get list of attached security groups to server
- delete server
- delete all security groups
- check that all groups were attached to server

Namespace: default

Parameters:

- image: ID of the image to be used for server creation
- flavor: ID of the flavor to be used for server creation
- security_group_count: Number of security groups
- rules_per_security_group: Number of rules per security group
- **kwargs: Optional arguments for booting the instance

Module: rally.plugins.openstack.scenarios.nova.security_group

NovaHosts.list_hosts [scenario]

List all nova hosts.

Measure the "nova host-list" command performance.

Namespace: default

Parameters:

- **zone: List nova hosts in an availibility-zone.** None (default value) means list hosts in all availibility-zones

Module: rally.plugins.openstack.scenarios.nova.hosts

NovaAggregates.list_aggregates [scenario]

List all nova aggregates.

Measure the "nova aggregate-list" command performance.

Namespace: default

Module: rally.plugins.openstack.scenarios.nova.aggregates

NovaAgents.list_agents [scenario]

List all builds.

Measure the "nova agent-list" command performance.

Namespace: default

Parameters:

- **hypervisor: List agent builds on a specific hypervisor.** None (default value) means list for all hypervisors

Module: rally.plugins.openstack.scenarios.nova.agents

NovaKeypair.create_and_list_keypairs [scenario]

Create a keypair with random name and list keypairs.

This scenario creates a keypair and then lists all keypairs.

Namespace: default

Parameters:

- kwargs: Optional additional arguments for keypair creation

Module: rally.plugins.openstack.scenarios.nova.keypairs

NovaKeypair.create_and_delete_keypair [scenario]

Create a keypair with random name and delete keypair.

This scenario creates a keypair and then delete that keypair.

Namespace: default

Parameters:

- kwargs: Optional additional arguments for keypair creation

Module: rally.plugins.openstack.scenarios.nova.keypairs

NovaKeypair.boot_and_delete_server_with_keypair [scenario]

Boot and delete server with keypair.

Plan of this scenario:

- create a keypair
- boot a VM with created keypair
- delete server
- delete keypair

Namespace: default

Parameters:

- image: ID of the image to be used for server creation
- flavor: ID of the flavor to be used for server creation
- **boot_server_kwargs: Optional additional arguments for VM** creation
- server_kwargs: Deprecated alias for boot_server_kwargs
- kwargs: Optional additional arguments for keypair creation

Module: rally.plugins.openstack.scenarios.nova.keypairs

NovaServers.boot_and_list_server [scenario]

Boot a server from an image and then list all servers.

Measure the "nova list" command performance.

If you have only 1 user in your context, you will add 1 server on every iteration. So you will have more and more servers and will be able to measure the performance of the "nova list" command depending on the number of servers owned by users.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- **detailed: True if the server listing should contain** detailed information about all of them
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.list_servers [scenario]

List all servers.

This simple scenario test the nova list command by listing all the servers.

Namespace: default

Parameters:

- **detailed: True if detailed information about servers** should be listed

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_delete_server [scenario]

Boot and delete a server.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between volume creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_delete_multiple_servers [scenario]

Boot multiple servers in a single request and delete them.

Deletion is done in parallel with one request per server, not with a single request for all servers.

Namespace: default

Parameters:

- image: The image to boot from
- flavor: Flavor used to boot instance
- count: Number of instances to boot
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for instance creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_from_volume_and_delete [scenario]

Boot a server from volume and then delete it.

The scenario first creates a volume and then a server. Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between volume creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- volume_size: volume size (in GB)
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_bounce_server [scenario]

Boot a server and run specified actions against it.

Actions should be passed into the actions parameter. Available actions are 'hard_reboot', 'soft_reboot', 'stop_start' and 'rescue_unrescue'. Delete server after all actions were completed.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- force_delete: True if force_delete should be used
- **actions: list of action dictionaries, where each action** dictionary speicifes an action to be performed in the following format: {"action_name": <no_of_iterations>}
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_lock_unlock_and_delete [scenario]

Boot a server, lock it, then unlock and delete it.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between locking and unlocking the server (of random duration from min_sleep to max_sleep).

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance

- **min_sleep: Minimum sleep time between locking and unlocking** in seconds
- **max_sleep: Maximum sleep time between locking and unlocking** in seconds
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.snapshot_server [scenario]

Boot a server, make its snapshot and delete both.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server [scenario]

Boot a server.

Assumes that cleanup is done elsewhere.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- auto_assign_nic: True if NICs should be assigned
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_from_volume [scenario]

Boot a server from volume.

The scenario first creates a volume and then a server. Assumes that cleanup is done elsewhere.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- volume_size: volume size (in GB)
- auto_assign_nic: True if NICs should be assigned

- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.resize_server [scenario]

Boot a server, then resize and delete it.

This test will confirm the resize by default, or revert the resize if confirm is set to false.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- to_flavor: flavor to be used to resize the booted instance
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_attach_created_volume_and_resize [scenario]

Create a VM from image, attach a volume to it and resize.

Simple test to create a VM and attach a volume, then resize the VM, detach the volume then delete volume and VM. Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between attaching a volume and running resize (of random duration from range [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: Glance image name to use for the VM
- flavor: VM flavor name
- to_flavor: flavor to be used to resize the booted instance
- volume_size: volume size (in GB)
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- force_delete: True if force_delete should be used
- confirm: True if need to confirm resize else revert resize
- **do_delete: True if resources needs to be deleted explicitly** else use rally cleanup to remove resources
- boot_server_kwargs: optional arguments for VM creation
- create_volume_kwargs: optional arguments for volume creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_from_volume_and_resize [scenario]

Boot a server from volume, then resize and delete it.

The scenario first creates a volume and then a server. Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between volume creation and deletion (of random duration from [min_sleep, max_sleep]).

This test will confirm the resize by default, or revert the resize if confirm is set to false.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- to_flavor: flavor to be used to resize the booted instance
- volume_size: volume size (in GB)
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- force_delete: True if force_delete should be used
- confirm: True if need to confirm resize else revert resize
- **do_delete: True if resources needs to be deleted explicitly** else use rally cleanup to remove resources
- boot_server_kwargs: optional arguments for VM creation
- create_volume_kwargs: optional arguments for volume creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.suspend_and_resume_server [scenario]

Create a server, suspend, resume and then delete it

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.pause_and_unpause_server [scenario]

Create a server, pause, unpause and then delete it

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance

- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.shelve_and_unshelve_server [scenario]

Create a server, shelve, unshelve and then delete it

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- force_delete: True if force_delete should be used
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_live_migrate_server [scenario]

Live Migrate a server.

This scenario launches a VM on a compute node available in the availability zone and then migrates the VM to another compute node on the same availability zone.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between VM booting and running live migration (of random duration from range [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- block_migration: Specifies the migration type
- **disk_over_commit: Specifies whether to allow overcommit** on migrated instance or not
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_from_volume_and_live_migrate [scenario]

Boot a server from volume and then migrate it.

The scenario first creates a volume and a server booted from the volume on a compute node available in the availability zone and then migrates the VM to another compute node on the same availability zone.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between VM booting and running live migration (of random duration from range [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- volume_size: volume size (in GB)
- block_migration: Specifies the migration type
- **disk_over_commit: Specifies whether to allow overcommit** on migrated instance or not
- force_delete: True if force_delete should be used
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_server_attach_created_volume_and_live_migrate [scenario]

Create a VM, attach a volume to it and live migrate.

Simple test to create a VM and attach a volume, then migrate the VM, detach the volume and delete volume/VM.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between attaching a volume and running live migration (of random duration from range [min_sleep, max_sleep]).

Namespace: default

Parameters:

- image: Glance image name to use for the VM
- flavor: VM flavor name
- size: volume size (in GB)
- block_migration: Specifies the migration type
- **disk_over_commit: Specifies whether to allow overcommit** on migrated instance or not
- boot_server_kwargs: optional arguments for VM creation
- create_volume_kwargs: optional arguments for volume creation
- min_sleep: Minimum sleep time in seconds (non-negative)
- max_sleep: Maximum sleep time in seconds (non-negative)

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_migrate_server [scenario]

Migrate a server.

This scenario launches a VM on a compute node available in the availability zone and stops the VM, and then migrates the VM to another compute node on the same availability zone.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_rebuild_server [scenario]

Rebuild a server.

This scenario launches a VM, then rebuilds that VM with a different image.

Namespace: default

Parameters:

- from_image: image to be used to boot an instance
- to_image: image to be used to rebuild the instance
- flavor: flavor to be used to boot an instance
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_associate_floating_ip [scenario]

Boot a server and associate a floating IP to it.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- kwargs: Optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_show_server [scenario]

Show server details.

This simple scenario tests the nova show command by retrieving the server details.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- kwargs: Optional additional arguments for server creation

Returns: Server details

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServers.boot_and_get_console_output [scenario]

Get text console output from server.

This simple scenario tests the nova console-log command by retrieving the text console log output.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- **length: The number of tail log lines you would like to retrieve.** None (default value) or -1 means unlimited length.
- kwargs: Optional additional arguments for server creation

Returns: Text console log output for server

Module: rally.plugins.openstack.scenarios.nova.servers

NovaServices.list_services [scenario]

List all nova services.

Measure the "nova service-list" command performance.

Namespace: default

Parameters:

- host: List nova services on host
- binary: List nova services matching given binary

Module: rally.plugins.openstack.scenarios.nova.services

NovaFloatingIpsBulk.create_and_list_floating_ips_bulk [scenario]

Create nova floating IP by range and list it.

This scenario creates a floating IP by range and then lists all.

Namespace: default

Parameters:

- start_cidr: Floating IP range
- kwargs: Optional additional arguments for range IP creation

Module: rally.plugins.openstack.scenarios.nova.floating_ips_bulk

NovaFloatingIpsBulk.create_and_delete_floating_ips_bulk [scenario]

Create nova floating IP by range and delete it.

This scenario creates a floating IP by range and then delete it.

Namespace: default

Parameters:

- start_cidr: Floating IP range
- kwargs: Optional additional arguments for range IP creation

Module: rally.plugins.openstack.scenarios.nova.floating_ips_bulk

ZaqarBasic.create_queue [scenario]

Create a Zaqar queue with a random name.

Namespace: default

Parameters:

- **kwargs: other optional parameters to create queues like** "metadata"

Module: rally.plugins.openstack.scenarios.zaqar.basic

ZaqarBasic.producer_consumer [scenario]

Serial message producer/consumer.

Creates a Zaqar queue with random name, sends a set of messages and then retrieves an iterator containing those.

Namespace: default

Parameters:

- min_msg_count: min number of messages to be posted
- max_msg_count: max number of messages to be posted
- **kwargs: other optional parameters to create queues like** "metadata"

Module: rally.plugins.openstack.scenarios.zaqar.basic

ManilaShares.create_and_delete_share [scenario]

Create and delete a share.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between share creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- **share_proto: share protocol, valid values are NFS, CIFS,** GlusterFS and HDFS
- size: share size in GB, should be greater than 0
- min_sleep: minimum sleep time in seconds (non-negative)
- max_sleep: maximum sleep time in seconds (non-negative)
- kwargs: optional args to create a share

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.list_shares [scenario]

Basic scenario for 'share list' operation.

Namespace: default

Parameters:

- **detailed: defines either to return detailed list of** objects or not.
- **search_opts: container of search opts such as** "name", "host", "share_type", etc.

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.create_share_network_and_delete [scenario]

Creates share network and then deletes.

Namespace: default

Parameters:

- neutron_net_id: ID of Neutron network
- neutron_subnet_id: ID of Neutron subnet
- nova_net_id: ID of Nova network
- description: share network description

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.create_share_network_and_list [scenario]

Creates share network and then lists it.

Namespace: default

Parameters:

- neutron_net_id: ID of Neutron network
- neutron_subnet_id: ID of Neutron subnet
- nova_net_id: ID of Nova network
- description: share network description
- **detailed: defines either to return detailed list of** objects or not.
- **search_opts: container of search opts such as** "name", "nova_net_id", "neutron_net_id", etc.

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.list_share_servers [scenario]

Lists share servers.

Requires admin creds.

Namespace: default

Parameters:

- **search_opts: container of following search opts:** "host", "status", "share_network" and "project_id".

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.create_security_service_and_delete [scenario]

Creates security service and then deletes.

Namespace: default

Parameters:

- **security_service_type: security service type, permitted values** are 'ldap', 'kerberos' or 'active_directory'.
- dns_ip: dns ip address used inside tenant's network
- server: security service server ip address or hostname
- domain: security service domain
- user: security identifier used by tenant
- password: password used by user
- description: security service description

Module: rally.plugins.openstack.scenarios.manila.shares

ManilaShares.attach_security_service_to_share_network [scenario]

Attaches security service to share network.

Namespace: default

Parameters:

- **security_service_type: type of security service to use.** Should be one of following: 'ldap', 'kerberos' or 'active_directory'.

Module: rally.plugins.openstack.scenarios.manila.shares

KeystoneBasic.create_user [scenario]

Create a keystone user with random name.

Namespace: default

Parameters:

- **kwargs: Other optional parameters to create users like** "tenant_id", "enabled".

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_delete_user [scenario]

Create a keystone user with random name and then delete it.

Namespace: default

Parameters:

- **kwargs: Other optional parameters to create users like** "tenant_id", "enabled".

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_user_set_enabled_and_delete [scenario]

Create a keystone user, enable or disable it, and delete it.

Namespace: default

Parameters:

- **enabled: Initial state of user 'enabled' flag. The user** will be created with 'enabled' set to this value, and then it will be toggled.
- kwargs: Other optional parameters to create user.

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_tenant [scenario]

Create a keystone tenant with random name.

Namespace: default

Parameters:

- kwargs: Other optional parameters

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_tenant_with_users [scenario]

Create a keystone tenant and several users belonging to it.

Namespace: default

Parameters:

- users_per_tenant: number of users to create for the tenant
- kwargs: Other optional parameters for tenant creation

Returns: keystone tenant instance

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_list_users [scenario]

Create a keystone user with random name and list all users.

Namespace: default

Parameters:

- **kwargs: Other optional parameters to create users like** "tenant_id", "enabled".

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_list_tenants [scenario]

Create a keystone tenant with random name and list all tenants.

Namespace: default

Parameters:

- kwargs: Other optional parameters

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.add_and_remove_user_role [scenario]

Create a user role add to a user and disassociate.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_delete_role [scenario]

Create a user role and delete it.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_add_and_list_user_roles [scenario]

Create user role, add it and list user roles for given user.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.get_entities [scenario]

Get instance of a tenant, user, role and service by id's.

An ephemeral tenant, user, and role are each created. By default, fetches the 'keystone' service. This can be overridden (for instance, to get the 'Identity Service' service on older OpenStack), or None can be passed explicitly to service_name to create a new service and then query it by ID.

Namespace: default

Parameters:

- **service_name: The name of the service to get by ID; or** None, to create an ephemeral service and get it by ID.

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_delete_service [scenario]

Create and delete service.

Namespace: default

Parameters:

- service_type: type of the service
- description: description of the service

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_update_and_delete_tenant [scenario]

Create, update and delete tenant.

Namespace: default

Parameters:

- kwargs: Other optional parameters for tenant creation

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_user_update_password [scenario]

Create user and update password for that user.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_list_services [scenario]

Create and list services.

Namespace: default

Parameters:

- service_type: type of the service
- description: description of the service

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_list_ec2credentials [scenario]

Create and List all keystone ec2-credentials.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

KeystoneBasic.create_and_delete_ec2credential [scenario]

Create and delete keystone ec2-credential.

Namespace: default

Module: rally.plugins.openstack.scenarios.keystone.basic

Quotas.nova_update [scenario]

Update quotas for Nova.

Namespace: default

Parameters:

- max_quota: Max value to be updated for quota.

Module: rally.plugins.openstack.scenarios.quotas.quotas

Quotas.nova_update_and_delete [scenario]

Update and delete quotas for Nova.

Namespace: default

Parameters:

- max_quota: Max value to be updated for quota.

Module: rally.plugins.openstack.scenarios.quotas.quotas

Quotas.cinder_update [scenario]

Update quotas for Cinder.

Namespace: default

Parameters:

- max_quota: Max value to be updated for quota.

Module: rally.plugins.openstack.scenarios.quotas.quotas

Quotas.cinder_update_and_delete [scenario]

Update and Delete quotas for Cinder.

Namespace: default

Parameters:

- max_quota: Max value to be updated for quota.

Module: rally.plugins.openstack.scenarios.quotas.quotas

Quotas.neutron_update [scenario]

Update quotas for neutron.

Namespace: default

Parameters:

- max_quota: Max value to be updated for quota.

Module: rally.plugins.openstack.scenarios.quotas.quotas

VMTasks.boot_runcommand_delete [scenario]

Boot a server, run script specified in command and delete server.

Example Script in samples/tasks/support/instance_dd_test.sh

The script to be executed is provided like command['remote_path'] or command['local_path'] and interpreter in command['interpreter'] respectively.

Namespace: default

Parameters:

- image: glance image name to use for the vm
- flavor: VM flavor name
- username: ssh username on server, str
- password: Password on SSH authentication
- **command: Command-specifying dictionary that either specifies** remote command path via *remote_path' (can be uploaded from a local file specified by 'local_path*), an inline script via 'script_inline' or a local script file path using 'script_file'. Both 'script_file' and 'local_path' are checked to be accessible by the 'file_exists' validator code.

  The 'script_inline' and 'script_file' both require an 'interpreter' value to specify the interpreter script should be run with.

  Note that any of 'interpreter' and 'remote_path' can be an array prefixed with environment variables and suffixed with args for the 'interpreter' command. 'remote_path's last component must be a path to a command to execute (also upload destination if a 'local_path' is given). Uploading an interpreter is possible but requires that 'remote_path' and 'interpreter' path do match.

