OSM #10 Hackfest – HD1.6 – Launching network services

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Recap on the OSM access

Two ways to interact with OSM:

- Dashboard
  http://172.21.248.73 (Users1-30)
  http://172.21.248.98 (31-60)
  (user / pass: osm_hackfest_x)

- CLI, vía SSH to the mgmt VM
  ssh osm_hackfest_x@172.21.248.4
  (user / pass: osm_hackfest_x)

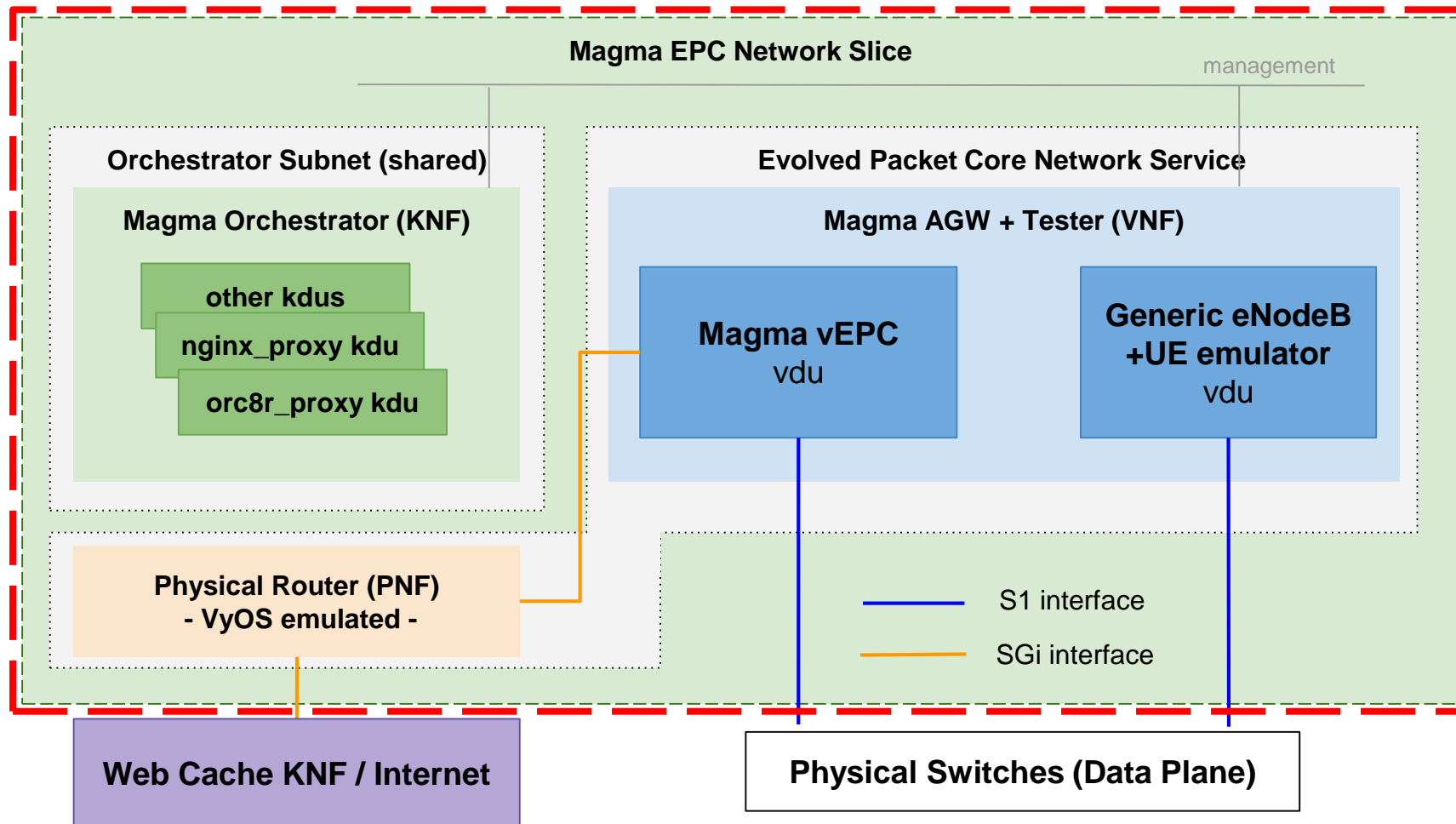# Presentation & Hands-on:
Launching network services

