

ETSI-DMS on INF O-Cloud, Tacker installation guide

This document describes how to deploy an openstack-helm environment based on the INF with Ceph.

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1. Preparation

- Setup INF O-Cloud. Install INF(StarlingX R8.0) AIO-SX by following the procedure. Enable the Ceph as persistent storage.
 - https://docs.starlingx.io/r/stx.8.0/deploy_install_guides/release/virtual/aio_simplex.html
 - https://docs.starlingx.io/r/stx.8.0/deploy_install_guides/release/virtual/aio_simplex_install_kubernetes.html#optionally-finish-configuration-of-ceph-based-persistent-storage-backend
- Use the following command to make sure you have the ceph as backend on the INF

```
sysadmin@controller-1:~$ source /etc/platform/openrc
[sysadmin@controller-1 ~(keystone_admin)]$ system storage-backend-list
+-----+-----+-----+-----+-----+-----+
+-----+
| uuid                | name      | backend | state   | task                | services |
capabilities |
+-----+-----+-----+-----+-----+-----+
+-----+
| da70e0b7-34c8-488a-9e1f-08e057d6a4be | ceph-store | ceph    | configured | provision-storage | None      |
replication: |
|                |           |         |           |                   |          | 2
min_replica |
|                |           |         |           |                   |          |
tion: 1      |
|                |           |         |           |                   |          |
+-----+-----+-----+-----+-----+-----+
+-----+

[sysadmin@controller-1 ~(keystone_admin)]$ ceph -s
cluster:
  id:           c5663990-249a-4b71-988f-19b402784429
  health:       HEALTH_OK

services:
  mon: 1 daemons, quorum controller (age 8h)
  mgr: controller-1(active, since 8h), standbys: controller-0
  mds: kube-cephfs:1 {0=controller-1=up:active} 1 up:standby
  osd: 2 osds: 2 up (since 8h), 2 in (since 8h)

data:
  pools:   3 pools, 192 pgs
  objects: 181 objects, 258 MiB
  usage:    2.4 GiB used, 269 GiB / 271 GiB avail
  pgs:      192 active+clean
```

- Prepare a Linux environment in which the network is reachable to the INF AIO-SX with Bash CLI. And, install the required packages.

```
$ sudo apt-get install git make patch jq
# Make sure your CLI has the 'kubectl', 'openstack' and 'helm' installed
```

- Clone openstack-helm and openstack-helm-infra code on your Linux.

```
# The commit id is 82a6aa8ce96b1669af0b9e8da85b537d02fc5fd3 that used in this demo.
$ git clone --depth 1 --branch master https://opendev.org/openstack/openstack-helm.git
# The commit id is 07c735f632147378c4af8e7b4ce6f390d38e3d69 that used in this demo.
$ git clone --depth 1 --branch master https://opendev.org/openstack/openstack-helm-infra.git
```

- Copy the "/etc/kubernetes/admin.conf" from the INF controller node to your local Linux.

```
$ scp <INF-controller-0>:/etc/kubernetes/admin.conf ~/.kube/config
# Change the IP address in the ~/.kube/config
# server: https://<INF-OAM-IP>:6443
# You can get the OAM IP through this command on controller node
# system addrpool-show `system addrpool-list | grep oam | awk '{print $2}'` | grep floating
```

- Add labels to controller-0 node.

```
$ kubectl label node controller-0 openstack-control-plane=enabled
```

- Create namespaces.

```
$ kubectl create namespace openstack
```

2. Deploy Ingress Controller

Original procedure: <https://docs.openstack.org/openstack-helm/latest/install/developer/kubernetes-and-common-setup.html#deploy-the-ingress-controller>