  Examples:

```
# Run a `local_script.pl' file sending it to a remote
# Perl interpreter
command = {
    "script_file": "local_script.pl",
    "interpreter": "/usr/bin/perl"
}

# Run an inline script sending it to a remote interpreter
command = {
    "script_inline": "echo 'Hello, World!'",
    "interpreter": "/bin/sh"
}

# Run a remote command
command = {
```

```
        "remote_path": "/bin/false"
    }

    # Copy a local command and run it
    command = {
        "remote_path": "/usr/local/bin/fio",
        "local_path": "/home/foobar/myfiodir/bin/fio"
    }

    # Copy a local command and run it with environment variable
    command = {
        "remote_path": ["HOME=/root", "/usr/local/bin/fio"],
        "local_path": "/home/foobar/myfiodir/bin/fio"
    }

    # Run an inline script sending it to a remote interpreter
    command = {
        "script_inline": "echo "Hello, ${NAME:-World}"",
        "interpreter": ["NAME=Earth", "/bin/sh"]
    }

    # Run an inline script sending it to an uploaded remote
    # interpreter
    command = {
        "script_inline": "echo "Hello, ${NAME:-World}"",
        "interpreter": ["NAME=Earth", "/tmp/sh"],
        "remote_path": "/tmp/sh",
        "local_path": "/home/user/work/cve/sh-1.0/bin/sh"
    }
```

- volume_args: volume args for booting server from volume
- floating_network: external network name, for floating ip
- port: ssh port for SSH connection
- use_floating_ip: bool, floating or fixed IP for SSH connection
- force_delete: whether to use force_delete for servers
- wait_for_ping: whether to check connectivity on server creation
- **kwargs: extra arguments for booting the server
- **max_log_length: The number of tail nova console-log lines user** would like to retrieve

Returns: dictionary with keys ‘data’ and ‘errors’: data: dict, JSON output from the script errors: str, raw data from the script’s stderr stream

Module: rally.plugins.openstack.scenarios.vm.vmtasks

VMTasks.boot_runcommand_delete_custom_image [scenario]

Boot a server from a custom image, run a command that outputs JSON.

Example Script in rally-jobs/extra/install_benchmark.sh

Namespace: default

Module: rally.plugins.openstack.scenarios.vm.vmtasks

VMTasks.runcommand_heat [scenario]

Run workload on stack deployed by heat.

Workload can be either file or resource:

Also it should contain "username" key.

Given file will be uploaded to *gate_node* and started. This script should print *key value* pairs separated by colon. These pairs will be presented in results.

Gate node should be accessible via ssh with keypair *key_name*, so heat template should accept parameter *key_name*.

Namespace: default

Parameters:

- workload: workload to run
- template: path to heat template file
- files: additional template files
- parameters: parameters for heat template

Module: rally.plugins.openstack.scenarios.vm.vmtasks

HeatStacks.create_and_list_stack [scenario]

Create a stack and then list all stacks.

Measure the "heat stack-create" and "heat stack-list" commands performance.

Namespace: default

Parameters:

- template_path: path to stack template file
- parameters: parameters to use in heat template
- files: files used in template
- environment: stack environment definition

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.list_stacks_and_resources [scenario]

List all resources from tenant stacks.

Namespace: default

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_and_delete_stack [scenario]

Create and then delete a stack.

Measure the "heat stack-create" and "heat stack-delete" commands performance.

Namespace: default

Parameters:

- template_path: path to stack template file
- parameters: parameters to use in heat template
- files: files used in template
- environment: stack environment definition

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_check_delete_stack [scenario]

Create, check and delete a stack.

Measure the performance of the following commands: - heat stack-create - heat action-check - heat stack-delete

Namespace: default

Parameters:

- template_path: path to stack template file
- parameters: parameters to use in heat template
- files: files used in template
- environment: stack environment definition

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_update_delete_stack [scenario]

Create, update and then delete a stack.

Measure the "heat stack-create", "heat stack-update" and "heat stack-delete" commands performance.

Namespace: default

Parameters:

- template_path: path to stack template file
- updated_template_path: path to updated stack template file
- parameters: parameters to use in heat template
- **updated_parameters: parameters to use in updated heat template** If not specified then parameters will be used instead
- files: files used in template
- **updated_files: files used in updated template. If not specified** files value will be used instead
- environment: stack environment definition
- updated_environment: environment definition for updated stack

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_stack_and_scale [scenario]

Create an autoscaling stack and invoke a scaling policy.

Measure the performance of autoscaling webhooks.

Namespace: default

Parameters:

- **template_path: path to template file that includes an** OS::Heat::AutoScalingGroup resource
- **output_key: the stack output key that corresponds to** the scaling webhook
- **delta: the number of instances the stack is expected to** change by.
- parameters: parameters to use in heat template
- **files: files used in template (dict of file name to** file path)
- environment: stack environment definition (dict)

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_suspend_resume_delete_stack [scenario]

Create, suspend-resume and then delete a stack.

Measure performance of the following commands: heat stack-create heat action-suspend heat action-resume heat stack-delete

Namespace: default

Parameters:

- template_path: path to stack template file
- parameters: parameters to use in heat template
- files: files used in template
- environment: stack environment definition

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.list_stacks_and_events [scenario]

List events from tenant stacks.

Namespace: default

Module: rally.plugins.openstack.scenarios.heat.stacks

HeatStacks.create_snapshot_restore_delete_stack [scenario]

Create, snapshot-restore and then delete a stack.

Measure performance of the following commands: heat stack-create heat stack-snapshot heat stack-restore heat stack-delete

Namespace: default

Parameters:

- template_path: path to stack template file
- parameters: parameters to use in heat template
- files: files used in template
- environment: stack environment definition

Module: rally.plugins.openstack.scenarios.heat.stacks

MistralWorkbooks.list_workbooks [scenario]

Scenario test mistral workbook-list command.

This simple scenario tests the Mistral workbook-list command by listing all the workbooks.

Namespace: default

Module: rally.plugins.openstack.scenarios.mistral.workbooks

MistralWorkbooks.create_workbook [scenario]

Scenario tests workbook creation and deletion.

This scenario is a very useful tool to measure the "mistral workbook-create" and "mistral workbook-delete" commands performance.

Namespace: default

Parameters:

- **definition: string (yaml string) representation of given** file content (Mistral workbook definition)
- **do_delete: if False than it allows to check performance** in "create only" mode.

Module: rally.plugins.openstack.scenarios.mistral.workbooks

CeilometerTraits.create_user_and_list_traits [scenario]

Create user and fetch all event traits.

This scenario creates user to store new event and fetches list of all traits for certain event type and trait name using GET /v2/event_types/<event_type>/traits/<trait_name>.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.traits

CeilometerTraits.create_user_and_list_trait_descriptions [scenario]

Create user and fetch all trait descriptions.

This scenario creates user to store new event and fetches list of all traits for certain event type using GET /v2/event_types/<event_type>/traits.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.traits

CeilometerAlarms.create_alarm [scenario]

Create an alarm.

This scenarios test POST /v2/alarms. meter_name and threshold are required parameters for alarm creation. kwargs stores other optional parameters like 'ok_actions', 'project_id' etc that may be passed while creating an alarm.

Namespace: default

Parameters:

- meter_name: specifies meter name of the alarm
- threshold: specifies alarm threshold
- kwargs: specifies optional arguments for alarm creation.

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerAlarms.list_alarms [scenario]

Fetch all alarms.

This scenario fetches list of all alarms using GET /v2/alarms.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerAlarms.create_and_list_alarm [scenario]

Create and get the newly created alarm.

This scenarios test GET /v2/alarms/(alarm_id) Initially alarm is created and then the created alarm is fetched using its alarm_id. meter_name and threshold are required parameters for alarm creation. kwargs stores other optional parameters like 'ok_actions', 'project_id' etc. that may be passed while creating an alarm.

Namespace: default

Parameters:

- meter_name: specifies meter name of the alarm
- threshold: specifies alarm threshold
- kwargs: specifies optional arguments for alarm creation.

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerAlarms.create_and_update_alarm [scenario]

Create and update the newly created alarm.

This scenarios test PUT /v2/alarms/(alarm_id) Initially alarm is created and then the created alarm is updated using its alarm_id. meter_name and threshold are required parameters for alarm creation. kwargs stores other optional parameters like 'ok_actions', 'project_id' etc that may be passed while alarm creation.

Namespace: default

Parameters:

- meter_name: specifies meter name of the alarm

- threshold: specifies alarm threshold
- kwargs: specifies optional arguments for alarm creation.

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerAlarms.create_and_delete_alarm [scenario]

Create and delete the newly created alarm.

This scenarios test DELETE /v2/alarms/(alarm_id) Initially alarm is created and then the created alarm is deleted using its alarm_id. meter_name and threshold are required parameters for alarm creation. kwargs stores other optional parameters like 'ok_actions', 'project_id' etc that may be passed while alarm creation.

Namespace: default

Parameters:

- meter_name: specifies meter name of the alarm
- threshold: specifies alarm threshold
- kwargs: specifies optional arguments for alarm creation.

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerAlarms.create_alarm_and_get_history [scenario]

Create an alarm, get and set the state and get the alarm history.

This scenario makes following queries: GET /v2/alarms/{alarm_id}/history GET /v2/alarms/{alarm_id}/state PUT /v2/alarms/{alarm_id}/state

Initially alarm is created and then get the state of the created alarm using its alarm_id. Then get the history of the alarm. And finally the state of the alarm is updated using given state. meter_name and threshold are required parameters for alarm creation. kwargs stores other optional parameters like 'ok_actions', 'project_id' etc that may be passed while alarm creation.

Namespace: default

Parameters:

- meter_name: specifies meter name of the alarm
- threshold: specifies alarm threshold
- state: an alarm state to be set
- **timeout: The number of seconds for which to attempt a** successful check of the alarm state
- kwargs: specifies optional arguments for alarm creation.

Module: rally.plugins.openstack.scenarios.ceilometer.alarms

CeilometerEvents.create_user_and_list_events [scenario]

Create user and fetch all events.

This scenario creates user to store new event and fetches list of all events using GET /v2/events.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.events

CeilometerEvents.create_user_and_list_event_types [scenario]

Create user and fetch all event types.

This scenario creates user to store new event and fetches list of all events types using GET /v2/event_types.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.events

CeilometerEvents.create_user_and_get_event [scenario]

Create user and gets event.

This scenario creates user to store new event and fetches one event using GET /v2/events/<message_id>.

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.events

CeilometerResource.list_resources [scenario]

Check all available queries for list resource request.

This scenario fetches list of all resources using GET /v2/resources.

Namespace: default

Parameters:

- metadata_query: dict with metadata fields and values for query
- start_time: lower bound of resource timestamp in isoformat
- end_time: upper bound of resource timestamp in isoformat
- limit: count of resources in response

Module: rally.plugins.openstack.scenarios.ceilometer.resources

CeilometerResource.get_tenant_resources [scenario]

Get all tenant resources.

This scenario retrieves information about tenant resources using GET /v2/resources/(resource_id)

Namespace: default

Module: rally.plugins.openstack.scenarios.ceilometer.resources

CeilometerResource.list_matched_resources [scenario]

Get resources that matched fields from context and args.

Namespace: default

Parameters:

- filter_by_user_id: flag for query by user_id
- filter_by_project_id: flag for query by project_id

- filter_by_resource_id: flag for query by resource_id
- metadata_query: dict with metadata fields and values for query
- start_time: lower bound of resource timestamp in isoformat
- end_time: upper bound of resource timestamp in isoformat
- limit: count of resources in response

Module: rally.plugins.openstack.scenarios.ceilometer.resources

CeilometerStats.create_meter_and_get_stats [scenario]

Create a meter and fetch its statistics.

Meter is first created and then statistics is fetched for the same using GET /v2/meters/(meter_name)/statistics.

Namespace: default

Parameters:

- kwargs: contains optional arguments to create a meter

Module: rally.plugins.openstack.scenarios.ceilometer.stats

CeilometerStats.get_stats [scenario]

Fetch statistics for certain meter.

Statistics is fetched for the using GET /v2/meters/(meter_name)/statistics.

Namespace: default

Parameters:

- meter_name: meter to take statistic for
- filter_by_user_id: flag for query by user_id
- filter_by_project_id: flag for query by project_id
- filter_by_resource_id: flag for query by resource_id
- metadata_query: dict with metadata fields and values for query
- period: the length of the time range covered by these stats
- groupby: the fields used to group the samples
- aggregates: name of function for samples aggregation

Returns: list of statistics data

Module: rally.plugins.openstack.scenarios.ceilometer.stats

CeilometerQueries.create_and_query_alarms [scenario]

Create an alarm and then query it with specific parameters.

This scenario tests POST /v2/query/alarms An alarm is first created and then fetched using the input query.

Namespace: default

Parameters:

- meter_name: specifies meter name of alarm
- threshold: specifies alarm threshold
- filter: optional filter query dictionary
- orderby: optional param for specifying ordering of results
- limit: optional param for maximum number of results returned
- kwargs: optional parameters for alarm creation

Module: rally.plugins.openstack.scenarios.ceilometer.queries

CeilometerQueries.create_and_query_alarm_history [scenario]

Create an alarm and then query for its history.

This scenario tests POST /v2/query/alarms/history An alarm is first created and then its alarm_id is used to fetch the history of that specific alarm.

Namespace: default

Parameters:

- meter_name: specifies meter name of alarm
- threshold: specifies alarm threshold
- orderby: optional param for specifying ordering of results
- limit: optional param for maximum number of results returned
- kwargs: optional parameters for alarm creation

Module: rally.plugins.openstack.scenarios.ceilometer.queries

CeilometerQueries.create_and_query_samples [scenario]

Create a sample and then query it with specific parameters.

This scenario tests POST /v2/query/samples A sample is first created and then fetched using the input query.

Namespace: default

Parameters:

- counter_name: specifies name of the counter
- counter_type: specifies type of the counter
- counter_unit: specifies unit of the counter
- counter_volume: specifies volume of the counter
- resource_id: specifies resource id for the sample created
- filter: optional filter query dictionary
- orderby: optional param for specifying ordering of results
- limit: optional param for maximum number of results returned
- kwargs: parameters for sample creation

Module: rally.plugins.openstack.scenarios.ceilometer.queries

CeilometerSamples.list_matched_samples [scenario]

Get list of samples that matched fields from context and args.

Namespace: default

Parameters:

- filter_by_user_id: flag for query by user_id
- filter_by_project_id: flag for query by project_id
- filter_by_resource_id: flag for query by resource_id
- metadata_query: dict with metadata fields and values for query
- limit: count of samples in response

Module: rally.plugins.openstack.scenarios.ceilometer.samples

CeilometerSamples.list_samples [scenario]

Fetch all available queries for list sample request.

Namespace: default

Parameters:

- metadata_query: dict with metadata fields and values for query
- limit: count of samples in response

Module: rally.plugins.openstack.scenarios.ceilometer.samples

CeilometerMeters.list_meters [scenario]

Check all available queries for list resource request.

Namespace: default

Parameters:

- metadata_query: dict with metadata fields and values
- limit: limit of meters in response

Module: rally.plugins.openstack.scenarios.ceilometer.meters

CeilometerMeters.list_matched_meters [scenario]

Get meters that matched fields from context and args.

Namespace: default

Parameters:

- filter_by_user_id: flag for query by user_id
- filter_by_project_id: flag for query by project_id
- filter_by_resource_id: flag for query by resource_id
- metadata_query: dict with metadata fields and values for query

- limit: count of resources in response

Module: rally.plugins.openstack.scenarios.ceilometer.meters

FuelEnvironments.create_and_delete_environment [scenario]

Create and delete Fuel environments.

Namespace: default

Parameters:

- release_id: release id (default 1)
- network_provider: network provider (default 'neutron')
- deployment_mode: deployment mode (default 'ha_compact')
- net_segment_type: net segment type (default 'vlan')
- delete_retries: retries count on delete oprations (default 5)

Module: rally.plugins.openstack.scenarios.fuel.environments

FuelEnvironments.create_and_list_environments [scenario]

Create and list Fuel environments

Namespace: default

Parameters:

- release_id: release id (default 1)
- network_provider: network provider (default 'neutron')
- deployment_mode: deployment mode (default 'ha_compact')
- net_segment_type: net segment type (default 'vlan')

Module: rally.plugins.openstack.scenarios.fuel.environments

FuelNodes.add_and_remove_node [scenario]

Add node to environment and remove

Namespace: default

Parameters:

- **node_roles: list. Roles, which node should be assigned to** env with

Module: rally.plugins.openstack.scenarios.fuel.nodes

SwiftObjects.create_container_and_object_then_list_objects [scenario]

Create container and objects then list all objects.

Namespace: default

Parameters:

- objects_per_container: int, number of objects to upload

- object_size: int, temporary local object size
- kwargs: dict, optional parameters to create container

Module: rally.plugins.openstack.scenarios.swift.objects

SwiftObjects.create_container_and_object_then_delete_all [scenario]

Create container and objects then delete everything created.

Namespace: default

Parameters:

- objects_per_container: int, number of objects to upload
- object_size: int, temporary local object size
- kwargs: dict, optional parameters to create container

Module: rally.plugins.openstack.scenarios.swift.objects

SwiftObjects.create_container_and_object_then_download_object [scenario]

Create container and objects then download all objects.

Namespace: default

Parameters:

- objects_per_container: int, number of objects to upload
- object_size: int, temporary local object size
- kwargs: dict, optional parameters to create container

Module: rally.plugins.openstack.scenarios.swift.objects

SwiftObjects.list_objects_in_containers [scenario]

List objects in all containers.

Namespace: default

Module: rally.plugins.openstack.scenarios.swift.objects

SwiftObjects.list_and_download_objects_in_containers [scenario]

List and download objects in all containers.

Namespace: default

Module: rally.plugins.openstack.scenarios.swift.objects

TempestScenario.single_test [scenario]

Launch a single Tempest test by its name.

Namespace: default

Parameters:

- test_name: name of tempest scenario for launching
- log_file: name of file for junitxml results
- tempest_conf: User specified tempest.conf location

Module: rally.plugins.openstack.scenarios.tempest.tempest

TempestScenario.all [scenario]

Launch all discovered Tempest tests by their names.

Namespace: default

Parameters:

- log_file: name of file for junitxml results
- tempest_conf: User specified tempest.conf location

Module: rally.plugins.openstack.scenarios.tempest.tempest

TempestScenario.set [scenario]

Launch all Tempest tests from a given set.

Namespace: default

Parameters:

- set_name: set name of tempest scenarios for launching
- log_file: name of file for junitxml results
- tempest_conf: User specified tempest.conf location

Module: rally.plugins.openstack.scenarios.tempest.tempest

TempestScenario.list_of_tests [scenario]

Launch all Tempest tests from a given list of their names.

Namespace: default

Parameters:

- test_names: list of tempest scenarios for launching
- log_file: name of file for junitxml results
- tempest_conf: User specified tempest.conf location

Module: rally.plugins.openstack.scenarios.tempest.tempest

TempestScenario.specific_regex [scenario]

Launch Tempest tests whose names match a given regular expression.

