CNF deployment on OpenShift

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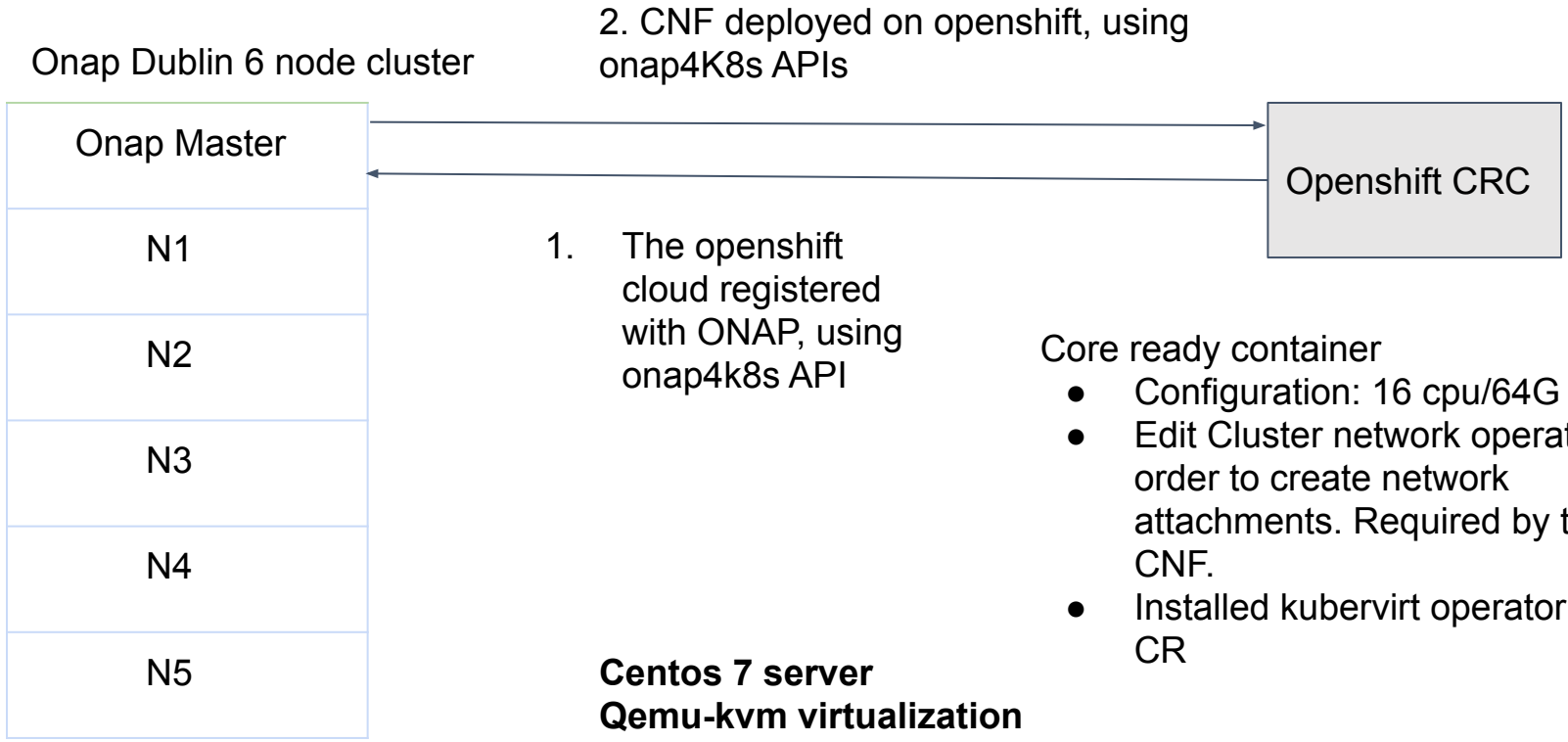
The Setup

- ONAP Dublin
  - OOM deployment
  - Deployed across 6 node K8 cluster on same bare metal server
- Openshift CRC (Red Hat Core ready) VM on same bare metal server
  - CRC: A preconfigured Openshift disk image meant for development and testing.
    - CPUs : 4
    - RAM: 8G
    - DISK: 35G
    - oc client library used to interact with the Openshift cluster
  - Openshift version 4.3.1
  - Kubernetes version 1.16.2

The Setup (Continued…)



