
OPNFV Functest Documentation

Release master

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Contents

1	functest	3
1.1	functest package	3
2	Indices and tables	35
	Python Module Index	37

Contents:

functest

1.1 functest package

1.1.1 Subpackages

functest.ci package

Submodules

functest.ci.check_deployment module

OpenStack deployment checker

Verifies that:

- Credentials file is given and contains the right information
- OpenStack endpoints are reachable

class `functest.ci.check_deployment.CheckDeployment(rc_file='/var/lib/xtesting/conf/env_file')`
Bases: object

Check deployment class.

check_all()

Calls all the class functions and returns 0 if all of them succeed. This is the method called by CLI

check_auth_endpoint()

Verifies connectivity to the OS_AUTH_URL given in the RC file and get auth token

check_ext_net()

checks if external network exists

check_glance()

checks that a simple glance operation works

```
check_neutron()
    checks that a simple neutron operation works

check_nova()
    checks that a simple nova operation works

check_public_endpoint()
    Gets the public endpoint and verifies connectivity to it

check_rc()
    Check if RC file exists and contains OS_AUTH_URL

check_service_endpoint(service)
    Verifies connectivity to a given openstack service

functest.ci.check_deployment.get_auth_token(os_creds)
    Get auth token

functest.ci.check_deployment.main()
    Entry point

functest.ci.check_deployment.verify_connectivity(endpoint)
    Returns true if an hostname/port is reachable
```

Module contents

functest.core package

Submodules

functest.core.cloudify module

Cloudify testcase implementation.

```
class functest.core.cloudify.Cloudify(**kwargs)
    Bases: functest.core.singlevm.SingleVm2

    Cloudify Orchestrator Case.

    cloudify_archive = '/home/opnfv/functest/images/cloudify-docker-manager-community-19.0'
    cloudify_container = 'docker-cfy-manager:latest'
    create_server_timeout = 600

    execute()
        Deploy Cloudify Manager.

    filename = '/home/opnfv/functest/images/ubuntu-16.04-server-cloudimg-amd64-disk1.img'
    flavor_disk = 40
    flavor_ram = 4096
    flavor_vcpus = 2
    ports = [80, 443, 5671, 53333]

    prepare()
        Create the security group and the keypair

        It can be overridden to set other rules according to the services running in the VM
```

Raises: Exception on error

```
ssh_connect_loops = 12
username = 'ubuntu'

functest.core.cloudify.get_execution_id(client, deployment_id)
    Get the execution id of a env preparation.

    network, security group, fip, VM creation

functest.core.cloudify.wait_for_execution(client, execution, logger, timeout=3600)
    Wait for a workflow execution on Cloudify Manager.
```

functest.core.singlevm module

Ease deploying a single VM reachable via ssh

It offers a simple way to create all tenant network resources + a VM for advanced testcases (e.g. deploying an orchestrator).

```
class functest.core.singlevm.SingleVm1(**kwargs)
```

Bases: *functest.core.singlevm.VmReady1*

Deploy a single VM reachable via ssh (scenario1)

It inherits from TenantNetwork1 which creates all network resources and completes it by booting a VM attached to that network.

It ensures that all testcases inheriting from SingleVm1 could work without specific configurations (or at least read the same config data).

```
clean()
```

Clean the resources.

It can be overriden if resources must be deleted after running the test case.

```
connect(vm1)
```

Connect to a virtual machine via ssh

It first adds a floating ip to the virtual machine and then establishes the ssh connection.

Returns: - (fip, ssh) - None on error

```
create_floating_ip_timeout = 120
```

```
execute()
```

Say hello world via ssh

It can be overriden to execute any command.

Returns: echo exit codes

```
prepare()
```

Create the security group and the keypair

It can be overriden to set other rules according to the services running in the VM

Raises: Exception on error

```
run(**kwargs)
```

Boot the new VM

Here are the main actions: - add a new ssh key - boot the VM - create the security group - execute the right command over ssh

Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

```
ssh_connect_loops = 6
ssh_connect_timeout = 1
username = 'cirros'

class functest.core.singlevm.SingleVm2(**kwargs)
Bases: functest.core.singlevm.SingleVm1
```

Deploy a single VM reachable via ssh (scenario2)

It creates new user/project before creating and configuring all tenant network resources and vms required by advanced testcases.

It ensures that all testcases inheriting from SingleVm2 could work without specific configurations (or at least read the same config data).

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

```
class functest.core.singlevm.VmReady1(**kwargs)
Bases: functest.core.tenantnetwork.TenantNetwork1
```

Prepare a single VM (scenario1)

It inherits from TenantNetwork1 which creates all network resources and prepares a future VM attached to that network.

It ensures that all testcases inheriting from SingleVm1 could work without specific configurations (or at least read the same config data).

```
boot_vm(name=None, **kwargs)
```

Boot the virtual machine

It allows booting multiple machines for the child testcases. It forces the same configuration for all subtest-cases.

Returns: vm

Raises: exception on error

```
check_regex_in_console(name, regex='login:', loop=1)
```

Wait for specific message in console

Returns: True or False on errors

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

```
create_flavor(name=None)
```

Create flavor

It allows creating multiple flavors for the child testcases. It forces the same configuration for all subtest-cases.

Returns: flavor

Raises: exception on error

```
create_flavor_alt (name=None)
```

Create flavor

It allows creating multiple alt flavors for the child testcases. It forces the same configuration for all sub-testcases.

Returns: flavor

Raises: exception on error

```
create_server_timeout = 180
```

```
extra_alt_properties = {}
```

```
extra_properties = {}
```

```
filename = '/home/opnfv/functest/images/cirros-0.4.0-x86_64-disk.img'
```

```
filename_alt = '/home/opnfv/functest/images/cirros-0.4.0-x86_64-disk.img'
```

```
flavor_alt_disk = 1
```

```
flavor_alt_extra_specs = {}
```

```
flavor_alt_ram = 1024
```

```
flavor_alt_vcpus = 1
```

```
flavor_disk = 1
```

```
flavor_extra_specs = {}
```

```
flavor_ram = 512
```

```
flavor_vcpus = 1
```

```
image_alt_format = 'qcow2'
```

```
image_format = 'qcow2'
```

```
publish_image (name=None)
```

Publish image

It allows publishing multiple images for the child testcases. It forces the same configuration for all sub-testcases.

Returns: image

Raises: exception on error

```
publish_image_alt (name=None)
```

Publish alternative image

It allows publishing multiple images for the child testcases. It forces the same configuration for all sub-testcases.

Returns: image

Raises: exception on error

```
run (**kwargs)
```

Boot the new VM

Here are the main actions: - publish the image - create the flavor

Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

```
visibility = 'private'
```

```
class functest.core.singlevm.VmReady2 (**kwargs)
Bases: functest.core.singlevm.VmReady1
```

Deploy a single VM reachable via ssh (scenario2)

It creates new user/project before creating and configuring all tenant network resources, flavors, images, etc. required by advanced testcases.

It ensures that all testcases inheriting from SingleVm2 could work without specific configurations (or at least read the same config data).

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

functest.core.tenantnetwork module

Ease deploying tenant networks

It offers a simple way to create all tenant network resources required by a testcase (including all Functest ones):

- TenantNetwork1 selects the user and the project set as env vars
- TenantNetwork2 creates a user and project to isolate the same resources

This classes could be reused by more complexed scenarios (Single VM)

```
class functest.core.tenantnetwork.NewProject (cloud, case_name, guid)
```

Bases: object

Ease creating new projects/users

```
clean()
```

Remove projects/users

```
create()
```

Create projects/users

```
class functest.core.tenantnetwork.TenantNetwork1 (**kwargs)
```

Bases: xtesting.core.testcase.TestCase

Create a tenant network (scenario1)

It creates and configures all tenant network resources required by advanced testcases (subnet, network and router).

It ensures that all testcases inheriting from TenantNetwork1 could work without network specific configurations (or at least read the same config data).

```
cidr = '192.168.120.0/24'
```

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

```
create_network_resources()
```

Create all tenant network resources

It creates a router which gateway is the external network detected. The new subnet is attached to that router.

Raises: exception on error

```
static get_default_role(cloud, member='Member')
    Get the default role

    It also tests the role in lowercase to avoid possible conflicts.

static get_external_network(cloud)
    Return the configured external network name or the first retrieved external network name

static get_public_auth_url(cloud)
    Get Keystone public endpoint

run(**kwargs)
    Run the test case.

    It allows running TestCase and getting its execution status.

    The subclasses must override the default implementation which is false on purpose.

    The new implementation must set the following attributes to push the results to DB:
        • result,
        • start_time,
        • stop_time.
```

Args: *kwargs*: Arbitrary keyword arguments.

```
shared_network = False

class functest.core.tenantnetwork.TenantNetwork2(**kwargs)
    Bases: functest.core.tenantnetwork.TenantNetwork1

    Create a tenant network (scenario2)

    It creates new user/project before creating and configuring all tenant network resources required by a testcase
    (subnet, network and router).

    It ensures that all testcases inheriting from TenantNetwork2 could work without network specific configurations
    (or at least read the same config data).

    clean()
        Clean the resources.

        It can be overriden if resources must be deleted after running the test case.
```

Module contents

functest.opnfv_tests package

Subpackages

functest.opnfv_tests.openstack package

Subpackages

functest.opnfv_tests.openstack.api package

Submodules

`functest.opnfv_tests.openstack.api.connection_check module`

Verify the connection to OpenStack Services

```
class functest.opnfv_tests.openstack.api.connection_check.ConnectionCheck(**kwargs)
Bases: xtesting.core testcase.TestCase

Perform simplest queries

run(**kwargs)
    Run all read operations to check connections
```

Module contents

`functest.opnfv_tests.openstack.cinder package`

Submodules

`functest.opnfv_tests.openstack.cinder.cinder_test module`

CinderCheck testcase.

```
class functest.opnfv_tests.openstack.cinder.cinder_test.CinderCheck(**kwargs)
Bases: functest.core.singlevm.SingleVm2
```

CinderCheck testcase implementation.

