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**MANO**

## 5G Multi-site deployment using OSM

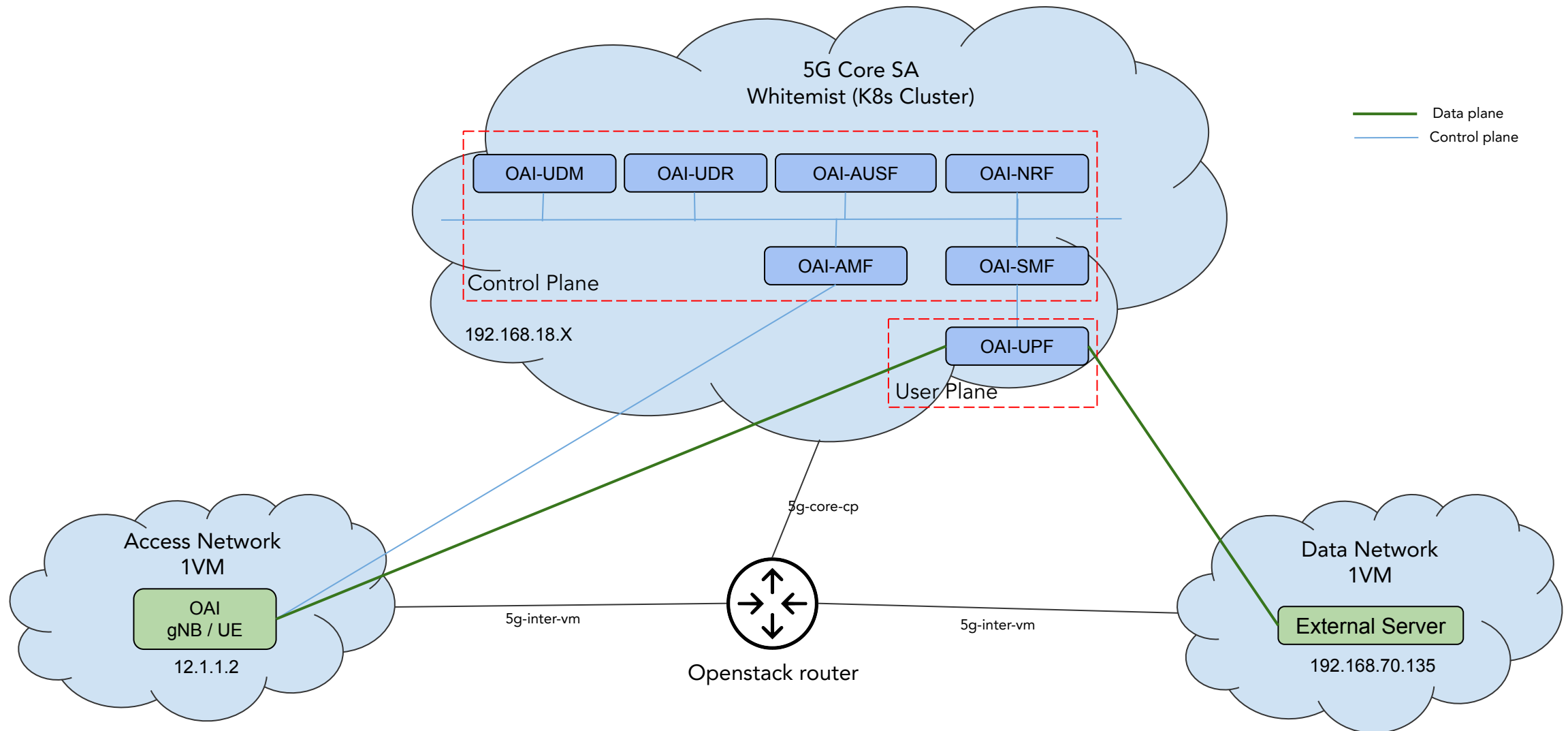
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- Introduction
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- Demo
- Next steps
- Questions

- OAI has several years of experience working with wireless cellular Radio Access Network (RAN) and Core Network (CN) technologies.
- OAI has an active community working on delivering new functionalities all the time (e.g. Open RAN, network slicing, etc)
- Whitestack has deployed the full 5G OAI core:
  - AMF
  - SMF
  - UPF
  - UDR
  - UDM
  - NRF
- Whitestack's trying to deploy OAI from OSM in an automatic way with primitives to allow users to perform operations from day-1 and day-2.

