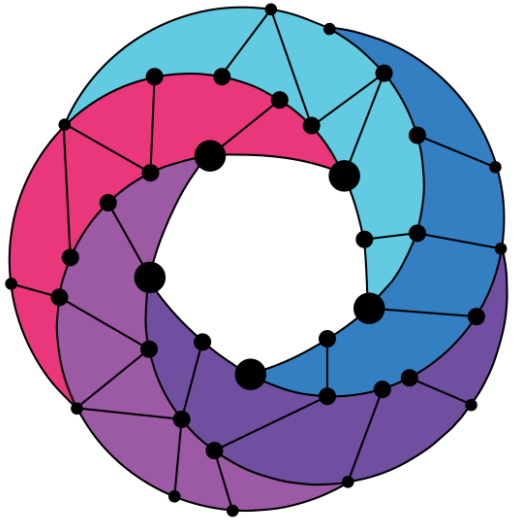

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OSM-MR#9 Hackfest – Day 2

ETSI

Agenda for today (CET)

Recap on the logistics and way of working

- Join us every day on **G2M**
  - https://www.gotomeet.me/OSMhackfest
  - Please enter your **name & email**
  - Use a **headset** and **mute** yourself during the sessions
  - Sessions are being recorded and will be posted on YouTube
- Ask questions any time on Slack **#hackfests** channel
  - Please create a dedicated thread for each issue
- Slides are made available in the wiki
- Resources spreadsheet can be found in this link

Comms & Social Media

- You can follow Open Source MANO and this hackfest on:
  - https://twitter.com/OpenSourceMANO
  - https://www.linkedin.com/company/open-source-mano
  - https://www.youtube.com/c/OpenSourceMANO
- Share your thoughts, impressions, pictures or screenshots on social media, blog posts...
  - Mentions are welcome!

@OpenSourceMANO #OSMMR9hackfest

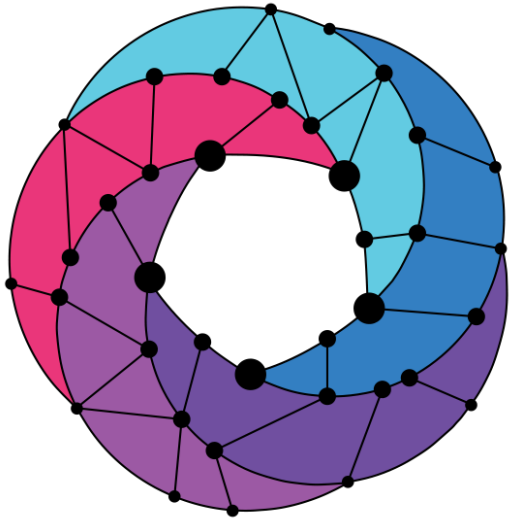
Warning

- If you are an advanced user or you are reading this presentation in advance…

PLEASE DO NOT DEPLOY

A KUBERNETES CLUSTER IN THE VIM!

(WE WILL USE AN EXISTING ONE)



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OSM-MR#9 Hackfest – Day 2
Session 1. K8s support in OSM

Gerardo García (Telefónica)

Why K8s in OSM?

- Applications based in micro-services
  - OSM is, in fact, already running in K8s, both distros and community installer
- Upcoming NFV use cases: 5G Core, uCPE/SD-WAN...
- K8s apps and clusters are essential ingredients for many Edge use cases