The EPC Network Slice
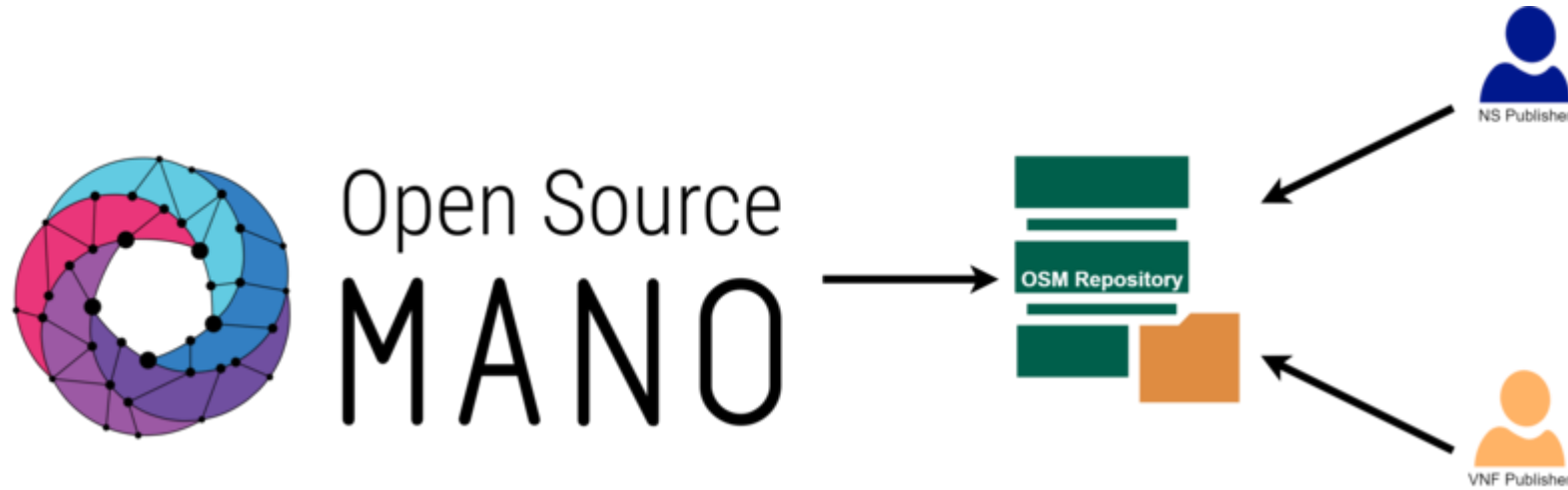
Network Slice Requirements

VNFD:

- fb_magma_knf
- hackfest_magma-agw-enb_vnfd
- hackfest_gateway_vnfd

NSD:

- fb_magma_nsd
- hackfest_magma-agw-enb_nsd

NST:

- **magma_slice.yaml**

OSM Repositories

- In order to **add a new repo**, the user should invoke the following command:

```
osm repo-add --description <repo description>
           <repo name> <repository_url>
```

Adding external repos

```
osm repo-add --type helm-chart --description "Repository for
Facebook Magma helm Chart" magma http://osm-
download.etsi.org/ftp/Packages/vnf-onboarding-tf/helm/

osm repo-add --description "Repository for OSM VNF Catalog"
vnfrepo https://osm.etsi.org/vnf-catalog/Testing/
```

More info about OSM repositories here:

https://osm.etsi.org/docs/user-guide/06-osm-platform-configuration.html#osm-repositories

Adding external repos

- osm repo-list

```
+----------+--------------------------------------+------------+------------------------------------------------------------------------+---------------------------------------+
| Name     | Id                                   | Type       | URI                                                                    | Description                           |
+----------+--------------------------------------+------------+------------------------------------------------------------------------+---------------------------------------+
| magma    | 92b72c06-3588-4968-9b7d-11792b0f2080 | helm-chart | http://osm-download.etsi.org/ftp/Packages/vnf-onboarding-tf/helm/      | Repository for Facebook Magma helm Chart |
| vnfrepo  | dc9939a8-4bb1-4641-a0ce-0dd26d13b94c | osm        | https://osm.etsi.org/vnf-catalog/Testing/                             | Repository for OSM VNF Catalog        |
+----------+--------------------------------------+------------+------------------------------------------------------------------------+---------------------------------------+
```

