Project name: **Emulating 5G in Comnetsemu**

Goal: Increase the scenario complexity introducing multiple users and base stations

SDN / NFV

of a 5g core network

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Collaborators:

- Diego Arrondo
- Emiliano Finetti
- Jacopo Bennati

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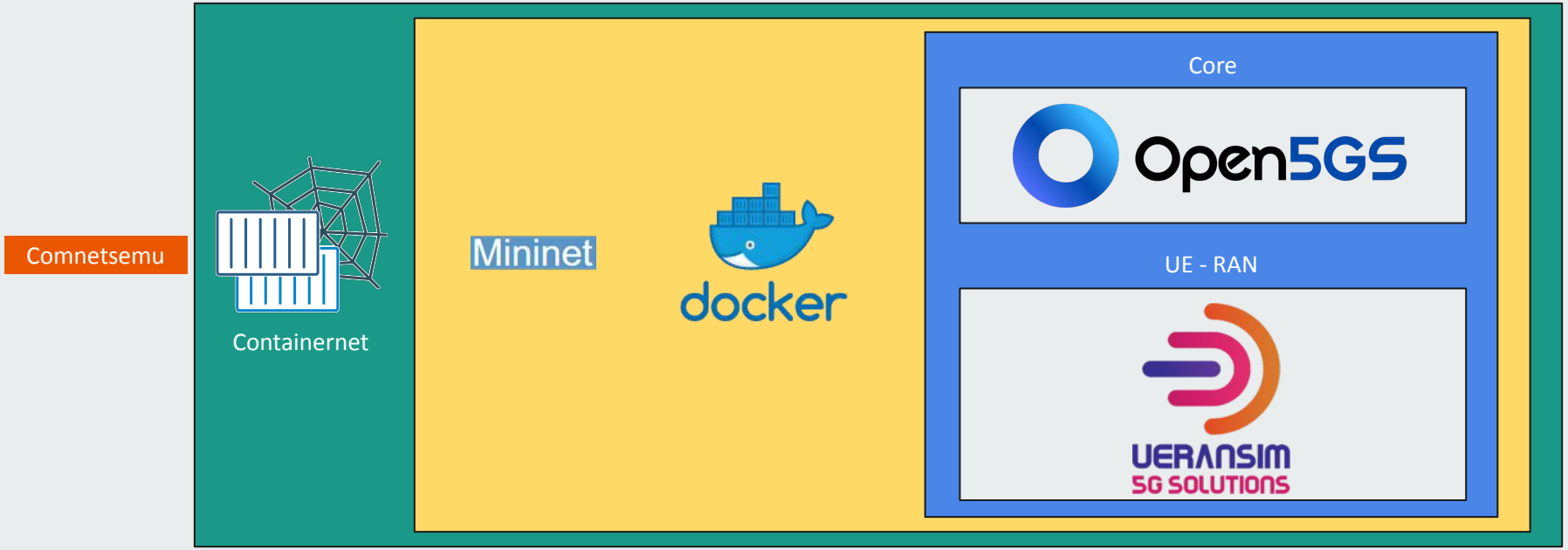
Environment:



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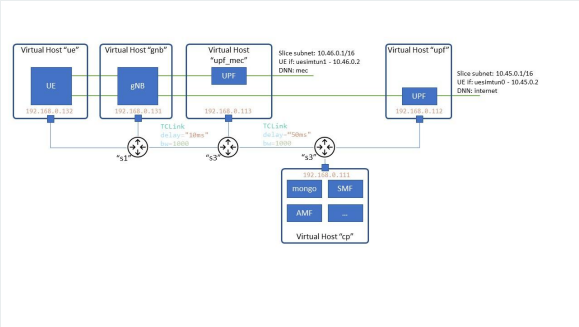
Introduction

Comparison :

Starting from a base topology composed of:

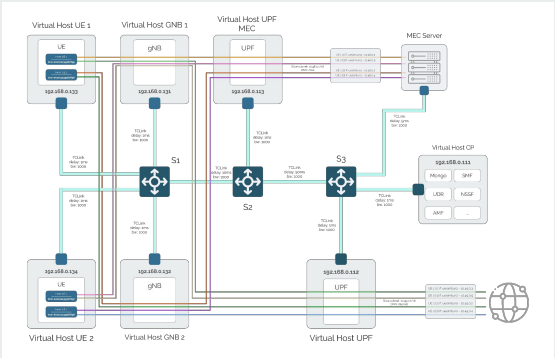
- a 5g core (Open5gs)
- 2 Upf (Ueransim)
- 1 Base stations
- 1 User equipment



The chosen network topology consists of:

- a 5g core (Open5gs)
- 2 Upf (Ueransim)
- 2 Base stations
- 4 User equipments
- 1 Mec server

described here:



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Tunings :

Base stations (Ueransim):
- nr-gnb
- different ips
- .yaml and .sh files

User equipments (Ueransim):
- nr-ue
- unique imsi(s)
- .yaml and .sh files

2gnb_4ue_network.py :
- 2 containers for ues
- 2 containers for gnbs
- all linked to switch s1

subscriber_profile2_2.json :
- json array of 4 subscribers
- different slices for each imsi (internet/mec)

