# Container based network service/function deployment

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# Session goal: answer feedbacks

The purpose of 2nd ARC review is to answer/respond/clarify questions/feedbacks

- Beijing scope
- project impacts analysis on other ONAP projects
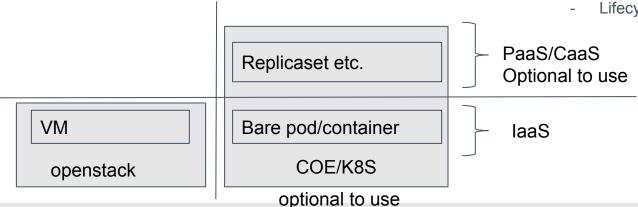- Implication to lifecycle management

# The goal and how to consume COE/K8S

The goal is

- The use of COE/K8S as optional

- Don't change the existing components

- Leverage the existing interfaces and the integration points where possible
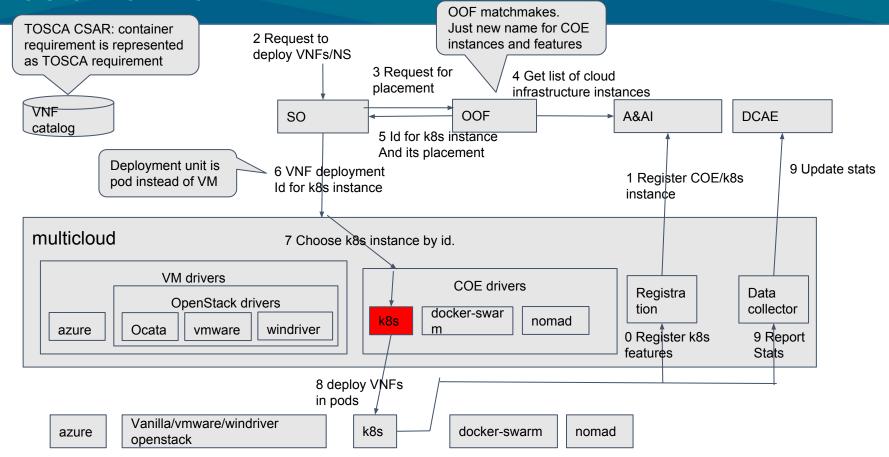
COE/K8S has two aspects

- IaaS: Cloud infrastructure to deploy/run software
  - The existing openstack can be easily extended to COE/K8S

- PaaS/CaaS: External controller to manage software. E.g. replicaset.
  - Optional to use
  - Lifecycle management can be delegated.

| | |
|---|---|
| Replicaset etc. | PaaS/CaaS Optional to use |
| Bare pod/container | IaaS |
| COE/K8S | |

VM

openstack

optional to use

# Basic workflow



TOSCA CSAR: container requirement is represented as TOSCA requirement

OOF matchmakes. Just new name for COE instances and features

2 Request to deploy VNFs/NS

3 Request for placement

4 Get list of cloud infrastructure instances

VNF catalog

SO

OOF

A&AI

DCAE

5 Id for k8s instance And its placement

Deployment unit is pod instead of VM

6 VNF deployment Id for k8s instance

1 Register COE/k8s instance

9 Update stats

multicloud

7 Choose k8s instance by id.

VM drivers

COE drivers

Registration

Data collector

OpenStack drivers

azure

Ocata

vmware

windriver

k8s

docker-swarm

nomad

0 Register k8s features

9 Report Stats

8 deploy VNFs in pods

azure

Vanilla/vmware/windriver openstack

k8s

docker-swarm

nomad

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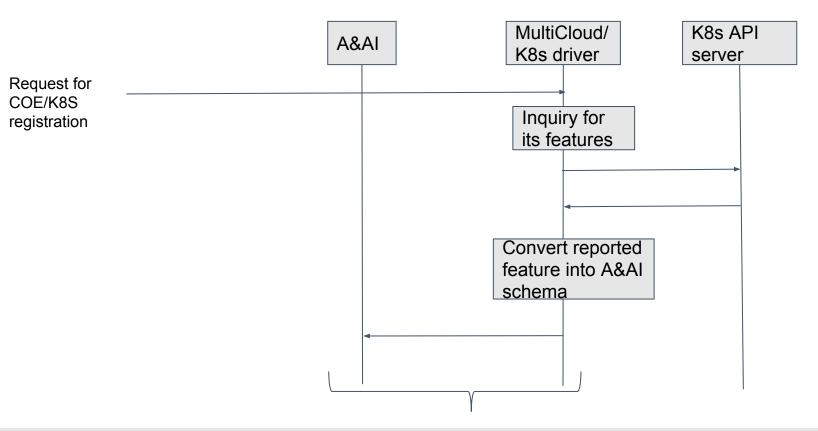OPEN NETWORK AUTOMATION PLATFORM