kubernetes

How K8s-based apps are modelled today

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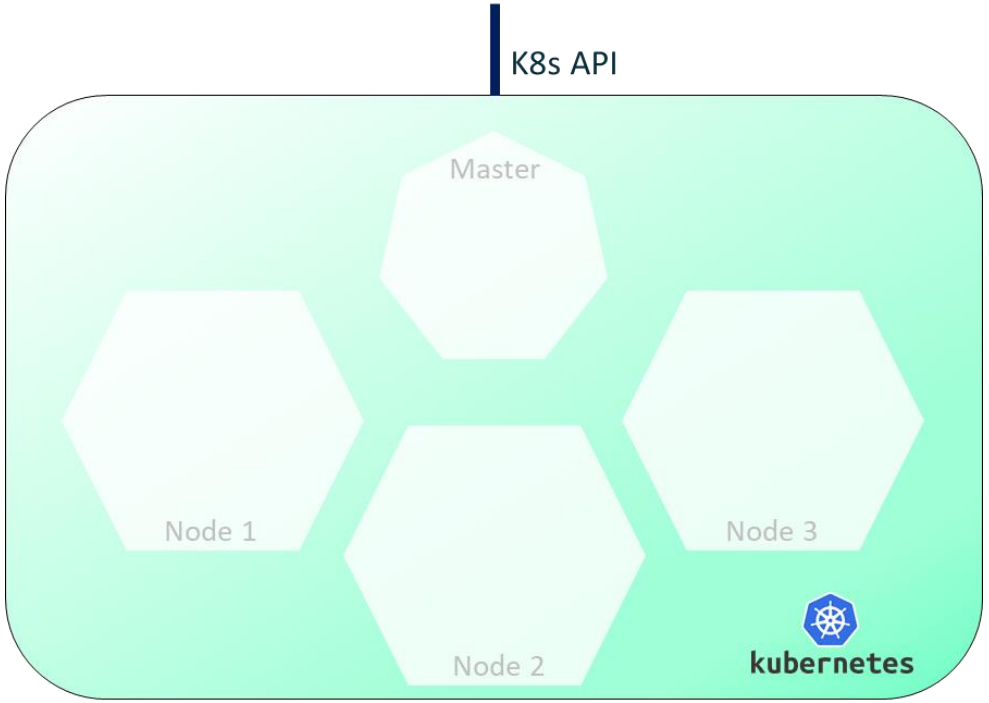
- K8s provides a huge number of high-level service objects, which are the core of its functionality:
  - Pod sets*: deployments (+replicasets), statefulsets
  - Services: clusterIP, NodePort, LoadBalancer
  - Storage: persistent volumes, persistent volume claims
  - …



- TWO ways to deploy a K8s app:
  - **Helm charts**: packaged format + indirect call to the K8s API via helm
  - **Juju charms and bundles**: packaged format + indirect call to the K8s API via Juju

(*) The concept "pod set" is not part of K8s terminology, but has been used here for convenience

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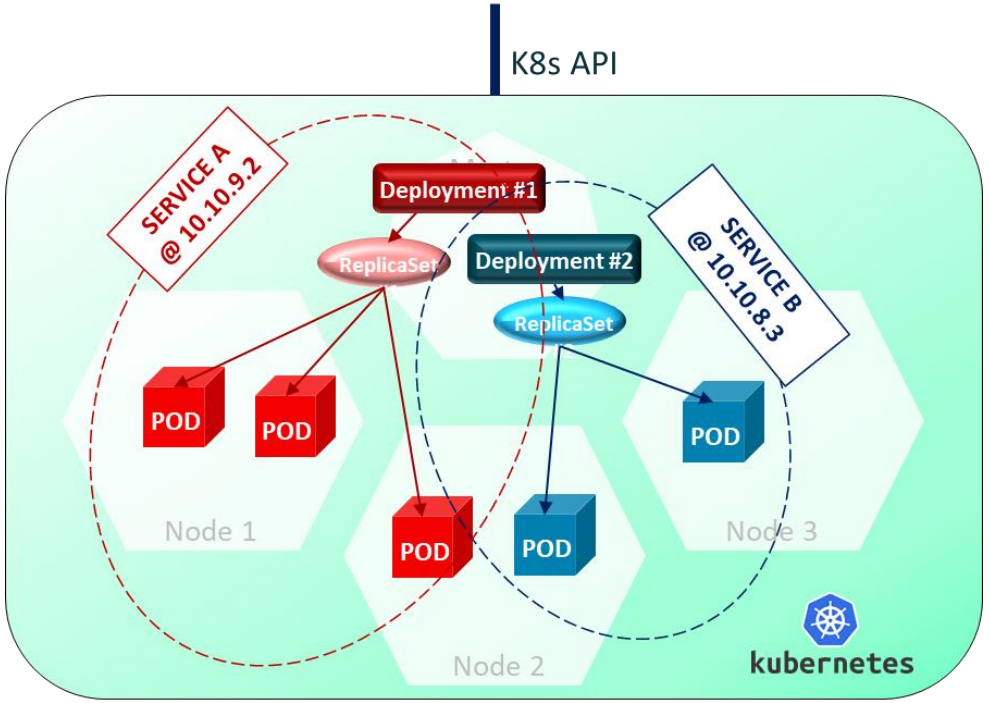