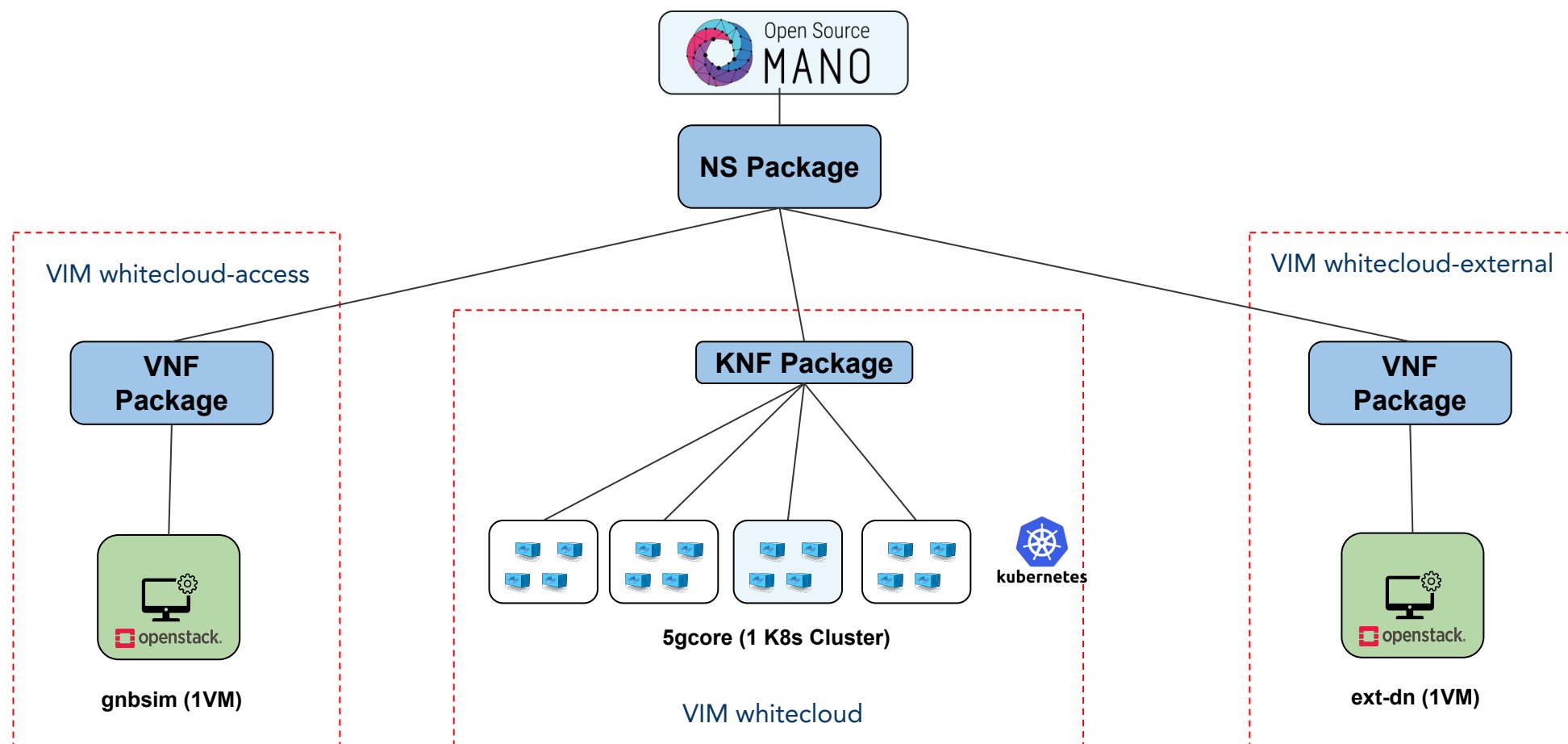


# Architecture of 5G network deployment



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- We'll deploy the 5G OAI Core KNF, access gnbssim and external server VNFs (with primitives) using one NS package



# Architecture of 5G network deployment

- We're using helm-based Execution Environment (EE) to define primitives for day-1 and day-2 in the VNF.
  - Day-1: For gnbsim and external server we install docker components and copy configuration files in the NF as part as the instantiation.
  - Day-2: For gnbsim and external server we've defined primitives to start/stop the application service at any time. In addition, we can send any command to the bash of the NF using ssh.
- Helm-based EE allows us to interact with the NF via ssh/netconf/REST
- Helm-based is one of the alternatives we have available for primitives for Execution Environments.

- Run the ns-create command to create the KNF and both VNFs in different VIMs:

```
osm ns-create --ns_name 5g --nsd_name 5gcore-ns --vim_account whitecloud --config '{"ssh_keys": ["$SSH_KEY"],"k8s-namespace": "oai",  
vnf: [ {member-vnf-index: gnbsim, vimAccountId: b0fe741c-37d9-4f42-bce7-b163122a9790},{member-vnf-index: ext-server, vimAccountId:  
74c9e008-28ce-45c4-9634-9aec3177fb76}]}'
```

- Examine the descriptors and primitives created for this deployment
- Wait for the NS to be ready in the OSM environment and in the cluster to see 5G Core creation
- Log into OSM to use the primitives for:

Start the gnbsim service

Start the ext-server service

- SSH to ext-server and start iperf3 as a server

```
docker exec -ti oai-ext-dn iperf3 -s
```

- SSH to the gnbsim and start iperf3 as a client

```
docker exec -it gnbsim iperf3 -c 192.168.70.135 -B 12.1.1.2
```

# Next steps

- Deploy the router as a PNF using VyOS Router
- Divide the 5G Core in multiple KDUs per each NF
- Create primitives for 5G Core KNF
- Test additional access NFs (VNF and/or CNF)
- Create UPF in a edge site

# Thank you!