Namespace: default

Parameters:

- regex: regexp to match Tempest test names against
- log_file: name of file for junitxml results
- tempest_conf: User specified tempest.conf location

Module: rally.plugins.openstack.scenarios.tempest.tempest

NeutronSecurityGroup.create_and_list_security_groups [scenario]

Create and list Neutron security-groups.

Measure the "neutron security-group-create" and "neutron security-group-list" command performance.

Namespace: default

Parameters:

- **security_group_create_args: dict, POST /v2.0/security-groups** request options

Module: rally.plugins.openstack.scenarios.neutron.security_groups

NeutronSecurityGroup.create_and_delete_security_groups [scenario]

Create and delete Neutron security-groups.

Measure the "neutron security-group-create" and "neutron security-group-delete" command performance.

Namespace: default

Parameters:

- **security_group_create_args: dict, POST /v2.0/security-groups** request options

Module: rally.plugins.openstack.scenarios.neutron.security_groups

NeutronSecurityGroup.create_and_update_security_groups [scenario]

Create and update Neutron security-groups.

Measure the "neutron security-group-create" and "neutron security-group-update" command performance.

Namespace: default

Parameters:

- **security_group_create_args: dict, POST /v2.0/security-groups** request options
- **security_group_update_args: dict, POST /v2.0/security-groups** update options

Module: rally.plugins.openstack.scenarios.neutron.security_groups

NeutronLoadbalancerV1.create_and_list_pools [scenario]

Create a pool(v1) and then list pools(v1).

Measure the "neutron lb-pool-list" command performance. The scenario creates a pool for every subnet and then lists pools.

Namespace: default

Parameters:

- pool_create_args: dict, POST /lb/pools request options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_delete_pools [scenario]

Create pools(v1) and delete pools(v1).

Measure the "neutron lb-pool-create" and "neutron lb-pool-delete" command performance. The scenario creates a pool for every subnet and then deletes those pools.

Namespace: default

Parameters:

- pool_create_args: dict, POST /lb/pools request options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_update_pools [scenario]

Create pools(v1) and update pools(v1).

Measure the "neutron lb-pool-create" and "neutron lb-pool-update" command performance. The scenario creates a pool for every subnet and then update those pools.

Namespace: default

Parameters:

- pool_create_args: dict, POST /lb/pools request options
- pool_update_args: dict, POST /lb/pools update options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_list_vips [scenario]

Create a vip(v1) and then list vips(v1).

Measure the "neutron lb-vip-create" and "neutron lb-vip-list" command performance. The scenario creates a vip for every pool created and then lists vips.

Namespace: default

Parameters:

- vip_create_args: dict, POST /lb/vips request options
- pool_create_args: dict, POST /lb/pools request options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_delete_vips [scenario]

Create a vip(v1) and then delete vips(v1).

Measure the "neutron lb-vip-create" and "neutron lb-vip-delete" command performance. The scenario creates a vip for pool and then deletes those vips.

Namespace: default

Parameters:

- pool_create_args: dict, POST /lb/pools request options
- vip_create_args: dict, POST /lb/vips request options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_update_vips [scenario]

Create vips(v1) and update vips(v1).

Measure the "neutron lb-vip-create" and "neutron lb-vip-update" command performance. The scenario creates a pool for every subnet and then update those pools.

Namespace: default

Parameters:

- pool_create_args: dict, POST /lb/pools request options
- vip_create_args: dict, POST /lb/vips request options
- vip_update_args: dict, POST /lb/vips update options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_list_healthmonitors [scenario]

Create healthmonitors(v1) and list healthmonitors(v1).

Measure the "neutron lb-healthmonitor-list" command performance. This scenario creates healthmonitors and lists them.

Namespace: default

Parameters:

- healthmonitor_create_args: dict, POST /lb/healthmonitors request

options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_delete_healthmonitors [scenario]

Create a healthmonitor(v1) and delete healthmonitors(v1).

Measure the "neutron lb-healthmonitor-create" and "neutron lb-healthmonitor-delete" command performance. The scenario creates healthmonitors and deletes those healthmonitors.

Namespace: default

Parameters:

- healthmonitor_create_args: dict, POST /lb/healthmonitors request

options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronLoadbalancerV1.create_and_update_healthmonitors [scenario]

Create a healthmonitor(v1) and update healthmonitors(v1).

Measure the "neutron lb-healthmonitor-create" and "neutron lb-healthmonitor-update" command performance. The scenario creates healthmonitors and then updates them.

Namespace: default

Parameters:

- healthmonitor_create_args: dict, POST /lb/healthmonitors request

options

- healthmonitor_update_args: dict, POST /lb/healthmonitors update

options

Module: rally.plugins.openstack.scenarios.neutron.loadbalancer_v1

NeutronNetworks.create_and_list_networks [scenario]

Create a network and then list all networks.

Measure the "neutron net-list" command performance.

If you have only 1 user in your context, you will add 1 network on every iteration. So you will have more and more networks and will be able to measure the performance of the "neutron net-list" command depending on the number of networks owned by users.

Namespace: default

Parameters:

- network_create_args: dict, POST /v2.0/networks request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_update_networks [scenario]

Create and update a network.

Measure the "neutron net-create and net-update" command performance.

Namespace: default

Parameters:

- network_update_args: dict, PUT /v2.0/networks update request
- network_create_args: dict, POST /v2.0/networks request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_delete_networks [scenario]

Create and delete a network.

Measure the "neutron net-create" and "net-delete" command performance.

Namespace: default

Parameters:

- network_create_args: dict, POST /v2.0/networks request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_list_subnets [scenario]

Create and a given number of subnets and list all subnets.

The scenario creates a network, a given number of subnets and then lists subnets.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_update_subnets [scenario]

Create and update a subnet.

The scenario creates a network, a given number of subnets and then updates the subnet. This scenario measures the "neutron subnet-update" command performance.

Namespace: default

Parameters:

- subnet_update_args: dict, PUT /v2.0/subnets update options
- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_delete_subnets [scenario]

Create and delete a given number of subnets.

The scenario creates a network, a given number of subnets and then deletes subnets.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_list_routers [scenario]

Create and a given number of routers and list all routers.

Create a network, a given number of subnets and routers and then list all routers.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network
- router_create_args: dict, POST /v2.0/routers request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_update_routers [scenario]

Create and update a given number of routers.

Create a network, a given number of subnets and routers and then updating all routers.

Namespace: default

Parameters:

- router_update_args: dict, PUT /v2.0/routers update options
- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network
- router_create_args: dict, POST /v2.0/routers request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_delete_routers [scenario]

Create and delete a given number of routers.

Create a network, a given number of subnets and routers and then delete all routers.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- subnet_create_args: dict, POST /v2.0/subnets request options
- subnet_cidr_start: str, start value for subnets CIDR
- subnets_per_network: int, number of subnets for one network
- router_create_args: dict, POST /v2.0/routers request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_list_ports [scenario]

Create and a given number of ports and list all ports.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- port_create_args: dict, POST /v2.0/ports request options
- ports_per_network: int, number of ports for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_update_ports [scenario]

Create and update a given number of ports.

Measure the "neutron port-create" and "neutron port-update" commands performance.

Namespace: default

Parameters:

- port_update_args: dict, PUT /v2.0/ports update request options
- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- port_create_args: dict, POST /v2.0/ports request options
- ports_per_network: int, number of ports for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_delete_ports [scenario]

Create and delete a port.

Measure the "neutron port-create" and "neutron port-delete" commands performance.

Namespace: default

Parameters:

- **network_create_args: dict, POST /v2.0/networks request** options. Deprecated.
- port_create_args: dict, POST /v2.0/ports request options
- ports_per_network: int, number of ports for one network

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_list_floating_ips [scenario]

Create and list floating IPs.

Measure the "neutron floating-ip-create" and "neutron floating-ip-list" commands performance.

Namespace: default

Parameters:

- floating_network: str, external network for floating IP creation
- floating_ip_args: dict, POST /floatingips request options

Module: rally.plugins.openstack.scenarios.neutron.network

NeutronNetworks.create_and_delete_floating_ips [scenario]

Create and delete floating IPs.

Measure the "neutron floating-ip-create" and "neutron floating-ip-delete" commands performance.

Namespace: default

Parameters:

- floating_network: str, external network for floating IP creation
- floating_ip_args: dict, POST /floatingips request options

Module: rally.plugins.openstack.scenarios.neutron.network

DesignateBasic.create_and_list_domains [scenario]

Create a domain and list all domains.

Measure the "designate domain-list" command performance.

If you have only 1 user in your context, you will add 1 domain on every iteration. So you will have more and more domain and will be able to measure the performance of the "designate domain-list" command depending on the number of domains owned by users.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.list_domains [scenario]

List Designate domains.

This simple scenario tests the designate domain-list command by listing all the domains.

Suppose if we have 2 users in context and each has 2 domains uploaded for them we will be able to test the performance of designate domain-list command in this case.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_delete_domain [scenario]

Create and then delete a domain.

Measure the performance of creating and deleting domains with different level of load.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_update_domain [scenario]

Create and then update a domain.

Measure the performance of creating and updating domains with different level of load.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_delete_records [scenario]

Create and then delete records.

Measure the performance of creating and deleting records with different level of load.

Namespace: default

Parameters:

- records_per_domain: Records to create pr domain.

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.list_records [scenario]

List Designate records.

This simple scenario tests the designate record-list command by listing all the records in a domain.

Suppose if we have 2 users in context and each has 2 domains uploaded for them we will be able to test the performance of designate record-list command in this case.

Namespace: default

Parameters:

- domain_id: Domain ID

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_list_records [scenario]

Create and then list records.

If you have only 1 user in your context, you will add 1 record on every iteration. So you will have more and more records and will be able to measure the performance of the "designate record-list" command depending on the number of domains/records owned by users.

Namespace: default

Parameters:

- records_per_domain: Records to create pr domain.

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_list_servers [scenario]

Create a Designate server and list all servers.

If you have only 1 user in your context, you will add 1 server on every iteration. So you will have more and more server and will be able to measure the performance of the "designate server-list" command depending on the number of servers owned by users.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_delete_server [scenario]

Create and then delete a server.

Measure the performance of creating and deleting servers with different level of load.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.list_servers [scenario]

List Designate servers.

This simple scenario tests the designate server-list command by listing all the servers.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_list_zones [scenario]

Create a zone and list all zones.

Measure the "openstack zone list" command performance.

If you have only 1 user in your context, you will add 1 zone on every iteration. So you will have more and more zone and will be able to measure the performance of the "openstack zone list" command depending on the number of zones owned by users.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.list_zones [scenario]

List Designate zones.

This simple scenario tests the openstack zone list command by listing all the zones.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_delete_zone [scenario]

Create and then delete a zone.

Measure the performance of creating and deleting zones with different level of load.

Namespace: default

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.list_recordsets [scenario]

List Designate recordsets.

This simple scenario tests the openstack recordset list command by listing all the recordsets in a zone.

Namespace: default

Parameters:

- zone_id: Zone ID

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_delete_recordsets [scenario]

Create and then delete recordsets.

Measure the performance of creating and deleting recordsets with different level of load.

Namespace: default

Parameters:

- recordsets_per_zone: recordsets to create pr zone.

Module: rally.plugins.openstack.scenarios.designate.basic

DesignateBasic.create_and_list_recordsets [scenario]

Create and then list recordsets.

If you have only 1 user in your context, you will add 1 recordset on every iteration. So you will have more and more recordsets and will be able to measure the performance of the "openstack recordset list" command depending on the number of zones/recordsets owned by users.

Namespace: default

Parameters:

- recordsets_per_zone: recordsets to create pr zone.

Module: rally.plugins.openstack.scenarios.designate.basic

Authenticate.keystone [scenario]

Check Keystone Client.

Namespace: default

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_glance [scenario]

Check Glance Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated. In following we are checking for non-existent image.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_nova [scenario]

Check Nova Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_cinder [scenario]

Check Cinder Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_neutron [scenario]

Check Neutron Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_heat [scenario]

Check Heat Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

Authenticate.validate_monasca [scenario]

Check Monasca Client to ensure validation of token.

Creation of the client does not ensure validation of the token. We have to do some minimal operation to make sure token gets validated.

Namespace: default

Parameters:

- repetitions: number of times to validate

Module: rally.plugins.openstack.scenarios.authenticate.authenticate

EC2Servers.list_servers [scenario]

List all servers.

This simple scenario tests the EC2 API list function by listing all the servers.

Namespace: default

Module: rally.plugins.openstack.scenarios.ec2.servers

EC2Servers.boot_server [scenario]

Boot a server.

Assumes that cleanup is done elsewhere.

Namespace: default

Parameters:

- image: image to be used to boot an instance
- flavor: flavor to be used to boot an instance
- kwargs: optional additional arguments for server creation

Module: rally.plugins.openstack.scenarios.ec2.servers

CinderVolumes.create_and_list_volume [scenario]

Create a volume and list all volumes.

Measure the "cinder volume-list" command performance.

If you have only 1 user in your context, you will add 1 volume on every iteration. So you will have more and more volumes and will be able to measure the performance of the "cinder volume-list" command depending on the number of images owned by users.

Namespace: default

Parameters:

- **size: volume size (integer, in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- **detailed: determines whether the volume listing should contain** detailed information about all of them
- image: image to be used to create volume
- kwargs: optional args to create a volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.list_volumes [scenario]

List all volumes.

This simple scenario tests the cinder list command by listing all the volumes.

Namespace: default

Parameters:

- **detailed: True if detailed information about volumes** should be listed

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_update_volume [scenario]

Create a volume and update its name and description.

Namespace: default

Parameters:

- size: volume size (integer, in GB)
- image: image to be used to create volume
- create_volume_kwargs: dict, to be used to create volume
- update_volume_kwargs: dict, to be used to update volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_delete_volume [scenario]

Create and then delete a volume.

Good for testing a maximal bandwidth of cloud. Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between volume creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- **size: volume size (integer, in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- image: image to be used to create volume
- **min_sleep: minimum sleep time between volume creation and** deletion (in seconds)
- **max_sleep: maximum sleep time between volume creation and** deletion (in seconds)
- kwargs: optional args to create a volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_volume [scenario]

Create a volume.

Good test to check how influence amount of active volumes on performance of creating new.

Namespace: default

Parameters:

- **size: volume size (integer, in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- image: image to be used to create volume
- kwargs: optional args to create a volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.modify_volume_metadata [scenario]

Modify a volume's metadata.

This requires a volume to be created with the volumes context. Additionally, `sets * set_size` must be greater than or equal to `deletes * delete_size`.

Namespace: default

Parameters:

- sets: how many set_metadata operations to perform
- **set_size: number of metadata keys to set in each** set_metadata operation
- deletes: how many delete_metadata operations to perform
- **delete_size: number of metadata keys to delete in each** delete_metadata operation

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_extend_volume [scenario]

Create and extend a volume and then delete it.

Namespace: default

Parameters:

- **size: volume size (in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- **new_size: volume new size (in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.

  to extend. Notice: should be bigger volume size
- **min_sleep: minimum sleep time between volume extension and** deletion (in seconds)
- **max_sleep: maximum sleep time between volume extension and** deletion (in seconds)
- kwargs: optional args to extend the volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_from_volume_and_delete_volume [scenario]

Create volume from volume and then delete it.

Scenario for testing volume clone.Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between volume creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- **size: volume size (in GB), or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.

Should be equal or bigger source volume size

- **min_sleep: minimum sleep time between volume creation and** deletion (in seconds)
- **max_sleep: maximum sleep time between volume creation and** deletion (in seconds)
- kwargs: optional args to create a volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_delete_snapshot [scenario]

Create and then delete a volume-snapshot.

Optional 'min_sleep' and 'max_sleep' parameters allow the scenario to simulate a pause between snapshot creation and deletion (of random duration from [min_sleep, max_sleep]).

Namespace: default

Parameters:

- **force: when set to True, allows snapshot of a volume when** the volume is attached to an instance
- **min_sleep: minimum sleep time between snapshot creation and** deletion (in seconds)
- **max_sleep: maximum sleep time between snapshot creation and** deletion (in seconds)
- kwargs: optional args to create a snapshot

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_attach_volume [scenario]

Create a VM and attach a volume to it.

Simple test to create a VM and attach a volume, then detach the volume and delete volume/VM.

Namespace: default

Parameters:

- **size: volume size (integer, in GB) or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- image: Glance image name to use for the VM
- flavor: VM flavor name
- create_volume_params: optional arguments for volume creation
- create_vm_params: optional arguments for VM creation
- kwargs: (deprecated) optional arguments for VM creation

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_snapshot_and_attach_volume [scenario]

Create volume, snapshot and attach/detach volume.

This scenario is based on the standalone qaStressTest.py (https://github.com/WaltHP/cinder-stress).

Namespace: default

Parameters:

- **volume_type: Whether or not to specify volume type when creating** volumes.
- **size: Volume size - dictionary, contains two values:**

  min - minimum size volumes will be created as; max - maximum size volumes will be created as.

  default values: {"min": 1, "max": 5}
- **kwargs: Optional parameters used during volume** snapshot creation.

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_nested_snapshots_and_attach_volume [scenario]

Create a volume from snapshot and attach/detach the volume

This scenario create volume, create it's snapshot, attach volume, then create new volume from existing snapshot and so on, with defined nested level, after all detach and delete them. volume->snapshot->volume->snapshot->volume ...

Namespace: default

Parameters:

- **size: Volume size - dictionary, contains two values:**

  min - minimum size volumes will be created as; max - maximum size volumes will be created as.

  default values: {"min": 1, "max": 5}
- **nested_level: Nested level - dictionary or int, dictionary**

  contains two values:

  min - minimum number of volumes will be created from snapshot;

  max - maximum number of volumes will be created from snapshot.

  due to its deprecated would be taken min value. int, means the exact nested level. default value: 1.
- **kwargs: Optional parameters used during volume** snapshot creation.

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_list_snapshots [scenario]

Create and then list a volume-snapshot.

Namespace: default

Parameters:

- **force: when set to True, allows snapshot of a volume when** the volume is attached to an instance
- **detailed: True if detailed information about snapshots** should be listed
- kwargs: optional args to create a snapshot

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_upload_volume_to_image [scenario]

Create and upload a volume to image.

Namespace: default

Parameters:

- **size: volume size (integers, in GB), or**

  dictionary, must contain two values: min - minimum size volumes will be created as; max - maximum size volumes will be created as.
- **force: when set to True volume that is attached to an instance** could be uploaded to image
- container_format: image container format
- disk_format: disk format for image
- do_delete: deletes image and volume after uploading if True
- kwargs: optional args to create a volume

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_volume_backup [scenario]

Create a volume backup.