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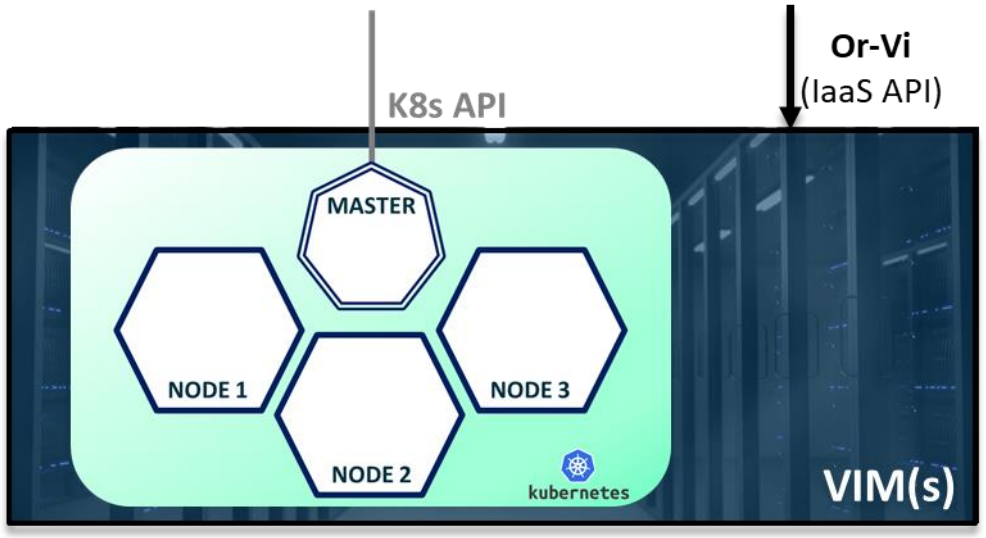
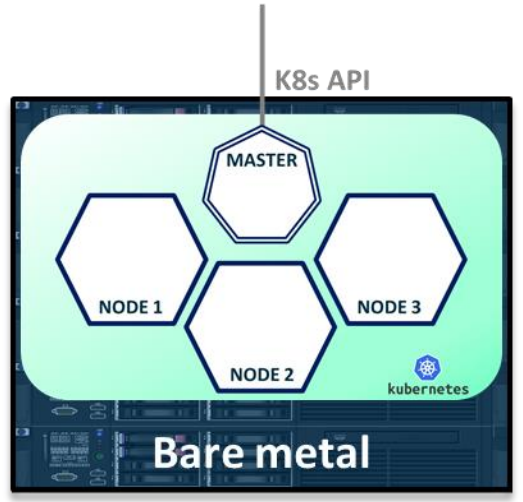
Requirements of K8s-based apps: a K8s cluster

- The K8s cluster:
  - Can be created in different ways:
    - Standalone: Openshift, Charmed K8s, Ericsson CCD, etc.
    - As part of a VIM: VMware Cloud PKS, AWS, etc.
  - Can run on Bare Metal or on VMs running in a VIM
  - Once created, each cluster provides a K8s API, irrespective of the way it was created.
- Specific versions of K8s or CNI plugins might be required





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K8s support in OSM

From K8s apps to xNF
Model-driven (like everything in OSM)

