

Refstack Testing

Tempest Related Issues

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Table of contents

[Introduction](#)

[Multi-Network](#)

[Image Name Unicode Encoding Error](#)

[Tests Required SSH to VM](#)

[Tests Skipped with Tempest Identified Bugs](#)

[Set VM Admin Password Test](#)

[Tempest multiple test cases associated with same UUID](#)

[Password is not strong enough failures](#)

Introduction

There are two major components in the Refstack project, namely Refstack-client and the Refstack web site. Refstack-client is a test tool that runs Tempest against a target OpenStack deployment. It then processes and uploads the test results to the Refstack web site. Private cloud builders can install Refstack-client and run the tests internally for clouds that do not have publicly accessible API endpoints. On the other hand, the Refstack web site is a community portal that will store test results, analyze and report the compliance status based on the core and "must pass" criteria which are defined by the DefCore committee.

Refstack: <https://github.com/stackforge/refstack/>

Refstack-client: <https://github.com/stackforge/refstack-client>

Thus far, Tempest is mainly used to test devstack clouds, as vendors start to use Refstack-client to test against their non-devstack clouds, we expect that Refstack-client tests will expose many Tempest related issues.

In this document, we attempt to document a list of Tempest related shortcomings that are discovered during Refstack-client tests.

Multi-Networks

Tempest does not specify network when creating server. Most of the core tests will fail if any tenant in a cloud has access more than one network. This is an issue that Tempest needs to fix because when testing a public cloud we would not be able to arbitrary add or remove networks. This is a very complicated problem. There is a bug open regarding this issue since November 11, 2013 (<https://bugs.launchpad.net/tempest/+bug/1250866>) with many unsuccessful patches that were never got merged.

Impact:

Most of public clouds.

Status:

1. 2015/01/19: Catherine had added a comment in <https://bugs.launchpad.net/tempest/+bug/1250866> that the Refstack team will take over working on a patch for this issue.
2. Currently, we have some working code but still need to review and test on the isolation path before submitting to Tempest.
3. Simeon Monov from IBM is working on the bug (<https://bugs.launchpad.net/tempest/+bug/1250866>)
4. [git-harry](#) has taken over this bug from Simeon Monov with a new patch submitted <https://review.openstack.org/159776>
5. Possible related upstream QA Team Fix in Progress.
 - a. spec: <http://specs.openstack.org/openstack/qa-specs/specs/test-accounts-continued.ht>

- [ml](http://specs.openstack.org/openstack/ga-specs/specs/ssh-auth-strategy.html)
<http://specs.openstack.org/openstack/ga-specs/specs/ssh-auth-strategy.html>
- b. wip: <https://review.openstack.org/#/c/143159/>
 - c. Info: <https://etherpad.openstack.org/p/tempest-specify-network-for-servers>
6. <https://review.openstack.org/159776> was merged on 2015-03-27.
7. As of 2015-04-30, the multi-network failures are still observed with the test cases where tenant isolation are needed and configured with `force_tenant_isolation = true`.

Image Name Unicode Encoding Error

Tempest will not be able to test clouds that have Chinese (and may be others) characters as part of the image names. The failure is because testr is not able to list the test case names due to Unicode encode error.

Impact:

Potentially some non-English based clouds.

Status:

1. Open. Need more investigation.

Details:

Error message:

```
(.venv)xxx@jpx-x-x-x:~/refstack-client-20150123/refstack-client/.tempest$ tools/with_venv.sh testr list-tests
running=OS_STDOUT_CAPTURE=${OS_STDOUT_CAPTURE:-1} \
OS_STDERR_CAPTURE=${OS_STDERR_CAPTURE:-1} \
OS_TEST_TIMEOUT=${OS_TEST_TIMEOUT:-500} \
OS_TEST_LOCK_PATH=${OS_TEST_LOCK_PATH:-${TMPDIR:-/tmp}} \
${PYTHON:-python} -m subunit.run discover -t ./ ${OS_TEST_PATH:-./tempest/test_discover} --list
--- import errors ---
Failed to call load_tests:
Traceback (most recent call last):
  File
"/home/xxx/refstack-client-20150123/refstack-client/.tempest/.venv/local/lib/python2.7/site-packages/unittest2/loader.py",
line 136, in loadTestsFromModule
    return load_tests(self, tests, pattern)
  File "/home/xxx/refstack-client-20150123/refstack-client/.tempest/tempest/scenario/utils.py", line 158, in
load_tests_input_scenario_utils
    scenario_image = scenario_utils.scenario_images
  File "/home/xxx/refstack-client-20150123/refstack-client/.tempest/tempest/scenario/utils.py", line 127, in scenario_images
    str(i['name']))
UnicodeEncodeError: 'ascii' codec can't encode characters in position 0-5: ordinal not in range(128)
Non-zero exit code (2) from test listingIntroduction
```