Class to execute the CinderCheck test using 2 Floating IPs to connect to the VMs and one data volume

```
clean()
    Clean the resources.
```

It can be overridden if resources must be deleted after running the test case.

```
execute()
    Execute CinderCheck testcase.
```

Sets up the OpenStack keypair, router, security group, and VM instance objects then validates cinder.
:return: the exit code from the super.execute() method

```
prepare()
    Create the security group and the keypair
```

It can be overridden to set other rules according to the services running in the VM

Raises: Exception on error

```
volume_timeout = 60
```

Module contents

`functest.opnfv_tests.openstack.patrole package`

Submodules

functest.opnfv_tests.openstack.patrole.patrole module

```
class functest.opnfv_tests.openstack.patrole.patrole(**kwargs)
    Bases: functest.opnfv_tests.openstack.tempest.tempest.TempestCommon

    configure(**kwargs)
        Create all openstack resources for tempest-based testcases and write tempest.conf.

    run(**kwargs)
        Boot the new VM

        Here are the main actions: - publish the image - create the flavor

        Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error
```

Module contents

functest.opnfv_tests.openstack.rally package

Submodules

functest.opnfv_tests.openstack.rally.rally module

Rally testcases implementation.

```
class functest.opnfv_tests.openstack.rally.rally.RallyBase(**kwargs)
    Bases: functest.core.singlevm.VmReady2

    Base class form Rally testcases implementation.

    BLACKLIST_FILE = '/home/docs/checkouts/readthedocs.org/user_builds/functest-api/envs/s...
    CONCURRENCY = 4
    ITERATIONS_AMOUNT = 10
    RALLY_AARCH64_PATCH_PATH = '/home/docs/checkouts/readthedocs.org/user_builds/functest-...
    RALLY_CONF_PATH = '/etc/rally/rally.conf'
    RALLY_DIR = '/home/docs/checkouts/readthedocs.org/user_builds/functest-api/envs/stable...
    RALLY_SCENARIO_DIR = '/home/docs/checkouts/readthedocs.org/user_builds/functest-api/en...
    SUPPORT_DIR = '/home/docs/checkouts/readthedocs.org/user_builds/functest-api/envs/stab...
    TASK_DIR = '/home/opnfv/functest/data/rally/task'
    TEMPLATE_DIR = '/home/docs/checkouts/readthedocs.org/user_builds/functest-api/envs/sta...
    TEMP_DIR = '/home/opnfv/functest/data/rally/task/var'
    TENANTS_AMOUNT = 3
    TESTS = ['authenticate', 'glance', 'cinder', 'gnocchi', 'heat', 'keystone', 'neutron',...
    USERS_AMOUNT = 2
    VOLUME_SERVICE_TYPE = 'volumev3'
    VOLUME_VERSION = 3
```

```
apply_blacklist(case_file_name, result_file_name)
    Apply blacklist.

clean()
    Cleanup of OpenStack resources. Should be called on completion.

static clean_rally_conf(rally_conf='/etc/rally/rally.conf')
    Clean Rally config

static create_rally_deployment(environ=None)
    Create new rally deployment

excl_func()
    Exclude functionalities.

static excl_scenario()
    Exclude scenario.

static export_task(file_name, export_type='html')
    Export all task results (e.g. html or xunit report)

    Raises: subprocess.CalledProcessError: if Rally doesn't return 0

    Returns: None

static file_is_empty(file_name)
    Determine is a file is empty.

static get_task_id(cmd_raw)
    Get task id from command rally result.

    Parameters cmd_raw -
    Returns task_id as string

static get_verifier_deployment_id()
    Returns deployment id for active Rally deployment

static in_iterable_re(needle, haystack)
    Check if given needle is in the iterable haystack, using regex.

    Parameters
        • needle – string to be matched
        • haystack – iterable of strings (optionally regex patterns)

    Returns True if needle is eqial to any of the elements in haystack, or if a nonempty regex pattern
    in haystack is found in needle.

is_successful()
    The overall result of the test.

prepare_run(**kwargs)
    Prepare resources needed by test scenarios.

prepare_task(test_name)
    Prepare resources for test run.

run(**kwargs)
    Run testcase.

run_task(test_name)
    Run a task.
```

```
run_tests (**kwargs)
    Execute tests.

shared_network = True

static task_succeed(json_raw)
    Parse JSON from rally JSON results.

    Parameters json_raw -

    Returns Bool

static update_keystone_default_role(rally_conf='/etc/rally/rally.conf')
    Set keystone_default_role in rally.conf

static verify_report(file_name, uuid, export_type='html')
    Generate the verifier report (e.g. html or xunit report)

    Raises: subprocess.CalledProcessError: if Rally doesn't return 0

    Returns: None

visibility = 'public'

class functest.opnfv_tests.openstack.rally.rally.RallyFull(**kwargs)
    Bases: functest.opnfv_tests.openstack.rally.rally.RallyBase

    Rally full testcase implementation.

class functest.opnfv_tests.openstack.rally.rally.RallyJobs(**kwargs)
    Bases: functest.opnfv_tests.openstack.rally.rally.RallyBase

    Rally OpenStack CI testcase implementation.

TESTS = ['neutron']

apply_blacklist(case_file_name, result_file_name)
    Apply blacklist.

clean()
    Cleanup of OpenStack resources. Should be called on completion.

prepare_run(**kwargs)
    Create resources needed by test scenarios.

prepare_task(test_name)
    Prepare resources for test run.

class functest.opnfv_tests.openstack.rally.rally.RallySanity(**kwargs)
    Bases: functest.opnfv_tests.openstack.rally.rally.RallyBase

    Rally sanity testcase implementation.
```

Module contents

[functest.opnfv_tests.openstack.refstack package](#)

Submodules

[functest.opnfv_tests.openstack.refstack.refstack module](#)

Refstack testcase implementation.

```
class functest.opnfv_tests.openstack.refstack.refstack(**kwargs)
Bases: functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
Refstack testcase implementation class.

defcorelist = '/home/opnfv/functest/data/refstack/defcore.txt'
generate_test_list(**kwargs)
    Generate test list based on the test mode.
```

Module contents

functest.opnfv_tests.openstack.shaker package

Submodules

functest.opnfv_tests.openstack.shaker.shaker module

Shaker wraps around popular system network testing tools like iperf, iperf3 and netperf (with help of flent). Shaker is able to deploy OpenStack instances and networks in different topologies. Shaker scenario specifies the deployment and list of tests to execute.

```
class functest.opnfv_tests.openstack.shaker.shaker.Shaker(**kwargs)
Bases: functest.core.singlevm.SingleVm2
```

Run shaker full+perf l2 and l3

```
check_requirements()
```

Check the requirements of the test case.

It can be overridden on purpose.

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

```
create_server_timeout = 300
```

```
execute()
```

Returns:

- 0 if success
- 1 on operation error

```
filename = '/home/opnfv/functest/images/shaker-image.qcow2'
```

```
flavor_disk = 3
```

```
flavor_ram = 512
```

```
flavor_vcpus = 1
```

```
port = 9000
```

```
prepare()
```

Create the security group and the keypair

It can be overridden to set other rules according to the services running in the VM

Raises: Exception on error

```
shaker_timeout = '3600'  
ssh_connect_loops = 12  
username = 'ubuntu'
```

Module contents

functest.opnfv_tests.openstack.snap package

Submodules

functest.opnfv_tests.openstack.snap.api_check module

api_check test case implementation

```
class functest.opnfv_tests.openstack.snap.api_check.ApiCheck(**kwargs)  
    Bases: functest.opnfv_tests.openstack.snap.snap_test_runner.  
    SnapsTestRunner
```

This test executes the Python Tests included with the SNAPS libraries that exercise many of the OpenStack APIs within Keystone, Glance, Neutron, and Nova

```
run(**kwargs)  
    Builds the test suite then calls super.run() :param kwargs: the arguments to pass on :return:
```

functest.opnfv_tests.openstack.snap.health_check module

snap_health_check test case implementation

```
class functest.opnfv_tests.openstack.snap.health_check.HealthCheck(**kwargs)  
    Bases: functest.opnfv_tests.openstack.snap.snap_test_runner.  
    SnapsTestRunner
```

This test executes the SNAPS Python Test case SimpleHealthCheck which creates a VM with a single port with an IPv4 address that is assigned by DHCP. This test then validates the expected IP with the actual

```
run(**kwargs)  
    Builds the test suite then calls super.run() :param kwargs: the arguments to pass on :return:
```

functest.opnfv_tests.openstack.snap.smoke module

snap_smoke test case implementation

```
class functest.opnfv_tests.openstack.snap.smoke.SnapSmoke(**kwargs)  
    Bases: functest.opnfv_tests.openstack.snap.snap_test_runner.  
    SnapsTestRunner
```

This test executes the Python Tests included with the SNAPS libraries that exercise many of the OpenStack APIs within Keystone, Glance, Neutron, and Nova

```
run(**kwargs)  
    Builds the test suite then calls super.run() :param kwargs: the arguments to pass on :return:
```

functest.opnfv_tests.openstack.snaps.snaps_suite_builder module

Snaps test suite including openstack client tests, api tests and integration tests. add_openstack_client_tests: for connection_check add_openstack_api_tests: for api_check add_openstack_integration_tests: for snaps_smoke

```
functest.opnfv_tests.openstack.snaps.snaps_suite_builder.add_openstack_api_tests(suite,
                                os_creds,
                                ext_net_name
                                use_keystone=
                                im-
                                age_metadata
                                log_level=20)
```

Adds tests written to exercise all existing OpenStack APIs

Parameters

- **suite** – the unittest.TestSuite object to which to add the tests
- **os_creds** – Instance of OSCreds that holds the credentials required by OpenStack
- **ext_net_name** – the name of an external network on the cloud under test
- **use_keystone** – when True, tests requiring direct access to Keystone are added as these need to be running on a host that has access to the cloud's private network
- **image_metadata** – dict() object containing metadata for creating an image with custom config (see YAML files in examples/image-metadata)
- **log_level** – the logging level

Returns None as the tests will be adding to the ‘suite’ parameter object

```
functest.opnfv_tests.openstack.snaps.snaps_suite_builder.add_openstack_client_tests(suite,
                                os_creds,
                                ext_net_n
                                use_keyst
                                log_level=
```

Adds tests written to exercise OpenStack client retrieval

Parameters

- **suite** – the unittest.TestSuite object to which to add the tests
- **os_creds** – and instance of OSCreds that holds the credentials required by OpenStack
- **ext_net_name** – the name of an external network on the cloud under test
- **use_keystone** – when True, tests requiring direct access to Keystone are added as these need to be running on a host that has access to the cloud's private network
- **log_level** – the logging level

Returns None as the tests will be adding to the ‘suite’ parameter object

```
functest.opnfv_tests.openstack snaps.suite_builder.add_openstack_integration_tests(su
os
ex
us
fl
vo
im
ag
us
ne
co
lo
```

Adds tests written to exercise all long-running OpenStack integration tests meaning they will be creating VM instances and potentially performing some SSH functions through floating IPs