# Beijing scope

Start as simple as possible

- Pure COE/K8S deployment
  - Assume that COE/K8S is already deployed
  - Deployment unit is Pod
  - Future work
    - Hybrid deployment: VM + container (+ PF)
    - Dynamic deployment of COE/K8S instances on demand

- Multicloud: basic API

- Lifecycle management: keep compatibility of APP-C
  - No (major) change by using bare pod
  - Future work
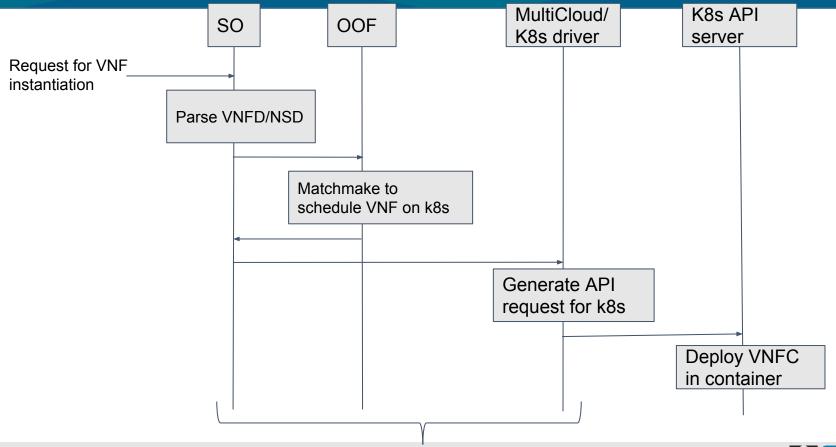    - Delegation in APP-C or VNF controllers is future work
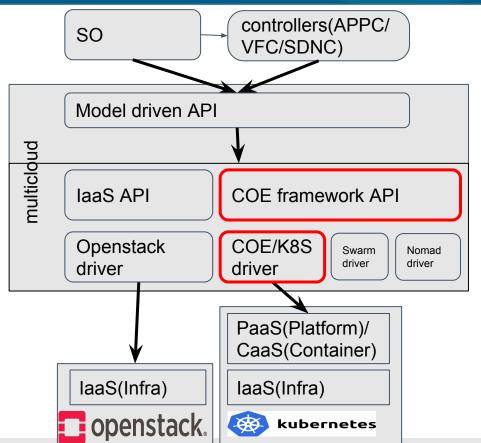
# Operation flow: COE/K8S registration



A&AI    MultiCloud/ K8s driver    K8s API server

Request for COE/K8S registration

Inquiry for its features

Convert reported feature into A&AI schema

No change in operational flow

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# Operation flow: deploying VNF into pod

Request for VNF instantiation

SO

OOF

MultiCloud/ K8s driver

K8s API server

Parse VNFD/NSD

Matchmake to schedule VNF on k8s

Generate API request for k8s

Deploy VNFC in container

No change in operational flow

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# SO/controllers and multicloud enhancement



- model driven API which is already planned in SO/multi cloud

- Reuse (planned internal) IaaS API in multicloud

- New PaaS/CaaS API in multicloud for COE/K8S
  - Passthrough API
  - Future work: Abstracted API as COE to hide COE differences

# Implications to LifeCycle Management

- VNF packaging
  - No change in format: reuse the existing format
- VNF instantiation
  - Already discussed in the previous slides
- VNF operation
  - With bare pod, Controllers(APP-C) can continue to work with no (major) change.
  - Delegating management to COE/K8S is another discussion as future work.
    - New adaptors to call COE/K8S or multicloud API
    - Non-invasive because it's new adaptor

# Project Impact analysis: summary

| component | comment |
|---|---|
| modelling | New names of Data model to describe k8s node/COE instead of compute/openstack. Already modeling for k8s is proposed. |
| SO | Multi-cloud adapter to call multicloud k8s driver. ARIA adaptor which already was merged will be utilized. The difference of VM and container will be hidden in model driver API |
| OOF | New policy to use COE, to run VNF in container |
| A&AI/ESR | Schema extensions to represent k8s data. (kay value pairs) |
| Multicloud | New driver for COE/k8s.<br>(depending on the community discussion, ARIA and helm support needs to be considered. But this is contained within multicloud project.) |
| controllers/APP-C | No impact or new adaptor |

- The code change/enhancement is contained in multicloud project
- Schema/policy enhancement to allow COE/K8S
  - Only new entry. Matchmaking logic will remain without change
- The existing APIs/integration points/workflows are re-used untouched.

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