Namespace: default

Parameters:

- size: volume size in GB
- **do_delete: if True, a volume and a volume backup will** be deleted after creation.
- create_volume_kwargs: optional args to create a volume
- create_backup_kwargs: optional args to create a volume backup

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_restore_volume_backup [scenario]

Restore volume backup.

Namespace: default

Parameters:

- size: volume size in GB
- **do_delete: if True, the volume and the volume backup will** be deleted after creation.
- create_volume_kwargs: optional args to create a volume
- create_backup_kwargs: optional args to create a volume backup

Module: rally.plugins.openstack.scenarios.cinder.volumes

CinderVolumes.create_and_list_volume_backups [scenario]

Create and then list a volume backup.

Namespace: default

Parameters:

- size: volume size in GB
- **detailed: True if detailed information about backup** should be listed
- do_delete: if True, a volume backup will be deleted
- create_volume_kwargs: optional args to create a volume
- create_backup_kwargs: optional args to create a volume backup

Module: rally.plugins.openstack.scenarios.cinder.volumes

SaharaClusters.create_and_delete_cluster [scenario]

Launch and delete a Sahara Cluster.

This scenario launches a Hadoop cluster, waits until it becomes 'Active' and deletes it.

Namespace: default

Parameters:

- **flavor: Nova flavor that will be for nodes in the** created node groups. Deprecated.
- **master_flavor: Nova flavor that will be used for the master** instance of the cluster
- **worker_flavor: Nova flavor that will be used for the workers of** the cluster
- workers_count: number of worker instances in a cluster
- plugin_name: name of a provisioning plugin
- **hadoop_version: version of Hadoop distribution supported by** the specified plugin.
- **floating_ip_pool: floating ip pool name from which Floating** IPs will be allocated. Sahara will determine automatically how to treat this depending on its own configurations. Defaults to None because in some cases Sahara may work w/o Floating IPs.
- **volumes_per_node: number of Cinder volumes that will be** attached to every cluster node
- volumes_size: size of each Cinder volume in GB
- **auto_security_group: boolean value. If set to True Sahara will** create a Security Group for each Node Group in the Cluster automatically.
- **security_groups: list of security groups that will be used** while creating VMs. If auto_security_group is set to True, this list can be left empty.
- **node_configs: config dict that will be passed to each Node** Group
- **cluster_configs: config dict that will be passed to the** Cluster
- **enable_anti_affinity: If set to true the vms will be scheduled** one per compute node.
- **enable_proxy: Use Master Node of a Cluster as a Proxy node and** do not assign floating ips to workers.

Module: rally.plugins.openstack.scenarios.sahara.clusters

SaharaClusters.create_scale_delete_cluster [scenario]

Launch, scale and delete a Sahara Cluster.

This scenario launches a Hadoop cluster, waits until it becomes 'Active'. Then a series of scale operations is applied. The scaling happens according to numbers listed in

Namespace: default

Parameters:

- **flavor: Nova flavor that will be for nodes in the** created node groups. Deprecated.
- **master_flavor: Nova flavor that will be used for the master** instance of the cluster
- **worker_flavor: Nova flavor that will be used for the workers of** the cluster
- workers_count: number of worker instances in a cluster
- plugin_name: name of a provisioning plugin
- **hadoop_version: version of Hadoop distribution supported by** the specified plugin.
- **deltas: list of integers which will be used to add or** remove worker nodes from the cluster
- **floating_ip_pool: floating ip pool name from which Floating** IPs will be allocated. Sahara will determine automatically how to treat this depending on its own configurations. Defaults to None because in some cases Sahara may work w/o Floating IPs.
- **neutron_net_id: id of a Neutron network that will be used** for fixed IPs. This parameter is ignored when Nova Network is set up.
- **volumes_per_node: number of Cinder volumes that will be** attached to every cluster node
- volumes_size: size of each Cinder volume in GB
- **auto_security_group: boolean value. If set to True Sahara will** create a Security Group for each Node Group in the Cluster automatically.
- **security_groups: list of security groups that will be used** while creating VMs. If auto_security_group is set to True this list can be left empty.
- **node_configs: configs dict that will be passed to each Node** Group
- **cluster_configs: configs dict that will be passed to the** Cluster
- **enable_anti_affinity: If set to true the vms will be scheduled** one per compute node.
- **enable_proxy: Use Master Node of a Cluster as a Proxy node and** do not assign floating ips to workers.

Module: rally.plugins.openstack.scenarios.sahara.clusters

SaharaNodeGroupTemplates.create_and_list_node_group_templates [scenario]

Create and list Sahara Node Group Templates.

This scenario creates two Node Group Templates with different set of node processes. The master Node Group Template contains Hadoop's management processes. The worker Node Group Template contains Hadoop's worker processes.

By default the templates are created for the vanilla Hadoop provisioning plugin using the version 1.2.1

After the templates are created the list operation is called.

Namespace: default

Parameters:

- **flavor: Nova flavor that will be for nodes in the** created node groups
- plugin_name: name of a provisioning plugin
- **hadoop_version: version of Hadoop distribution supported by** the specified plugin.

Module: rally.plugins.openstack.scenarios.sahara.node_group_templates

SaharaNodeGroupTemplates.create_delete_node_group_templates [scenario]

Create and delete Sahara Node Group Templates.

This scenario creates and deletes two most common types of Node Group Templates.

By default the templates are created for the vanilla Hadoop provisioning plugin using the version 1.2.1

Namespace: default

Parameters:

- **flavor: Nova flavor that will be for nodes in the** created node groups
- plugin_name: name of a provisioning plugin
- **hadoop_version: version of Hadoop distribution supported by** the specified plugin.

Module: rally.plugins.openstack.scenarios.sahara.node_group_templates

SaharaJob.create_launch_job [scenario]

Create and execute a Sahara EDP Job.

This scenario Creates a Job entity and launches an execution on a Cluster.

Namespace: default

Parameters:

- job_type: type of the Data Processing Job
- configs: config dict that will be passed to a Job Execution
- **job_idx: index of a job in a sequence. This index will be** used to create different atomic actions for each job in a sequence

Module: rally.plugins.openstack.scenarios.sahara.jobs

SaharaJob.create_launch_job_sequence [scenario]

Create and execute a sequence of the Sahara EDP Jobs.

This scenario Creates a Job entity and launches an execution on a Cluster for every job object provided.

Namespace: default

Parameters:

- jobs: list of jobs that should be executed in one context

Module: rally.plugins.openstack.scenarios.sahara.jobs

SaharaJob.create_launch_job_sequence_with_scaling [scenario]

Create and execute Sahara EDP Jobs on a scaling Cluster.

This scenario Creates a Job entity and launches an execution on a Cluster for every job object provided. The Cluster is scaled according to the deltas values and the sequence is launched again.

Namespace: default

Parameters:

- jobs: list of jobs that should be executed in one context
- **deltas: list of integers which will be used to add or** remove worker nodes from the cluster

Module: rally.plugins.openstack.scenarios.sahara.jobs

MuranoEnvironments.list_environments [scenario]

List the murano environments.

Run murano environment-list for listing all environments.

Namespace: default

Module: rally.plugins.openstack.scenarios.murano.environments

MuranoEnvironments.create_and_delete_environment [scenario]

Create environment, session and delete environment.

Namespace: default

Module: rally.plugins.openstack.scenarios.murano.environments

MuranoEnvironments.create_and_deploy_environment [scenario]

Create environment, session and deploy environment.

Create environment, create session, add app to environment packages_per_env times, send environment to deploy.

Namespace: default

Parameters:

- packages_per_env: number of packages per environment

Module: rally.plugins.openstack.scenarios.murano.environments

MuranoPackages.import_and_list_packages [scenario]

Import Murano package and get list of packages.

Measure the "murano import-package" and "murano package-list" commands performance. It imports Murano package from "package" (if it is not a zip archive then zip archive will be prepared) and gets list of imported packages.

Namespace: default

Parameters:

- **package: path to zip archive that represents Murano** application package or absolute path to folder with package components
- **include_disabled: specifies whether the disabled packages will** be included in a the result or not. Default value is False.

Module: rally.plugins.openstack.scenarios.murano.packages

MuranoPackages.import_and_delete_package [scenario]

Import Murano package and then delete it.

Measure the "murano import-package" and "murano package-delete" commands performance. It imports Murano package from "package" (if it is not a zip archive then zip archive will be prepared) and deletes it.

Namespace: default

Parameters:

- **package: path to zip archive that represents Murano** application package or absolute path to folder with package components

Module: rally.plugins.openstack.scenarios.murano.packages

MuranoPackages.package_lifecycle [scenario]

Import Murano package, modify it and then delete it.

Measure the Murano import, update and delete package commands performance. It imports Murano package from "package" (if it is not a zip archive then zip archive will be prepared), modifies it (using data from "body") and deletes.

Namespace: default

Parameters:

- **package: path to zip archive that represents Murano** application package or absolute path to folder with package components
- **body: dict object that defines what package property will be** updated, e.g {"tags": ["tag"]} or {"enabled": "true"}
- **operation: string object that defines the way of how package** property will be updated, allowed operations are "add", "replace" or "delete". Default value is "replace".

Module: rally.plugins.openstack.scenarios.murano.packages

MuranoPackages.import_and_filter_applications [scenario]

Import Murano package and then filter packages by some criteria.

Measure the performance of package import and package filtering commands. It imports Murano package from "package" (if it is not a zip archive then zip archive will be prepared) and filters packages by some criteria.

Namespace: default

Parameters:

- **package: path to zip archive that represents Murano** application package or absolute path to folder with package components

- **filter_query: dict that contains filter criteria, lately it** will be passed as **kwargs to filter method e.g. {"category": "Web"}

Module: rally.plugins.openstack.scenarios.murano.packages

IronicNodes.create_and_list_node [scenario]

Create and list nodes.

Namespace: default

Parameters:

- **associated: Optional. Either a Boolean or a string** representation of a Boolean that indicates whether to return a list of associated (True or "True") or unassociated (False or "False") nodes.
- **maintenance: Optional. Either a Boolean or a string** representation of a Boolean that indicates whether to return nodes in maintenance mode (True or "True"), or not in maintenance mode (False or "False").
- **marker: Optional, the UUID of a node, eg the last** node from a previous result set. Return the next result set.
- **limit: The maximum number of results to return per**

  request, if:

  1. limit > 0, the maximum number of nodes to return.
  2. limit == 0, return the entire list of nodes.
  3. limit param is NOT specified (None), the number of items returned respect the maximum imposed by the Ironic API (see Ironic's api.max_limit option).
- **detail: Optional, boolean whether to return detailed** information about nodes.
- sort_key: Optional, field used for sorting.
- **sort_dir: Optional, direction of sorting, either 'asc' (the** default) or 'desc'.
- kwargs: Optional additional arguments for node creation

Module: rally.plugins.openstack.scenarios.ironic.nodes

IronicNodes.create_and_delete_node [scenario]

Create and delete node.

Namespace: default

Parameters:

- kwargs: Optional additional arguments for node creation

Module: rally.plugins.openstack.scenarios.ironic.nodes

GlanceImages.create_and_list_image [scenario]

Create an image and then list all images.

Measure the "glance image-list" command performance.

If you have only 1 user in your context, you will add 1 image on every iteration. So you will have more and more images and will be able to measure the performance of the "glance image-list" command depending on the number of images owned by users.

Namespace: default

Parameters:

- **container_format: container format of image. Acceptable** formats: ami, ari, aki, bare, and ovf
- image_location: image file location
- **disk_format: disk format of image. Acceptable formats:** ami, ari, aki, vhd, vmdk, raw, qcow2, vdi, and iso
- kwargs: optional parameters to create image

Module: rally.plugins.openstack.scenarios.glance.images

GlanceImages.list_images [scenario]

List all images.

This simple scenario tests the glance image-list command by listing all the images.

Suppose if we have 2 users in context and each has 2 images uploaded for them we will be able to test the performance of glance image-list command in this case.

Namespace: default

Module: rally.plugins.openstack.scenarios.glance.images

GlanceImages.create_and_delete_image [scenario]

Create and then delete an image.

Namespace: default

Parameters:

- **container_format: container format of image. Acceptable** formats: ami, ari, aki, bare, and ovf
- image_location: image file location
- **disk_format: disk format of image. Acceptable formats:** ami, ari, aki, vhd, vmdk, raw, qcow2, vdi, and iso
- kwargs: optional parameters to create image

Module: rally.plugins.openstack.scenarios.glance.images

GlanceImages.create_image_and_boot_instances [scenario]

Create an image and boot several instances from it.

Namespace: default

Parameters:

- **container_format: container format of image. Acceptable** formats: ami, ari, aki, bare, and ovf
- image_location: image file location
- **disk_format: disk format of image. Acceptable formats:** ami, ari, aki, vhd, vmdk, raw, qcow2, vdi, and iso
- flavor: Nova flavor to be used to launch an instance
- number_instances: number of Nova servers to boot
- kwargs: optional parameters to create server

Module: rally.plugins.openstack.scenarios.glance.images

Dummy.dummy [scenario]

Do nothing and sleep for the given number of seconds (0 by default).

Dummy.dummy can be used for testing performance of different ScenarioRunners and of the ability of rally to store a large amount of results.

Namespace: default

Parameters:

- sleep: idle time of method (in seconds).

Module: rally.plugins.common.scenarios.dummy.dummy

Dummy.dummy_exception [scenario]

Throw an exception.

Dummy.dummy_exception can be used for test if exceptions are processed properly by ScenarioRunners and benchmark and analyze rally results storing process.

Namespace: default

Parameters:

- size_of_message: int size of the exception message
- sleep: idle time of method (in seconds).
- message: message of the exception

Module: rally.plugins.common.scenarios.dummy.dummy

Dummy.dummy_exception_probability [scenario]

Throw an exception with given probability.

Dummy.dummy_exception_probability can be used to test if exceptions are processed properly by ScenarioRunners. This scenario will throw an exception sometimes, depending on the given exception probability.

Namespace: default

Parameters:

- **exception_probability: Sets how likely it is that an exception** will be thrown. Float between 0 and 1 0=never 1=always.

Module: rally.plugins.common.scenarios.dummy.dummy

Dummy.dummy_output [scenario]

Generate dummy output.

This scenario generates example of output data.

Namespace: default

Parameters:

- random_range: max int limit for generated random values

Module: rally.plugins.common.scenarios.dummy.dummy

Dummy.dummy_with_scenario_output [scenario]

Return a dummy scenario output.

Dummy.dummy_with_scenario_output can be used to test the scenario output processing.

Namespace: default

Module: rally.plugins.common.scenarios.dummy.dummy

Dummy.dummy_random_fail_in_atomic [scenario]

Randomly throw exceptions in atomic actions.

Dummy.dummy_random_fail_in_atomic can be used to test atomic actions failures processing.

Namespace: default

Parameters:

- **exception_probability: Probability with which atomic actions** fail in this dummy scenario (0 <= p <= 1)

Module: rally.plugins.common.scenarios.dummy.dummy

HttpRequests.check_request [scenario]

Standard way to benchmark web services.

This benchmark is used to make request and check it with expected Response.

Namespace: default

Parameters:

- url: url for the Request object
- method: method for the Request object
- status_code: expected response code
- kwargs: optional additional request parameters

Module: rally.plugins.common.scenarios.requests.http_requests

HttpRequests.check_random_request [scenario]

Benchmark the list of requests

This scenario takes random url from list of requests, and raises exception if the response is not the expected response.

Namespace: default

Parameters:

- requests: List of request dicts
- status_code: Expected Response Code it will

be used only if we doesn't specified it in request proper

Module: rally.plugins.common.scenarios.requests.http_requests

1.7.5 Processing Output Charts

StackedArea [output chart]

Display results as stacked area.

This plugin processes additive data and displays it in HTML report as stacked area with X axis bound to iteration number. Complete output data is displayed as stacked area as well, without any processing.

Keys "description", "label" and "axis_label" are optional.

Examples of using this plugin in Scenario, for saving output data:

```
self.add_output(
    additive={"title": "Additive data as stacked area",
              "description": "Iterations trend for foo and bar",
              "chart_plugin": "StackedArea",
              "data": [["foo", 12], ["bar", 34]]},
    complete={"title": "Complete data as stacked area",
              "description": "Data is shown as stacked area, as-is",
              "chart_plugin": "StackedArea",
              "data": [["foo", [0, 5], [1, 42], [2, 15], [3, 7]],
                       ["bar", [0, 2], [1, 1.3], [2, 5], [3, 9]]],
              "label": "Y-axis label text",
              "axis_label": "X-axis label text"})
```

Namespace: default

Module: rally.task.processing.charts

Lines [output chart]

Display results as generic chart with lines.

This plugin processes additive data and displays it in HTML report as linear chart with X axis bound to iteration number. Complete output data is displayed as linear chart as well, without any processing.

Examples of using this plugin in Scenario, for saving output data:

```
self.add_output(
    additive={"title": "Additive data as stacked area",
              "description": "Iterations trend for foo and bar",
              "chart_plugin": "Lines",
              "data": [["foo", 12], ["bar", 34]]},
    complete={"title": "Complete data as stacked area",
              "description": "Data is shown as stacked area, as-is",
              "chart_plugin": "Lines",
              "data": [["foo", [0, 5], [1, 42], [2, 15], [3, 7]],
                       ["bar", [0, 2], [1, 1.3], [2, 5], [3, 9]]],
              "label": "Y-axis label text",
              "axis_label": "X-axis label text"})
```

Namespace: default

Module: rally.task.processing.charts

Pie [output chart]

Display results as pie, calculate average values for additive data.

This plugin processes additive data and calculate average values. Both additive and complete data are displayed in HTML report as pie chart.

Examples of using this plugin in Scenario, for saving output data:

```
self.add_output(
    additive={"title": "Additive output",
              "description": ("Pie with average data "
                              "from all iterations values"),
              "chart_plugin": "Pie",
              "data": [["foo", 12], ["bar", 34], ["spam", 56]]},
    complete={"title": "Complete output",
              "description": "Displayed as a pie, as-is",
              "chart_plugin": "Pie",
              "data": [["foo", 12], ["bar", 34], ["spam", 56]]})
```

Namespace: default

Module: rally.task.processing.charts

Table [output chart]

Display complete output as table, can not be used for additive data.

Use this plugin for complete output data to display it in HTML report as table. This plugin can not be used for additive data because it does not contain any processing logic.

