**Deploying Infoscale cluster using Infoscale Operator**

Pre-requisites:

1. Login to Red Hat registry from all OCP nodes.
2. Add entry for registry in /etc/containers/registries.conf followed by systemctl daemon-reload and crio restart.
3. Install NFD from operator hub.
4. Apply cert-manager.

Workflow summary:

1. Deploy SRO using sro.yaml.
2. Check if SRO is running in openshift-special-resource-operator namespace.
3. Now deploy infoscale-operator using **iso.yaml.**
4. Check if controller-manager(ISO) is running in namespace infoscale-vtas.
5. Edit the cr.yaml to enter cluster details.
6. Apply cr.yaml and check pod status in namespace infoscale-vtas.
7. **Login to all the OCP cluster nodes (master/worker) and login to Red Hat registry from there using Veritas credentials. (CSI and NFD will pull images from here)**

e.g.

*# ssh core@10.210.178.233*

*Red Hat Enterprise Linux CoreOS 46.82.202012051820-0*

*Part of OpenShift 4.6, RHCOS is a Kubernetes native operating system*

*managed by the Machine Config Operator (`clusteroperator/machine-config`).*

*WARNING: Direct SSH access to machines is not recommended; instead,*

*make configuration changes via `machineconfig` objects:*

*https://docs.openshift.com/container-platform/4.6/architecture/architecture-rhcos.html*

*---*

*Last login: Mon Jun 7 15:07:25 2021 from 10.210.178.35*

*[core@clus1-szbxr-worker-2dcn6 ~]$ sudo su -*

*Last login: Mon Jun 7 15:07:29 UTC 2021 on pts/0*

*[root@clus1-szbxr-worker-2dcn6 ~]#* *podman login registry.redhat.io*

*Username: vtas-eng*

*Password: Ver1t@s*

*Login Succeeded!*

*If login is expired , you need to re-login to registry to avoid image pull issues.*

1. **Below entries needs to be done in /etc/containers/registries.conf on all worker nodes to pull Infoscale operator, SRO, license controller, CSI and Infoscale images from repo (one time step)**

e.g.

*[root@clus1-szbxr-worker-2dcn6 ~]# cat /etc/containers/registries.conf*

*unqualified-search-registries = ['10.221.84.61:5000', 'registry.access.redhat.com', 'docker.io']*

*[[registry]]*

*prefix = '10.221.84.61:5000'*

*insecure = true*

*location = '10.221.84.61:5000'*

1. **Once above file is updated, please restart crio using below commands,**

**(one time step)**

*systemctl daemon-reload*

*systemctl restart crio*

1. **Login to Openshift cluster console from browser and install NFD operator from operator-hub. (one time step)**

Graphical user interface, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

*This will take some time as images will be pulled from redhat registry, you can check the status of the same from terminal.*

*[root@pundl360g10-16-vm45 /]# oc get pods -A |grep nfd*

*openshift-operators nfd-operator-5d47d67b67-vbmp5 1/1 Running 0 4m*

1. **Once NFD operator is Ready then login to OCP cluster console go to installed operator and create NodeFeatureDiscovery from there (Use the default configuration) (one time step)**