Parameters

- **suite** – the unittest.TestSuite object to which to add the tests
- **os_creds** – and instance of OSCreds that holds the credentials required by OpenStack
- **ext_net_name** – the name of an external network on the cloud under test
- **use_keystone** – when True, tests requiring direct access to Keystone are added as these need to be running on a host that has access to the cloud's private network
- **image_metadata** – dict() object containing metadata for creating an image with custom config (see YAML files in examples/image-metadata)
- **flavor_metadata** – dict() object containing the metadata required by your flavor based on your configuration: (i.e. {'hw:mem_page_size': 'large'})
- **use_floating_ips** – when true, all tests requiring Floating IPs will be added to the suite
- **netconf_override** – dict() containing the reconfigured network_type, physical_network and segmentation_id
- **log_level** – the logging level

Returns None as the tests will be adding to the ‘suite’ parameter object

functest.opnfv_tests.openstack.snap.snap_test_runner module

configuration params to run snaps tests

```
class functest.opnfv_tests.openstack.snap.snap_test_runner.SnapTestRunner(**kwargs)
Bases: xtesting.core.unit.Suite

This test executes the SNAPS Python Tests

check_requirements()
Skip if OpenStack Rocky or newer.

clean()
Cleanup of OpenStack resources. Should be called on completion.
```

functest.opnfv_tests.openstack.snap.snap_utils module

Some common utils wrapping snaps functions

```
functest.opnfv_tests.openstack.snap.snap_utils.get_active_compute_cnt(os_creds)
    Returns the number of active compute servers :param: os_creds: an instance of snaps OSCreds object :return: the number of active compute servers
```

```
functest.opnfv_tests.openstack.snap.snap_utils.get_credentials(proxy_settings_str=None,
                                                               ssh_proxy_cmd=None,
                                                               over-
                                                               rides=None)
    Returns snaps OSCreds object instance :param: proxy_settings_str: proxy settings string <host>:<port> :param: ssh_proxy_cmd: the SSH proxy command for the environment :param overrides: dict() values to override in credentials :return: an instance of snaps OSCreds object
```

```
functest.opnfv_tests.openstack.snap.snap_utils.get_ext_net_name(os_creds)
    Returns the configured external network name or the first retrieved external network name :param: os_creds: an instance of snaps OSCreds object :return:
```

Module contents

functest.opnfv_tests.openstack.tempest package

Submodules

functest.opnfv_tests.openstack.tempest.conf_utils module

Tempest configuration utilities.

```
functest.opnfv_tests.openstack.tempest.conf_utils.CI_INSTALLER_TYPE = 'unknown'
    logging configuration
```

```
functest.opnfv_tests.openstack.tempest.conf_utils.configure_tempest_update_params(tempest_conf_im-
                                                                                 age_id=None,
                                                                                 flava_id=None,
                                                                                 com-
                                                                                 pute_cnt=1,
                                                                                 im-
                                                                                 age_alt_id=None,
                                                                                 fla-
                                                                                 vor_alt_id=None,
                                                                                 ad-
                                                                                 min_role_name=None,
                                                                                 do-
                                                                                 cidr='192.168.1.0/24',
                                                                                 main_id='devstack')
```

Add/update needed parameters into tempest.conf file

```
functest.opnfv_tests.openstack.tempest.conf_utils.configure_verifier(deployment_dir)
    Execute rally verify configure-verifier, which generates tempest.conf
```

```
functest.opnfv_tests.openstack.tempest.conf_utils.create_verifier()
    Create new verifier
```

```

functest.opnfv_tests.openstack.tempest.conf_utils.get_verifier_deployment_dir(verifier_id,
    de-
    ploy-
    ment_id)

    Returns Rally deployment directory for current verifier

functest.opnfv_tests.openstack.tempest.conf_utils.get_verifier_id()

    Returns verifier id for current Tempest

functest.opnfv_tests.openstack.tempest.conf_utils.get_verifier_repo_dir(verifier_id)

    Returns installed verifier repo directory for Tempest

functest.opnfv_tests.openstack.tempest.conf_utils.update_tempest_conf_file(conf_file,
    rcon-
    fig)

    Update defined paramters into tempest config file

```

functest.opnfv_tests.openstack.tempest.tempest module

Tempest testcases implementation.

```
class functest.opnfv_tests.openstack.tempest.tempest.TempestCommon (**kwargs)
    Bases: functest.core.singlevm.VmReady2
```

TempestCommon testcases implementation class.

```
apply_tempest_blacklist()
```

Exclude blacklisted test cases.

```
static backup_tempest_config(conf_file, res_dir)
```

Copy config file to tempest results directory

```
check_extensions()
```

Check the mandatory network extensions.

```
check_requirements()
```

Check the requirements of the test case.

It can be overriden on purpose.

```
check_services()
```

Check the mandatory services.

```
clean()
```

Cleanup all OpenStack objects. Should be called on completion.

```
static clean_rally_conf(rally_conf='/etc/rally/rally.conf')
```

Clean Rally config

```
configure(**kwargs)
```

Create all openstack resources for tempest-based testcases and write tempest.conf.

```
filename_alt = '/home/opnfv/functest/images/cirros-0.4.0-x86_64-disk.img'
```

```
generate_test_list(**kwargs)
```

Generate test list based on the test mode.

```
static get_verifier_result(verif_id)
```

Retrieve verification results.

```
is_successful()
```

The overall result of the test.

```
parse_verifier_result()
    Parse and save test results.

static read_file(filename)
    Read file and return content as a stripped list.

run(**kwargs)
    Boot the new VM

    Here are the main actions: - publish the image - create the flavor

    Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

run_verifier_tests(**kwargs)
    Execute tempest test cases.

shared_network = True

update_compute_section()
    Update compute section in tempest.conf

update_default_role(rally_conf='/etc/rally/rally.conf')
    Detect and update the default role if required

update_network_section()
    Update network section in tempest.conf

update_rally_logs(rally_conf='/etc/rally/rally.conf')
    Print rally logs in res dir

update_rally_regex(rally_conf='/etc/rally/rally.conf')
    Set image name as tempest img_name_regex

update_scenario_section()
    Update scenario section in tempest.conf

visibility = 'public'
```

Module contents

[functest.opnfv_tests.openstack.vgpu package](#)

Submodules

[functest.opnfv_tests.openstack.vgpu.vgpu module](#)

vGPU testcase implementation.

```
class functest.opnfv_tests.openstack.vgpu.vgpu.VGPU(**kwargs)
    Bases: functest.core.singleVm.SingleVm2

    OpenStack vGPU Test Case.

    create_server_timeout = 300

    execute()
        Test if the vGPU exist.

    filename = '/home/opnfv/functest/images/ubuntu-16.04-server-cloudimg-amd64-disk1.img'
    flavor_disk = 40
```

```
flavor_extra_specs = {'resources:VGPU': '1'}
flavor_ram = 4096
flavor_vcpus = 2
ssh_connect_loops = 12
username = 'ubuntu'
```

Module contents

functest.opnfv_tests.openstack.vmtplib package

Submodules

functest.opnfv_tests.openstack.vmtplib.vmtplib module

VMTPL is a small python application that will automatically perform ping connectivity, round trip time measurement (latency) and TCP/UDP throughput measurement for the following East/West flows on any OpenStack deployment:

- VM to VM same network (private fixed IP, flow #1)
- VM to VM different network using fixed IP (same as intra-tenant L3 fixed IP, flow #2)
- VM to VM different network using floating IP and NAT (same as floating IP inter-tenant L3, flow #3)

```
class functest.opnfv_tests.openstack.vmtplib.Vmtplib(**kwargs)
```

Bases: *functest.core.singlevm.VmReady2*

Class to run **Vmtplib** as an OPNFV Functest testcase

```
check_requirements()
```

Check the requirements of the test case.

It can be overridden on purpose.

```
clean()
```

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

```
create_network_resources()
```

Create router

It creates a router which gateway is the external network detected.

Raises: exception on error

```
create_server_timeout = 300
```

```
filename = '/home/opnfv/functest/images/ubuntu-14.04-server-cloudimg-amd64-disk1.img'
```

```
flavor_disk = 0
```

```
flavor_ram = 2048
```

```
flavor_vcpus = 1
```

```
generate_keys()
```

Generate Keys

Raises: Exception on error

```
run (**kwargs)
    Boot the new VM

    Here are the main actions: - publish the image - create the flavor

    Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

run_vmtcp()
    Run Vmtcp and generate charts

    Raises: Exception on error

write_config()
    Write vmtcp.conf

    Raises: Exception on error
```

Module contents

functest.opnfv_tests.openstack.vping package

Submodules

functest.opnfv_tests.openstack.vping.vping_ssh module

vPingSSH testcase.

```
class functest.opnfv_tests.openstack.vping.vping_ssh.VPingSSH(**kwargs)
    Bases: functest.core.singlevm.SingleVm2

    VPingSSH testcase implementation.

    Class to execute the vPing test using a Floating IP to connect to one VM to issue the ping command to the second

    clean()
        Clean the resources.

        It can be overriden if resources must be deleted after running the test case.

    execute()
        Ping the second VM

        Returns: ping exit codes

    prepare()
        Create the security group and the keypair

        It can be overriden to set other rules according to the services running in the VM

        Raises: Exception on error
```

functest.opnfv_tests.openstack.vping.vping_userdata module

vping_userdata testcase.

```
class functest.opnfv_tests.openstack.vping.vping_userdata.VPingUserData(**kwargs)
    Bases: functest.core.singlevm.VmReady2

    Class to execute the vPing test using userdata and the VM's console
```

clean()

Clean the resources.

It can be overridden if resources must be deleted after running the test case.

run (kwargs)**

Sets up the OpenStack VM instance objects then executes the ping and validates. :return: the exit code from the super.execute() method

Module contents

Module contents

[functest.opnfv_tests.sdn package](#)

Subpackages

[functest.opnfv_tests.sdn.odl package](#)

Submodules

[functest.opnfv_tests.sdn.odl.odl module](#)

Define classes required to run ODL suites.

It has been designed for any context. But helpers are given for running test suites in OPNFV environment.

Example: \$ python odl.py

```
class functest.opnfv_tests.sdn.odl.odl.ODLParser
Bases: object
```

Parser to run ODL test suites.

```
parse_args(argv=None)
```

Parse arguments.

It can call sys.exit if arguments are incorrect.

Returns: the arguments from cmdline

```
class functest.opnfv_tests.sdn.odl.odl.ODLTests(**kwargs)
Bases: xtesting.core.robotframework.RobotFramework
```

ODL test runner.

```
basic_suite_dir = '/src/odl_test/csit/suites/integration/basic'
```

```
default_suites = ['/src/odl_test/csit/suites/integration/basic', '/src/odl_test/csit/s
```

```
neutron_suite_dir = '/src/odl_test/csit/suites/openstack/neutron'
```

```
odl_test_repo = '/src/odl_test'
```

```
odl_variables_file = '/src/odl_test/csit/variables/Variables.robot'
```

```
run(**kwargs)
```

Run suites in OPNFV environment

It basically checks env vars to call main() with the keywords required.