Examples of using this plugin in Scenario, for saving output data:

```
self.add_output(
    complete={"title": "Arbitrary Table",
              "description": "Just show columns and rows as-is",
              "chart_plugin": "Table",
              "data": {"cols": ["foo", "bar", "spam"],
                       "rows": [["a row", 1, 2], ["b row", 3, 4],
                                ["c row", 5, 6]]}})
```

Namespace: default

Module: rally.task.processing.charts

StatsTable [output chart]

Calculate statistics for additive data and display it as table.

This plugin processes additive data and compose statistics that is displayed as table in HTML report.

Examples of using this plugin in Scenario, for saving output data:

```
self.add_output(
    additive={"title": "Statistics",
              "description": ("Table with statistics generated "
                              "from all iterations values"),
              "chart_plugin": "StatsTable",
              "data": [["foo stat", 12], ["bar", 34], ["spam", 56]]})
```

Namespace: default

Module: rally.task.processing.charts

1.7.6 Deployment Engines

ExistingCloud [engine]

Just use an existing OpenStack deployment without deploying anything.

To use ExistingCloud, you should put credential information to the config:

```
{
    "type": "ExistingCloud",
    "auth_url": "http://localhost:5000/v2.0/",
    "region_name": "RegionOne",
    "endpoint_type": "public",
    "admin": {
        "username": "admin",
        "password": "password",
        "tenant_name": "demo"
    },
    "https_insecure": False,
    "https_cacert": "",
}
```

Or, using keystone v3 API endpoint:

```
{
    "type": "ExistingCloud",
    "auth_url": "http://localhost:5000/v3/",
    "region_name": "RegionOne",
    "endpoint_type": "public",
    "admin": {
        "username": "admin",
        "password": "admin",
        "user_domain_name": "admin",
        "project_name": "admin",
        "project_domain_name": "admin",
    },
    "https_insecure": False,
    "https_cacert": "",
}
```

Namespace: default

Module: rally.deployment.engines.existing

MultihostEngine [engine]

Deploy multihost cloud with existing engines.

Sample configuration:

```
{
    "type": "MultihostEngine",
    "controller": {
        "type": "DevstackEngine",
```

```
        "provider": {
            "type": "DummyProvider"
        }
    },
    "nodes": [
        {"type": "Engine1", "config": "Config1"},
        {"type": "Engine2", "config": "Config2"},
        {"type": "Engine3", "config": "Config3"},
    ]
}
```

If {controller_ip} is specified in configuration values, it will be replaced with controller address taken from credential returned by controller engine:

```
...
"nodes": [
    {
        "type": "DevstackEngine",
        "local_conf": {
            "GLANCE_HOSTPORT": "{controller_ip}:9292",
...
```

Namespace: default

Module: rally.deployment.engines.multihost

LxcEngine [engine]

Deploy with other engines in lxc containers.

Sample configuration:

```
{
    "type": "LxcEngine",
    "provider": {
        "type": "DummyProvider",
        "credentials": [{"user": "root", "host": "example.net"}]
    },
    "distribution": "ubuntu",
    "release": "raring",
    "tunnel_to": ["10.10.10.10", "10.10.10.11"],
    "start_lxc_network": "10.1.1.0/24",
    "container_name_prefix": "devstack-node",
    "containers_per_host": 16,
    "start_script": "~/start.sh",
    "engine": { ... }
}
```

Namespace: default

Module: rally.deployment.engines.lxc

DevstackEngine [engine]

Deploy Devstack cloud.

Sample configuration:

```
{
    "type": "DevstackEngine",
    "devstack_repo": "https://example.com/devstack/",
    "local_conf": {
        "ADMIN_PASSWORD": "secret"
    },
    "provider": {
        "type": "ExistingServers",
        "credentials": [{"user": "root", "host": "10.2.0.8"}]
    }
}
```

Namespace: default

Module: rally.deployment.engines.devstack

1.7.7 Deployment Server Providers

LxcProvider [server provider]

Provide lxc container(s) on given host.

Sample configuration:

```
{
    "type": "LxcProvider",
    "distribution": "ubuntu",
    "start_lxc_network": "10.1.1.0/24",
    "containers_per_host": 32,
    "tunnel_to": ["10.10.10.10"],
    "forward_ssh": false,
    "container_name_prefix": "rally-multinode-02",
    "host_provider": {
        "type": "ExistingServers",
        "credentials": [{"user": "root", "host": "host.net"}]
    }
}
```

Namespace: default

Module: rally.deployment.serverprovider.providers.lxc

ExistingServers [server provider]

Just return endpoints from its own configuration.

Sample configuration:

```
{
    "type": "ExistingServers",
    "credentials": [{"user": "root", "host": "localhost"}]
}
```

Namespace: default

Module: rally.deployment.serverprovider.providers.existing

CobblerProvider [server provider]

Creates servers via PXE boot from given cobbler selector.

Cobbler selector may contain a combination of fields to select a number of system. It's user responsibility to provide selector which selects something. Since cobbler stores servers password encrypted the user needs to specify it configuration. All servers selected must have the same password.

Sample configuration:

```
{
    "type": "CobblerProvider",
    "host": "172.29.74.8",
    "user": "cobbler",
    "password": "cobbler",
    "system_password": "password"
    "selector": {"profile": "cobbler_profile_name", "owners": "user1"}
}
```

Namespace: default

Module: rally.deployment.serverprovider.providers.cobbler

VirshProvider [server provider]

Create VMs from prebuilt templates.

Sample configuration:

```
{
    "type": "VirshProvider",
    "connection": "alex@performance-01",
    "template_name": "stack-01-devstack-template",
    "template_user": "ubuntu",
    "template_password": "password"
}
```

where :

- connection - ssh connection to vms host
- template_name - vm image template
- template_user - vm user to launch devstack
- template_password - vm password to launch devstack

Namespace: default

Module: rally.deployment.serverprovider.providers.virsh

OpenStackProvider [server provider]

Provide VMs using an existing OpenStack cloud.

Sample configuration:

```
{
    "type": "OpenStackProvider",
    "amount": 42,
    "user": "admin",
```

```
    "tenant": "admin",
    "password": "secret",
    "auth_url": "http://example.com/",
    "flavor_id": 2,
    "image": {
        "checksum": "75846dd06e9fcfd2b184aba7fa2b2a8d",
        "url": "http://example.com/disk1.img",
        "name": "Ubuntu Precise(added by rally)",
        "format": "qcow2",
        "userdata": "disable_root: false"
    },
    "secgroup_name": "Rally"
}
```

Namespace: default

Module: rally.deployment.serverprovider.providers.openstack

1.8 Database upgrade/downgrade in Rally

1.8.1 Information for users

Rally supports DB schema versioning (schema versions are called *revisions*) and migration (upgrade to later and downgrade to earlier revisions).

End user is provided with the following possibilities:

- Print current revision of DB.

  ```
  rally-manage db revision
  ```

- Upgrade existing DB to the latest state.

  This is needed when previously existing Rally installation is being upgraded to a newer version. In this case user should issue command

  ```
  rally-manage db upgrade
  ```

  AFTER upgrading Rally package. DB schema will get upgraded to the latest state and all existing data will be kept.

- Downgrade existing DB to a previous revision.

  This command could be useful if user wants to return to an earlier version of Rally. This could be done by issuing command

  ```
  rally-manage db downgrade --revision <UUID>
  ```

  Database schema downgrade **MUST** be done **BEFORE** Rally package is downgraded. User must provide revision UUID to which the schema must be downgraded.

1.8.2 Information for developers

DB migration in Rally is implemented via package *alembic*.

It is highly recommended to get familiar with it's documnetation available by the link before proceeding.

If developer is about to change existing DB schema they should create new DB revision and migration script with the following command

```
alembic --config rally/common/db/sqlalchemy/alembic.ini revision -m <Message>
```

It will generate migration script – a file named *<UUID>_<Message>.py* located in *rally/common/db/sqlalchemy/migrations/versions*. Generated script should then be checked, edited if it is needed to be and added to Rally source tree.

1.9 Contribute to Rally

1.9.1 Where to begin

Please take a look our Roadmap to get information about our current work directions.

In case you have questions or want to share your ideas, be sure to contact us at the `#openstack-rally` IRC channel on **irc.freenode.net**.

If you are going to contribute to Rally, you will probably need to grasp a better understanding of several main design concepts used throughout our project (such as **benchmark scenarios**, **contexts** etc.). To do so, please read *this article*.

1.9.2 How to contribute

1. You need a Launchpad account and need to be joined to the OpenStack team. You can also join the Rally team if you want to. Make sure Launchpad has your SSH key, Gerrit (the code review system) uses this.
2. Sign the CLA as outlined in the account setup section of the developer guide.
3. Tell git your details:

```
git config --global user.name "Firstname Lastname"
git config --global user.email "your_email@youremail.com"
```

4. Install git-review. This tool takes a lot of the pain out of remembering commands to push code up to Gerrit for review and to pull it back down to edit it. It is installed using:

```
pip install git-review
```

Several Linux distributions (notably Fedora 16 and Ubuntu 12.04) are also starting to include git-review in their repositories so it can also be installed using the standard package manager.

5. Grab the Rally repository:

```
git clone git@github.com:openstack/rally.git
```

6. Checkout a new branch to hack on:

```
git checkout -b TOPIC-BRANCH
```

7. Start coding
8. Run the test suite locally to make sure nothing broke, e.g. (this will run py34/py27/pep8 tests):

```
tox
```

(NOTE: you should have installed tox<=1.6.1)

If you extend Rally with new functionality, make sure you have also provided unit and/or functional tests for it.

9. Commit your work using:

```
git commit -a
```

Make sure you have supplied your commit with a neat commit message, containing a link to the corresponding blueprint / bug, if appropriate.

10. Push the commit up for code review using:

```
git review -R
```

That is the awesome tool we installed earlier that does a lot of hard work for you.

11. Watch your email or review site, it will automatically send your code for a battery of tests on our Jenkins setup and the core team for the project will review your code. If there are any changes that should be made they will let you know.
12. When all is good the review site will automatically merge your code.

(This tutorial is based on: http://www.linuxjedi.co.uk/2012/03/real-way-to-start-hacking-on-openstack.html)

1.9.3 Testing

Please, don't hesitate to write tests ;)

Unit tests

*Files: /tests/unit/**

The goal of unit tests is to ensure that internal parts of the code work properly. All internal methods should be fully covered by unit tests with a reasonable mocks usage.

About Rally unit tests:

- All unit tests are located inside /tests/unit/*
- Tests are written on top of: *testtools*, *fixtures* and *mock* libs
- Tox is used to run unit tests

To run unit tests locally:

```
$ pip install tox
$ tox
```

To run py34, py27 or pep8 only:

```
$ tox -e <name>

#NOTE: <name> is one of py34, py27 or pep8
```

To run a single unit test e.g. test_deployment

```
$ tox -e <name> -- <test_name>

#NOTE: <name> is one of py34, py27 or pep8
#      <test_name> is the unit test case name
```

To debug issues on the unit test:

- Add breakpoints on the test file using `import pdb; pdb.set_trace()`

- Then run tox in debug mode:

```
$ tox -e debug <test_name>
#NOTE: use python 2.7
#NOTE: <test_name> is the unit test case name

or

$ tox -e debug34 <test_name>
#NOTE: use python 3.4
#NOTE: <test_name> is the unit test case name
```

To get test coverage:

```
$ tox -e cover

#NOTE: Results will be in /cover/index.html
```

To generate docs:

```
$ tox -e docs

#NOTE: Documentation will be in doc/source/_build/html/index.html
```

Functional tests

*Files: /tests/functional/**

The goal of functional tests is to check that everything works well together. Functional tests use Rally API only and check responses without touching internal parts.

To run functional tests locally:

```
$ source openrc
$ rally deployment create --fromenv --name testing
$ tox -e cli

#NOTE: openrc file with OpenStack admin credentials
```

Output of every Rally execution will be collected under some reports root in directory structure like: reports_root/ClassName/MethodName_suffix.extension This functionality implemented in tests.functional.utils.Rally.__call__ method. Use 'gen_report_path' method of 'Rally' class to get automatically generated file path and name if you need. You can use it to publish html reports, generated during tests. Reports root can be passed throw environment variable 'REPORTS_ROOT'. Default is 'rally-cli-output-files'.

Rally CI scripts

*Files: /tests/ci/**

This directory contains scripts and files related to the Rally CI system.

Rally Style Commandments

Files: /tests/hacking/

This module contains Rally specific hacking rules for checking commandments.

For more information about Style Commandments, read the OpenStack Style Commandments manual.

1.10 Rally OS Gates

1.10.1 Gate jobs

The **OpenStack CI system** uses the so-called **"Gate jobs"** to control merges of patched submitted for review on Gerrit. These **Gate jobs** usually just launch a set of tests – unit, functional, integration, style – that check that the proposed patch does not break the software and can be merged into the target branch, thus providing additional guarantees for the stability of the software.

1.10.2 Create a custom Rally Gate job

You can create a **Rally Gate job** for your project to run Rally benchmarks against the patchsets proposed to be merged into your project.

To create a rally-gate job, you should create a **rally-jobs/** directory at the root of your project.

As a rule, this directory contains only **{projectname}.yaml**, but more scenarios and jobs can be added as well. This yaml file is in fact an input Rally task file specifying benchmark scenarios that should be run in your gate job.

To make *{projectname}.yaml* run in gates, you need to add *"rally-jobs"* to the "jobs" section of *projects.yaml* in *openstack-infra/project-config*.

1.10.3 Example: Rally Gate job for Glance

Let's take a look at an example for the Glance project:

Edit *jenkins/jobs/projects.yaml:*

```
- project:
    name: glance
    node: `bare-precise || bare-trusty'
    tarball-site: tarballs.openstack.org
    doc-publisher-site: docs.openstack.org

    jobs:
      - python-jobs
      - python-icehouse-bitrot-jobs
      - python-juno-bitrot-jobs
      - openstack-publish-jobs
      - translation-jobs
      - rally-jobs
```

Also add *gate-rally-dsvm-{projectname}* to *zuul/layout.yaml*:

```
- name: openstack/glance
  template:
    - name: merge-check
    - name: python26-jobs
    - name: python-jobs
    - name: openstack-server-publish-jobs
    - name: openstack-server-release-jobs
    - name: periodic-icehouse
    - name: periodic-juno
    - name: check-requirements
    - name: integrated-gate
```

```
    - name: translation-jobs
    - name: large-ops
    - name: experimental-tripleo-jobs
  check:
    - check-devstack-dsvm-cells
    - gate-rally-dsvm-glance
  gate:
    - gate-devstack-dsvm-cells
  experimental:
    - gate-grenade-dsvm-forward
```

To add one more scenario and job, you need to add *{scenarioname}.yaml* file here, and *gate-rally-dsvm-{scenarioname}* to *projects.yaml*.

For example, you can add *myscenario.yaml* to *rally-jobs* directory in your project and then edit *jenkins/jobs/projects.yaml* in this way:

```
- project:
    name: glance
    github-org: openstack
    node: bare-precise
    tarball-site: tarballs.openstack.org
    doc-publisher-site: docs.openstack.org

    jobs:
      - python-jobs
      - python-havana-bitrot-jobs
      - openstack-publish-jobs
      - translation-jobs
      - rally-jobs
      - `gate-rally-dsvm-{name}':
        name: myscenario
```

Finally, add *gate-rally-dsvm-myscenario* to *zuul/layout.yaml*:

```
- name: openstack/glance
  template:
    - name: python-jobs
    - name: openstack-server-publish-jobs
    - name: periodic-havana
    - name: check-requirements
    - name: integrated-gate
  check:
    - check-devstack-dsvm-cells
    - check-tempest-dsvm-postgres-full
    - gate-tempest-dsvm-large-ops
    - gate-tempest-dsvm-neutron-large-ops
    - gate-rally-dsvm-myscenario
```

It is also possible to arrange your input task files as templates based on jinja2. Say, you want to set the image names used throughout the *myscenario.yaml* task file as a variable parameter. Then, replace concrete image names in this file with a variable:

```
...

NovaServers.boot_and_delete_server:
  -
    args:
```

```
      image:
          name: {{image_name}}
    ...

NovaServers.boot_and_list_server:
  -
    args:
      image:
          name: {{image_name}}
    ...
```

and create a file named *myscenario_args.yaml* that will define the parameter values:

```
---

  image_name: "^cirros.*uec$"
```

this file will be automatically used by Rally to substitute the variables in *myscenario.yaml*.

1.10.4 Plugins & Extras in Rally Gate jobs

Along with scenario configs in yaml, the **rally-jobs** directory can also contain two subdirectories:

- **plugins**: *Plugins* needed for your gate job;
- **extra**: auxiliary files like bash scripts or images.

Both subdirectories will be copied to *~/.rally/* before the job gets started.

1.11 Request New Features

To request a new feature, you should create a document similar to other feature requests and then contribute it to the **doc/feature_request** directory of the Rally repository (see the *How-to-contribute tutorial*).

If you don't have time to contribute your feature request via gerrit, please contact Boris Pavlovic (boris@pavlovic.me)

Active feature requests:

1.11.1 Capture Logs from services

Use case

A developer is executing various task and would like to capture logs as well as test results.

Problem description

In case of errors it is quite hard to debug what happened.

Possible solution

- Add special context that can capture the logs from tested services.

1.11.2 Check queue perfdata

Use case ———— Sometimes OpenStack services use common messaging system very prodigally. For example neutron metering agent sending all database table data on new object creation i.e https://review.openstack.org/#/c/143672/. It cause to neutron degradation and other obvious problems. It will be nice to have a way to track messages count and messages size in queue during tests/benchmarks.

Problem description ——————— Heavy usage of queue isn't checked.

Possible solution ——————— * Before running tests/benchmarks start process which will connect to queue topics and measure messages count, size and other data which we need.

1.11.3 Ability to compare results between task

Use case

During the work on performance it's essential to be able to compare results of similar task before and after change in system.

Problem description

There is no command to compare two or more tasks and get tables and graphs.

Possible solution

- Add command that accepts 2 tasks UUID and prints graphs that compares result

1.11.4 Distributed load generation

Use Case

Some OpenStack projects (Marconi, MagnetoDB) require a real huge load, like 10-100k request per second for benchmarking.

To generate such huge load Rally have to create load from different servers.

Problem Description

- Rally can't generate load from different servers
- Result processing can't handle big amount of data
- There is no support for chunking results

1.11.5 Explicitly specify existing users for scenarios

Use Case

Rally allows to reuse existing users for scenario runs. And we should be able to use only specified set of existing users for specific scenarios.