Graphical user interface, text, application, email, website

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

*check the status of the pods from terminal.*

*[root@pundl360g10-16-vm45 /]# oc get pods -A |grep nfd*

*openshift-operators nfd-master-ll2mw 1/1 Running 0 3m32s*

*openshift-operators nfd-master-pthns 1/1 Running 0 3m32s*

*openshift-operators nfd-master-s47gv 1/1 Running 0 3m32s*

*openshift-operators nfd-operator-5d47d67b67-vbmp5 1/1 Running 0 10m*

*openshift-operators nfd-worker-flhdx 1/1 Running 0 3m31s*

*openshift-operators nfd-worker-rd744 1/1 Running 0 3m32s*

*openshift-operators nfd-worker-z9f5z 1/1 Running 0 3m31s*

*openshift-operators nfd-worker-zzgc4 1/1 Running 0 3m31s*

*[root@pundl360g10-16-vm45 /]# oc get all -n openshift-operators*

*NAME READY STATUS RESTARTS AGE*

*pod/nfd-master-ll2mw 1/1 Running 0 5m57s*

*pod/nfd-master-pthns 1/1 Running 0 5m57s*

*pod/nfd-master-s47gv 1/1 Running 0 5m57s*

*pod/nfd-operator-5d47d67b67-vbmp5 1/1 Running 0 12m*

*pod/nfd-worker-flhdx 1/1 Running 0 5m56s*

*pod/nfd-worker-rd744 1/1 Running 0 5m57s*

*pod/nfd-worker-z9f5z 1/1 Running 0 5m56s*

*pod/nfd-worker-zzgc4 1/1 Running 0 5m56s*

*NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE*

*service/nfd-master ClusterIP 172.30.138.85 <none> 12000/TCP 5m59s*

*service/storageos-scheduler-webhook ClusterIP 172.30.166.78 <none> 443/TCP 92d*

*NAME DESIRED CURRENT READY UP-TO-DATE AVAILABLE NODE SELECTOR AGE*

*daemonset.apps/nfd-master 3 3 3 3 3 node-role.kubernetes.io/master= 5m59s*

*daemonset.apps/nfd-worker 4 4 4 4 4 <none> 5m59s*

*NAME READY UP-TO-DATE AVAILABLE AGE*

*deployment.apps/nfd-operator 1/1 1 1 12m*

*NAME DESIRED CURRENT READY AGE*

*replicaset.apps/nfd-operator-5d47d67b67 1 1 1 12m*

*check if NFD daemonsets are scheduled on all master and workers and are in running state.*

1. **Apply Cert-Manager using below commands,**

*oc create namespace cert-manager*

*oc apply -f* [*https://github.com/jetstack/cert-manager/releases/download/v1.3.0/cert-manager.yaml*](https://github.com/jetstack/cert-manager/releases/download/v1.3.0/cert-manager.yaml)

1. **Now copy the SRO deployment yaml to bastion node from below location**

*Location : root@r7515-047-vm28:* */infoscale/SRO/sro.yaml*

1. **Apply sro.yaml**

*[root@pundl360g10-16-vm45 SRO]#* *oc create -f sro.yaml*

*namespace/openshift-special-resource-operator created*

*customresourcedefinition.apiextensions.k8s.io/specialresources.sro.openshift.io created*

*role.rbac.authorization.k8s.io/special-resource-leader-election-role created*

*role.rbac.authorization.k8s.io/special-resource-prometheus-k8s created*

*clusterrole.rbac.authorization.k8s.io/special-resource-manager-role created*

*clusterrole.rbac.authorization.k8s.io/special-resource-metrics-reader created*

*clusterrole.rbac.authorization.k8s.io/special-resource-proxy-role created*

*rolebinding.rbac.authorization.k8s.io/special-resource-leader-election-rolebinding created*

*rolebinding.rbac.authorization.k8s.io/special-resource-prometheus-k8s created*

*clusterrolebinding.rbac.authorization.k8s.io/special-resource-manager-rolebinding created*

*clusterrolebinding.rbac.authorization.k8s.io/special-resource-proxy-rolebinding created*

*service/special-resource-controller-manager-metrics-service created*

*deployment.apps/special-resource-controller-manager created*

*clusteroperator.config.openshift.io/special-resource-operator created*

*servicemonitor.monitoring.coreos.com/special-resource-controller-manager-metrics-monitor created*

*specialresource.sro.openshift.io/special-resource-preamble created*

*Make sure SRO controller is Ready,*

*[root@pundl360g10-16-vm45 SRO]# oc get pods -n openshift-special-resource-operator*

*NAME READY STATUS RESTARTS AGE*

*special-resource-controller-manager-5b949646b4-mss59 2/2 Running 0 20s*

*[root@pundl360g10-16-vm45 SRO]#*

1. **Copy Infoscale operator deployment yaml from below location.**

*root@r7515-047-vm28://infoscale/ISO/iso.yaml*

*This yaml has the image name and repo from it will get pulled.*

*……*

*image: 10.221.84.61:5000/veritas/infoscale-operator:v1.0.0*

*imagePullPolicy: IfNotPresent*

**……**

1. **Apply iso.yaml**

*[root@pundl360g10-16-vm45 ISO]# oc create -f iso.yaml*

*namespace/infoscale-vtas created*

*customresourcedefinition.apiextensions.k8s.io/infoscaleclusters.infoscale.veritas.com created*

*serviceaccount/controller-manager created*

*role.rbac.authorization.k8s.io/leader-election-role created*

*clusterrole.rbac.authorization.k8s.io/manager-role created*

*clusterrole.rbac.authorization.k8s.io/metrics-reader created*

*clusterrole.rbac.authorization.k8s.io/proxy-role created*

*rolebinding.rbac.authorization.k8s.io/leader-election-rolebinding created*

*clusterrolebinding.rbac.authorization.k8s.io/manager-rolebinding created*

*clusterrolebinding.rbac.authorization.k8s.io/proxy-rolebinding created*

*configmap/manager-config created*

*service/controller-manager-metrics-service created*

*deployment.apps/controller-manager created*

*certificate.cert-manager.io/infoscale-ca created*

*certificate.cert-manager.io/iso-ctrl-cert created*

*issuer.cert-manager.io/cm-self-signed created*

*issuer.cert-manager.io/infoscale-cert-issuer created*

*Check the status of operator,*

*[root@pundl360g10-16-vm45 ISO]# oc get pods -n infoscale-vtas*

*NAME READY STATUS RESTARTS AGE*

*controller-manager-788dddb979-6w96t 0/1 Running 0 12s*

*[root@pundl360g10-16-vm45 ISO]#*

*[root@pundl360g10-16-vm45 ISO]# oc get pods -n infoscale-vtas*

*NAME READY STATUS RESTARTS AGE*

*controller-manager-788dddb979-6w96t 1/1 Running 0 41s*

*[root@pundl360g10-16-vm45 ISO]#*

1. **Copy sample CR from below location,**

[*root@r7515-047-vm28:/infoscale/CR/cr.yaml*](mailto:root@r7515-047-vm28:/infoscale/CR/cr.yaml)

