OSM-MR#11 Hackfest
OAI Onboarding Challenge
Tasks and technicalities

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OAI on-boarding challenge - task

• Deploy OAI network function and simulators using OSM
• Test if OAI is working correctly
• Automate a configuration change
• Automate a scale-up operation by deploying additional gNB RF SIM
• Upgrade AMF
OAI on-boarding challenge - criteria

• Deployment - successful deployment of entire setup
• Demo - quality of the demonstration
• Presentation - quality of the presentation
• Actions/Operations - amount of implemented actions
• Additional points can be gained for unit tests and documenting your work
OAI on-boarding challenge - task

Production Grade Kubernetes Cluster

- OAI-NR-UE
- OAI-gNB RFSim
- NGAP/GTPU
- OAI-AMF
- MySQL Server
- N3
- OAI-UPF (OAI-SPGWU)
- OAI-SMF
- OAI-NRF
- Nrf
- Nsmf
- N4
- CNI
- Multus CNI
- Deployment Order

Each network function is deployed in a pod and these pods are distributed among different host machines.
• Write juju charms for OAI network functions
• Write OSM deployment descriptors for OAI network functions
• Deploy OAI network functions (amf, smf, nrf, upf)
• Deploy simulators and testing tools (nr-ue, oai-gnb)
Materials and guides

• Development setup for charms [https://juju.is/docs/sdk/dev-setup](https://juju.is/docs/sdk/dev-setup)
• Onboarding [https://osm.etsi.org/docs/vnf-onboarding-guidelines/](https://osm.etsi.org/docs/vnf-onboarding-guidelines/)
• OAI tutorial
  [https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-fed/-/blob/helm-update/docs/DEPLOY_SA5G_HC.md#6-changes-for-vanila-kubernetes](https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-fed/-/blob/helm-update/docs/DEPLOY_SA5G_HC.md#6-changes-for-vanila-kubernetes)
Simple CNI

• To make the task easier we will not work with multiple networks and Multus (it’s required on production)
• use Micro K8s - small, simple and dev friendly K8s cluster
• run amf, smf, nrf, upf all of them on eth0
• nr-ue and oai-gnb on eth0 as well
• only gNB needs static ip-address, which can be set up like this: https://docs.projectcalico.org/networking/use-specific-ip
Connectivity
Connecting to the lab

• Each team member needs a HIVE VPN access
• Each team will receive their own VM with OSM installed
• Each team will receive an empty K8s cluster (MicroK8s)
HIVE Network Topology

Participant (You) → Internet → HIVE VPN → Canonical Partner Cloud

Team 1 OSM 172.21.18.11
MicroK8s 172.21.18.31

Team 2 OSM 172.21.18.12
MicroK8s 172.21.18.32

Team 3 OSM 172.21.18.13
MicroK8s 172.21.18.33

Team 4 OSM 172.21.18.14
MicroK8s 172.21.18.34

Team N OSM 172.21.18.1N
MicroK8s 172.21.18.3N

Team 9 OSM 172.21.18.19
MicroK8s 172.21.18.39
Accessing Your Instances

OSM instances:

- `ssh ubuntu@172.21.18.11 / password hackfest`
- OSM Web UI: `https://ui.172.21.18.11.nip.io/login`
  
  User: admin, Password: admin

Microk8s instances:

- `ssh ubuntu@172.21.18.31 / password hackfest`
Example charms
How charms should look like

- https://github.com/charmed-osm/oai-bundle