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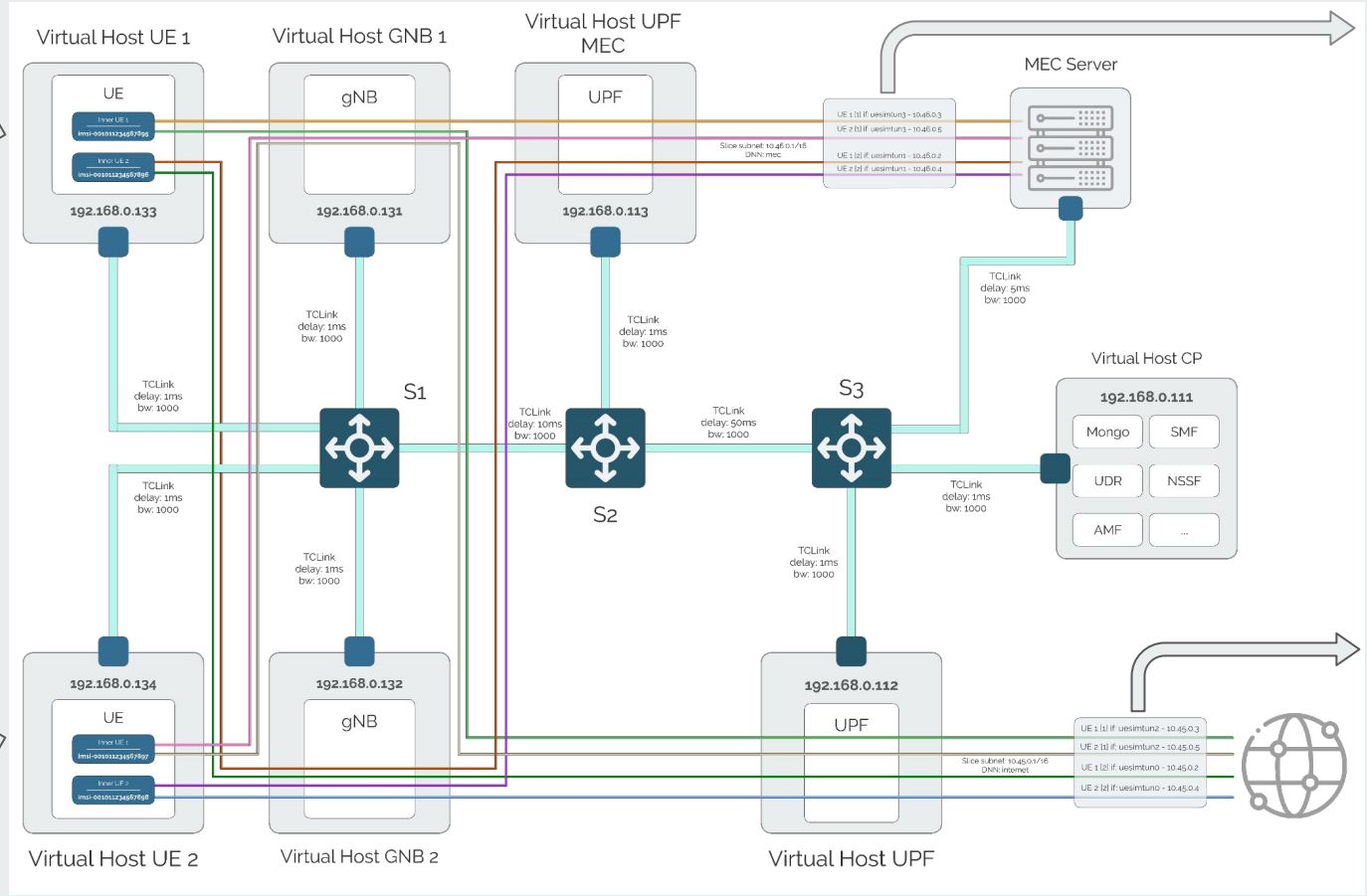
Topology



Inner UE 1
imsi-001011234567895

Inner UE 2
imsi-001011234567896

Inner UE 1
imsi-001011234567897

Inner UE 2
imsi-001011234567898

UE 1 [1] if: uesimtun3 - 10.46.0.3
UE 2 [1] if: uesimtun3 - 10.46.0.5
UE 1 [2] if: uesimtun1 - 10.46.0.2
UE 2 [2] if: uesimtun1 - 10.46.0.4

UE 1 [1] if: uesimtun2 - 10.45.0.3
UE 2 [1] if: uesimtun2 - 10.45.0.5
UE 1 [2] if: uesimtun0 - 10.45.0.2
UE 2 [2] if: uesimtun0 - 10.45.0.4

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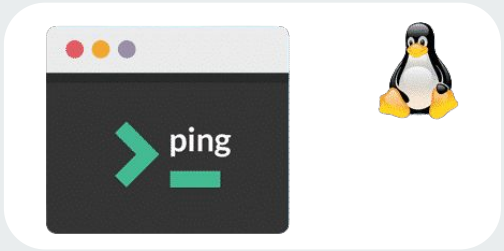
TestNet 5G :

TestNet5g.py :

Functionalities

- latency test
- bandwidth test
- nodes test
- show subscriber details

utility.py :
a python module that contains the logic to perform these functions



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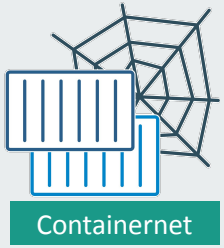
Comnetsemu 5gs

GitHub: https://github.com/jacopo-bennati/comnetsemu_5gs

forked from: https://github.com/fabrizio-granelli/comnetsemu_5Gnet

ref: https://www.granelli-lab.org/researches/relevant-projects/comnetsemu-sdn-nfv-emulator



Mininet

docker