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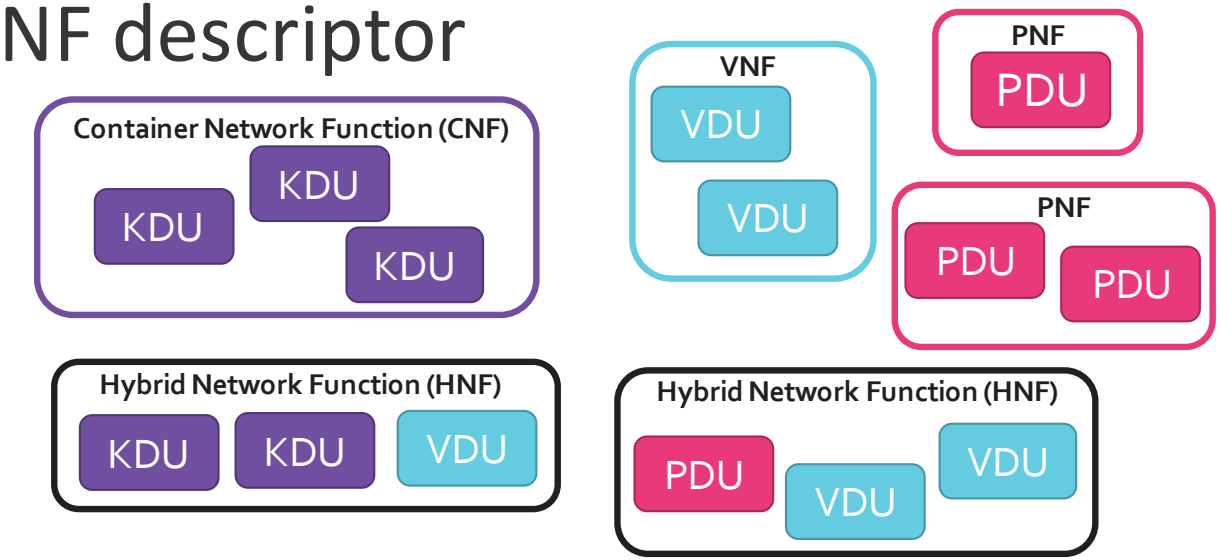
- NF composition specified in the VNF descriptor
  - Deployment Units:
    - Virtual (VDU) = VM
    - Physical (PDU) = Physical Node
    - Kubernetes (KDU) = K8s app



- Modelling in the VNF descriptor:
  - KDU based on helm charts or juju bundles

```
+--ro kdu* [name]
|  +--ro name                string
|  +--ro description?        string
|  +--ro (kdu-model)?
|  |  +--:(helm-chart)
|  |  |  +--ro helm-chart?   string
|  |  +--:(juju-bundle)
|  |     +--ro juju-bundle?  string
```

  - K8s cluster requirements:

```
+--rw k8s-cluster
|  +--rw version*   string
|  +--rw cni*       enumeration
|  +--rw nets* [id]
|     +--rw id                                string
|     +--rw external-connection-point-ref?    -> ../../../connection-point/name
```

Two steps are considered in OSM

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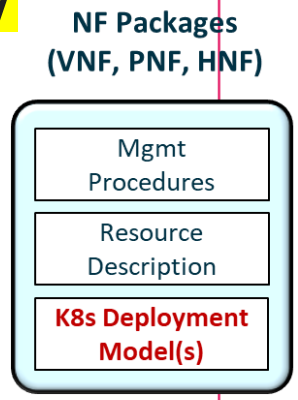
STEP #1. CREATION OF THE K8S CLUSTER

OPTIONS:

1. **By an external platform, static**
   - Cluster is then registered into OSM administratively
2. **By using external standalone platform API**
   - Covered by plugin model (Rel EIGHT)
3. **By using "enriched" APIs in some VIMs**
   - Covered by plugin model (Rel EIGHT)
4. **Created by OSM as a regular NS**

STEP #2. USE OF THE K8S CLUSTER

- **The full catalog of K8s objects is entirely incorporated in a future-proof manner**:
  - **Helm charts**: +20,000 stable applications are already available for production
  - **Juju bundles**: fairly powerful for inter-object configurations
- OSM also supports **hybrid cases**, which are required for real VNFs (e.g. 5G Core)