Useful commands for managing repos

```
repo-add                adds a repo to OSM

repo-delete             deletes a repo

repo-index              Index a repository from a folder with artifacts

repo-list               list all repos

repo-show               shows the details of a repo

repo-update             updates a repo in OSM

vnfpkg-repo-list        list all xNF from OSM repositories

vnfpkg-repo-show        shows the details of a NF package in an OSM repository

nspkg-repo-list         list all NS from OSM repositories

nspkg-repo-show         shows the details of a NS package in an OSM repository
```

Onboarding our descriptors

- ## We will retrieve some configuration files from the repository that will help us to build the slice:

```
wget https://osm.etsi.org/gitlab/vnf-onboarding/osm-packages/-/raw/master/magma/params.yaml

wget https://osm.etsi.org/gitlab/vnf-onboarding/osm-packages/-/raw/master/magma/magma_slice.yaml

wget https://osm.etsi.org/gitlab/vnf-onboarding/osm-packages/-/raw/master/magma/pdu.yaml
```

Onboarding our descriptors

- PDU:
```
VIMID=`osm vim-list| grep "osm_hackfest*"|awk '{ print $4 }'`
sed -i "s/vim_accounts: .*/vim_accounts: [ $VIMID ]/" pdu.yaml
osm pdu-create --descriptor_file pdu.yaml
```

- VNF packages:
```
osm nfpkg-create --repo vnfrepo fb_magma_knf
osm nfpkg-create --repo vnfrepo hackfest_gateway_vnfd
osm nfpkg-create --repo vnfrepo hackfest_magma-agw-enb_vnfd
osm nfpkg-create --repo vnfrepo squid_cnf
```

- NS packages:
```
osm nspkg-create --repo vnfrepo fb_magma_ns
osm nspkg-create --repo vnfrepo hackfest_magma-agw-enb_nsd
osm nspkg-create --repo vnfrepo squid_cnf_ns
```

- NST file:
```
osm netslice-template-create magma_slice.yaml
```

- `osm nsi-create --help`

```
Usage: osm nsi-create [OPTIONS]
  creates a new Network Slice Instance (NSI)

Options:
  --nsi_name TEXT   name of the Network Slice Instance
  --nst_name TEXT   name of the Network Slice Template
  --vim_account TEXT   default VIM account id or name for the deployment
  --ssh_keys TEXT   comma separated list of keys to inject to vnfs
  --config TEXT     Netslice specific yaml configuration:
                    netslice_subnet: [
                    id: TEXT, vim_account: TEXT,
                    vnf: [member-vnf-index:
                    TEXT, vim_account: TEXT]
                    vld: [name: TEXT, vim-network-
                    name: TEXT or DICT with vim_account, vim_net entries]],
                    netslice-vld: [name: TEXT, vim-network-name: TEXT or
                    DICT with vim_account, vim_net entries]
  --config_file TEXT  nsi specific yaml configuration file
  --help             Show this message and exit.
```

Creating a Network Slice Instance

```
netslice-subnet:
- id: slice_hackfest_nsd_epc
  additionalParamsForVnf:
  - member-vnf-index: 'MagmaAGWsrsLTE'
          additionalParams:
          agw_id: 'agw_100'
          agw_name: 'AGW100'
          orch_ip: '172.21.251.XX'
          orch_net: 'osmnet'

- id: slice_hackfest_nsd_epcmgmt
  additionalParamsForVnf:
  - member-vnf-index: 'orc8r'
          additionalParamsForKdu:
          - kdu_name: orc8r
          additionalParams:
          proxyserviceloadBalancerIP: '172.21.251.XX'
```

```
sed -i "s/orch_ip:.*/orch_ip: '$ORCH_IP'/" params.yaml
sed -i "s/proxyserviceloadBalancerIP:.*/proxyserviceloadBalancerIP: '$ORCH_IP'/" params.yaml
```

Creating, Listing and Deleting a Network Slice Instance

- NSI instantiation
```
osm nsi-create --nsi_name magma_slice_${OSM_USER} \
--nst_name magma_slice_hackfest_nst \
--vim_account osm_hackfest_1 \
--config_file params.yaml
```

- List Network Slice Instances
  - `osm nsi-list`

- Delete Network Slice Instance
  - `osm nsi-delete <nsi_name> or <nsi_id>`

Managing Network Slice Instances (via CLI)