Args: kwargs: Arbitrary keyword arguments.

Returns: EX_OK if all suites ran well. EX_RUN_ERROR otherwise.

run_suites (*suites=None*, ***kwargs*)

Run the test suites

It has been designed to be called in any context. It requires the following keyword arguments:

- odlusername,
- odlpassword,
- osauthurl,
- neutronurl,
- osusername,
- osprojectname,
- ospassword,
- odllib,
- odlwebport,
- odlrestconfport.

Here are the steps:

- set all RobotFramework_variables,
- create the output directories if required,
- get the results in output.xml,
- delete temporary files.

Args: kwargs: Arbitrary keyword arguments.

Returns: EX_OK if all suites ran well. EX_RUN_ERROR otherwise.

classmethod set_robotframework_vars (*odlusername='admin'*, *odlpassword='admin'*)

Set credentials in csit/variables/Variables.robot.

Returns: True if credentials are set. False otherwise.

`functest.opnfv_tests.sdn.odl.main()`

Entry point

Module contents

Module contents

`functest.opnfv_tests.vnf package`

Subpackages

`functest.opnfv_tests.vnf.epc package`

Submodules

functest.opnfv_tests.vnf.epc.juju_epc module

Juju testcase implementation.

```
class functest.opnfv_tests.vnf.epc.juju_epc(**kwargs)
Bases: functest.core.singlevm.VmReady2

    Abot EPC deployed with JUJU Orchestrator Case

    check_app (name='abot-epc-basic', status='active')
        Check application status.

    check_requirements ()
        Check the requirements of the test case.

        It can be overriden on purpose.

    cidr = '192.168.121.0/24'

    clean ()
        Clean created objects/functions.

    deploy_orchestrator ()
        Create network, subnet, router

        Bootstrap juju

    deploy_vnf ()
        Deploy ABOT-OAI-EPC.

        filename = '/home/opnfv/functest/images/ubuntu-16.04-server-cloudimg-amd64-disk1.img'
        filename_alt = '/home/opnfv/functest/images/ubuntu-14.04-server-cloudimg-amd64-disk1.img'
        flavor_alt_disk = 10
        flavor_alt_ram = 4096
        flavor_alt_vcpus = 1
        flavor_disk = 10
        flavor_ram = 2048
        flavor_vcpus = 1
        juju_timeout = '4800'

    prepare ()
        Prepare testcase (Additional pre-configuration steps).

    publish_image (name=None)
        Publish image

        It allows publishing multiple images for the child testcases. It forces the same configuration for all sub-testcases.

        Returns: image

        Raises: exception on error

    publish_image_alt (name=None)
        Publish alternative image
```

It allows publishing multiple images for the child testcases. It forces the same configuration for all sub-testcases.

Returns: image

Raises: exception on error

run (**kwargs)

Boot the new VM

Here are the main actions: - publish the image - create the flavor

Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

test_vnf()

Run test on ABoT.

`functest.opnfv_tests.vnf.epc.juju_epc.process_abot_test_result(file_path)`

Process ABoT Result

`functest.opnfv_tests.vnf.epc.juju_epc.sig_test_format(sig_test)`

Process the signaling result to have a short result

`functest.opnfv_tests.vnf.epc.juju_epc.update_data(obj)`

Update Result data

Module contents

`functest.opnfv_tests.vnf.ims` package

Submodules

`functest.opnfv_tests.vnf.ims.clearwater` module

Ease testing any Clearwater deployment

class `functest.opnfv_tests.vnf.ims.clearwater.ClearwaterTesting(case_name, ellis_ip)`

Bases: object

vIMS clearwater base usable by several orchestrators

availability_check (*signup_code='secret'*, *two_numbers=False*)

Create one or two numbers

run_clearwater_live_test (*dns_ip*, *public_domain*, *bono_ip=None*, *ellis_ip=None*, *signup_code='secret'*)

Run the Clearwater live tests

It first runs dnsmasq to reach clearwater services by FQDN and then the Clearwater live tests. All results are saved in ims_test_output.txt.

Returns:

- a dict containing the overall results
- None on error

functest.opnfv_tests.vnf.ims.cloudify_ims module

CloudifyIms testcase implementation.

```
class functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms(**kwargs)
```

Bases: `functest.core.cloudify.Cloudify`

Clearwater vIMS deployed with Cloudify Orchestrator Case.

```
check_requirements()
```

Check the requirements of the test case.

It can be overriden on purpose.

```
clean()
```

Clean created objects/functions.

```
cop_wgn = 'https://github.com/cloudify-cosmo/cloudify-openstack-plugin/releases/download/v1.0/clearwater-ims.wgn'
```

```
cop_yaml = 'https://github.com/cloudify-cosmo/cloudify-openstack-plugin/releases/download/v1.0/clearwater-ims.yaml'
```

```
deploy_vnf()
```

Deploy Clearwater IMS.

```
execute()
```

Deploy Cloudify Manager.

network, security group, fip, VM creation

```
filename_alt = '/home/opnfv/functest/images/ubuntu-14.04-server-cloudimg-amd64-disk1.img'
```

```
flavor_alt_disk = 3
```

```
flavor_alt_ram = 1024
```

```
flavor_alt_vcpus = 1
```

```
quota_port = 50
```

```
quota_security_group = 20
```

```
quota_security_group_rule = 100
```

```
test_vnf()
```

Run test on clearwater ims instance.

functest.opnfv_tests.vnf.ims.heat_ims module

HeatIms testcase implementation.

```
class functest.opnfv_tests.vnf.ims.heat_ims.HeatIms(**kwargs)
```

Bases: `functest.core.singlevm.VmReady2`

Clearwater vIMS deployed with Heat Orchestrator Case.

```
clean()
```

Clean created objects/functions.

```
create_network_resources()
```

Create all tenant network resources

It creates a router which gateway is the external network detected. The new subnet is attached to that router.

Raises: exception on error

```
deploy_vnf()
    Deploy Clearwater IMS.

execute()
    Prepare Tenant/User
    network, security group, fip, VM creation

filename = '/home/opnfv/functest/images/ubuntu-14.04-server-cloudimg-amd64-disk1.img'
flavor_disk = 3
flavor_ram = 1024
flavor_vcpus = 1
parameters = {'private_mgmt_net_cidr': '192.168.100.0/24', 'private_mgmt_net_gateway':
quota_port = 50
quota_security_group = 20
quota_security_group_rule = 100
run(**kwargs)
    Deploy and test clearwater
    Here are the main actions: - deploy clearwater stack via heat - test the vnf instance
    Returns: - TestCase.EX_OK - TestCase.EX_RUN_ERROR on error

test_vnf()
    Run test on clearwater ims instance.
```

Module contents

[functest.opnfv_tests.vnf.router package](#)

Subpackages

[functest.opnfv_tests.vnf.router.test_controller package](#)

Submodules

[functest.opnfv_tests.vnf.router.test_controller.function_test_exec module](#)

vrouter function test execution module

```
class functest.opnfv_tests.vnf.router.test_controller.function_test_exec.FunctionTestExec():
    Bases: object
    vrouter function test execution class

    config_reference_vnf(target_vnf, reference_vnf, test_kind)
    config_target_vnf(target_vnf, reference_vnf, test_kind)
    logger = <logging.Logger object>
    result_check(target_vnf, reference_vnf, test_kind, test_list)
    run(target_vnf, reference_vnf_list, test_info, test_list)
```

Module contents

functest.opnfv_tests.vnf.router.vnf_controller package

Submodules

functest.opnfv_tests.vnf.router.vnf_controller.checker module

vrouter test result check module

```
class functest.opnfv_tests.vnf.router.vnf_controller.checker.Checker
Bases: object

vrouter test result check class

static load_check_rule(rule_file_dir, rule_file_name, parameter)
logger = <logging.Logger object>
static regexp_information(response, rules)
```

functest.opnfv_tests.vnf.router.vnf_controller.command_generator module

command generator module for vrouter testing

```
class functest.opnfv_tests.vnf.router.vnf_controller.command_generator.CommandGenerator
Bases: object

command generator class for vrouter testing

static command_create(template, parameter)
static load_template(template_dir, template)
logger = <logging.Logger object>
```

functest.opnfv_tests.vnf.router.vnf_controller.ssh_client module

ssh client module for vrouter testing

```
class functest.opnfv_tests.vnf.router.vnf_controller.ssh_client.SshClient(ip_address,
user,
pass-
word=None,
key_filename=None)
Bases: object

ssh client class for vrouter testing

close()
connect(time_out=10, retrycount=10)
static error_check(response, err_strs=None)
logger = <logging.Logger object>
send(cmd, prompt, timeout=10)
```

functest.opnfv_tests.vnf.router.vnf_controller.vm_controller module

vm controll module

```
class functest.opnfv_tests.vnf.router.vnf_controller.vm_controller.VmController(util_info)
    Bases: object

    vm controll class

    command_create_and_execute(ssh, test_cmd_file_path, cmd_input_param, prompt_file_path)
    command_execute(ssh, command, prompt)
    command_gen_from_template(command_file_path, cmd_input_param)
    command_list_execute(ssh, command_list, prompt)
    config_vm(vm_info, test_cmd_file_path, cmd_input_param, prompt_file_path)
    connect_ssh_and_config_vm(vm_info, test_cmd_file_path, cmd_input_param,
                               prompt_file_path)
    logger = <logging.Logger object>
```

functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller module

vrouter controll module

```
class functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller.VnfController(util_info)
    Bases: object

    vrouter controll class

    config_vnf(source_vnf, destination_vnf, test_cmd_file_path, parameter_file_path, prompt_file_path)
    logger = <logging.Logger object>
    output_check_result_detail_data(res_data_list)
    result_check(target_vnf, reference_vnf, check_rule_file_path_list, parameter_file_path,
                  prompt_file_path)
```