Problem Description

For the moment if used *deployment* with existing users then Rally chooses user for each scenario run randomly. But there are cases when we may want to use one scenario with one user and another with different one specific user. Main reason for it is in different set of resources that each user has and those resources may be required for scenarios. Without this feature Rally user is forced to make all existing users similar and have all required resources set up for all scenarios he uses. But it is redundant.

Possible solution

- Make it possible to use explicitly existing_users context

1.11.6 Historical performance data

Use case

OpenStack is really rapidly developed. Hundreds of patches are merged daily and it's really hard to track how performance is changed during time. It will be nice to have a way to track performance of major functionality of OpenStack running periodically rally task and building graphs that represent how performance of specific method is changed during the time.

Problem description

There is no way to bind tasks

Possible solution

- Add grouping for tasks
- Add command that creates historical graphs

1.11.7 Enhancements to installation script: `--version` and `--uninstall`

Use case

User might wish to control which rally version is installed or even purge rally from the machine completely.

Problem description

1. Installation script doesn't allow to choose version.
2. No un-install support.

Possible solution

1. Add `--version` option to installation script.
2. Add `--uninstall` option to installation script or create an un-installation script

1.11.8 Installation script: `--pypi-mirror`, `--package-mirror` and `--venv-mirror`

Use case

Installation is pretty easy when there is an Internet connection available. And there is surely a number of OpenStack uses when whole environment is isolated. In this case, we need somehow specify where installation script should take required libs and packages.

Problem description

1. Installation script can't work without direct Internet connection

Possible solution #1

1. Add `--pypi-mirror` option to installation script.
2. Add `--package-mirror` option to installation script.
3. Add `--venv-mirror` option to installation script.

1.11.9 Launch Specific Benchmark(s)

Use case

A developer is working on a feature that is covered by one or more specific benchmarks/scenarios. He/she would like to execute a rally task with an existing task template file (yaml or json) indicating exactly which benchmark(s) will be executed.

Problem description

When executing a task with a template file in Rally, all benchmarks are executed without the ability to specify one or a set of benchmarks the user would like to execute.

Possible solution

- Add optional flag to rally task start command to specify one or more

benchmarks to execute as part of that test run.

1.11.10 Using multi scenarios to generate load

Use Case

Rally should be able to generate real life load. Simultaneously create load on different components of OpenStack, e.g. simultaneously booting VM, uploading image and listing users.

Problem Description

At the moment Rally is able to run only 1 scenario per benchmark. Scenario are quite specific (e.g. boot and delete VM for example) and can't actually generate real life load.

Writing a lot of specific benchmark scenarios that will produce more real life load will produce mess and a lot of duplication of code.

Possible solution

- Extend Rally task benchmark configuration in such way to support passing multiple benchmark scenarios in single benchmark context
- Extend Rally task output format to support results of multiple scenarios in single benchmark separately.
- Extend rally task plot2html and rally task detailed to show results separately for every scenario.

1.11.11 Add support of persistence benchmark environment

Use Case

To benchmark many of operations like show, list, detailed you need to have already these resource in cloud. So it will be nice to be able to create benchmark environment once before benchmarking. So run some amount of benchmarks that are using it and at the end just delete all created resources by benchmark environment.

Problem Description

Fortunately Rally has already a mechanism for creating benchmark environment, that is used to create load. Unfortunately it's atomic operation: (create environment, make load, delete environment). This should be split to 3 separated steps.

Possible solution

- Add new CLI operations to work with benchmark environment: (show, create, delete, list)
- Allow task to start against benchmark environment (instead of deployment)

1.11.12 Production read cleanups

Use Case

Rally should delete in any case all resources that it created during benchmark.

Problem Description

- (implemented) Deletion rate limit

  You can kill cloud by deleting too many objects simultaneously, so deletion rate limit is required
- (implemented) Retry on failures

  There should be few attempts to delete resource in case of failures

- (implemented) Log resources that failed to be deleted

  We should log warnings about all non deleted resources. This information should include UUID of resource, it's type and project.

- (implemented) Pluggable

  It should be simple to add new cleanups adding just plugins somewhere.

- Disaster recovery

  Rally should use special name patterns, to be able to delete resources in such case if something went wrong with server that is running rally. And you have just new instance (without old rally db) of rally on new server.

1.12 Project Info

1.12.1 Maintainers

Project Team Lead (PTL)

Contact	Area of interest
Boris Pavlovic boris-42 (irc) boris@pavlovic.me	• Road Map • Release management • Community management • Core team management • Chief Architect

If you would like to refactor whole Rally or have UX/community/other issues please contact me.

Project Core maintainers

Contact	Area of interest
Alexander Maretskiy amaretskiy (irc) amaretskiy@mirantis.com	• Rally reports • Front-end
Andrey Kurilin andreykurilin (irc) andr.kurilin@gmail.com	• Rally-Tempest Integration • Rally verify • Nova plugins
Chris St. Pierre stpierre (irc) cstpierr@cisco.com	• Rally task & benchmark • Bash guru ;)
Kun Huang kun_huang (irc) gareth.huang@huawei.com	• Rally task & benchmark
Li Yingjun liyingjun (irc) yingjun.li@kylin-cloud.com	• Rally task & benchmark
Pavel Boldin pboldin (irc) pboldin@mirantis.com	• VM workloads
Roman Vasilets rvasilets (irc) rvasilets@mirantis.com	• Rally task & benchmark
Sergey Skripnick redixin (irc) sskripnick@mirantis.com	• Rally CI/CD • Rally deploy • Automation of everything
Yair Fried yfried (irc) yfried@redhat.com	• Rally-Tempest integration • Rally task & benchmark

All cores from this list are reviewing all changes that are proposed to Rally. To avoid duplication of efforts, please contact them before starting work on your code.

Plugin Core reviewers

Contact	Area of interest
Ivan Kolodyazhny e0ne (irc) e0ne@e0ne.info	• Cinder plugins
Nikita Konovalov NikitaKonovalov (irc) nkonovalov@mirantis.com	• Sahara plugins
Sergey Kraynev skraynev (irc) skraynev@mirantis.com	• Heat plugins

All cores from this list are responsible for their component plugins. To avoid duplication of efforts, please contact them before starting working on your own plugins.

1.12.2 Useful links

- Source code
- Rally road map
- Project space
- Bugs
- Patches on review
- Meeting logs (server: **irc.freenode.net**, channel: **#openstack-meeting**)
- Release meeting logs (server: **irc.freenode.net**, channel: **#openstack-rally**)
- IRC logs (server: **irc.freenode.net**, channel: **#openstack-rally**)

1.12.3 Where can I discuss and propose changes?

- Our IRC channel: **#openstack-rally** on **irc.freenode.net**;
- Weekly Rally team meeting (in IRC): **#openstack-meeting** on **irc.freenode.net**, held on Mondays at 14:00 UTC;
- Weekly release meeting (in IRC): **#openstack-rally** on **irc.freenode.net**, held on Mondays at 13:00 UTC;

- OpenStack mailing list: **openstack-dev@lists.openstack.org** (see subscription and usage instructions);
- Rally team on Launchpad: Answers/Bugs/Blueprints.

1.13 Release Notes

1.13.1 All release notes

Rally v0.0.1

Information

Commits	**1039**
Bug fixes	**0**
Dev cycle	**547 days**
Release date	**26/Jan/2015**

Details

Rally is awesome tool for testing verifying and benchmarking OpenStack clouds.

A lot of people started using Rally in their CI/CD so Rally team should provide more stable product with clear strategy of deprecation and upgrades.

Rally v0.0.2

Information

Commits	**100**
Bug fixes	**18**
Dev cycle	**45 days**
Release date	**12/Mar/2015**

Details

This release contains new features, new benchmark plugins, bug fixes, various code and API improvements.

New Features

- rally task start **–abort-on-sla-failure**

  Stopping load before things go wrong. Load generation will be interrupted if SLA criteria stop passing.

- Rally verify command supports multiple Tempest sources now.
- python34 support
- postgres DB backend support

API changes

- [new] **rally [deployment | verify | task] use** subcommand

  It should be used instead of root command **rally use**

- [new] Rally as a Lib API

  To avoid code duplication between Rally as CLI tool and Rally as a Service we decide to make Rally as a Lib as a common part between these 2 modes.

  Rally as a Service will be a daemon that just maps HTTP request to Rally as a Lib API.

- [deprecated] **rally use** CLI command
- [deprecated] Old Rally as a Lib API

  Old Rally API was quite mixed up so we decide to deprecate it

Plugins

- **Benchmark Scenario Runners**:

  [improved] Improved algorithm of generation load in **constant runner**

  Before we used processes to generate load, now it creates pool of processes (amount of processes is equal to CPU count) after that in each process use threads to generate load. So now you can easily generate load of 1k concurrent scenarios.

  [improved] Unify code of **constant** and **rps** runners

  [interface] Added **abort()** to runner's plugin interface

  New method **abort()** is used to immediately interrupt execution.

- **Benchmark Scenarios**:

  [new] DesignateBasic.create_and_delete_server

  [new] DesignateBasic.create_and_list_servers

  [new] DesignateBasic.list_servers

  [new] MistralWorkbooks.list_workbooks

  [new] MistralWorkbooks.create_workbook

  [new] Quotas.neutron_update

  [new] HeatStacks.create_update_delete_stack

  [new] HeatStacks.list_stacks_and_resources

  [new] HeatStacks.create_suspend_resume_delete_stac

  [new] HeatStacks.create_check_delete_stack

  [new] NeutronNetworks.create_and_delete_routers

  [new] NovaKeypair.create_and_delete_keypair

  [new] NovaKeypair.create_and_list_keypairs

  [new] NovaKeypair.boot_and_delete_server_with_keypair

  [new] NovaServers.boot_server_from_volume_and_live_migrate

  [new] NovaServers.boot_server_attach_created_volume_and_live_migrate

[new] CinderVolumes.create_and_upload_volume_to_image

[fix] CinderVolumes.create_and_attach_volume

Pass optional **kwargs only to create server command

[fix] GlanceImages.create_image_and_boot_instances

Pass optional **kwargs only to create server command

[fix] TempestScenario.* removed stress cleanup.

Major issue is that tempest stress cleanup cleans whole OpenStack. This is very dangerous, so it's better to remove it and leave some extra resources.

[improved] NovaSecGroup.boot_and_delete_server_with_secgroups

Add optional **kwargs that are passed to boot server comment

- **Benchmark Context**:

[new] **stacks**

Generates passed amount of heat stacks for all tenants.

[new] **custom_image**

Prepares images for benchmarks in VMs.

To Support generating workloads in VMs by existing tools like: IPerf, Blogbench, HPCC and others we have to have prepared images, with already installed and configured tools.

Rally team decide to generate such images on fly from passed to avoid requirements of having big repository with a lot of images.

This context is abstract context that allows to automate next steps:

1. runs VM with passed image (with floating ip and other stuff)
2. execute abstract method that has access to VM
3. snapshot this image

In future we are going to use this as a base for making context that prepares images.

[improved] **allow_ssh**

Automatically disable it if security group are disabled in neutron.

[improved] **keypair**

Key pairs are stored in "users" space it means that accessing keypair from scenario is simpler now:

self.context["user"]["keypair"]["private"]

[fix] **users**

Pass proper EndpointType for newly created users

[fix] **sahara_edp**

The Job Binaries data should be treated as a binary content

- **Benchmark SLA**:

[interface] SLA calculations is done in additive way now

Resolves scale issues, because now we don't need to have whole array of iterations in memory to process SLA.

This is required to implement **–abort-on-sla-failure** feature

[all] SLA plugins were rewritten to implement new interface

Bug fixes 18 bugs were fixed, the most critical are:

- Fix **rally task detailed –iterations-data**

  It didn't work in case of missing atomic actions. Such situation can occur if scenario method raises exceptions

- Add user-friendly message if the task cannot be deleted

  In case of trying to delete task that is not in "finished" status users get traces instead of user-friendly message try to run it with –force key.

- Network context cleanups networks properly now

Documentation

- Image sizes are fixed
- New tutorial in "Step by Step" relate to **–abort-on-sla-failure**
- Various fixes

Rally v0.0.3

Information

Commits	**53**
Bug fixes	**14**
Dev cycle	**33 days**
Release date	**14/Apr/2015**

Details

This release contains new features, new benchmark plugins, bug fixes, various code and API improvements.

New Features & API changes

- Add the ability to specify versions for clients in benchmark scenarios

  You can call self.clients("glance", "2") and get any client for specific version.

- Add API for tempest uninstall

  $ rally-manage tempest uninstall # removes fully tempest for active deployment

- Add a –uuids-only option to rally task list

  $ rally task list –uuids-only # returns list with only task uuids

- Adds endpoint to –fromenv deployment creation

  $ rally deployment create –fromenv # recognizes standard OS_ENDPOINT environment variable

- Configure SSL per deployment

  Now SSL information is deployment specific not Rally specific and rally.conf option is deprecated

  Like in this sample https://github.com/openstack/rally/blob/14d0b5ba0c75ecefdb6a6c121d9cf2810571f77/samples/deployn
  L12

Specs

- [spec] Proposal for new task input file format

  This spec describes new task input format that will allow us to generate multi scenario load which is crucial for HA and more real life testing:

  https://github.com/openstack/rally/blob/master/doc/specs/in-progress/new_rally_input_task_format.rst

Plugins

- **Benchmark Scenario Runners**:
  - Add a maximum concurrency option to rps runner

    To avoid running to heavy load you can set 'concurrency' to configuration and in case if cloud is not able to process all requests it won't start more parallel requests then 'concurrency' value.

- **Benchmark Scenarios**:

  [new] CeilometerAlarms.create_alarm_and_get_history

  [new] KeystoneBasic.get_entities

  [new] EC2Servers.boot_server

  [new] KeystoneBasic.create_and_delete_service

  [new] MuranoEnvironments.list_environments

  [new] MuranoEnvironments.create_and_delete_environment

  [new] NovaServers.suspend_and_resume_server

  [new] NovaServers.pause_and_unpause_server

  [new] NovaServers.boot_and_rebuild_server

  [new] KeystoneBasic.create_and_list_services

  [new] HeatStacks.list_stacks_and_events

  [improved] VMTask.boot_runcommand_delete

  restore ability to use fixed IP and floating IP to connect to VM via ssh

  [fix] NovaServers.boot_server_attach_created_volume_and_live_migrate

  Kwargs in nova scenario were wrongly passed

- **Benchmark SLA**:
  - [new] aborted_on_sla

  This is internal SLA criteria, that is added if task was aborted

  - [new] something_went_wrong

  This is internal SLA criteria, that is added if something went wrong, context failed to create or runner raised some exceptions

Bug fixes **14 bugs were fixed, the most critical are**:

- Set default task uuid to running task. Before it was set only after task was fully finished.
- The "rally task results" command showed a disorienting "task not found" message for a task that is currently running.
- Rally didn't know how to reconnect to OpenStack in case if token expired.

Documentation

- New tutorial **task templates**

https://rally.readthedocs.org/en/latest/tutorial/step_5_task_templates.html

- Various fixes

Rally v0.0.4

Information

Commits	**87**
Bug fixes	**21**
Dev cycle	**30 days**
Release date	**14/May/2015**

Details

This release contains new features, new benchmark plugins, bug fixes, various code and API improvements.

New Features & API changes

- Rally now can generate load with users that already exist

  Now one can use Rally for benchmarking OpenStack clouds that are using LDAP, AD or any other read-only keystone backend where it is not possible to create any users. To do this, one should set up the "users" section of the deployment configuration of the ExistingCloud type. This feature also makes it safer to run Rally against production clouds: when run from an isolated group of users, Rally won't affect rest of the cloud users if something goes wrong.

- New decorator *@osclients.Clients.register* can add new OpenStack clients at runtime

  It is now possible to add a new OpenStack client dynamically at runtime. The added client will be available from osclients.Clients at the module level and cached. Example:

```
>>> from rally import osclients
>>> @osclients.Clients.register("supernova")
... def another_nova_client(self):
...   from novaclient import client as nova
...   return nova.Client("2", auth_token=self.keystone().auth_token,
...                      **self._get_auth_info(password_key="key"))
...
>>> clients = osclients.Clients.create_from_env()
>>> clients.supernova().services.list()[:2]
[<Service: nova-conductor>, <Service: nova-cert>]
```

- Assert methods now available for scenarios and contexts

  There is now a new *FunctionalMixin* class that implements basic unittest assert methods. The *base.Context* and *base.Scenario* classes inherit from this mixin, so now it is possible to use *base.assertX()* methods in scenarios and contexts.

- Improved installation script

  The installation script has been almost completely rewritten. After this change, it can be run from an unprivileged user, supports different database types, allows to specify a custom python binary, always asks confirmation before doing potentially dangerous actions, automatically install needed software if run as root, and also automatically cleans up the virtualenv and/or the downloaded repository if interrupted.

Specs & Feature requests

- [Spec] Reorder plugins

  The spec describes how to split Rally framework and plugins codebase to make it simpler for newbies to understand how Rally code is organized and how it works.

- [Feature request] Specify what benchmarks to execute in task

  This feature request proposes to add the ability to specify benchmark(s) to be executed when the user runs the *rally task start* command. A possible solution would be to add a special flag to the *rally task start* command.

Plugins

- **Benchmark Scenario Runners**:
  - Add limits for maximum Core usage to constant and rps runners

    The new 'max_cpu_usage' parameter can be used to avoid possible 100% usage of all available CPU cores by reducing the number of CPU cores available for processes started by the corresponding runner.
- **Benchmark Scenarios**:
  - [new] KeystoneBasic.create_update_and_delete_tenant
  - [new] KeystoneBasic.create_user_update_password
  - [new] NovaServers.shelve_and_unshelve_server
  - [new] NovaServers.boot_and_associate_floating_ip
  - [new] NovaServers.boot_lock_unlock_and_delete
  - [new] NovaHypervisors.list_hypervisors
  - [new] CeilometerSamples.list_samples
  - [new] CeilometerResource.get_resources_on_tenant
  - [new] SwiftObjects.create_container_and_object_then_delete_all
  - [new] SwiftObjects.create_container_and_object_then_download_object
  - [new] SwiftObjects.create_container_and_object_then_list_objects
  - [new] MuranoEnvironments.create_and_deploy_environment
  - [new] HttpRequests.check_random_request
  - [new] HttpRequests.check_request
  - [improved] NovaServers live migrate benchmarks

add 'min_sleep' and 'max_sleep' parameters to simulate a pause between VM booting and running live migration

- [improved] NovaServers.boot_and_live_migrate_server

  add a usage sample to samples/tasks

- [improved] CinderVolumes benchmarks

  support size range to be passed to the 'size' argument as a dictionary *{"min": <minimum_size>, "max": <maximum_size>}*

- **Benchmark Contexts**:
  - [new] MuranoPackage

    This new context can upload a package to Murano from some specified path.

