



# Open5GS Deployment on 1935 tutorial

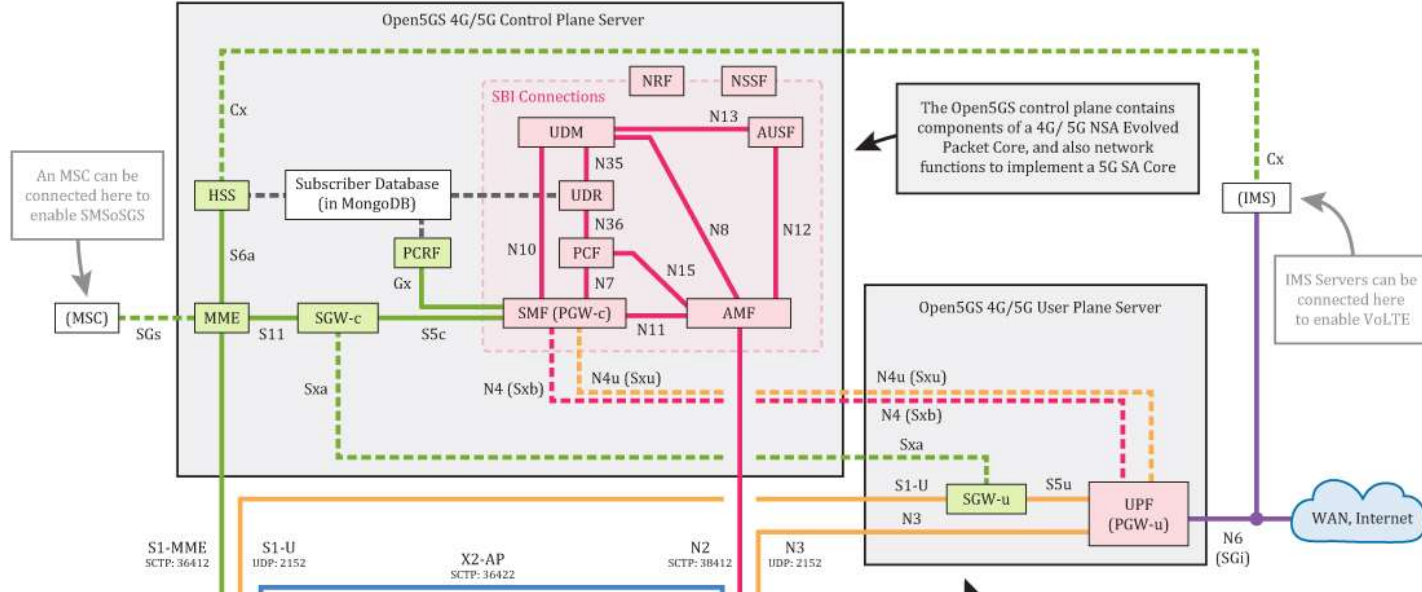
2022.05.11 System Study Group

Presenter : Guan Hao, Chen

Advisor : Hung Yu, Wei

# Open5GS Intro

Doc : <https://open5gs.org/open5gs/docs/guide/01-quickstart/>



# 5G Edge computing E2E component



## • NSA Mode

Device

Fi FlyX 5G DTU



TP-Link M7200



TP-Link MR400



Huawei doogee E3372



BS

Fi Dual Mode Small Cell (b41/n257)



srsRAN = USRP.BB210 (with VM/Docker Ver.)



EPC/5GC

Fi AIO EPC (VM)



Open5gs v2.4.5 (with VM/K8s Ver.)



## • SA Mode

Device

UERANSIM UE (with VM/Docker Ver.)



BS

UERANSIM gnb (with VM/Docker Ver.)



5GC

Open5gs v2.4.5 (with VM/K8s Ver.)





## NSA mode

5GC : open5gs NSA ([http://140.112.187.109:7080/tomchean/open5gs\\_k8s/-/tree/main/open5gs\\_nsa](http://140.112.187.109:7080/tomchean/open5gs_k8s/-/tree/main/open5gs_nsa))

BS : srsRAN (with USRP B210 attach) ([http://140.112.187.109:7080/tomchean/srsenb\\_docker](http://140.112.187.109:7080/tomchean/srsenb_docker))

Device : 5G/4G wireless receiver (with customize SIM card)

(See: <https://www.youtube.com/watch?v=934WINmgSm8> or README in first project)