Register Openshift Cluster with ONAP

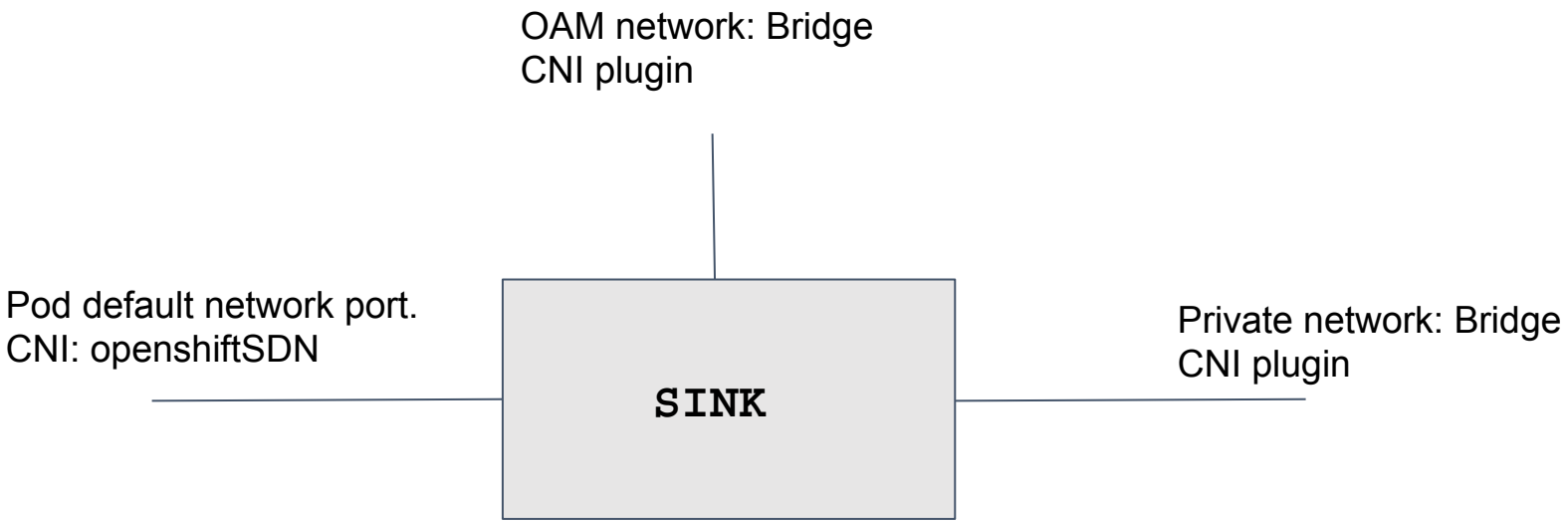
- Call onap4K8s plugin API in order to upload the kubecfonig.

```
curl -i -F "metadata=<${payload};type=application/json" -F
file=@$HOME/.kube/config -X POST ${base_url}
base_url='http://{ONAPMASTER}:30280/api/multicloud-k8s/v1/v1/connectivity-info'
Payload :
        {
            "cloud-region": "crc",
            "cloud-owner": "owner",
            "other-connectivity-list": {
                "connectivity-records": [{
                    "ssl-initiator": "false",
                    "user-name": "kubeadmin",
                    "password": "db9Dr-J2csc-8oP78-9sbmf"
                }]
            }
         }
```

Prepare CNF Helm Chart

- CNF used: Open source vFW
  - Sink: Container
  - FW: VM
  - Packer generator: VM
- Helm Version: Helm3
- VM on Openshift
  - Kubervirt operator/CRD
  - oc apply -f kubervirt_operator.yaml
  - oc apply -f kubevirt_crd.yaml
  - Helm chart with heat template of VM
- Specify multiple network requirements by CNFs in Helm chart...

SINK CNF Networks Setup



SINK CNF Networks Setup (Continued…)

- Openshift (CNO) Cluster network operator
  - Comes up with default CNI openshiftSDN (or OVN)
  - CNO has capability of adding more CNI plugins.
  - Users can create network attachments by adding CNI.
  - CNO creates networkattachmentDefinition CR (custom resource) for Multus CNI.
  - Multus handles CNI chaining.
- For Sink we used the bridge CNI as network attachment.
  - `oc edit networks.operator.openshift.io cluster`