Module contents**Submodules****functest.opnfv_tests.vnf.router.cloudify_vrouter module**

vrouter testcase implementation.

```
class functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVrouter(**kwargs)
    Bases: functest.core.cloudify.Cloudify

    vrouter testcase deployed with Cloudify Orchestrator.

    clean()
        Clean the resources.

        It can be overriden if resources must be deleted after running the test case.

    cop_wgn = 'https://github.com/cloudify-cosmo/cloudify-openstack-plugin/releases/download'
```

```
cop_yaml = 'https://github.com/cloudify-cosmo/cloudify-openstack-plugin/releases/downl
deploy_vnf()
execute()
    Deploy Cloudify Manager, network, security group, fip, VM creation
filename_alt = '/home/opnfv/functest/images/vyos-1.1.8-amd64.qcow2'
flavor_alt_disk = 3
flavor_alt_ram = 1024
flavor_alt_vcpus = 1
test_vnf()
```

functest.opnfv_tests.vnf.router.utilvnf module

Utility module of vrouter testcase

```
class functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
    Bases: object

    Utility class of vrouter testcase

    static convert_functional_test_result(result_data_list)
    get_address(server_name, network_name)
    get_blueprint_outputs(cfymanager_ip, deployment_name)
    get_blueprint_outputs_networks(cfymanager_ip, deployment_name)
    get_blueprint_outputs_vnfs(cfymanager_ip, deployment_name)
    get_mac_address(server_name, network_name)
    static get_reference_vnf_list(vnf_info_list)
    static get_target_vnf(vnf_info_list)
    static get_test_scenario(file_path)
    static get_vnf_info(vnf_info_list, vnf_name)
    get_vnf_info_list(cfymanager_ip, topology_deploy_name, target_vnf_name)
    logger = <logging.Logger object>
    output_test_result_json()
    request_vm_delete(vnf_info_list)
    set_credentials(cloud)
    write_result_data(result_data)
```

functest.opnfv_tests.vnf.router.vrouter_base module

vrouter testing base class module

```
class functest.opnfv_tests.vnf.router.vrouter_base.VrouterOnBoardingBase(util,
                                                                           util_info)
    Bases: object
    vrouter testing base class
    function _test_vrouter (target_vnf_name, test_info)
        function test execution
    get_vnf_info_list (target_vnf_name)
    test_vnf ()
        vrouter test execution
```

Module contents

Module contents

Module contents

functest.utils package

Submodules

functest.utils.config module

```
class functest.utils.config.Config
    Bases: object
    fill()
    patch_file(patch_file_path)
```

functest.utils.constants module

functest.utils.env module

```
functest.utils.env.get (env_var)
functest.utils.env.string()
```

functest.utils.functest_utils module

```
functest.utils.functest_utils.convert_dict_to_ini (value)
    Convert dict to oslo.conf input
functest.utils.functest_utils.convert_ini_to_dict (value)
    Convert oslo.conf input to dict
functest.utils.functest_utils.convert_ini_to_list (value)
    Convert list to oslo.conf input
functest.utils.functest_utils.convert_list_to_ini (value)
    Convert list to oslo.conf input
```

```
functest.utils.functest_utils.execute_command(cmd, info=False, error_msg='', verbose=True, output_file=None)
```

```
functest.utils.functest_utils.execute_command_raise(cmd, info=False, error_msg='', verbose=True, output_file=None)
```

```
functest.utils.functest_utils.get_nova_version(cloud)
```

Get Nova API microversion

Returns:

- Nova API microversion
- None on operation error

```
functest.utils.functest_utils.get_openstack_version(cloud)
```

Detect OpenStack version via Nova API microversion

It follows [MicroversionHistory](#).

Returns:

- OpenStack release
- Unknown on operation error

```
functest.utils.functest_utils.get_parameter_from_yaml(parameter, yfile)
```

Returns the value of a given parameter in file.yaml parameter must be given in string format with dots Example:
general.openstack.image_name

Module contents

1.1.2 Module contents

CHAPTER 2

Indices and tables

- genindex
- modindex
- search

Python Module Index

f

```
functest, 33
functest.ci, 4
functest.ci.check_deployment, 3
functest.core, 9
functest.core.cloudify, 4
functest.core.singlevm, 5
functest.core.tenantnetwork, 8
functest.opnfv_tests, 32
functest.opnfv_tests.openstack, 23
functest.opnfv_tests.openstack.api, 10
functest.opnfv_tests.openstack.api.connection_check, 10
functest.opnfv_tests.openstack.cinder, 10
functest.opnfv_tests.openstack.cinder.cinder_test, 10
functest.opnfv_tests.openstack.patrole, 11
functest.opnfv_tests.openstack.patrole.patrole, 11
functest.opnfv_tests.openstack.rally, 13
functest.opnfv_tests.openstack.rally.rally, 11
functest.opnfv_tests.openstack.refstack, 14
functest.opnfv_tests.openstack.refstack.refstack, 13
functest.opnfv_tests.openstack.shaker, 15
functest.opnfv_tests.openstack.shaker.shaker, 14
functest.opnfv_tests.openstack.snap, 18
functest.opnfv_tests.openstack.snap.api_check, 15
functest.opnfv_tests.openstack.snap.health_check, 15
functest.opnfv_tests.openstack.snap.scripts.smoke, 15
functest.opnfv_tests.openstack.snap.scripts.snap_suite_builder, 16
functest.opnfv_tests.openstack.snap.snap_test_runner, 17
functest.opnfv_tests.openstack.snap.snap_utils, 17
functest.opnfv_tests.openstack.tempest, 20
functest.opnfv_tests.openstack.tempest.conf_utils, 18
functest.opnfv_tests.openstack.tempest.tempest, 19
functest.opnfv_tests.openstack.vgpu, 21
functest.opnfv_tests.openstack.vgpu.vgpu, 20
functest.opnfv_tests.openstack.vmtp, 22
functest.opnfv_tests.openstack.vmtp.vmtp, 22
functest.opnfv_tests.openstack.vping, 23
functest.opnfv_tests.openstack.vping.vping_ssh, 23
functest.opnfv_tests.openstack.vping.vping_userdata, 23
functest.opnfv_tests.sdn, 24
functest.opnfv_tests.sdn.odl, 24
functest.opnfv_tests.sdn.odl.odl, 23
functest.opnfv_tests.vnf, 32
functest.opnfv_tests.vnf.epc, 26
functest.opnfv_tests.vnf.epc.juju_epc, 25
functest.opnfv_tests.vnf.ims, 28
functest.opnfv_tests.vnf.ims.clearwater, 28
functest.opnfv_tests.vnf.ims.cloudify_ims, 27
functest.opnfv_tests.vnf.ims.heat_ims, 27
```

```
functest.opnfv_tests.vnf.router, 32
functest.opnfv_tests.vnf.router.cloudify_vrouter,
    30
functest.opnfv_tests.vnf.router.test_controller,
    29
functest.opnfv_tests.vnf.router.test_controller.function_test_exec,
    28
functest.opnfv_tests.vnf.router.utilvnf,
    31
functest.opnfv_tests.vnf.router.vnf_controller,
    30
functest.opnfv_tests.vnf.router.vnf_controller.checker,
    29
functest.opnfv_tests.vnf.router.vnf_controller.command_generator,
    29
functest.opnfv_tests.vnf.router.vnf_controller.ssh_client,
    29
functest.opnfv_tests.vnf.router.vnf_controller.vm_controller,
    30
functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller,
    30
functest.opnfv_tests.vnf.router.vrouter_base,
    31
functest.utils, 33
functest.utils.config, 32
functest.utils.constants, 32
functest.utils.env, 32
functest.utils.functest_utils, 32
```

Index

A

check_app () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
add_openstack_api_tests () (in module method), 25
 functest.opnfv_tests.openstack.snap.snap_suite_builder, auth_endpoint()
 16
 (func test.ci.check_deployment.CheckDeployment
add_openstack_client_tests () (in module method), 3
 functest.opnfv_tests.openstack.snap.snap_suite_builder, ext_net () (func test.ci.check_deployment.CheckDeployment
 16
 method), 3
add_openstack_integration_tests () (in check_extensions()
 module functest.opnfv_tests.openstack.snap.snap_suite_builder, functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
 16
 method), 19
ApICheck (class in functest.opnfv_tests.openstack.snap.apicheck) glance () (func test.ci.check_deployment.CheckDeployment
 15
 method), 3
apply_blacklist () check_neutron () (func test.ci.check_deployment.CheckDeployment
 (func test.opnfv_tests.openstack.rally.rally.RallyBase method), 3
 method), 11
 check_nova () (func test.ci.check_deployment.CheckDeployment
apply_blacklist () method), 4
 (func test.opnfv_tests.openstack.rally.rally.RallyJobs check_public_endpoint()
 method), 13
 (func test.ci.check_deployment.CheckDeployment
apply_tempest_blacklist () method), 4
 (func test.opnfv_tests.openstack.tempest.tempest.TempestCommon check_rcc() (func test.ci.check_deployment.CheckDeployment
 method), 19
 method), 4
availability_check () check_regex_in_console()
 (func test.opnfv_tests.vnf.ims.clearwater.ClearwaterTesting (func test.core.singlevm.VmReady1 method), 6
 method), 26
 check_requirements()
 (func test.opnfv_tests.openstack.shaker.shaker.Shaker
 method), 14
 check_requirements()
 (func test.opnfv_tests.openstack.snap.snap_test_runner.Snapstes
 method), 17

B

backup_tempest_config () check_requirements()
 (func test.opnfv_tests.openstack.tempest.tempest.TempestCommon
 static method), 19
 (func test.opnfv_tests.openstack.snap.snap_test_runner.Snapstes
 method), 17
basic_suite_dir (func test.opnfv_tests.sdn.opendaylight.ODLETests check_requirements()
 attribute), 23
 (func test.opnfv_tests.openstack.tempest.tempest.TempestCommon
BLACKLIST_FILE (func test.opnfv_tests.openstack.rally.rally.RallyBase method), 19
 attribute), 11
 (func test.opnfv_tests.openstack.vmtcp.vmtcp.Vmtcp
boot_vm () (func test.core.singlevm.VmReady1 method), 6
 (func test.opnfv_tests.openstack.vmtcp.vmtcp.Vmtcp
 method), 21
 check_requirements()
 (func test.opnfv_tests.vnf.epc.juju_epc.JujuEpc
 method), 25
 check_requirements()
 (func test.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms

C

check_all () (func test.ci.check_deployment.CheckDeployment
 method), 3
 check_requirements()
 (func test.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms

```
        method), 27
check_service_endpoint ()                                     clean () (functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVrouter
                                                               method), 30
    (functest.ci.check_deployment.CheckDeployment clean_rally_conf ()
                                                               method), 4
                                                               (functest.opnfv_tests.openstack.rally.rally.RallyBase
check_services () (functest.opnfv_tests.openstack.tempest.tempestCommon
                                                               method), 19
                                                               clean_rally_conf ())
CheckDeployment          (class      in      (functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
functest.ci.check_deployment), 3
                                                               static method), 19
Checker (class in functest.opnfv_tests.vnf.router.vnf_controllerchecker)
                                                               CheckerTesting (class      in
                                                               functest.opnfv_tests.vnf.ims.clearwater),
                                                               29
                                                               26
CI_INSTALLER_TYPE       (in      module
functest.opnfv_tests.openstack.tempest.conf_utils)close () (functest.opnfv_tests.vnf.router.vnf_controller.ssh_client.SshClient
                                                               method), 29
                                                               18
cidr (functest.core.tenantnetwork.TenantNetwork1 at-
tribut), 8
cidr (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc at-
tribut), 25
CinderCheck             (class      in      Cloudify (class in functest.core.cloudify), 4
functest.opnfv_tests.openstack.cinder.cinder_test),     cloudify_archive (functest.core.cloudify.Cloudify
                                                               attribute), 4
                                                               4
                                                               cloudify_container
                                                               (functest.core.cloudify.Cloudify      attribute),
                                                               4
CloudifyIms             (class      in      CloudifyIms
functest.opnfv_tests.vnf.ims.cloudify_ims),           27
                                                               27
CloudifyVrouter          (class      in      CloudifyVrouter
functest.opnfv_tests.vnf.router.cloudify_vrouter),     30
                                                               30
command_create () (functest.opnfv_tests.vnf.router.vnf_controller.comm-
static method), 29
command_create_and_execute () (functest.opnfv_tests.vnf.router.vnf_controller.vm_controller.VmC
                                                               method), 30
                                                               30
clean () (functest.core.singlevm.SingleVm1 method), 5
clean () (functest.core.singlevm.SingleVm2 method), 6
clean () (functest.core.singlevm.VmReady1 method), 6
clean () (functest.core.singlevm.VmReady2 method), 8
clean () (functest.core.tenantnetwork.NewProject
method), 8
clean () (functest.core.tenantnetwork.TenantNetwork1
method), 8
clean () (functest.core.tenantnetwork.TenantNetwork2
method), 9
clean () (functest.opnfv_tests.openstack.cinder.cinder_test
method), 10
clean () (functest.opnfv_tests.openstack.rally.rally.RallyBase
method), 12
clean () (functest.opnfv_tests.openstack.rally.rally.RallyJobs
method), 13
clean () (functest.opnfv_tests.openstack.shaker.shaker.Shaker
method), 14
clean () (functest.opnfv_tests.openstack.snap.snap_test_runner.SnapTestRunner
method), 17
clean () (functest.opnfv_tests.openstack.tempest.tempestTempestConfig
method), 19
clean () (functest.opnfv_tests.openstack.vmtcp.Vmtcp CONCURRENCY (functest.opnfv_tests.openstack.rally.rally.RallyBase
method), 21
                                                               attribute), 11
clean () (functest.opnfv_tests.openstack.vping.vping_ssh.VPingSSH(class in functest.utils.config), 32
                                                               method), 22
                                                               config_reference_vnf ()
clean () (functest.opnfv_tests.openstack.vping.vping_userdata.VPingUserData (functest.opnfv_tests.vnf.router.test_controller.function_test_exec.
method), 22
                                                               method), 28
clean () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc config_target_vnf ()
method), 25
                                                               (functest.opnfv_tests.vnf.router.test_controller.function_test_exec.
method), 27
clean () (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms config_vm ()
method), 28
                                                               config_vnfc (functest.opnfv_tests.vnf.router.vnf_controller.vm_controller
method), 30
                                                               config_vnf () (functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller
method), 27
```

```

        method), 30
configure() (functest.opnfv_tests.openstack.patrole.patrole.Patrol
            method), 11
configure() (functest.opnfv_tests.openstack.tempest.tempest
            method), 19
configure_update_params() (in
            module functest.opnfv_tests.openstack.tempest.conf_utils)
            18
configure_verifier() (in
            module functest.opnfv_tests.openstack.tempest.conf_utils)
            18
connect() (functest.core.singlevm.SingleVm)
            5
connect() (functest.opnfv_tests.vnf.router.vnf_controller.ssh_client)
            29
connect_ssh_and_config_vm() (functest.opnfv_tests.vnf.router.vnf_controller.vm_controller)
            30
ConnectionCheck (class
            in
            module functest.opnfv_tests.openstack.api.connection_check),
            10
convert_dict_to_ini() (in
            module functest.utils.functest_utils), 32
convert_functional_test_result() (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
            static method), 31
convert_ini_to_dict() (in
            module functest.utils.functest_utils), 32
convert_ini_to_list() (in
            module functest.utils.functest_utils), 32
convert_list_to_ini() (in
            module functest.utils.functest_utils), 32
cop_wgn (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms)
            27
cop_wgn (functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVrouter)
            30
cop_yaml (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms)
            27
cop_yaml (functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVrouter)
            30
create() (functest.core.tenantnetwork.NewProject
            method), 8
create_flavor() (functest.core.singlevm.VmReady1
            method), 6
create_flavor_alt()
            (functest.core.singlevm.VmReady1 method), 6
create_floating_ip_timeout
            (functest.core.singlevm.SingleVm1 attribute), 5
create_network_resources()
            (functest.core.tenantnetwork.TenantNetwork1
            method), 8
create_network_resources()
            (functest.opnfv_tests.openstack.vmtcp.vmtcp.Vmtcp
            method), 21
create_network_resources()
            (functest.opnfv_tests.openstack.vmtcp.vmtcp.Vmtcp
            method), 27
create_server_timeout
            (functest.core.cloudify.Cloudify
            attribute), 4
create_server_timeout
            (functest.core.singlevm.VmReady1 attribute), 7
create_server_timeout
            (functest.opnfv_tests.openstack.shaker.shaker.Shaker
            attribute), 14
create_server_timeout
            (functest.opnfv_tests.openstack.vgpu.vgpu.VGPU
            method), 21
create_server_timeout
            (functest.opnfv_tests.openstack.vmtcp.vmtcp.Vmtcp
            method), 18
create_verifier() (in
            module functest.opnfv_tests.openstack.tempest.conf_utils),
            18
D
default_suites (functest.opnfv_tests.sdn.opendaylight_ODLTests
            attribute), 23
defcorelist (functest.opnfv_tests.openstack.refstack.refstack.Refstack
            attribute), 14
deploy_orchestrator()
            (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
            method), 25
DeployVnf () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
            method), 25
DeployVnf () (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms
            method), 27
DeployVnf () (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms
            method), 28
DeployVnf () (functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVrouter
            method), 31
E
error_check() (functest.opnfv_tests.vnf.router.vnf_controller.ssh_client
            static method), 29
excl_func() (functest.opnfv_tests.openstack.rally.rally.RallyBase
            method), 12
excl_scenario() (functest.opnfv_tests.openstack.rally.rally.RallyBase
            static method), 12
execute() (functest.core.cloudify.Cloudify method), 4
execute() (functest.core.singlevm.SingleVm1
            method), 5
execute() (functest.opnfv_tests.openstack.cinder.cinder_test.CinderCheck
            method), 10

```

```

execute() (functest.opnfv_tests.openstack.shaker.shaker.ShakerOrAltDisk (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIm
    method), 14                                         attribute), 27
execute() (functest.opnfv_tests.openstack.vgpu.vgpu.VGPUavorAltDisk (functest.opnfv_tests.vnf.router.cloudify_vrouter.Cloud
    method), 20                                         attribute), 31
execute() (functest.opnfv_tests.openstack.vping.vping_sshVPingSSHtExtraSpecs
    method), 22                                         (functest.core.singlevm.VmReady1 attribute), 7
execute() (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyMaxAltRam (functest.core.singlevm.VmReady1
    method), 27                                         attribute), 7
execute() (functest.opnfv_tests.vnf.ims.heat_ims.HeatImfflavorAltRam (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
    method), 28                                         attribute), 25
execute() (functest.opnfv_tests.vnf.router.cloudify_vrouterCloudifyVRouterRam (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIm
    method), 31                                         attribute), 27
execute_command() (in module flavorAltRam (functest.opnfv_tests.vnf.router.cloudify_vrouter.Cloud
    functest.utils.functest_utils), 32                                         attribute), 31
execute_command_raise() (in module flavorAltVCPUs (functest.core.singlevm.VmReady1
    functest.utils.functest_utils), 33                                         attribute), 7
export_task() (functest.opnfv_tests.openstack.rally.rallyRallyBase
    static method), 12                                         flavorAltVCPUs (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                                               attribute), 25
extra_alt_properties                                         flavorAltVCPUs (functest.opnfv_tests.vnf.ims.cloudify_ims.Cloudify
    (functest.core.singlevm.VmReady1 attribute), 7                                         attribute), 27
extra_properties (functest.core.singlevm.VmReady1 flavorAltVCPUs (functest.opnfv_tests.vnf.router.cloudify_vrouter.Cloud
    attribute), 7                                         flavorDisk (functest.core.cloudify.Cloudify
                                                               attribute), 4
F
file_is_empty() (functest.opnfv_tests.openstack.rally.FILERallyBase
    static method), 12                                         flavorDisk (functest.core.singlevm.VmReady1 at
                                                               tribute), 7
filename (functest.core.cloudify.Cloudify attribute), 4 flavorDisk (functest.opnfv_tests.openstack.shaker.shaker.Shaker
filename (functest.core.singlevm.VmReady1 attribute), 7                                         attribute), 14
                                         flavorDisk (functest.opnfv_tests.vgpu.vgpu.VGPU
                                         attribute), 20
filename (functest.opnfv_tests.openstack.shaker.shaker.Shaker
                                         attribute), 14                                         flavorDisk (functest.opnfv_tests.openstack.vmtplib.Vmtplib
                                         attribute), 21
                                         flavorDisk (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                         attribute), 25
filename (functest.opnfv_tests.openstack.vgpu.vgpu.VGPU
                                         attribute), 20                                         flavorDisk (functest.opnfv_tests.vnf.ims.heat_ims.HeatIm
                                         attribute), 25
filename (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                         attribute), 25                                         flavorExtraSpecs
                                         (functest.core.singlevm.VmReady1 attribute), 7
filename (functest.opnfv_tests.vnf.ims.heat_ims.HeatIm
                                         attribute), 28                                         flavorExtraSpecs
                                         (functest.core.singlevm.VmReady1 attribute), 7
filename_alt (functest.core.singlevm.VmReady1 at
                                         tribute), 7                                         flavorDisk (functest.opnfv_tests.vgpu.vgpu.VGPU
                                         attribute), 20
filename_alt (functest.opnfv_tests.openstack.tempest.tempestTempestCommon
                                         attribute), 19                                         flavorDisk (functest.core.cloudify.Cloudify
                                         attribute), 4
filename_alt (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                         attribute), 25                                         flavorDisk (functest.core.singlevm.VmReady1 at
                                         tribute), 7
filename_alt (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIm
                                         attribute), 27                                         flavorDisk (functest.opnfv_tests.openstack.shaker.shaker.Shaker
                                         attribute), 14
filename_alt (functest.opnfv_tests.vnf.router.cloudify_vrouterCloudifyVRouter
                                         attribute), 31                                         flavorDisk (functest.core.cloudify.Cloudify
                                         attribute), 21
fill() (functest.utils.config.Config method), 32 flavorDisk (functest.opnfv_tests.openstack.vmtplib.Vmtplib
flavorAltDisk (functest.core.singlevm.VmReady1
                                         attribute), 7                                         flavorDisk (functest.core.singlevm.VmReady1 attribute), 21
                                         flavorDisk (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                         attribute), 25
flavorAltDisk (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
                                         attribute), 25                                         flavorDisk (functest.opnfv_tests.vnf.ims.heat_ims.HeatIm
                                         attribute), 25