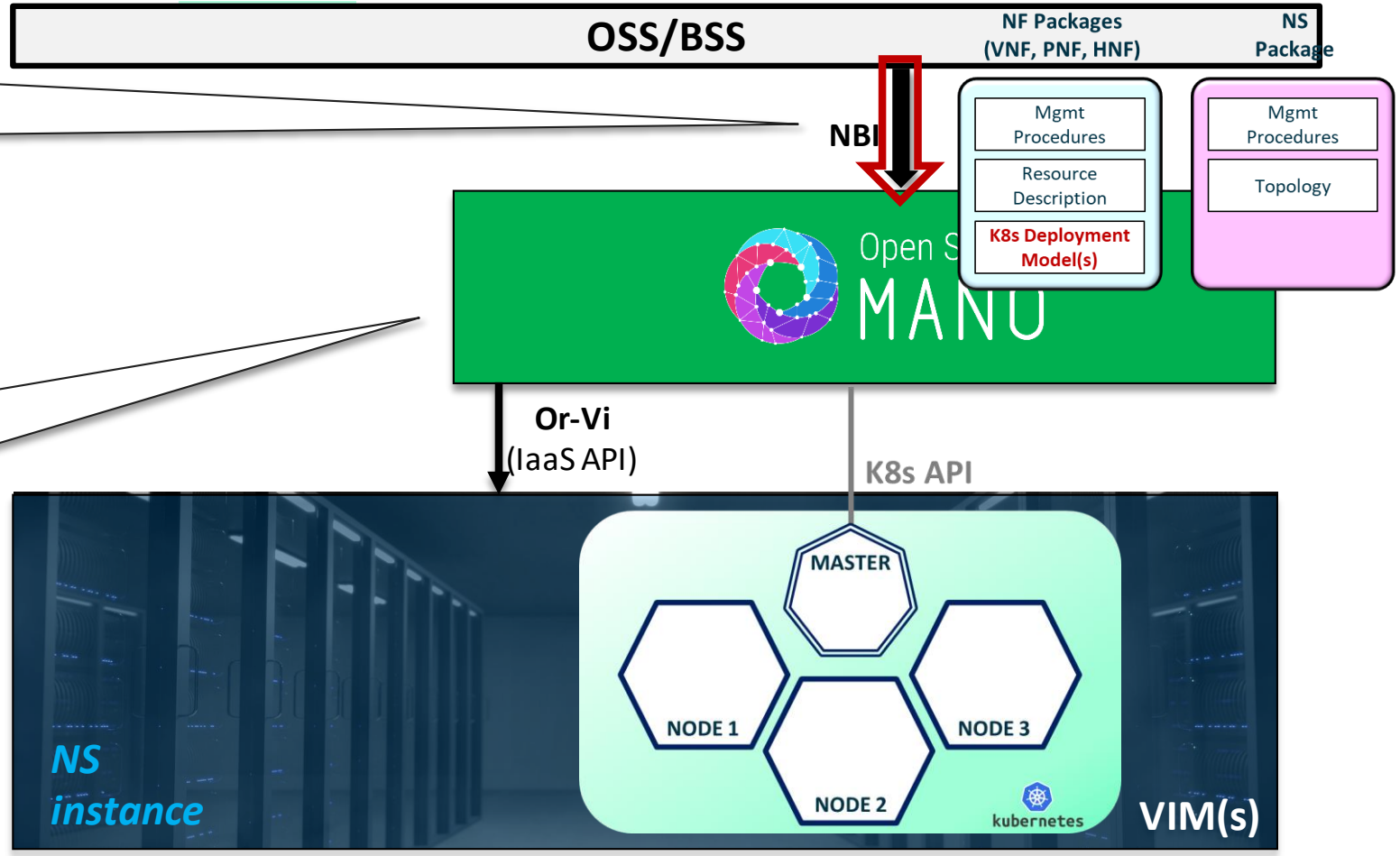


Ready since Release SEVEN!