Tests Required SSH to VM (Fixed)

Tempest config provides a configuration parameter named “network_for_ssh” to specify the network that should be used to ssh to the VM. This parameter would be ignored if the “use_floatingip_for_ssh” flag is set to true (default Tempest setting). We found that in many non-devstack clouds where the use_floatingip_for_ssh is set to true, most of the test cases that require ssh to the VM would fail for ssh network connection timeout error. This is because of the following reasons:

1. Most of the test cases that perform ssh to the VM uses the “network_for_ssh” network without checking the “use_floatingip_for_ssh” flag.
2. In many cases, Tempest test cases create the test servers using a private network with no floating IP associated. As an external tester, the refstack-client server has no access to the private networks (especially for GRE network) of the clouds. Consequently, many tests that require ssh to the VM would fail. This is in contrast to the all-in-one devstack environment where Tempest may have access to the private network,

The following Havana **core (must-pass)** tests always fail if the refstack server has no network connectivity to the VM via its private network.

1. tempest.api.compute.servers.test_create_server.ServersTestManualDisk.test_verify_created_server_vcpus
2. tempest.api.compute.servers.test_create_server.ServersTestManualDisk.test_host_name_is_same_as_server_name
3. tempest.api.compute.servers.test_create_server.ServersTestJSON.test_verify_created_server_vcpus
4. tempest.api.compute.servers.test_create_server.ServersTestJSON.test_host_name_is_same_as_server_name
5. tempest.api.compute.volumes.test_attach_volume.AttachVolumeTestJSON.test_attach_detach_volume

Impact:

Most of public clouds.

Status:

1. Recommend to remove those tests from the must-pass test list. Currently, those tests are skipped in Refstack test by setting the “compute.run_ssh” flag to false (which is default tempest setting) in the tempest.conf file.
2. Sizing effort needed to fix this in Tempest
3. DefCore had decided to flag those tests
4. 2015-07-22. Fixed with Tempest <https://review.openstack.org/#/c/165504/>. Refstack confirmed fix with <https://review.openstack.org/#/c/203077/>

Details:

Only this test case perform checking on the use_floatingip flag before using the network_for_ssh network:

1. `tempest/scenario/test_volume_boot_pattern.py`

Test cases use the `network_for_ssh` network value without checking the `use_floatingip` flag:

1. `tempest/common/utils/linux/remote_client.py`:
2. `tempest/scenario/orchestration/test_server_cfn_init.py`
3. `tempest/scenario/manager.py`

Tests Skipped with Tempest Identified Bugs

Tempest skips some of the tests with previously identified bugs. Those skips are hardcoded in Tempest code with bug numbers as skip reason.

Current list of those tests are:

1. `tempest.api.object_storage.test_container_sync.ContainerSyncTest.test_container_synchronization (bug='1317133')`
2. `tempest.api.compute.servers.test_list_server_filters.ListServerFiltersTestJSON.test_list_servers_filtered_by_ip_regex (bug="1182883")` (fixed by <https://review.openstack.org/#/c/188511/>)
3. `tempest.api.compute.servers.test_server_actions.ServerActionsTestJSON.test_reboot_server_soft (bug="1014647")`

Impact:

All clouds.

Status:

1. Recommend to remove those tests from the must-pass test list.
2. **DefCore had decided to flag these tests.**
3. Test number 2 above was fixed with <https://review.openstack.org/#/c/188511/>. DefCore un-flagged this test with <https://review.openstack.org/#/c/189931/> (20150708)

Set VM Admin Password Test

Currently not all hypervisors (including libvirt) have implemented the change administrator password option of the `"/v2/{tenant_id}/servers/{server_id}/action"` API. As such, the following test will fail for "server fault" error.

1. `tempest.api.compute.servers.test_server_actions.ServerActionsTestJSON.test_change_server_password`

Impact:

All clouds (Only XenServer implemented this option
http://docs.openstack.org/developer/nova/support-matrix.html#operation_set_admin_passw)

Status:

1. Recommend to remove this test from the must-pass test list. Currently, Refstack test skips this test by setting the “compute-feature-enabled.change_password” flag to false (which is the default Tempest setting) in the tempest.conf file.
2. DefCore had decided to flag these tests.

Tempest multiple test cases associated with same UUID

Examining the newly implemented test UUIDs, we found that there are 496 test cases that are associated with same UUIDs. While the test methods themselves are uniquely identified, these test methods can be re-used in different classes (class inheritance) and thus results in different code paths and test cases.