  - [new] CeilometerSampleGenerator

    Context that can be used for creating samples and collecting resources for benchmarks in a list.

- **Benchmark SLA**:
  - [new] outliers

    This new SLA checks that the number of outliers (calculated from the mean and standard deviation of the iteration durations) does not exceed some maximum value. The SLA is highly configurable: the parameters used for outliers threshold calculation can be set by the user.

Bug fixes 21 bugs were fixed, the most critical are:

- Make it possible to use relative imports for plugins that are outside of rally package.
- Fix heat stacks cleanup by deleting them only 1 time per tenant (get rid of "stack not found" errors in logs).
- Fix the wrong behavior of 'rally task detailed –iterations-data' (it lacked the iteration info before).
- Fix security groups cleanup: a security group called "default", created automatically by Neutron, did not get deleted for each tenant.

Other changes

- Streaming algorithms that scale

  This release introduces the common/streaming_algorithms.py module. This module is going to contain implementations of benchmark data processing algorithms that scale: these algorithms do not store exhaustive information about every single benchmark iteration duration processed. For now, the module contains implementations of algorithms for computation of mean & standard deviation.

- Coverage job to check that new patches come with unit tests

  Rally now has a coverage job that checks that every patch submitted for review does not decrease the number of lines covered by unit tests (at least too much). This job allows to mark most patches with no unit tests with '-1'.

- Splitting the plugins code (Runners & SLA) into common/openstack plugins

  According to the spec "Reorder plugins" (see above), the plugins code for runners and SLA has been moved to the *plugins/common/* directory. Only base classes now remain in the *benchmark/* directory.

Documentation

- Various fixes
  - Remove obsolete *.rst* files (*deploy_engines.rst* / *server_providers.rst* / ...)
  - Restructure the docs files to make them easier to navigate through
  - Move the chapter on task templates to the 4th step in the tutorial
  - Update the information about meetings (new release meeting & time changes)

Rally v0.1.0

Information

Commits	**355**
Bug fixes	**90**
Dev cycle	**132 days**
Release date	**25/September/2015**

Details

This release contains new features, new 42 plugins, 90 bug fixes, various code and API improvements.

New Features & API changes

- **Improved installation script**
  - Add parameters:
    - `--develop` parameter to install rally in editable (develop) mode
    - `--no-color` to switch off output colorizing useful for automated output parsing and terminals that don't support colors.
  - Puts rally.conf under virtualenv etc/rally/ so you can have several rally installations in virtualenv
  - Many fixes related to access of different file, like: rally.conf, rally db file in case of sqlite
  - Update pip before Rally installation
  - Fix reinstallation
- **Separated Rally plugins & framework**

  Now plugins are here: https://github.com/openstack/rally/tree/master/rally/plugins

  Plugins are as well separated common/* for common plugins that can be use no matter what is tested and OpenStack related plugins
- **New Rally Task framework**
  - All plugins has the same Plugin base: rally.common.plugin.pluing.Plugin They have the same mechanisms for: discovering, providing information based on docstrings, and in future they will use the same deprecation/rename mechanism.
  - Some of files are moved:
    - rally/benchmark -> rally/task

      This was done to unify naming of rally task command and actually code that implements it.

    * rally/benchmark/sla/base.py -> rally/task/sla.py
    * rally/benchmark/context/base.py -> rally/task/context.py
    * rally/benchmark/scenarios/base.py -> rally/task/scenario.py
    * rally/benchmark/runners/base.py -> rally/task/runner.py
    * rally/benchmark/scenarios/utils.py -> rally/task/utils.py

  This was done to:

    * avoid doing rally.benchamrk.scenarios import base as scenario_base
    * remove one level of nesting
    * simplify framework structure

- Some of classes and methods were renamed
    * Plugin configuration:
        - context.context() -> context.configure()
        - scenario.scenario() -> scenario.configure()
        - Introduced runner.configure()
        - Introduced sla.configure()

      This resolves 3 problems:

        - Unifies configuration of different types of plugins
        - Simplifies plugin interface
        - **Looks nice with new modules path:**

```
>>> from rally.task import scenario
>>> @scenario.configure()
```

- Atomic Actions were changed:
    * New rally.task.atomic module

      This allow us in future to reuse atomic actions in Context plugins

    * Renames:

      rally.benchmark.scenarios.base.AtomicAction -> rally.task.atomic.ActionTimer

      rally.benchmark.scenarios.base.atomic_action() -> rally.task.atomic.action_timer()

- **Context plugins decide how to map their data for scenario**

  Now Context.map_for_scenario method can be override to decide how to pass context object to each iteration of scenario.

- Samples of NEW vs OLD context, sla, scenario and runner plugins:
    * Context

```
# Old
from rally.benchmark.context import base

@base.context(name="users", order=100)
class YourContext(base.Context):
```

```
    def setup(self):
        # ...

    def cleanup(self):
        # ...

# New
from rally.task import context

@context.configure(name="users", order=100)
class YourContext(context.Context):

    def setup(self):
        # ...

    def cleanup(self):
        # ...

    def map_for_scenario(self):
        # Maps context object to the scenario context object
        # like context["users"] -> context["user"] and so on.
```

* Scenario

```
# Old Scenario

from rally.benchmark.scenarios import base
from rally.benchmark import validation

class ScenarioPlugin(base.Scenario):

    @base.scenario()
    def some(self):
        self._do_some_action()


    @base.atomic_action_timer("some_timer")
    def _do_some_action(self):
        # ...

# New Scenario

from rally.task import atomic
from rally.task import scenario
from rally.task import validation

# OpenStack scenario has different base now:
# rally.plugins.openstack.scenario.OpenStackScenario
class ScenarioPlugin(scenario.Scenario):

    @scenario.configure()
    def some(self):
        self._do_some_action()

    @atomic.action_timer("some_action")
    def _do_some_action(self):
        # ...
```

* Runner

```
## Old

from rally.benchmark.runners import base

class SomeRunner(base.ScenarioRunner):

     __execution_type__ = "some_runner"

    def _run_scenario(self, cls, method_name, context, args)
      # Load generation

    def abort(self):
      # Method that aborts load generation

## New

from rally.task import runner

@runner.configure(name="some_runner")
class SomeRunner(runner.ScenarioRunner):

    def _run_scenario(self, cls, method_name, context, args)
        # Load generation

    def abort(self):
        # Method that aborts load generation
```

  * SLA

```
# Old

from rally.benchmark import sla

class FailureRate(sla.SLA):
    # ...

# New

from rally.task import sla

@sla.configure(name="failure_rate")
class FailureRate(sla.SLA):
    # ...
```

- **Rally Task aborted command**

  Finally you can gracefully shutdown running task by calling:

  `rally task abort <task_uuid>`

- **Rally CLI changes**
  - [add] `rally --plugin-paths` specify the list of directories with plugins
  - [add] `rally task report --junit` - generate a JUnit report This allows users to feed reports to tools such as Jenkins.
  - [add] `rally task abort` - aborts running Rally task when run with the `--soft` key, the `rally task abort` command is waiting until the currently running subtask is finished, otherwise the command interrupts subtask immediately after current scenario iterations are finished.

  - [add] `rally plugin show` prints detailed information about plugin
  - [add] `rally plugin list` prints table with rally plugin names and titles
  - [add] `rally verify genconfig` generates tempest.conf without running it.
  - [add] `rally verify install` install tempest for specified deployment
  - [add] `rally verify reinstall` removes tempest for specified deployment
  - [add] `rally verify uninstall` uninstall tempest of specified deployment
  - [fix] `rally verify start --no-use` –no-use was always turned on
  - [remove] `rally use` now each command has subcommand `use`
  - [remove] `rally info`
  - [remove] `rally-manage tempest` now it is covered by `rally verify`
- **New Rally task reports**
  - New code is based on OOP style which is base step to make plugable Reports
  - Reports are now generated for only one iteration over the resulting data which resolves scalability issues when we are working with large amount of iterations.
  - New Load profiler plot that shows amount of iterations that are working in parallel
  - Failed iterations are shown as a red areas on stacked are graphic.

Non backward compatible changes

- [remove] `rally use` cli command
- [remove] `rally info` cli command
- [remove] `--uuid` parameter from `rally deployment <any>`
- [remove `--deploy-id` parameter from: `rally task <any>`, `rally verify <any>`, `rally show <any>`

Specs & Feature requests

[feature request] Explicitly specify existing users for scenarios

[feature request] Improve install script and add –unistall and –version

[feature request] Allows specific repos & packages in install-rally.sh

[feature request] Add abbility to caputre logs from tested services

[feature request] Check RPC queue perfdata

[spec] Refactoring Rally cleanup

[spec] Consistent resource names

Plugins

- **Scenarios**:

  [new] CinderVolumes.create_volume_backup

  [new] CinderVolumes.create_and_restore_volume_backup

[new] KeystoneBasic.add_and_remove_user_role

[new] KeystoneBasic.create_and_delete_role

[new] KeystoneBasic.create_add_and_list_user_roles

[new] FuelEnvironments.list_environments

[new] CinderVolumes.modify_volume_metadata

[new] NovaServers.boot_and_delete_multiple_servers

[new] NeutronLoadbalancerV1.create_and_list_pool

[new] ManilaShares.list_shares

[new] CeilometerEvents.create_user_and_get_event

[new] CeilometerEvents.create_user_and_list_event_types

[new] CeilometerEvents.create_user_and_list_events

[new] CeilometerTraits.create_user_and_list_trait_descriptions

[new] CeilometerTraits.create_user_and_list_traits

[new] NeutronLoadbalancerV1.create_and_delete_pools

[new] NeutronLoadbalancerV1.create_and_update_pools

[new] ManilaShares.create_and_delete_share

[new] ManilaShares.create_share_network_and_delete

[new] ManilaShares.create_share_network_and_list

[new] HeatStacks.create_and_delete_stack

[new] ManilaShares.list_share_servers

[new] HeatStacks.create_snapshot_restore_delete_stack

[new] KeystoneBasic.create_and_delete_ec2credential

[new] KeystoneBasic.create_and_list_ec2credentials

[new] HeatStacks.create_stack_and_scale

[new] ManilaShares.create_security_service_and_delete

[new] KeystoneBasic.create_user_set_enabled_and_delete

[new] ManilaShares.attach_security_service_to_share_network

[new] IronicNodes.create_and_delete_node

[new] IronicNodes.create_and_list_node

[new] CinderVolumes.create_and_list_volume_backups

[new] NovaNetworks.create_and_list_networks

[new] NovaNetworks.create_and_delete_network

[new] EC2Servers.list_servers

[new] VMTasks.boot_runcommand_delete_custom_imagea

[new] CinderVolumes.create_and_update_volume

- **Contexts**:

  [new] ManilaQuotas

  > Add context for setting up Manila quotas: shares, gigabytes, snapshots, snapshot_gigabytes, share_networks

  [new] ManilaShareNetworks

  > Context for share networks that will be used in case of usage deployment with existing users. Provided share networks via context option "share_networks" will be balanced between all share creations of scenarios.

  [new] Lbaas

  > Context to create LBaaS-v1 resources

  [new] ImageCommandCustomizerContext

  > Allows image customization using side effects of a command execution. E.g. one can install an application to the image and use these image for 'boot_runcommand_delete' scenario afterwards.

  [new] EC2ServerGenerator

  > Context that creates servers using EC2 api

  [new] ExistingNetwork

  > This context lets you use existing networks that have already been created instead of creating new networks with Rally. This is useful when, for instance, you are using Neutron with a dumb router that is not capable of creating new networks on the fly.

- **SLA**:

  [remove] max_failure_rate - use failure_rate instead

Bug fixes 90 bugs were fixed, the most critical are:

- Many fixes related that fixes access of rally.conf and DB files
- Incorrect apt-get "-yes" parameter in install_rally.sh script
- Rally bash completion doesn't exist in a virtualenv
- Rally show networks CLI command worked only with nova networks
- RPS runner was not properly generating load
- Check is dhcp_agent_scheduler support or not in network cleanup
- NetworkContext doesn't work with Nova V2.1
- Rally task input file was not able to use jinja2 include directive
- Rally in docker image was not able to
- Rally docker image didn't contain samples
- Do not update the average duration when iteration failed

Documentation

- **Add plugin reference page**

  Rally Plugins Reference page page contains a full list with

- **Add maintainers section on project info page**

  Rally Maintainers section contains information about core contributors of OpenStack Rally their responsibilities and contacts. This will help us to make our community more transparent and open for newbies.

- **Added who is using section in docs**
- **Many small fixes**

Rally v0.1.1

Information

Commits	**32**
Bug fixes	**9**
Dev cycle	**11 days**
Release date	**6/October/2015**

Details

This release contains new features, new 6 plugins, 9 bug fixes, various code and API improvements.

New Features

- **Rally verify generates proper tempest.conf file now**

  Improved script that generates tempest.conf, now it works out of box for most of the clouds and most of Tempest tests will pass without hacking it.

- **Import Tempest results to Rally DB**

  `rally verify import` command allows you to import already existing Tempest results and work with them as regular "rally verify start" results: generate HTML/CSV reports & compare different runs.

API Changes Rally CLI changes

- [add] `rally verify import` imports raw Tempest results to Rally

Specs & Feature requests

There is no new specs and feature requests.

Plugins

- **Scenarios**:

  [new] NeutronNetworks.create_and_list_floating_ips

  [new] NeutronNetworks.create_and_delete_floating_ips

  [new] MuranoPackages.import_and_list_packages

  [new] MuranoPackages.import_and_delete_package

  [new] MuranoPackages.import_and_filter_applications

  [new] MuranoPackages.package_lifecycle

[improved] NovaKeypair.boot_and_delete_server_with_keypair

New argument `server_kwargs`, these kwargs are used to boot server.

[fix] NeutronLoadbalancerV1.create_and_delete_vips

Now it works in case of concurrency > 1

- **Contexts**:

  [improved] network

  Network context accepts two new arguments: `subnets_per_network` and `network_create_args`.

  [fix] network

  Fix cleanup if nova-network is used. Networks should be dissociate from project before deletion

  [fix] custom_image

  Nova server that is used to create custom image was not deleted if script that prepares server failed.

Bug fixes 9 bugs were fixed, the most critical are:

- Fix install_rally.sh script

  Set 777 access to /var/lib/rally/database file if system-wide method of installation is used.

- Rally HTML reports Overview table had few mistakes
  - Success rate was always 100%
  - Percentiles were wrongly calculated
- Missing Ironic, Murano and Workload(vm) options in default config file
- `rally verify start` failed while getting network_id
- `rally verify genconfig` hangs forever if Horizon is not available

Documentation

- **Fix project maintainers page**

  Update the information about Rally maintainers

- **Document rally –plugin-paths CLI argument**
- **Code blocks in documentation looks prettier now**

Rally v0.1.2

Information

Commits	**208**
Bug fixes	**37**
Dev cycle	**77 days**
Release date	**23/December/2015**

Details

This release, as well as all previous ones, includes a lot of internal and external changes. Most important of them are listed below.

> **Warning:** Release 0.1.2 is the last release with Python 2.6 support.

Deprecations

- Class *rally.common.objects.Endpoint* was renamed to *Credentials*. Old class is kept for backward compatibility. Please, stop using the old class in your plugins.

  > **Warning:** dict key was changed too in user context from "endpoint" to "credential"

- rally.task.utils: wait_is_ready(), wait_for(), wait_for_delete() deprecated you should use wait_for_status() instead.

Rally Verify

- Added possibility to run Tempest tests listed in a file(–tests-file argument in `verify start`)
- Added possibility to upload Tempest subunit stream logs into data base
- Improvements in generating Tempest config file
- Reworked subunit stream parser
- Don't install Tempest when *rally verify [gen/show]config*
- Rally team tries to simplify usage of each our component. Now Rally verification has some kind of a context like in Tasks. Before launching each verification, Rally checks existence of required resources(networks, images, flavours, etc) in Tempest configuration file and pre-creates them. Do not worry, all these resources will not be forgotten and left, Rally will clean them after verification.

Rally Task

- Add –html-static argument to `rally task report` which allows to generate HTML reports that doesn't require Internet.
- Rally supports different API versions now via api_versions context:
- Move rally.osclients.Clients to plugin base

  Rally OSclients is plugable now and it is very easy to extend OSClients for your cloud out of Rally tree.

- Add 'merge' functionality to SLA

  All SLA plugins should implement merge() method now. In future this will be used for distributed load generation. Where SLA results from different runners will be merged together.

- New optional_action_timer decorator

  Allows to make the methods that can be both atomic_action or regular method. Method changes behavior based on value in extra key "atomic_action"

Rally Certification

- Fix Glance certification arguments
- Add Neutron Quotas only if Neutron service is available

Specs & Feature Requests

- Spec consistent-resource-names:

  Resource name is based on Task id now. It is a huge step to persistence and disaster cleanups.
- Add a spec for distributed load generation:

  https://github.com/openstack/rally/blob/master/doc/specs/in-progress/distributed_runner.rst
- Improvements for scenario output format

  https://github.com/openstack/rally/blob/master/doc/specs/in-progress/improve_scenario_output_format.rst
- Task and Verify results export command

  https://github.com/openstack/rally/blob/master/doc/specs/in-progress/task_and_verification_export.rst

Plugins

- **Scenarios**:
- [new] NovaServers.boot_and_get_console_output
- [new] NovaServers.boot_and_show_server
- [new] NovaServers.boot_server_attach_created_volume_and_resize
- [new] NovaServers.boot_server_from_volume_and_resize
- [new] NeutronSecurityGroup.create_and_delete_security_groups
- [new] NeutronSecurityGroup.create_and_list_security_groups
- [new] NeutronSecurityGroup.create_and_update_security_groups
- [new] NeutronLoadbalancerV1.create_and_delete_healthmonitors
- [new] NeutronLoadbalancerV1.create_and_list_healthmonitors
- [new] NeutronLoadbalancerV1.create_and_update_healthmonitors
- [new] SwiftObjects.list_and_download_objects_in_containers
- [new] SwiftObjects.list_objects_in_containers
- [new] FuelNodes.add_and_remove_node
- [new] CeilometerMeters.list_matched_meters
- [new] CeilometerResource.list_matched_resources
- [new] CeilometerSamples.list_matched_samples
- [new] CeilometerStats.get_stats
- [new] Authenticate.validate_monasca
- [new] DesignateBasic.create_and_delete_zone
- [new] DesignateBasic.create_and_list_zones
- [new] DesignateBasic.list_recordsets

- [new] DesignateBasic.list_zones
- **[fix] CinderVolumes.create_nested_snapshots_and_attach_volume** Remove random nested level which produce different amount of atomic actions and bad reports.
- Support for Designate V2 api
- A lot of improvements in Sahara scenarios
- **Context**:
- [new] api_versions

  Context allows us to setup client to communicate to specific service.
- [new] swift_objects

  Context pre creates swift objects for future usage in scenarios
- [update] sahara_cluster

  It supports proxy server which allows to use single floating IP for whole cluster.
- [fix] cleanup

  Fix cleanup of networks remove vip before port.