OSM NBI abstracts the operations required to manage the life cycle of KDU in the context of a NS

OSM operations:
- NS instantiate
- NS primitive
- NS termination

Full K8s app lifecycle operations:
- install
- upgrade
- rollback
- delete



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How to create a K8s cluster

Cluster creation using OSM packages

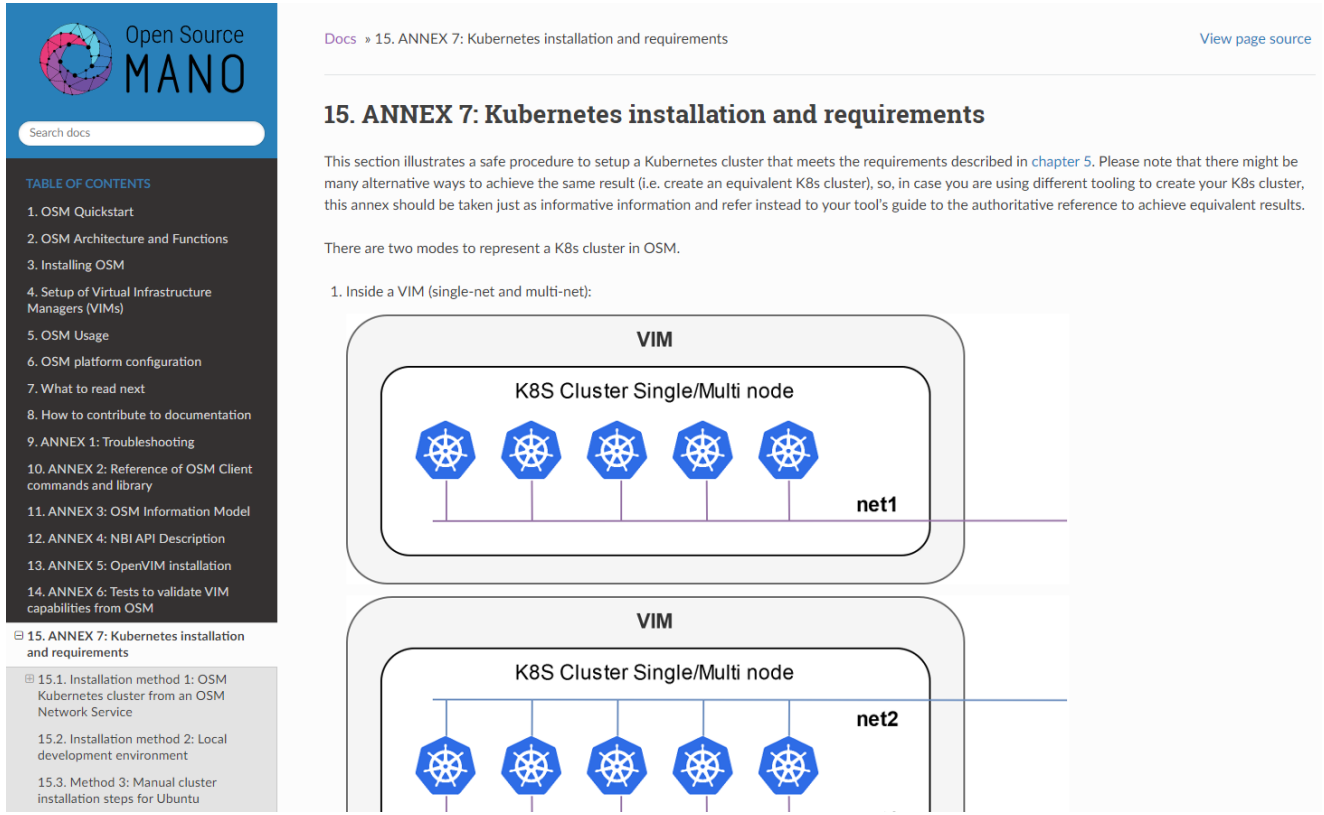
Friendly reminder

PLEASE DO NOT DEPLOY
A KUBERNETES CLUSTER IN THE VIM!