- Modify openstack-helm/tools/deployment/component/common/ingress.sh file as follows:

```
diff --git a/tools/deployment/component/common/ingress.sh b/tools/deployment/component/common/ingress.sh
index 9ae0371..3229dcb 100755
--- a/tools/deployment/component/common/ingress.sh
+++ b/tools/deployment/component/common/ingress.sh
@@ -29,6 +29,23 @@ deployment:
     type: DaemonSet
     network:
       host_namespace: true
+endpoints:
+  ingress:
+    port:
+      http:
+        default: 10080
+      https:
+        default: 10443
+    healthz:
+      default: 11254
+    status:
+      default: 11246
+    stream:
+      default: 11247
+    profiler:
+      default: 11245
+    server:
+      default: 18181
EOF

touch /tmp/ingress-component.yaml
@@ -48,21 +65,21 @@ pod:
EOF
fi

-helm upgrade --install ingress-kube-system ${HELM_CHART_ROOT_PATH}/ingress \
- --namespace=kube-system \
- --values=/tmp/ingress-kube-system.yaml \
```

```

- ${OSH_EXTRA_HELM_ARGS} \
- ${OSH_EXTRA_HELM_ARGS_INGRESS} \
- ${OSH_EXTRA_HELM_ARGS_INGRESS_KUBE_SYSTEM}
-
-#NOTE: Wait for deploy
-./tools/deployment/common/wait-for-pods.sh kube-system
+helm upgrade --install ingress-kube-system ${HELM_CHART_ROOT_PATH}/ingress \
+# --namespace=kube-system \
+# --values=/tmp/ingress-kube-system.yaml \
+# ${OSH_EXTRA_HELM_ARGS} \
+# ${OSH_EXTRA_HELM_ARGS_INGRESS} \
+# ${OSH_EXTRA_HELM_ARGS_INGRESS_KUBE_SYSTEM}
+#
+##NOTE: Wait for deploy
+#!/tools/deployment/common/wait-for-pods.sh kube-system

#NOTE: Deploy namespace ingress
helm upgrade --install ingress-openstack ${HELM_CHART_ROOT_PATH}/ingress \
--namespace=openstack \
--values=/tmp/ingress-component.yaml \
- --set deployment.cluster.class=nginx \
+ --set deployment.cluster.class=nginx-openstack \
${OSH_EXTRA_HELM_ARGS} \
${OSH_EXTRA_HELM_ARGS_INGRESS} \
${OSH_EXTRA_HELM_ARGS_INGRESS_OPENSTACK}
@@ -70,13 +87,13 @@ helm upgrade --install ingress-openstack ${HELM_CHART_ROOT_PATH}/ingress \
#NOTE: Wait for deploy
./tools/deployment/common/wait-for-pods.sh openstack

-helm upgrade --install ingress-ceph ${HELM_CHART_ROOT_PATH}/ingress \
- --namespace=ceph \
- --values=/tmp/ingress-component.yaml \
- --set deployment.cluster.class=nginx-ceph \
- ${OSH_EXTRA_HELM_ARGS} \
- ${OSH_EXTRA_HELM_ARGS_INGRESS} \
- ${OSH_EXTRA_HELM_ARGS_INGRESS_CEPH}
-
-#NOTE: Wait for deploy
-./tools/deployment/common/wait-for-pods.sh ceph
+helm upgrade --install ingress-ceph ${HELM_CHART_ROOT_PATH}/ingress \
+# --namespace=ceph \
+# --values=/tmp/ingress-component.yaml \
+# --set deployment.cluster.class=nginx-ceph \
+# ${OSH_EXTRA_HELM_ARGS} \
+# ${OSH_EXTRA_HELM_ARGS_INGRESS} \
+# ${OSH_EXTRA_HELM_ARGS_INGRESS_CEPH}
+#
+##NOTE: Wait for deploy
+#!/tools/deployment/common/wait-for-pods.sh ceph

```

- Execute `ingress.sh`.

```

$ cd $HOME/openstack-helm/
$ ./tools/deployment/component/common/ingress.sh

```

3. Deploy Other Component

Original Procedure: <https://docs.openstack.org/openstack-helm/latest/install/developer/deploy-with-ceph.html#deploy-mariadb>

Install the following components to use Tacker:

- * MariaDB
- * RabbitMQ

* Memcached

* Keystone

* Glance

- Modify openstack-helm/tools/deployment/component/glance/glance.sh file as follows:

```
diff --git a/tools/deployment/component/glance/glance.sh b/tools/deployment/component/glance/glance.sh
index b388ec04..4d50c2c5 100755
--- a/tools/deployment/component/glance/glance.sh
+++ b/tools/deployment/component/glance/glance.sh
@@ -27,7 +27,7 @@ make glance
 tee /tmp/glance.yaml <<EOF
 storage: ${GLANCE_BACKEND}
 volume:
- class_name: standard
+ class_name: general
 bootstrap:
 structured:
 images:
```

- Execute script files.

```
$ ./tools/deployment/developer/ceph/050-mariadb.sh
$ ./tools/deployment/developer/ceph/060-rabbitmq.sh
$ ./tools/deployment/developer/ceph/070-memcached.sh
$ ./tools/deployment/developer/ceph/080-keystone.sh
$ ./tools/deployment/component/glance/glance.sh
```