```

attribute), 28
flavor_vcpus (*functest.core.cloudify.Cloudify attribute*), 4
flavor_vcpus (*functest.core.singlevm.VmReadyI attribute*), 7
flavor_vcpus (*functest.opnfv_tests.openstack.shaker.shakerShaker attribute*), 14
flavor_vcpus (*functest.opnfv_tests.openstack.vgpu.vgpuVGPUtest*), 21
flavor_vcpus (*functest.opnfv_tests.openstack.vmtplibVmtpfVmtp test*), 21
flavor_vcpus (*functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc test*), 25
flavor_vcpus (*functest.opnfv_tests.vnf.ims.HeatIms test*), 28
functest (*module*), 33
functest.ci (*module*), 4
functest.ci.check_deployment (*module*), 3
functest.core (*module*), 9
functest.core.cloudify (*module*), 4
functest.core.singlevm (*module*), 5
functest.core.tenantnetwork (*module*), 8
functest.opnfv_tests (*module*), 32
functest.opnfv_tests.openstack (*module*), 23
functest.opnfv_tests.openstack.api (*module*), 10
functest.opnfv_tests.openstack.api.connectivitycheck (*module*), 10
functest.opnfv_tests.openstack.cinder (*module*), 10
functest.opnfv_tests.openstack.cinder.cinderCinder test (*module*), 10
functest.opnfv_tests.openstack.patrole (*module*), 11
functest.opnfv_tests.openstack.patrole.patroltest (*module*), 11
functest.opnfv_tests.openstack.rally (*module*), 13
functest.opnfv_tests.openstack.rally.rally (*module*), 11
functest.opnfv_tests.openstack.refstack (*module*), 14
functest.opnfv_tests.openstack.refstack.refstack (*module*), 13
functest.opnfv_tests.openstack.shaker (*module*), 15
functest.opnfv_tests.openstack.shaker.shaker (*module*), 14
functest.opnfv_tests.openstack.snap (*module*), 18
functest.opnfv_tests.openstack.snap.api_check (*module*), 15
functest.opnfv_tests.openstack.snap.health_check (*module*), 31

(module), 15
functest.opnfv_tests.openstack.snap.smoke (*module*), 15
functest.opnfv_tests.openstack.snap.snap_suite_builder (*module*), 16
functest.opnfv_tests.openstack.snap.snap_test_runner (*module*), 17
functest.opnfv_tests.openstack.vgpu.VGPUtest (*opnfv_tests.openstack.snap.snap_utils module*), 17
functest.opnfv_tests.openstack.vmtp.VmtpTest (*opnfv_tests.openstack.tempest module*), 20
functest.opnfv_tests.vnf.Epc test (*opnfv_tests.openstack.tempest.conf_utils module*), 18
functest.opnfv_tests.vnf.heatIms test (*opnfv_tests.openstack.tempest.tempest module*), 19
functest.opnfv_tests.openstack.vgpu (*module*), 21
functest.opnfv_tests.openstack.vgpu.vgpu (*module*), 20
functest.opnfv_tests.openstack.vmtp (*module*), 22
functest.opnfv_tests.openstack.vmtp.vmtp (*module*), 21
functest.opnfv_tests.openstack.vping (*module*), 23
functest.opnfv_tests.openstack.vping.vping_ssh (*module*), 22
functest.opnfv_tests.openstack.vping.vping_userdata (*module*), 22
functest.opnfv_tests.sdn (*module*), 24
functest.opnfv_tests.sdn.odl (*module*), 24
functest.opnfv_tests.sdn.sdn.odl (*module*), 23
functest.opnfv_tests.vnf (*module*), 32
functest.opnfv_tests.vnf.epc (*module*), 26
functest.opnfv_tests.vnf.epc.juju_epc (*module*), 25
functest.opnfv_tests.vnf.ims (*module*), 28
functest.opnfv_tests.vnf.ims.clearwater (*module*), 26
functest.opnfv_tests.vnf.ims.cloudify_ims (*module*), 27
functest.opnfv_tests.vnf.ims.heat_ims (*module*), 27
functest.opnfv_tests.vnf.router (*module*), 32
functest.opnfv_tests.vnf.router.cloudify_vrouter (*module*), 30
functest.opnfv_tests.vnf.router.test_controller (*module*), 29
functest.opnfv_tests.vnf.router.test_controller.fun (*module*), 28
functest.opnfv_tests.vnf.router.utilvnf (*module*), 31

```
 functest.opnfv_tests.vnf.router.vnf_controller 18
   (module), 30                           get_default_role()
functest.opnfv_tests.vnf.router.vnf_controller.(functest.core.tenantnetwork.TenantNetwork1
   (module), 29                           static method), 8
functest.opnfv_tests.vnf.router.vnf_controller.get_exec_command_generator (in      module
   (module), 29                           functest.core.cloudify), 5
functest.opnfv_tests.vnf.router.vnf_controller.get_text_snatchmate (in      module
   (module), 29                           functest.opnfv_tests.openstack.snap.snap_utils),
functest.opnfv_tests.vnf.router.vnf_controller.l3n_controller
   (module), 30                           get_external_network()
functest.opnfv_tests.vnf.router.vnf_controller.(functest.core.tenantnetwork.TenantNetwork1
   (module), 30                           static method), 9
functest.opnfv_tests.vnf.router.vrouter_get_mac_address ()
   (module), 31                           (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
functest.utils (module), 33               method), 31
functest.utils.config (module), 32        get_nova_version()      (in      module
functest.utils.constants (module), 32     functest.utils.functest_utils), 33
functest.utils.env (module), 32          get_openstack_version() (in      module
functest.utils.functest_utils (module), 32   functest.utils.functest_utils), 33
function_test_vrouter()
   (functest.opnfv_tests.vnf.router.vrouter_base.VrouterOnBoardingBase,functest_utils), 33
   method), 32                           get_public_auth_url()
FunctionTestExec      (class           in      (functest.core.tenantnetwork.TenantNetwork1
   functest.opnfv_tests.vnf.router.test_controller.function_test_exec); method), 9
   28                                     get_reference_vnf_list()
   (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   static method), 31
G
generate_keys () (functest.opnfv_tests.openstack.vmtcp.natp_Vpnget_vnf () (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   method), 21                           static method), 31
generate_test_list ()                      get_task_id() (functest.opnfv_tests.openstack.rally.rally.RallyBase
   (functest.opnfv_tests.openstack.refstack.refstack.Refstack  static method), 12
   method), 14                           get_test_scenario()
generate_test_list ()                      (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   (functest.opnfv_tests.openstack.tempest.tempest.TempestCom static method), 31
   method), 19                           get_verifier_deployment_dir() (in      module
get () (in module functest.utils.env), 32    functest.opnfv_tests.openstack.tempest.conf_utils),
get_active_compute_cnt () (in      module   18
   functest.opnfv_tests.openstack.snap.snap_utils),get_verifier_deployment_id()
   17                           (functest.opnfv_tests.openstack.rally.rally.RallyBase
get_address () (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf  static method), 12
   method), 31                           get_verifier_id()      (in      module
get_auth_token () (in      module       functest.opnfv_tests.openstack.tempest.conf_utils),
   functest.ci.check_deployment), 4         19
get_blueprint_outputs ()                   get_verifier_repo_dir() (in      module
   (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   method), 31                           functest.opnfv_tests.openstack.tempest.conf_utils),
get_blueprint_outputs_networks ()          19
   (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   method), 31                           get_verifier_result()
get_blueprint_outputs_vnfs ()             (functest.opnfv_tests.openstack.tempest.tempest.TempestCom
   (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   method), 31                           static method), 19
get_credentials () (in      module       get_vnf_info() (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   functest.opnfv_tests.openstack.snap.snap_utils),
   31                           static method), 31
get_vnf_info_list () (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
   method), 31
```

`get_vnf_info_list()` **M**
`(functest.opnfv_tests.vnf.router.vrouter_base.VrouterOnBoardingBase.main(in module functest.ci.check_deployment), 4
method), 32` **main () (in module functest.opnfv_tests.sdn.odl.odl)**, 24

H

HealthCheck (class in neutron_suite_dir
 `functest.opnfv_tests.openstack.snap.health_check`), (functest.opnfv_tests.sdn.odl.odl.ODLTests
 15 attribute), 23

HeatIms (class in `functest.opnfv_tests.vnf.ims.heat_ims`), NewProject (class in `functest.core.tenantnetwork`), 8
27

1

```
image_alt_format (functest.core.singlevm.VmReady1
                  attribute), 7
image_format (functest.core.singlevm.VmReady1 at-
                  tribute), 7
in_iterable_re () (functest.opnfv_tests.openstack.rally.rally.RallyBase
                  class in functest.opnfv_tests.sdn.odl.odl.ODLTests
                  static method), 12
is_successful () (functest.opnfv_tests.openstack.rally.rally.RallyBase
                  class in functest.opnfv_tests.sdn.odl.odl),
                  23
method), 12
is_successful () (functest.opnfv_tests.openstack.tempest.tempest
                  tempest common tests.vnf.router.vnf_controller.vnf_co
                  method), 19
method), 30
ITERATIONS_AMOUNT
                  output_test_result_json ()
(functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
(functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
method), 31
odl_test_repo (functest.opnfv_vtests.sdn.odl.odl.ODLTests
                  attribute), 23
odl_variables_file
                  (functest.opnfv_tests.sdn.odl.odl.ODLTests
                  attribute), 23
odl_attributes
                  (functest.opnfv_tests.sdn.odl.odl.ODLTests
                  attribute), 23
odl_attributes
                  (functest.opnfv_tests.sdn.odl.odl.ODLTests
                  attribute), 23
```