- Creates a new Network Slice Instance
  - `netslice-instance-create / nsi-create`
- Deletes a Network Slice Instance
  - `netslice-instance-delete  / nsi-delete`
- List all Network Slice Instances (NSI)
  - `netslice-instance-list / nsi-list`
- Shows the history of operations over a Network Slice Instance(NSI)
  - `netslice-instance-op-list / nsi-op-list`
- Shows the info of an operation over a Network Slice Instance(NSI)
  - `netslice-instance-op-show / nsi-op-show`
- Shows the content of a Network Slice Instance (NSI)
  - `netslice-instance-show / nsi-show`

The Network Slice deployment
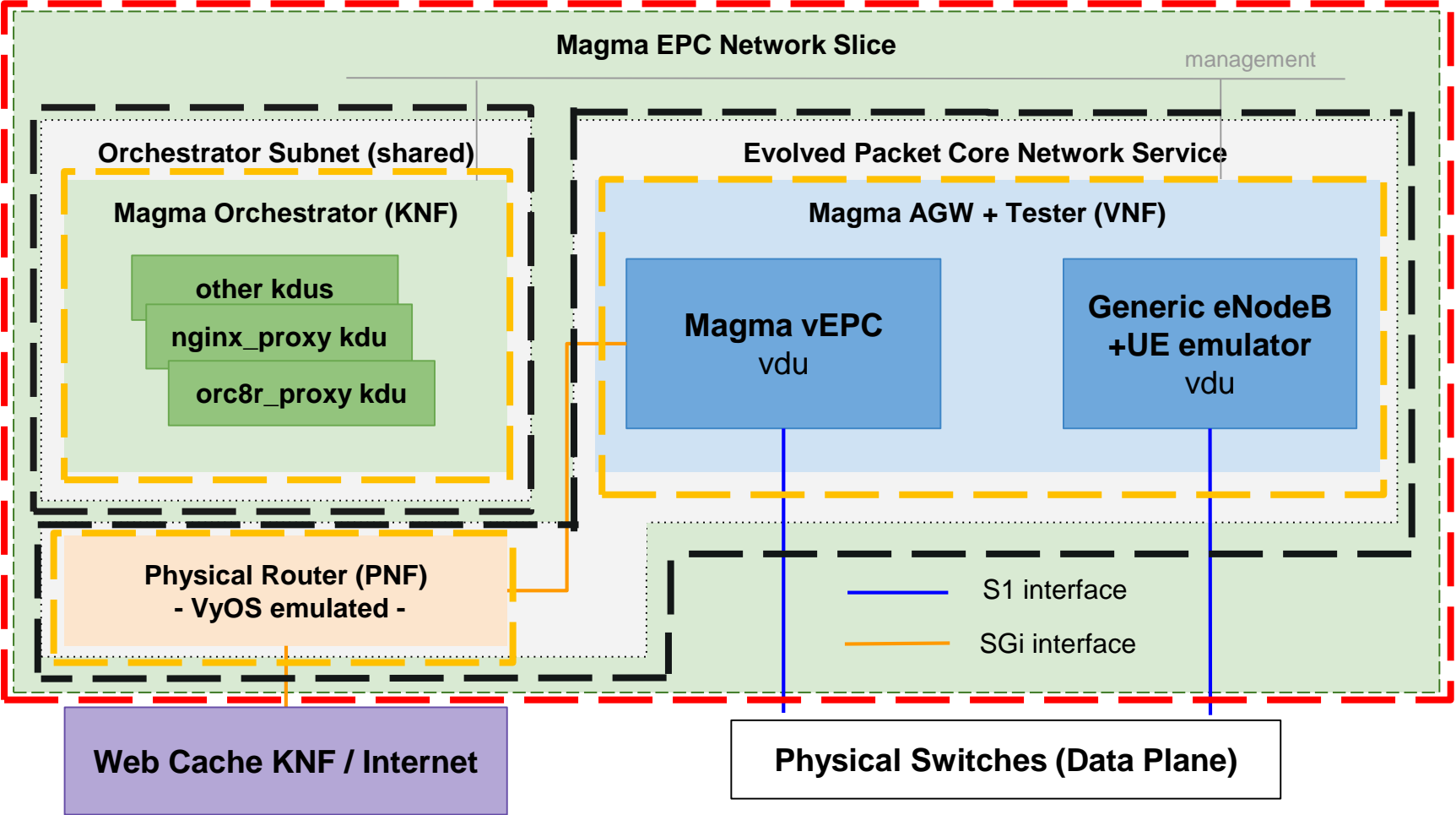
The Network Slice deployment