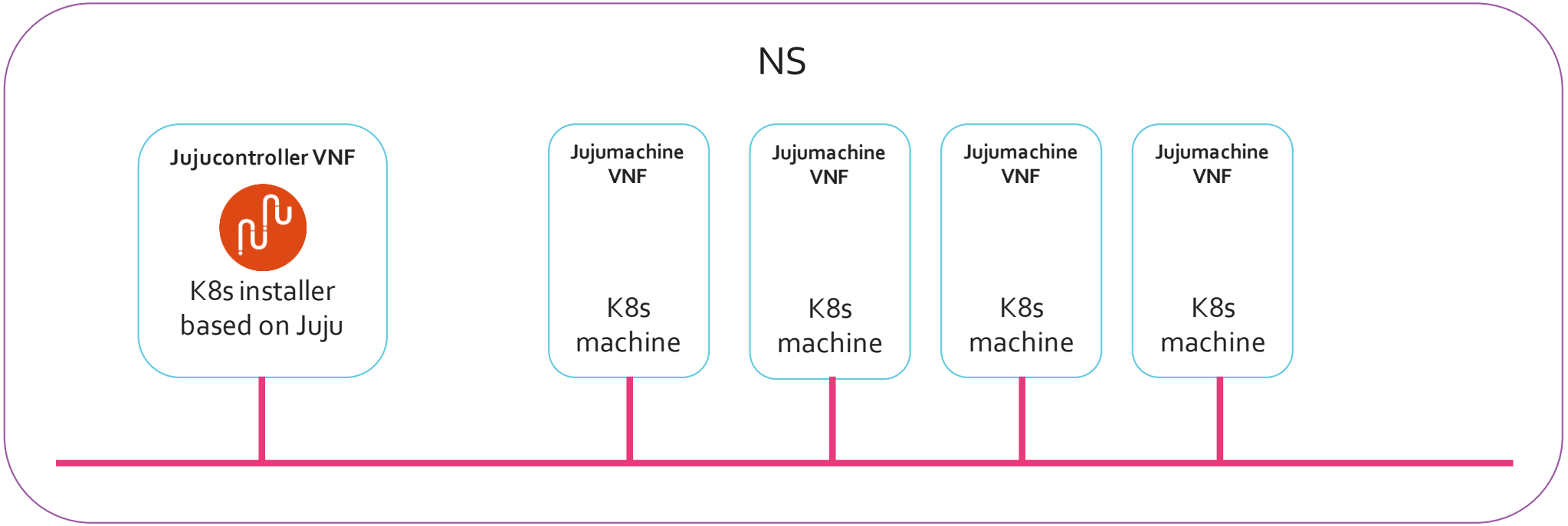
(WE WILL USE AN EXISTING ONE)

How to install a K8s cluster

You can follow this guide:
https://osm.etsi.org/docs/user-guide/15-k8s-installation.html



How to install a K8s cluster using OSM packages



How to install a K8s cluster using OSM packages

```
osm nfpkg-create k8s_jujumachine_vnf.tar.gz
osm nfpkg-create k8s_jujucontroller_vnf.tar.gz
osm nspkg-create k8s_juju_ns.tar.gz
osm ns-create --ns_name k8s-cluster \
              --nsd_name k8s_juju \
              --vim_account <VIM_ID> \
              --config_file config.yaml \
              --ssh_keys ${HOME}/.ssh/id_rsa.pub
```

Final warning!

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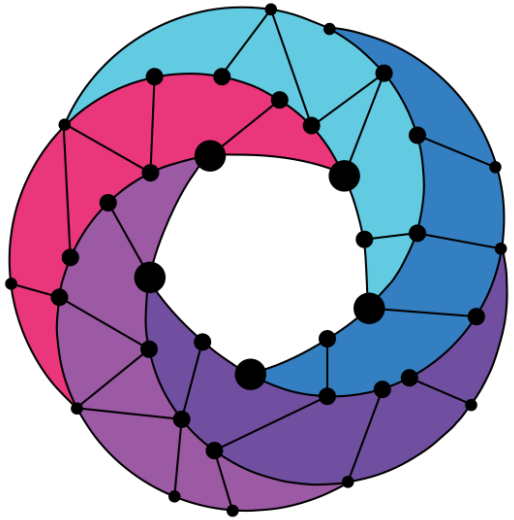

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