Bug fixes **37 bugs were fixed, the most critical are**:

- Follow symlinks in plugin discovery
- Use sed without -i option for portability (install_rally.sh)
- Fixed race in rally.common.broker
- Fixed incorrect iteration number on "Failures" Tab
- Fixing issue with create_isolated_networks = False
- Fix docker build command

Documentation Fixed some minor typos and inaccuracies.

Thanks We would like to thank Andreas Jaeger for ability to provide Python 2.6 support in this release.

Rally v0.2.0

Information

Commits	**48**
Bug fixes	*6**
Dev cycle	**19 days**
Release date	**1/11/2015**

Details

This release, as well as all previous ones, includes a lot of internal and external changes. Most important of them are listed below.

> **Warning:** Release 0.2.0 doesn't support python 26

Deprecations

- Option –system-wide-install for `rally verify start` was deprecated in favor of –system-wide
- ***rally show* commands were deprecated because of 3 reasons:**
  - It blocks us to make Rally generic testing tool
  - It complicates work on Rally as a Service
  - You can always use standard OpenStack clients to do the same

Rally Verify

- Add "xfail" mechanism for Tempest tests.

  This mechanism allows us to list some tests, that are expected to fail, in a YAML file and these tests will have "xfail" status instead of "fail".

  Use new argument "–xfails-file" of rally verify start command.

Rally Task

- –out argument of *rally task report* is optional now

  If you don't specify –out <file> it will just print the resulting report

- Better scenario output support

  As far as you know each scenario plugin are able to return data as a dict. This dict contained set of key-values {<name>: <float>} where each name was line on graph and each number was one of point. Each scenario run adds a single point for each line on that graph.

  This allows to add extra data to the Rally and see how some values were changed over time. However, in case when Rally was used to execute some other tool and collect it's data this was useless.

  To address this **Scenario.add_output(additive, complete)** was introduced:

  Now it is possible to generate as many as you need graphs by calling this method multiple times. There are two types of graph additive and complete. **Additive** is the same as legacy concept of output data which is generated from results of all iterations, **complete** are used when you would like to return whole chart from each iteration.

  HTML report has proper sub-tabs *Aggregated* and *Per iteration* inside *Scenario Data* tab.

  Here is a simple example how output can be added in any scenario plugin:

```
# This represents a single X point in result StackedArea.
# Values from other X points are taken from other iterations.
self.add_output(additive={"title": "How do A and B changes",
                          "description": ("Trend for A and B "
                                          "during the scenario run"),
                          "chart_plugin": "StackedArea",
                          "data": [["foo", 42], ["bar", 24]]})
```

```
# This is a complete Pie chart that belongs to this concrete iteration
self.add_output(
    complete={"title": "",
              "description": ("Complete results for Foo and Bar "
                              "from this iteration"),
              "chart_plugin": "Pie",
              "data": [["foo", 42], ["bar", 24]]})
```

Rally Certification

None.

Specs & Feature Requests

[Spec][Implemented] improve_scenario_output_format

https://github.com/openstack/rally/blob/master/doc/specs/implemented/improve_scenario_output_format.rst

Plugins

- **Scenarios**:
- [new] DesignateBasic.create_and_update_domain
- [improved] CinderVolumes.create_and_attach_volume

  > **Warning:** Use "create_vm_params" dict argument instead of **kwargs for instance parameters.

- **Context**:
- [improved] images

> **Warning:** The min_ram and min_disk arguments in favor of image_args, which lets the user specify any image creation keyword arguments they want.

Bug fixes 6 bugs were fixed:

- #1522935: CinderVolumes.create_and_attach_volume does not accept additional args for create_volume
- #1530770: "rally verify" fails with error 'TempestResourcesContext' object has no attribute 'generate_random_name'
- #1530075: cirros_img_url in rally.conf doesn't take effective in verification tempest
- #1517839: Make CONF.set_override with paramter enforce_type=True by default
- #1489059: "db type could not be determined" running py34
- #1262123: Horizon is unreachable outside VM when we are using DevStack + OpenStack

Documentation

None.

Thanks

2 Everybody!

Rally v0.3.0

Information

Commits	**69**
Bug fixes	**7**
Dev cycle	**29 days**
Release date	**2/16/2016**

Details

This release, as well as all previous ones, includes a lot of internal and external changes. Most important of them are listed below.

> **Warning:** In this release Rally DB schema migration is introduced. While upgrading Rally from previous versions it is required now to run `rally-manade db upgrade`. Please see 'Documentation' section for details.

CLI changes

- > **Warning:** [Removed] `rally info` in favor of `rally plugin *`.

  It was deprecated for a long time.

- [Modified] `rally deployment check` now prints services, which don't have names, since such services can be used via api_versions context.

- > **Warning:** [Modified] `rally verify [re]install` option –no-tempest-venv was deprecated in favor of –system-wide

- [Added] `rally-manage db revision` displays current revision of Rally database schema
- [Added] `rally-manage db upgrade` upgrades pre-existing Rally database schema to the latest revision
- [Added] `rally-manage db downgrade` to downgrades existing Rally database schema to previous revision
- [Added] `rally task export` exports task results to external services (only CLI command introduced, no real service support implemented yet, however one could write own plugins)
- [Added] `rally verify export` exports verification results to external services (only CLI command introduced, no real service support implemented yet, however one could write own plugins)

Rally Deployment

- > **Warning:** `fuel` deployment engine is removed since it was outdated and lacked both usage and support

Rally Task Add custom labels for "Scenario Output" charts

- X-axis label can be specified to add_output() by "axis_label" key of chart options dict. The key is named "axis_label" but not "x_label" because chart can be displayed as table, so we explicitly mention "axis" in option name to make this parameter useless for tables

- Y-axis label can be specified to add_output() by "label" key of chart options dict In some cases this parameter can be used for rendering tables - it becomes column name in case if chart with single iteration is transformed into table
- As mentiones above, if we have output chart with single iteration, then it is transformed to table, because chart with single value is useless
- OutputLinesChart is added, it is displayed by NVD3 lineChart()
- Chart "description" is optional now. Description is not shown if it is not specified explicitly
- Scenario Dummy.add_output is improved to display labels and OutputLinesChart
- Fix: If Y-values are too long and overlaps chart box, then JavaScript updates chart width in runtime to fit width of chart graphs + Y values to their DOM container

Rally Certification

None.

Specs & Feature Requests

- [Spec][Introduced] Export task and verification results to external services

  https://github.com/openstack/rally/blob/master/doc/specs/in-progress/task_and_verification_export.rst
- [Spec][Implemented] Consistent resource names

  https://github.com/openstack/rally/blob/master/doc/specs/implemented/consistent_resource_names.rst
- [Feature request][Implemented] Tempest concurrency

  https://github.com/openstack/rally/blob/master/doc/feature_request/implemented/add_possibility_to_specify_concurrency_for_te

Plugins

- **Scenarios**:
- [added] VMTasks.workload_heat
- [added] NovaFlavors.list_flavors
- [updated] Flavors for Master and Worker node groups are now configured separately for SaharaCluster.* scenarios
- **Context**:
- **Warning:** [deprecated] rally.plugins.openstack.context.cleanup in favor of rally.plugins.openstack.cleanup
- [improved] sahara_cluster

  Flavors for Master and Worker node groups are now configured separately in `sahara_cluster` context

Miscellaneous

- Cinder version 2 is used by default
- Keystone API v3 compatibility improved
  - Auth URL in both formats http://foo.rally:5000/v3 and http://foo.rally:5000 is supported for Keystone API v3

  - Tempest configuration file is created properly according to Keystone API version used
- `install_rally.sh --branch` now accepts all git tree-ish, not just branches or tags
- VM console logs are now printed when Rally fails to connect to VM
- Add support for Rally database schema migration (see 'Documentation' section)

Bug fixes 7 bugs were fixed:

- #1540563: Rally is incompatible with liberty Neutron client

  The root cause is that in Neutron Liberty client, the _fx function doesn't take any explicit keyword parameter but Rally is passing one (tenant_id).
- #1543414: The *rally verify start* command fails when running a verification against Kilo OpenStack
- #1538341: Error in logic to retrieve image details in image_valid_on_flavor

Documentation

- Add documentation for DB migration

  https://github.com/openstack/rally/blob/master/rally/common/db/sqlalchemy/migrations/README.rst

Thanks

2 Everybody!

Rally v0.3.1

Information

Commits	**9**
Bug fixes	**6**
Dev cycle	**2 days**
Release date	**2/18/2016**

Details

This release is more about bug-fixes than features.

> **Warning:** Please, update 0.3.0 to latest one.

Features

- Pass api_versions info to glance images context
- [Verify] Don't create new flavor when flavor already exists

Bug fixes 6 bugs were fixed, the most critical are:

- #1545889: Existing deployment with given endpoint doesn't work anymore
- #1547092: Insecure doesn't work with Rally 0.3.0
- #1547083: Rally Cleanup failed with api_versions context in 0.3.0 release
- #1544839: Job gate-rally-dsvm-zaqar-zaqar fails since the recent Rally patch
- #1544522: Non-existing "called_once_with" method of Mock library is used

Rally v0.3.2

Information

Commits	**55**
Dev cycle	**25 days**
Release date	**3/14/2016**

Details

This release, as well as all previous ones, includes a lot of internal and external changes. Most important of them are listed below.

CLI changes

- **Warning:** [Modified] Option '–tempest-config' for 'rally verify

  reinstall' command was deprecated for removal.

- **Warning:** [Removed] Option *–system-wide-install* was removed from

  rally verify commands in favor of *–system-wide* option.

- **Warning:** [Modified] Step of installation of Tempest during execution of

  the *rally verify start* command was deprecated and will be removed in the future. Please use *rally verify install* instead.

- Rework commands.task.TaskCommands.detailed. Now output of the command contains the same results as in HTML report.

Rally Verify

- Re-run failed Tempest tests

  Add the ability to re-run the tempest tests that failed in the last test execution. Sometimes Tempest tests fail due to a special temporary condition in the environment, in such cases it is very useful to be able to re-execute those tests.

  Running the following command will re-run all the test that failed during the last test execution regardless of what test suite was run.

```
rally verify start --failing
```

Specs & Feature Requests

- [Spec][Introduced] Refactoring scenario utils

  'https://github.com/openstack/rally/blob/master/doc/specs/in-progress /refactor_scenario_utils.rst'_

- [Spec] Deployment unification

Plugins

- **Scenarios**:
- [updated] Fix flavor for cloudera manager

  Cloudera manager need master-node flavor

- [added] Expand Nova API benchmark in Rally

  Add support for listing nova hosts, agents, availability-zones and aggregates.

- [updated] Make sure VolumeGenerator uses the api version info while cleanup
- Designate V2 - Add recordset scenarios

  Add create_and_(list|delete)_recordset scenarios Remove the test also that checks the allowed methods, this is in order for us to be able to have a private method _walk_pages that will do fetching of pages for us vs attempting to fetch 1 giant list at once.

- unify *_kwargs name in scenarios

  When running a scenario, *kwargs* is used as default key-word arguments. But in some scenarios, there are more and one services being called, and we use xxx_kwargs for this case.

  However, some xxx_kwargs are not unifed for same usage[0]. Unifying these could avoid midleading for end users. Another improvement is to add xxx_kwargs with empty settings for scenario config files.

  [0] http://paste.openstack.org/show/489505/

- > **Warning:** Deprecated arguments 'script' and 'interpreter' were removed in favor of 'command' argument.

  VM task scenarios executes a script with a interpreter provided through a formatted argument called 'command' which expects the remote_path or local_path of the script and optionally an interpreter with which the script has to be executed.

Miscellaneous

- Avoid using *len(x)* to check if x is empty

  This cases are using *len()* to check if collection has items. As collections have a boolean representation too, directly check for true / false. And fix the wrong mock in its unit test.

- Fix install_rally.sh to get it to work on MacOSX

  On MacOSX, *mktemp* requires being passed a template. This change modifies the calls to *mktemp* to explicitly pass a template so that the code works on both MacOSX and linux.

- Use new-style Python classes

  There are some classes in the code that didn't inherited from nothing and this is an old-style classes. A "New Class" is the recommended way to create a class in modern Python.A "New Class" should always inherit from *object* or another new-style class.

  Hacking rule added as well.

- Make Rally cope with unversioned keystone URL

  With the change, the client version that's returned is now determined by the keystoneclient library itself based on whether you supply a URL with a version in it or not.

- Fix rally-mos job to work with mos-8.0

  Also remove hardcoded values for some other jobs.

- Add name() to ResourceManager

  This will allow us to perform cleanup based on the name.

- Add task_id argument to name_matches_object

  This will be used to ensure that we are only deleting resources for a particular Rally task.

- Extend api.Task.get_detailed

  Extend api.Task.get_detailed with ability to return task data as dict with extended results.

Bug fixes **The most critical fixed bugs are**:

- #1547624: Wrong configuration for baremetal(ironic) tempest tests
- #1536800: openrc values are not quoted

  The openrc file created after rally deployment –fromenv did not quote the values for environment variables that will be exported.

- #1509027: Heat delete_stack never exits if status is DELETE_FAILED
- #1540545: Refactored atomic action in authenticate scenario
- #1469897: Incompatible with Keystone v3 argument in service create scenario
- #1550262: Different results in `rally task detailed`, `rally task report`

  and `rally task status` commands.

- #1553024: Backward incompatible change in neutronclient(release 4.1.0) broke Tempest config generation to support latest neutronclient.

Documentation

- Add documentation for DB migration

  Changes:

  - Add descriptive docstrings for plugins based on OutputChart
  - Register these plugins in doc/ext/plugin_reference.py so plugin/plugin_reference.htmlwill have a documentation chapter based on added docstrings

- Documentation tox fix

  Added information about debugging unit test with tox. Replace 3 references to py26 with py34 to reflect current rally tox configuration.

- Change structure of rally plugin and plugin references page
- Update the scenario development, runner and context sections
- The design of 'Rally Plugins Reference' page was improved (see **'http://docs.openstack.org/developer/rally/plugin/plugin_reference.html'_** with new design)
- New page was added - CLI references

  'http://docs.openstack.org/developer/rally/cli/cli_reference.html'_

Thanks

To Everybody!

Rally v0.3.2

Information

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Dev cycle	**25 days**
Release date	**3/14/2016**

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Thanks

To Everybody!

1.13.2 Rally v0.3.2

Information

Commits	**55**
Dev cycle	**25 days**
Release date	**3/14/2016**

Details

This release, as well as all previous ones, includes a lot of internal and external changes. Most important of them are listed below.

CLI changes

- **Warning:** [Modified] Option '–tempest-config' for 'rally verify

  reinstall' command was deprecated for removal.

- **Warning:** [Removed] Option *–system-wide-install* was removed from

  rally verify commands in favor of *–system-wide* option.

- **Warning:** [Modified] Step of installation of Tempest during execution of

  the *rally verify start* command was deprecated and will be removed in the future. Please use *rally verify install* instead.

- Rework commands.task.TaskCommands.detailed. Now output of the command contains the same results as in HTML report.

Rally Verify

- Re-run failed Tempest tests

  Add the ability to re-run the tempest tests that failed in the last test execution. Sometimes Tempest tests fail due to a special temporary condition in the environment, in such cases it is very useful to be able to re-execute those tests.

  Running the following command will re-run all the test that failed during the last test execution regardless of what test suite was run.

  ```
  rally verify start --failing
  ```

Specs & Feature Requests

- [Spec][Introduced] Refactoring scenario utils

  'https://github.com/openstack/rally/blob/master/doc/specs/in-progress /refactor_scenario_utils.rst'_

- [Spec] Deployment unification

Plugins

- **Scenarios**:
- [updated] Fix flavor for cloudera manager

  Cloudera manager need master-node flavor

- [added] Expand Nova API benchmark in Rally

  Add support for listing nova hosts, agents, availability-zones and aggregates.

- [updated] Make sure VolumeGenerator uses the api version info while cleanup
- Designate V2 - Add recordset scenarios

  Add create_and_(list|delete)_recordset scenarios Remove the test also that checks the allowed methods, this is in order for us to be able to have a private method _walk_pages that will do fetching of pages for us vs attempting to fetch 1 giant list at once.

- unify *_kwargs name in scenarios

  When running a scenario, *kwargs* is used as default key-word arguments. But in some scenarios, there are more and one services being called, and we use xxx_kwargs for this case.

  However, some xxx_kwargs are not unifed for same usage[0]. Unifying these could avoid midleading for end users. Another improvement is to add xxx_kwargs with empty settings for scenario config files.

  [0] http://paste.openstack.org/show/489505/

- **Warning:** Deprecated arguments 'script' and 'interpreter' were removed in favor of 'command' argument.

  VM task scenarios executes a script with a interpreter provided through a formatted argument called 'command' which expects the remote_path or local_path of the script and optionally an interpreter with which the script has to be executed.

Miscellaneous

- Avoid using *len(x)* to check if x is empty

  This cases are using *len()* to check if collection has items. As collections have a boolean representation too, directly check for true / false. And fix the wrong mock in its unit test.

- Fix install_rally.sh to get it to work on MacOSX

  On MacOSX, *mktemp* requires being passed a template. This change modifies the calls to *mktemp* to explicitly pass a template so that the code works on both MacOSX and linux.

- Use new-style Python classes

  There are some classes in the code that didn't inherited from nothing and this is an old-style classes. A "New Class" is the recommended way to create a class in modern Python.A "New Class" should always inherit from *object* or another new-style class.

  Hacking rule added as well.

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