The red dashed line represents the network slice instance:

`osm nsi-list /osm nsi-show`

The Network Slice deployment

The black dashed lines represent the network slices subnets/network services:

```
osm ns-list /osm ns-show
```

NS Instances

🕐 init ✅ running / configured ❌ failed

Name	Identifier	Nsd name	Operational Status	Config Status	Detailed Status
Name	Identifier	Nsd name	Select	Select	Detailed Status
magma_slice_osm_instructor_7.slice_hac kfest_nsd_epc	98b1d1b4-5611-4ef4-bb0c-26bbb912cfbc	hackfest_magma-agw-enb_nsd	✅	✅	Done
magma_slice_osm_instructor_7.slice_hac kfest_nsd_epcmgmt	35f84b23-68a9-40d5-84ed-d38fdf9d72fd	fb_magma_ns	✅	✅	Done

The Network Slice deployment

Yellow dashed lines represent the VNFs:

- `osm vnf-list/osm vnf-show`

VNF Instances

Entries | 10 ♦

Identifier	VNFD	Member Index	NS	Created At	Actions
					VNFR
5dc53f36-8bbf-4940-992e-a7bdcbe5fb55	hackfest_magma-agw-enb_vnfd	MagmaAGWsrsLTE	98b1d1b4-5611-4ef4-bb0c-26bbb912cfbc	Nov-29-2020 12:37:18	i
9cc8127c-1d55-413e-aa29-12a3e22c1c76	fb_magma_knf	orc8r	35f84b23-68a9-40d5-84ed-d38fdf9d72fd	Nov-29-2020 12:37:18	i
e7daffea-07ef-49b3-ab1e-966f8429dbf5	hackfest_gateway_vnfd	VYOS-PNF	98b1d1b4-5611-4ef4-bb0c-26bbb912cfbc	Nov-29-2020 12:37:18	i

The Network Slice deployment

- VNF deployment:
    - Openstack GUI (http://172.21.247.1/project/instances/)
    - Using the CLI: `openstack server list`

- KNF deployment:

```
PROJ_ID=`osm project-list | grep $OSM_USER | awk '{ print $4 }'`
kubectl get svc -n$PROJ_ID
```
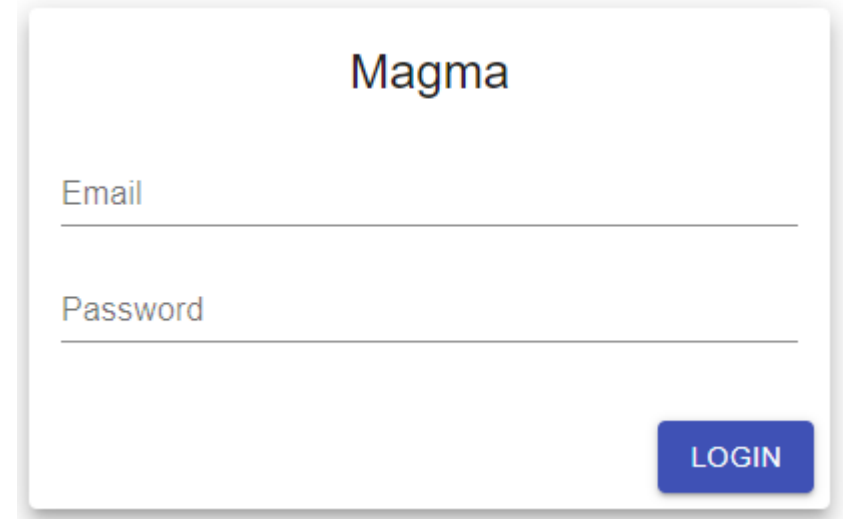
Magma EPC