4. Deploy Barbican and Tacker

- Modify openstack-helm/tacker/templates/pvc.yaml file as follows:

```
diff --git a/tacker/templates/pvc.yaml b/tacker/templates/pvc.yaml
index 8b1678b3..c0599b45 100644
--- a/tacker/templates/pvc.yaml
+++ b/tacker/templates/pvc.yaml
@@ -23,7 +23,7 @@ metadata:
 name: {{ $name }}
 spec:
 accessModes:
- - "ReadWriteMany"
+ - "ReadWriteOnce"
 resources:
 requests:
 storage: {{ $size }}
```

- Modify openstack-helm/tacker/values.yaml file as follows:

```
diff --git a/tacker/values.yaml b/tacker/values.yaml
index 90702f95..3d2f2621 100644
--- a/tacker/values.yaml
+++ b/tacker/values.yaml
@@ -105,12 +105,12 @@ pod:
 security_context:
 server:
 pod:
- runAsUser: 42424
- runAsNonRoot: true
+ runAsUser: 0
+ runAsNonRoot: false
 conductor:
 pod:
- runAsUser: 42424
- runAsNonRoot: true
+ runAsUser: 0
+ runAsNonRoot: false
 lifecycle:
 termination_grace_period:
 server:
```

- Execute script files.

```
$ ./tools/deployment/developer/common/085-barbican.sh
$ ./tools/deployment/component/tacker/tacker.sh
```

5. Verify successful deployment

- The helm releases are deployed as follows:

```
sysadmin@controller-0:~$ helm list -n openstack
```

NAME	NAMESPACE	REVISION	STATUS	CHART	APP VERSION
barbican	openstack	1		2023-10-04 14:11:54.122228604	+0000 UTC
deployed	barbican-0.3.5		v1.0.0		
glance	openstack	1		2023-10-05 01:14:44.18606719	+0000 UTC
deployed	glance-0.4.13		v1.0.0		
ingress-openstack	openstack	1		2023-10-02 07:59:30.823441021	+0000 UTC
deployed	ingress-0.2.17		v1.5.1		
keystone	openstack	2		2023-10-04 13:58:36.81624535	+0000 UTC
deployed	keystone-0.3.4		v1.0.0		
mariadb	openstack	1		2023-10-04 13:36:33.178219784	+0000 UTC
deployed	mariadb-0.2.33		v10.6.7		
memcached	openstack	1		2023-10-04 13:44:40.7788406	+0000
UTC deployed	memcached-0.1.13		v1.5.5		
rabbitmq	openstack	1		2023-10-04 13:39:44.683045128	+0000 UTC
deployed	rabbitmq-0.1.29		v3.9.0		
tacker	openstack	1		2023-10-05 10:03:19.033603307	+0000 UTC
deployed	tacker-0.1.1		v1.0.0		

- The pods are read as follows (Check all pods are "Completed" or "Running" status):

```
sysadmin@controller-0:~/openstack-helm$ kubectl get pod -n openstack
```