# SA mode

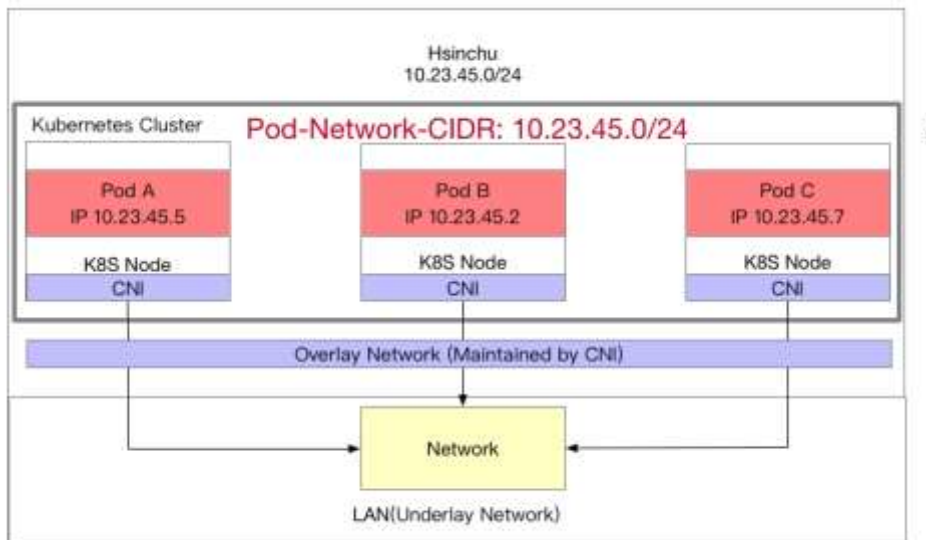
5GC : open5gs SA ([http://140.112.187.109:7080/tomchean/open5gs\\_k8s/-/tree/main/open5gs\\_sa](http://140.112.187.109:7080/tomchean/open5gs_k8s/-/tree/main/open5gs_sa))

BS : UERANSIM ([http://140.112.187.109:7080/tomchean/ueransim\\_docker](http://140.112.187.109:7080/tomchean/ueransim_docker) )

Device : UERANSIM (<https://github.com/aligungr/UERANSIM> )

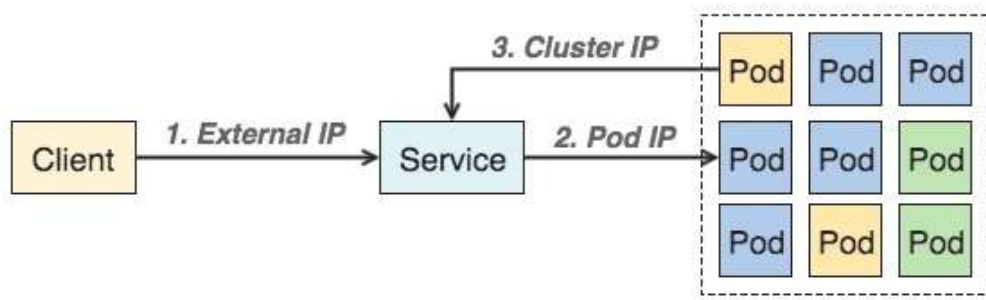
# K8S Network

- CNI
  - IPAM
  - Network Connectivity
  - Ref : <https://www.hwchiu.com/k8s-network-issue.html>



# K8S Service

- `kubectl get svc -o wide -A`
- `kubectl get pods -o wide -A`
- `sudo iptables -t nat -nL`



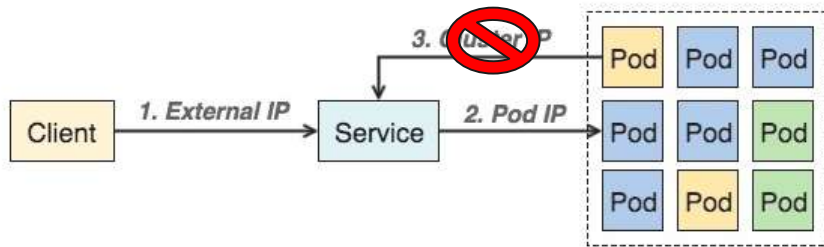
Reference :

<https://www.gushiciku.cn/pl/ph7o/zh-tw>

<https://tachingchen.com/tw/blog/kubernetes-service-in-detail-1/>

# K8S Headless Service

- `kubectl get svc -o wide -A | grep dns`
- `kubectl -n open5gs exec -i -t open5gs-amf-0 -- cat /etc/resolv.conf`
- `nslookup`
  - `server 10.x.x.x`
  - `open5gs-nrf-svc-pool.open5gs.svc.cluster.local`
  - `open5gs-amf-svc-pool.open5gs.svc.cluster.local`



Reference :

<https://www.gushiciku.cn/pl/ph7o/zh-tw>

<https://tachingchen.com/tw/blog/kubernetes-service-in-detail-1/>





Thanks