- Once the slice is deployed, we can log into Magma Web interface
  - Credentials:
    - admin@magma.test
    - password1234

```
VNFID=`osm vnf-list | grep orc8r | awk '{ print $2 }'`

osm vnf-show $VNFID --kdu orc8r > vnf-show.txt

MAGMAWEBIP=`cat vnf-show.txt | grep nginx-proxy | grep "LoadBalancer" | awk '{ print $4 }'`

echo Magma web interface is https://$MAGMAWEBIP
```
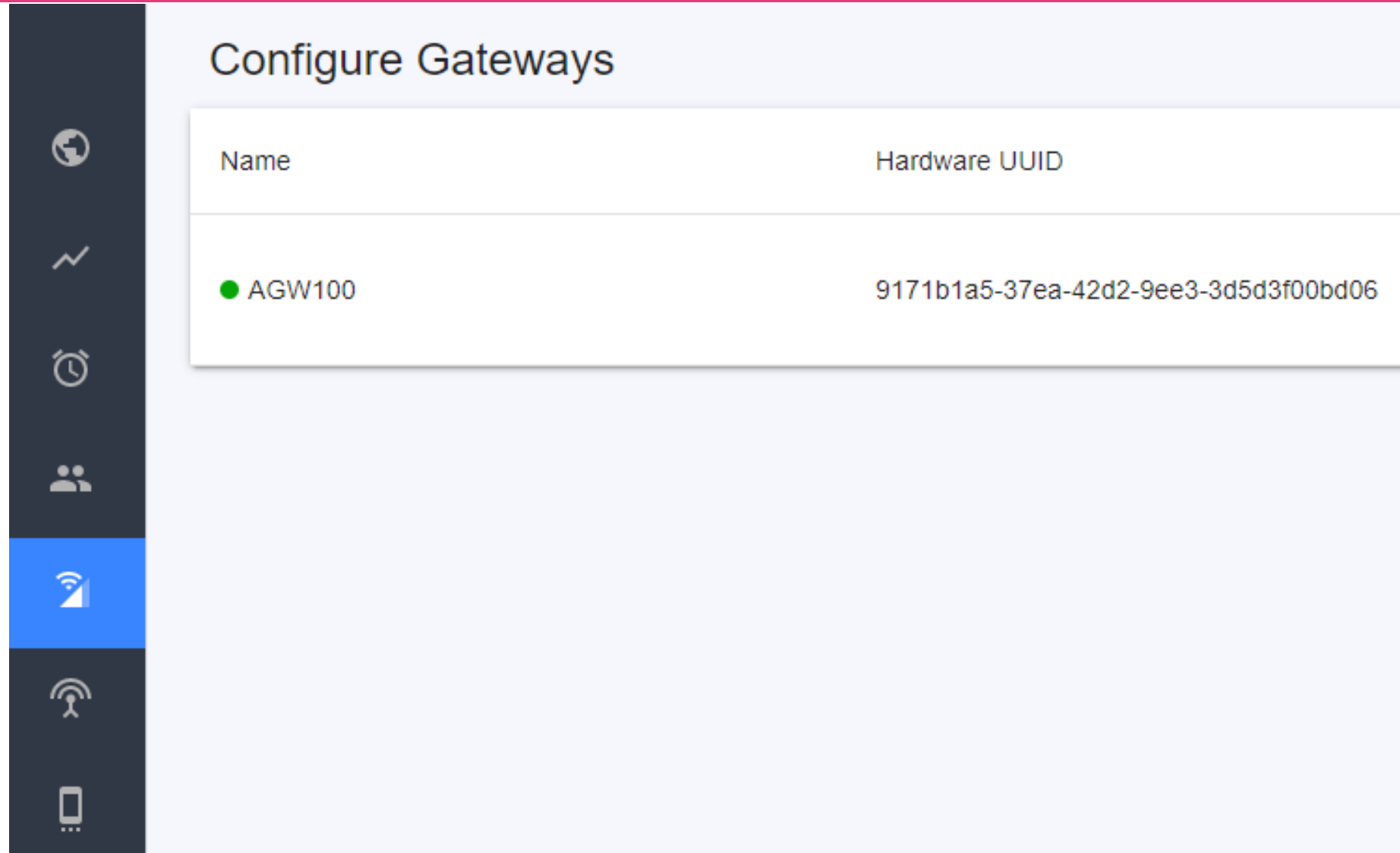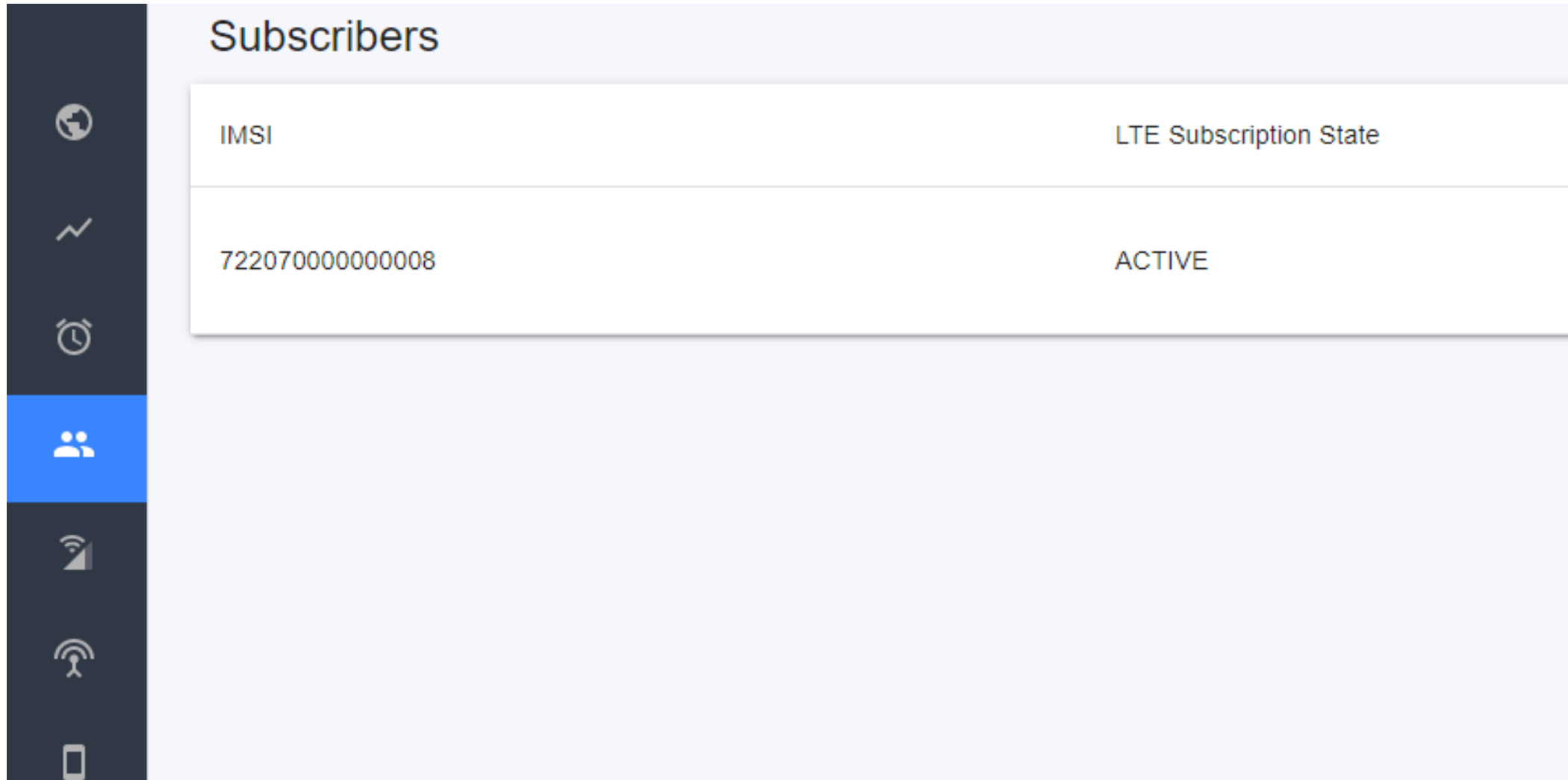
Day 1: Magma AGW Auto Registers