1. **Modify the CR for respective openshift cluster details**

**……**

*clusterInfo:*

*- nodeName: "avengers-cluster1-lcgf2-worker-5wmb7"*

*ip:*

*- "10.221.84.99"*

*- nodeName: "avengers-cluster1-lcgf2-worker-f6fq7"*

*ip:*

*- "10.221.84.96"*

*- nodeName: "avengers-cluster1-lcgf2-worker-kcmzq"*

*ip:*

*- "10.221.84.97"*

*- nodeName: "avengers-cluster1-lcgf2-worker-pnkvd"*

*ip:*

*- "10.221.84.95"*

**…..**

*Please login to one of the OCP cluster node and check kernel version using “uname -r”.*

*Specify the same kernel in cr.yaml in highlighted part of infoscaleStorageContainer field.*

*-----*

*imagePullPolicy: IfNotPresent*

*infoscaleStorageContainer: 10.221.84.61:5000/infoscale:8.0.0.0000-rhel8.2-4.18.0-193.el8\_2.x86\_64*

-----

1. **Apply the CR.**

*[root@pundl360g10-16-vm45 Reena]# oc create -f cr.yaml*

*infoscalecluster.infoscale.veritas.com/infoscalecluster-dev created*

*Check status of Infoscale,license and CSI pods*

*[root@pundl360g10-16-vm45 ISO\_WORKING]# oc get pods -n infoscale-vtas*

*NAME READY STATUS RESTARTS AGE*

*controller-manager-788dddb979-6w96t 1/1 Running 0 72m*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-cxtwx 0/1 Running 0 <invalid>*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-dnxs9 0/1 Running 0 <invalid>*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-mclxv 0/1 Running 0 <invalid>*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-rnrqj 0/1 Running 0 <invalid>*

*infoscale-vtas-licensing-controller-b4878f945-tmwrr 1/1 Running 1 <invalid>*

*[root@pundl360g10-16-vm45 ISO\_WORKING]# oc exec -ti infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-cxtwx -n infoscale-vtas – bash*

*[root@clus1-szbxr-worker-wg9dc /]# tail -f vss-logs.txt*

*Starting vxfs ..................................................... Done*

*Starting vxportal ................................................. Done*

*Starting fdd ...................................................... Done*

*Starting vxcafs ................................................... Done*

*Starting llt ...................................................... Done*

*Starting gab ...................................................... Done*

*Starting vxfen .................................................... Done*

*Starting amf ...................................................... Done*

*Starting vxglm .................................................... Done*

*Starting had ...................................................... Done*

*Starting vxgms .................................................... Done*

*Starting vxodm .................................................... Done*

*Performing SFCFS poststart tasks .................................. Done*

*Storage Foundation Cluster File System Startup completed successfully*

*installer log files and summary file are saved at:*

*/opt/VRTS/install/logs/installer-202106081555hks*

*[root@pundl360g10-16-vm45 ISO\_WORKING]# oc get pods -n infoscale-vtas*

*NAME READY STATUS RESTARTS AGE*

*controller-manager-788dddb979-6w96t 1/1 Running 0 80m*

*infoscale-vtas-csi-driver-controller-0 5/5 Running 0 4m29s*

*infoscale-vtas-csi-driver-node-7cxx5 2/2 Running 0 4m29s*

*infoscale-vtas-csi-driver-node-jcjfw 2/2 Running 0 4m29s*

*infoscale-vtas-csi-driver-node-lbwxq 2/2 Running 0 4m28s*

*infoscale-vtas-csi-driver-node-mqszr 2/2 Running 0 4m29s*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-cxtwx 1/1 Running 0 7m39s*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-dnxs9 1/1 Running 0 7m40s*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-mclxv 1/1 Running 0 7m40s*

*infoscale-vtas-driver-container-rhel8-dec6dc02b0be0e9b-rnrqj 1/1 Running 0 7m40s*

*infoscale-vtas-licensing-controller-b4878f945-tmwrr 1/1 Running 0 7m40s*

Open issues:

1. For open issues please refer to,

<http://vcslx002.vxindia.veritas.com/incident_portal/incident_list.php?ProdSent=CONTAINER&tabtype=CB&state=OPEN>

1. There are open issues around undeploy of operator so please skip testcases around undeployment with this drop.