NAME	READY	STATUS	RESTARTS	AGE
barbican-api-75fd4d79d7-ncz2c	1/1	Running	0	46h
barbican-db-init-mvhs4	0/1	Completed	0	46h
barbican-db-sync-2hn96	0/1	Completed	0	46h
barbican-ks-endpoints-57rm2	0/3	Completed	0	46h
barbican-ks-service-x2jqn	0/1	Completed	0	46h
barbican-ks-user-ds9h6	0/1	Completed	0	46h
barbican-rabbit-init-gz647	0/1	Completed	0	46h
barbican-test	0/1	Completed	0	46h
glance-api-97df56ddb-pr598	1/1	Running	0	35h
glance-bootstrap-fbmq	0/1	Completed	0	35h
glance-db-init-gtmdc	0/1	Completed	0	35h
glance-db-sync-9jkb8	0/1	Completed	0	35h
glance-ks-endpoints-dkb6m	0/3	Completed	0	35h
glance-ks-service-xdhfk	0/1	Completed	0	35h
glance-ks-user-9xhvf	0/1	Completed	0	35h
glance-metadefs-load-rw2kc	0/1	Completed	0	35h
glance-rabbit-init-c4wvr	0/1	Completed	0	35h
glance-storage-init-lzn72	0/1	Completed	0	35h
ingress-5448bbd7d-7rz99	1/1	Running	1 (47h ago)	4d4h
ingress-error-pages-54c8fdbf4d-wgktt	1/1	Running	1 (47h ago)	4d4h
keystone-api-6cb7d765ff-srpwg	1/1	Running	0	46h
keystone-bootstrap-f9s5n	0/1	Completed	0	46h
keystone-credential-setup-27qkx	0/1	Completed	0	46h
keystone-db-init-sr9dj	0/1	Completed	0	46h
keystone-db-sync-7hnj8	0/1	Completed	0	46h
keystone-domain-manage-2n6sf	0/1	Completed	0	46h
keystone-fernet-rotate-28275120-djbg7	0/1	Completed	0	24h
keystone-fernet-rotate-28275840-z2wnq	0/1	Completed	0	12h
keystone-fernet-rotate-28276560-z6rmr	0/1	Completed	0	30m
keystone-fernet-setup-x8px7	0/1	Completed	0	46h
keystone-rabbit-init-w5h9q	0/1	Completed	0	46h
mariadb-ingress-7f9bcfd79b-6flfw	1/1	Running	0	46h
mariadb-ingress-7f9bcfd79b-tlwkc	1/1	Running	0	46h
mariadb-ingress-error-pages-557b55c45f-tw8sw	1/1	Running	0	46h
mariadb-server-0	1/1	Running	0	46h
memcached-memcached-785bbdd4d8-zxh76	1/1	Running	0	46h
rabbitmq-cluster-wait-49khp	0/1	Completed	0	46h
rabbitmq-rabbitmq-0	1/1	Running	0	46h
rabbitmq-rabbitmq-1	1/1	Running	0	46h
tacker-conductor-9f977f5b4-tx58c	1/1	Running	0	26h
tacker-db-init-4d7xz	0/1	Completed	0	26h
tacker-db-sync-vwzg2	0/1	Completed	0	26h
tacker-ks-endpoints-426wd	0/3	Completed	0	26h
tacker-ks-service-lltsv	0/1	Completed	0	26h
tacker-ks-user-5vpws	0/1	Completed	0	26h
tacker-rabbit-init-2jkqb	0/1	Completed	0	26h
tacker-server-76d9bbf6c8-skk8h	1/1	Running	0	26h

- Test if Tacker is working properly

```

$ TACKER_SERVER_POD=tacker-server-76d9bbf6c8-skk8h
$ TACKER_ENDPOINT=tacker-api.openstack.svc.cluster.local

# Issue token from keystone
$ kubectl exec -n openstack -it $TACKER_SERVER_POD \
  -- curl -i -X POST -H "Content-Type: application/json" \
  -d '{"auth":{"identity":{"methods":["password"],"password":{"user":{"domain":{"name":"default"},"name":"admin"},"password":"password"}}},"scope":{"project":{"domain":{"name":"default"},"name":"admin"}}}}' \
  http://keystone-api.openstack.svc.cluster.local:5000/v3/auth/tokens

HTTP/1.1 201 CREATED
Date: Fri, 06 Oct 2023 12:46:40 GMT
Content-Type: application/json
Content-Length: 3175
Connection: keep-alive
X-Subject-Token: gAAAAABlIAGv1RqxqMJ7rt_VyAtPTxF0XjMG19zp-
0zaZmHdFkKmeJLfUus09GkPUdcbCeVuR8ZfmMjgg9C2kRCWWX4Llfdwld1lKM-
beqQ7s127kjhpilf28eloXh351CmBFy97PaZ9D5WBoe3fRrDkhhB_cEsB76Pyj6P2KQuNeMIhGmb1fKA
Vary: X-Auth-Token
x-openstack-request-id: req-408ef1f6-2b61-4a8d-89b0-0d987878cbbb

# Set `X-Subject-Token` retrieved as TOKEN
$ TOKEN=gAAAAABlIAGv1RqxqMJ7rt_VyAtPTxF0XjMG19zp-
0zaZmHdFkKmeJLfUus09GkPUdcbCeVuR8ZfmMjgg9C2kRCWWX4Llfdwld1lKM-
beqQ7s127kjhpilf28eloXh351CmBFy97PaZ9D5WBoe3fRrDkhhB_cEsB76Pyj6P2KQuNeMIhGmb1fKA

$ kubectl exec -n openstack -it $TACKER_SERVER_POD \
  -- curl -X GET http://${TACKER_ENDPOINT}:9890/vnflcm/v2/vnf_instances \
  -H "X-Auth-Token:$TOKEN" -H "Version: 2.0.0"
[]    *** Success if you can get an empty list ***

```