Day 1: Subscriber auto registered

Open Source MANO

Subscribers

IMSI	LTE Subscription State
722070000000008	ACTIVE

Shared Network Slices

- Let's share the Magma Orchestrator

Datacenter 1

Datacenter 1

NSI: magma_slice_1

slice_vld_mgmt

netslice-subnet:
slice_hackfest_nsd_epcmgmt

ns: fb_magma_ns
is-shared-nss: true

CP: nsd_cp_mgmt

netslice-subnet:
slice_hackfest_nsd_epc

ns: hackfest_magma-agw-enb_nsd

CP: nsd_cp_mgmt

Datacenter 2

netslice-subnet:
slice_hackfest_nsd_epc

ns: hackfest_magma-agw-enb_nsd

CP: nsd_cp_mgmt

NSI: magma_slice_2
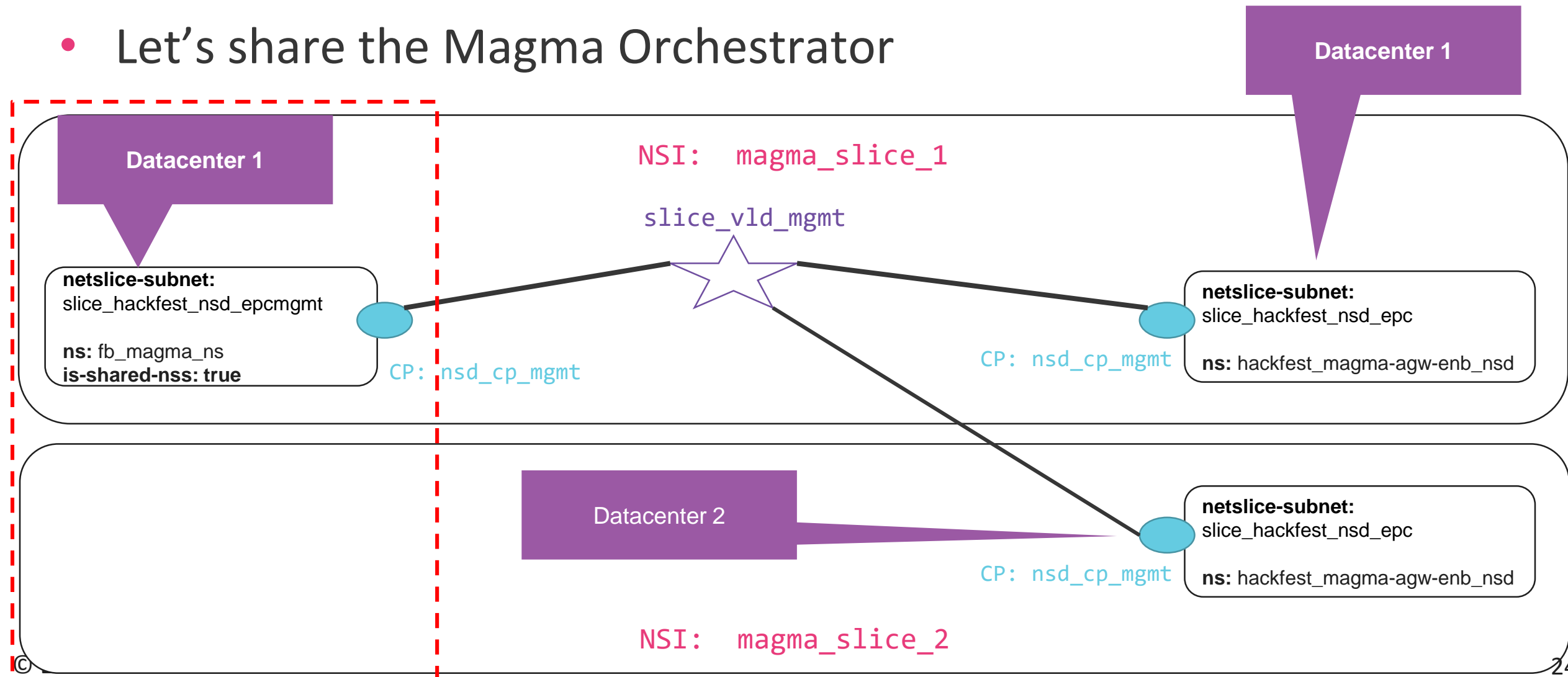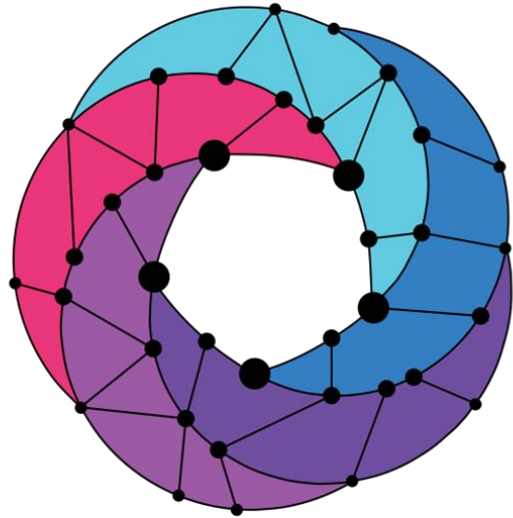
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