Functest K8s Kali

README.md (source from Functest-Kubernetes)

Functest

Network virtualization has dramatically modified our architectures which asks for more automation and powerful testing tools like Functest, a collection of state-of-the-art virtual infrastructure test suites, including automatic VNF testing (cf. [1]).

In context of OPNFV, Functest verifies any kind of OpenStack and Kubernetes deployments including production environments. It conforms to upstream rules and integrates smoothly lots of the test cases available in the opensource market. It includes about 3000+ functional tests and 3 hours upstream API and dataplane benchmarks. It's completed by Virtual Network Function deployments and testing (vIMS, vRouter and vEPC) to ensure that the platforms meet Network Functions Virtualization requirements. Raspberry PI is also supported to verify datacenters as the lowest cost (50 euros hardware and software included).

Functest releases	Kubernetes releases
Hunter	v1.13
Iruya	v1.15
Jerma	v1.17
Kali	**v1.19**
Leguer	v1.20
v1.21	v1.21
Master	v1.22.0-alpha.1 (rolling)

Prepare your environment

cat env

```
DEPLOY_SCENARIO=k8s-XXX
```

Run healthcheck suite

```
sudo docker run --env-file env \
    -v $(pwd)/config:/root/.kube/config \
    opnfv/functest-kubernetes-healthcheck:kali
```

```
+------------------+-----------------+--------------------+-----------------+----------------+
|     TEST CASE    |     PROJECT     |        TIER        |     DURATION    |     RESULT     |
+------------------+-----------------+--------------------+-----------------+----------------+
|     k8s_quick    |     functest    |     healthcheck    |      00:24      |      PASS      |
|     k8s_smoke    |     functest    |     healthcheck    |      00:09      |      PASS      |
+------------------+-----------------+--------------------+-----------------+----------------+
```

Run smoke suite

```
sudo docker run --env-file env \
    -v $(pwd)/config:/root/.kube/config \
    opnfv/functest-kubernetes-smoke:kali
```

```
+---------------------------------+-----------------+--------------+-----------------+----------------+
|            TEST CASE            |     PROJECT     |      TIER    |     DURATION    |     RESULT     |
+---------------------------------+-----------------+--------------+-----------------+----------------+
|        xrally_kubernetes        |     functest    |     smoke    |      11:48      |      PASS      |
|             k8s_io              |     functest    |     smoke    |      27:04      |      PASS      |
|         k8s_conformance         |     functest    |     smoke    |      10:48      |      PASS      |
|      k8s_conformance_serial     |     functest    |     smoke    |      13:43      |      PASS      |
|        sig_api_machinery        |     functest    |     smoke    |      10:21      |      PASS      |
|     sig_api_machinery_serial    |     functest    |     smoke    |      01:22      |      PASS      |
|             sig_apps            |     functest    |     smoke    |      06:25      |      PASS      |
|         sig_apps_serial         |     functest    |     smoke    |      00:34      |      PASS      |
|             sig_auth            |     functest    |     smoke    |      00:13      |      PASS      |
|      sig_cluster_lifecycle      |     functest    |     smoke    |      00:37      |      PASS      |
|       sig_instrumentation       |     functest    |     smoke    |      00:07      |      PASS      |
|           sig_network           |     functest    |     smoke    |      02:00      |      PASS      |
|             sig_node            |     functest    |     smoke    |      01:43      |      PASS      |
|      sig_scheduling_serial      |     functest    |     smoke    |      07:39      |      PASS      |
|           sig_storage           |     functest    |     smoke    |      07:23      |      PASS      |
|        sig_storage_serial       |     functest    |     smoke    |      03:05      |      PASS      |
+---------------------------------+-----------------+--------------+-----------------+----------------+
```

Run security suite

```
sudo docker run --env-file env \
    -v $(pwd)/config:/root/.kube/config \
    opnfv/functest-kubernetes-security:kali
```

```
+--------------------------+-----------------+-----------------+-----------------+----------------+
|         TEST CASE        |     PROJECT     |       TIER      |     DURATION    |     RESULT     |
+--------------------------+-----------------+-----------------+-----------------+----------------+
|        kube_hunter       |     functest    |     security    |      02:02      |      PASS      |
|     kube_bench_master    |     functest    |     security    |      00:15      |      PASS      |
|      kube_bench_node     |     functest    |     security    |      00:15      |      PASS      |
+--------------------------+-----------------+-----------------+-----------------+----------------+
```

Run benchmarking suite

```
sudo docker run --env-file env \
    -v $(pwd)/config:/root/.kube/config \
    opnfv/functest-kubernetes-benchmarking:kali
```

```
+--------------------------------+-----------------+---------------------+-----------------
+----------------+
|           TEST CASE            |     PROJECT     |         TIER        |     DURATION    |
RESULT     |
+--------------------------------+-----------------+---------------------+-----------------
+----------------+
|     xrally_kubernetes_full     |     functest    |     benchmarking    |      33:07      |
PASS      |
+--------------------------------+-----------------+---------------------+-----------------
+----------------+
```

Run cnf suite

```
sudo docker run --env-file env \
    -v $(pwd)/config:/root/.kube/config \
    opnfv/functest-kubernetes-cnf:kali
```

```
+----------------------+------------------+-------------+------------------+----------------+
|       TEST CASE      |     PROJECT      |     TIER    |     DURATION     |     RESULT     |
+----------------------+------------------+-------------+------------------+----------------+
|        k8s_vims      |     functest     |     cnf     |      24:35       |      PASS      |
|       helm_vims      |     functest     |     cnf     |      08:40       |      PASS      |
|     cnf_testsuite    |     functest     |     cnf     |      23:30       |      PASS      |
+----------------------+------------------+-------------+------------------+----------------+
```

Use on air gap environments (no access to Internet)

To test a Kubernetes without access to Internet, repository mirrors needs to be provided.

Currently, all tests supports this feature except cnf conformance.

There's two ways for providing the repository mirrors:

- Give an environment variable (`MIRROR_REPO`) which gives a repository with all needed images.
- Gives an environment variable per needed repo:
  - `DOCKERHUB_REPO` for DockerHub repository (`docker.io`)
  - `GCR_REPO` for Google Cloud repository (`gcr.io`)
  - `K8S_GCR_REPO` for Kubernetes repository (`k8s.gcr.io`)
  - `QUAY_REPO` for Quay repository (`quay.io`)

All needed images are given in functest-kubernetes/ci/images.txt

For e2e tests, `docker.io` is hardcoded. it does mean that you'll have to set up a mirror on docker. An example on how to set it up on docker daemon is provided here: daemon-configuration-file