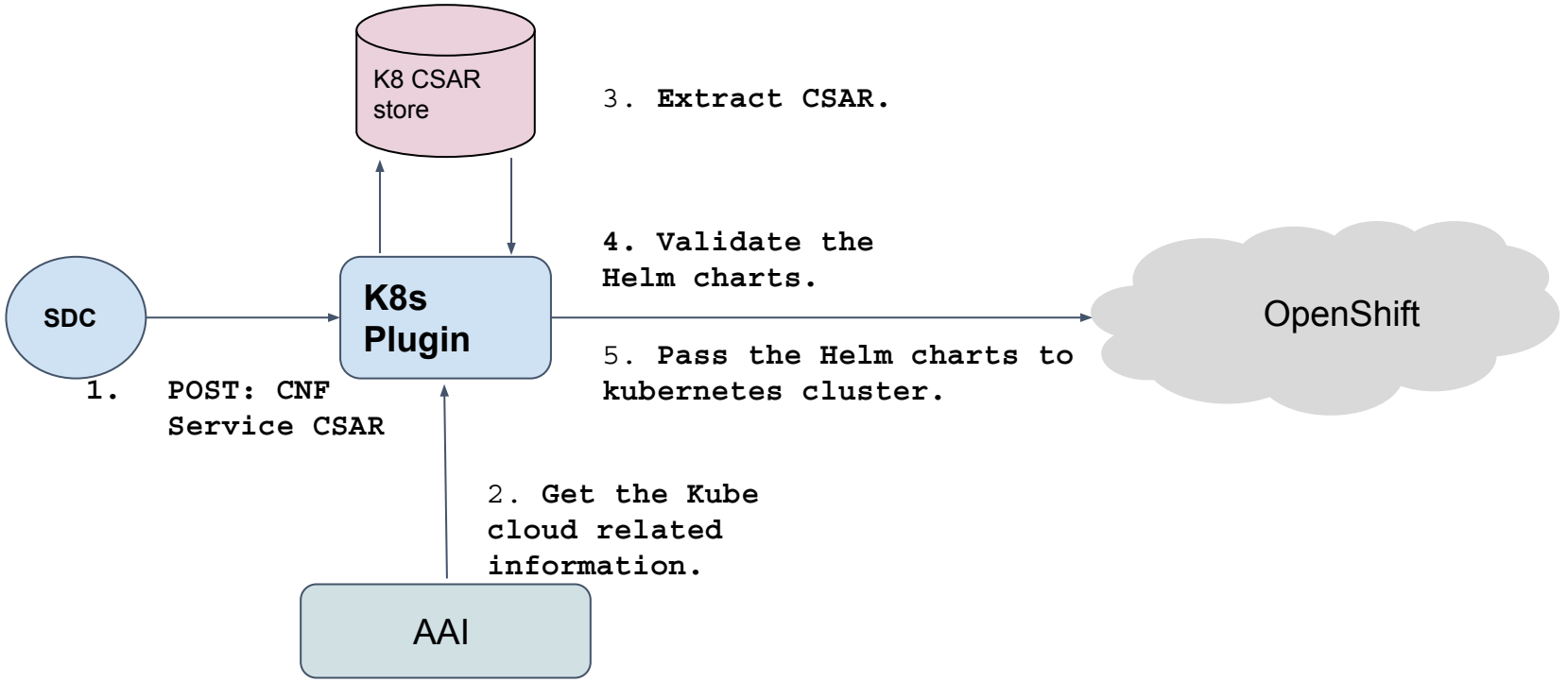
```
spec:
  additionalNetworks:
  - name: unprotected-private-net
    rawCNIConfig: '{ "cniVersion": "0.3.1", "type":
"bridge", "master": "eth1", "ipam":
      { "type": "static" }}'
    type: Raw
```

SINK CNF Networks Setup (Continued…)

- After creating the attachment definition specify the networks in Helm chart

```
annotations:
        k8s.v1.cni.cncf.io/networks: '[
          {
            "name": “unprotected-private-net”,
            "interface" : “eth1”,
            "ips": “192.168.10.10/24” ]
          },
```

CNF Deployment on Openshift



Onap4K8s APIs (V1)

- Design in SDC
  - Create VSP from the vFW helm package
  - Test and Approve
  - Distribute: This step will upload the package to the K8s plugin
- API
  - `curl -i -d @create_rbdefinition.json -X POST http://$NODE_IP:30280/api/multicloud-k8s/v1/v1/rb/definition`
  - `curl -i --data-binary @vfw_cloudtech_k8s_charts.tgz -X POST http://$NODE_IP:30280/api/multicloud-k8s/v1/v1/rb/definition/test-vfw2/v1/content`
  - `curl -i -d @create_rbprofile.json -X POST http://$NODE_IP:30280/api/multicloud-k8s/v1/v1/rb/definition/test-vfw2/v1/profile`
  - `curl -d @create_rbinstance.json http://$NODE_IP:30280/api/multicloud-k8s/v1/v1/instance`
  -

Add CAs for local Container registry to OpenShift

- Configure Additional CA
  - **Create a configmap in openshift-config NS**
  - **oc create configmap registry-config --from-file='myregistrydomain.com..443'=./ca.crt -n openshift-config**
  - ca.crt is the certificate
  - mystegistrydomain.com:443 is the registry name and port number
- Edit the image.config.openshift.io

```
oc edit image.config.openshift.io cluster

spec:

  AdditionalTrustedCA:

    name: registry-config
```

Run POD as USER ID in Openshift

- Openshift giver unique userd ID to applications.
- Problem: Application might want to run as specified user.
- Solution: Create service accounts in the residing project with specific service context constraints (SCC).

```
# oc create ns useanyuid
# oc project useanyuid
# oc create serviceaccount useanyuid
# oc adm policy add-scc-to-user anyuid -z useanyuid --as system:admin
```

In the Deployment of the application specify the serviceaccount,

```
spec:
      serviceAccountName: useanyuid
```

MachineConfig Operator

- Direct changes to Openshift Controller nodes is discouraged.
- For a Day-2 kernel configuration change create MachineConfigs for the running Openshift Container platform.
- Example: set kernel loglevel

```
 apiVersion: machineconfiguration.openshift.io/v1
kind: MachineConfig
metadata:
  labels:
    machineconfiguration.openshift.io/role: master
  name: 99_openshift-machineconfig_master-kargs
spec:
  kernelArguments:
    - 'loglevel=7'
EOF
```

THANK YOU