J

`juju_timeout (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc.parameters (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms attribute), 25 attribute), 28`
`JujuEpc (class in functest.opnfv_tests.vnf.epc.juju_epc), parse_args () (functest.opnfv_tests.sdn.odl.odl.ODLParser method), 23`
25

L

M

N

`neutron_suite_dir`
`k), (functest.openfv_tests.sdn.odl.odl.ODLTests`
`attribute), 23`

0

```
odl_test_repo (functest.opnfv_tests.sdn.odl.odl.ODLTests
               attribute), 23
odl_variables_file
    (functest.opnfv_tests.sdn.odl.odl.ODLTests
     attribute), 23
odl_RallyBase (class in functest.opnfv_tests.sdn.odl.odl),
                23
odl_RallyBase (class in functest.opnfv_tests.sdn.odl.odl), 23
output_check_result_detail_data ()
test.tempest.flavtests!GongTests.vnf.router.vnf_controller.vnf_cor
               method), 30
output_test_result_json ()
use         (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
               method), 31
```

P

parameters (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms attribute), 28
parse_args () (functest.opnfv_tests.sdn.odl.odl.ODLParser method), 23

```

prepare_run () (functest.opnfv_tests.openstack.rally.rally.RallyJobs      (class           in
    method), 13                                         functest.opnfv_tests.openstack.rally.rally),
prepare_task () (functest.opnfv_tests.openstack.rally.rally.RallyBl3e     RallySanity       (class           in
    method), 12                                         functest.opnfv_tests.openstack.rally.rally),
prepare_task () (functest.opnfv_tests.openstack.rally.rally.RallyJf3      RallyJobs        (class           in
    method), 13                                         functest.opnfv_tests.openstack.rally.rally),
process_abot_test_result () (in module   read_file () (functest.opnfv_tests.openstack.tempest.TempestCo
    functest.opnfv_tests.vnf.epc.juju_epc), 26                      static method), 20
publish_image () (functest.core.singlevm.VmReady1 Refstack (class in functest.opnfv_tests.openstack.refstack.refstack),
    method), 7
publish_image () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc_information ()
    method), 25                                         (functest.opnfv_tests.vnf.router.vnf_controller.checker.Checker
    static method), 29
publish_image_alt () request_vm_delete ()
    (functest.core.singlevm.VmReady1 method), 7 (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
    method), 31
publish_image_alt () result_check () (functest.opnfv_tests.vnf.router.test_controller.function
    (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
    method), 25                                         method), 28
result_check () (functest.opnfv_tests.vnf.router.vnf_controller.vnf_com
    method), 28
Q
quota_port (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms method), 30
    attribute), 27 run () (functest.core.singlevm.SingleVm1 method), 5
quota_port (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms run () (functest.core.singlevm.VmReady1 method), 7
    attribute), 28                                         run () (functest.core.tenantnetwork.TenantNetwork1
    method), 9
quota_security_group run () (functest.opnfv_tests.openstack.api.connection_check.ConnectionC
    (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms
    attribute), 27                                         method), 10
quota_security_group run () (functest.opnfv_tests.openstack.patreole.patreole.Patreole
    (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms
    attribute), 28                                         method), 11
quota_security_group_rule run () (functest.opnfv_tests.openstack.snaps.api_check.ApiCheck
    (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms
    attribute), 27                                         method), 15
quota_security_group_rule run () (functest.opnfv_tests.openstack.snaps.health_check.HealthCheck
    (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms
    attribute), 28                                         method), 15
R
RALLY_AARCH64_PATCH_PATH run () (functest.opnfv_tests.openstack.vmtp.vmtp.Vmtp
    (functest.opnfv_tests.openstack.rally.rally.RallyBase
    attribute), 11                                         method), 21
RALLY_CONF_PATH run () (functest.opnfv_tests.openstack.vping.vping_userdata.VPingUserda
    (functest.opnfv_tests.openstack.rally.rally.RallyBase
    attribute), 11                                         method), 23
RALLY_DIR run () (functest.opnfv_tests.sdn.odl.odl.ODLTests
    (functest.opnfv_tests.openstack.rally.rally.RallyBase
    attribute), 11                                         method), 23
RALLY_SCENARIO_DIR run () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
    (functest.opnfv_tests.openstack.rally.rally.RallyBase
    attribute), 11                                         method), 26
RallyBase         (class           in run () (functest.opnfv_tests.vnf.router.test_controller.function_test_exec.Fu
    functest.opnfv_tests.openstack.rally.rally),          method), 28
    11
RallyFull        (class           in run_clearwater_live_test ()
    functest.opnfv_tests.openstack.rally.rally),          (functest.opnfv_tests.vnf.ims.clearwater.ClearwaterTesting
    13                                         method), 26
run_suites () (functest.opnfv_tests.sdn.odl.odl.ODLTests

```

method), 24
run_task () (functest.opnfv_tests.openstack.rally.rally.RallyBase
method), 12
SUPPORT_DIR (functest.opnfv_tests.openstack.rally.rally.RallyBase
run_tests () (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
method), 12
run_verifier_tests ()
(functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
functest.opnfv_tests.openstack.rally.rally.RallyBase
method), 20
attribute), 11
run_vmtcp () (functest.opnfv_tests.openstack.vmtcp.Vmtcp
task_succeed () (functest.opnfv_tests.openstack.rally.rally.RallyBase
static method), 13
TEMP_DIR (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
S
send () (functest.opnfv_tests.vnf.router.vnf_controller.ssh_SshClient
method), 29
(class in functest.opnfv_tests.openstack.tempest.tempest),
19
set_credentials ()
(functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
method), 31
set_robotframework_vars ()
(functest.opnfv_tests.sdn.opendaylight.ODLTests
class method), 24
Shaker (class in functest.opnfv_tests.openstack.shaker.shaker),
14
shaker_timeout (functest.opnfv_tests.openstack.shaker.shaker.Shaker
attribute), 11
test_vnf () (functest.opnfv_tests.vnf.epc.juju_epc.JujuEpc
method), 26
shared_network (functest.core.tenantnetwork.TenantNetwork1
attribute), 9
shared_network (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 13
shared_network (functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
attribute), 20
sig_test_format () (in module
functest.opnfv_tests.vnf.epc.juju_epc), 26
SingleVm1 (class in functest.core.singlevm), 5
SingleVm2 (class in functest.core.singlevm), 6
SnapsSmoke (class in
functest.opnfv_tests.openstack.snaps.smoke),
15
SnapsTestRunner (class in
functest.opnfv_tests.openstack.snaps.snaps_test_runner),
17
ssh_connect_loops (functest.core.cloudify.Cloudify
attribute), 5
ssh_connect_loops
(functest.core.singlevm.SingleVm1 attribute), 6
ssh_connect_loops
(functest.opnfv_tests.openstack.shaker.shaker.Shaker
attribute), 15
ssh_connect_loops
(functest.opnfv_tests.openstack.vgpu.vgpu.VGPU
attribute), 21
ssh_connect_timeout
(functest.core.singlevm.SingleVm1 attribute), 6
SshClient (class in
functest.opnfv_tests.vnf.router.vnf_controller.ssh_client),
T
TemplateCommon (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
TemplDir (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
TenantNetwork1 (class in
functest.core.tenantnetwork), 8
TenantNetwork2 (class in
functest.core.tenantnetwork), 9
TENANTS_AMOUNT (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
test_vnf () (functest.opnfv_tests.vnf.ims.cloudify_ims.CloudifyIms
method), 27
test_vnf () (functest.opnfv_tests.vnf.ims.heat_ims.HeatIms
method), 28
test_vnf () (functest.opnfv_tests.vnf.router.cloudify_vrouter.CloudifyVro
method), 31
test_vnf () (functest.opnfv_tests.vnf.router.vrouter_base.VrouterOnBoa
method), 32
TESTS (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
TESTS (functest.opnfv_tests.openstack.rally.rally.RallyJobs
attribute), 13
U
update_compute_section ()
(functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method), 20
update_data () (in module
functest.opnfv_tests.vnf.epc.juju_epc), 26
update_default_role ()
(functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method), 20
update_keystone_default_role ()
(functest.opnfv_tests.openstack.rally.rally.RallyBase
static method), 13
update_network_section ()
(functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method), 20

update_rally_logs () VPingSSH (*class in functest.opnfv_tests.openstack.vping.vping_ssh*),
(*functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method*), 20 VPingUserData (class in
functest.opnfv_tests.openstack.vping.vping_userdata),
update_rally_regex () VrouterOnBoardingBase (class in
*functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method*), 20
update_scenario_section () VrouterOnBoardingBase (class in
*functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
method*), 20
update_tempest_conf_file () (in module W
functest.opnfv_tests.openstack.tempest.conf_utils) wait_for_execution () (in module
19 functest.core.cloudify), 5 write_config () (functest.opnfv_tests.openstack.vmtp.vmtp.Vmtp
username (functest.core.cloudify.Cloudify attribute), 5 write_config () (functest.opnfv_tests.openstack.vmtp.vmtp.Vmtp
username (functest.core.singlevm.SingleVm1 attribute), method), 22
6 write_result_data()
username (functest.opnfv_tests.openstack.shaker.shaker.Shaker attribute), 15 (functest.opnfv_tests.vnf.router.utilvnf.Utilvnf
attribute), 21 method), 31
username (functest.opnfv_tests.openstack.vgpu.vgpu.VGPU attribute), 21
USERS_AMOUNT (functest.opnfv_tests.openstack.rally.rally.RallyBase attribute), 11
Utilvnf (class in functest.opnfv_tests.vnf.router.utilvnf),
31

V

verify_connectivity () (in module
functest.ci.check_deployment), 4
verify_report () (functest.opnfv_tests.openstack.rally.rally.RallyBase
static method), 13
VGPU (class in functest.opnfv_tests.openstack.vgpu.vgpu),
20
visibility (functest.core.singlevm.VmReady1 attribute), 7
visibility (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 13
visibility (functest.opnfv_tests.openstack.tempest.tempest.TempestCommon
attribute), 20
VmController (class in
functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller),
30
VmReady1 (class in functest.core.singlevm), 6
VmReady2 (class in functest.core.singlevm), 7
Vmtp (class in functest.opnfv_tests.openstack.vmtp.vmtp),
21
VnfController (class in
functest.opnfv_tests.vnf.router.vnf_controller.vnf_controller),
30
VOLUME_SERVICE_TYPE
(functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11
volume_timeout (functest.opnfv_tests.openstack.cinder.cinder_test.CinderCheck
attribute), 10
VOLUME_VERSION (functest.opnfv_tests.openstack.rally.rally.RallyBase
attribute), 11