Example 1: A single UUID is associated to multiple test cases for different API versions.

```
tempest.api.volume.admin.test_volume_types_negative.VolumeTypesNegativeV2Test.test_create_with_nonexistent_volume_type[gate,id-b48c98f2-e662-4885-9b71-032256906314]
tempest.api.volume.admin.test_volume_types_negative.VolumeTypesNegativeV1Test.test_create_with_nonexistent_volume_type[gate,id-b48c98f2-e662-4885-9b71-032256906314]
```

Example 2: A single UUID associates to multiple test cases for different features, protocols (IPv4 vs IPv6)

```
tempest.api.network.test_networks.NetworksTestJSON.test_list_networks_fields[gate,id-6ae6d24f-9194-4869-9c85-c313cb20e080,smoke]
tempest.api.network.test_networks.NetworksIPv6TestJSON.test_list_networks_fields[gate,id-6ae6d24f-9194-4869-9c85-c313cb20e080,smoke]
tempest.api.network.test_networks.NetworksIPv6TestAttrs.test_list_networks_fields[gate,id-6ae6d24f-9194-4869-9c85-c313cb20e080,smoke]
```

The current test UUIDs are good for test tracking purposes. However, since DefCore plan to define the must-pass tests using test UUIDs, it is not possible to differentiate the test results based on UUID alone.

A complete list of the 496 test cases can be found in

<https://docs.google.com/spreadsheets/d/1mXeDNsJJJI93juzlNG9ccxSdO9ywqlM-E2EJdvNImk/edit#gid=1273407686>

Impact:

1. DefCore will need to use a secondary identifier besides UUID. If a second identifier is used then DefCore will need to use a certain Tempest tag release or SHA build to ensure stability of the identifiers.
2. Refstack still have to test with the same tag release or SHA build as used by DefCore to ensure that test cases identifier matched with DefCore must-pass test identifier.

Status:

1. Tempest bug: <https://bugs.launchpad.net/tempest/+bug/1433700>

2. Patch: <https://review.openstack.org/#/c/165921/>

Password is not strong enough failures (Fixed)

Many tests that involve creating users with default passwords would fail in OpenStack environments that have implemented more strengthen password rules.

Examples of Tempest default passwords are: "password", pass_1234567.. (created with `data_utils.rand_name('pass_')` ... These passwords will fail in environments that require the first character of the password must be a capitalized letter.

Impact:

Potentially public clouds that have strengthen password rules.

Status:

1. Tempest bugs opened <https://bugs.launchpad.net/tempest/+bug/1448217>
2. 201506-03 <https://review.openstack.org/#/c/178546/> merged
3. <https://review.openstack.org/#/c/178561/> (should abandon)

Details:

Error message:

Traceback (most recent call last):

=====

FAIL: setUpClass (tempest.api.compute.admin.test_quotas.QuotasAdminTestJSON)

Traceback (most recent call last):

testtools.testresult.real._StringException: Traceback (most recent call last):

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/test.py", line 256, in setUpClass
cls.setup_credentials()

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/api/compute/base.py", line 362, in
setup_credentials

super(BaseComputeAdminTest, cls).setup_credentials()

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/api/compute/base.py", line 55, in
setup_credentials

cls.os = cls.get_client_manager()

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/test.py", line 397, in get_client_manager
creds = cls.isolated_creds.get_primary_creds()

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/common/isolated_creds.py", line 324, in
get_primary_creds

return self.get_credentials('primary')

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/common/isolated_creds.py", line 306, in
get_credentials

credentials = self._create_creds(admin=is_admin)

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/common/isolated_creds.py", line 198, in
_create_creds

username, self.password, project, email)

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/common/isolated_creds.py", line 47, in
create_user

username, password, project['id'], email)

File "/home/ibm/refstack-client-20150420-master/refstack-client/.tempest/tempest/services/identity/v2/json/identity_client.py", line 158, in create_user

```
    resp, body = self.post('users', post_body)
```

File

"/home/ibm/refstack-client-20150420-sha/refstack-client/.tempest/.venv/local/lib/python2.7/site-packages/tempest_lib/common/rest_client.py", line 252, in post

```
    return self.request('POST', url, extra_headers, headers, body)
```

File

"/home/ibm/refstack-client-20150420-sha/refstack-client/.tempest/.venv/local/lib/python2.7/site-packages/tempest_lib/common/rest_client.py", line 629, in request

```
    resp, resp_body)
```

File

"/home/ibm/refstack-client-20150420-sha/refstack-client/.tempest/.venv/local/lib/python2.7/site-packages/tempest_lib/common/rest_client.py", line 680, in _error_checker

```
    raise exceptions.BadRequest(resp_body)
```

tempest_lib.exceptions.BadRequest: Bad request

Details: {'message': 'u'Password is not strong enough', 'code': 400, 'title': 'u'Bad Request'}