

IPLOOK's Cases

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IPLOOK Networks

Versions

Versions	Alteration of contents	Director
V 1.3	Introduction	Frank
V 1.4	Case	Rain

Contents

- Versions..... 1
- 1 About IPLOOK..... 4
- 2 IPLOOK’s Cases..... 5
 - 2.1 EPC IMS Solution for an ISP in the Southeast Asia..... 5
 - 2.1.1 Project background..... 5
 - 2.1.2 Network architecture..... 5
 - 2.1.3 Functions of IPLOOK’s EPC+IMS solution..... 7
 - 2.2 EPC solution for a telecom company in the Southeast Asia..... 8
 - 2.2.1 Project background..... 8
 - 2.2.2 Network architecture..... 8
 - 2.2.3 Functions of EPC solution..... 9
 - 2.2.4 Deployment plans..... 9
 - 2.3 IMS Solution for a WISP in the Middle East..... 10
 - 2.3.1 Project background..... 10
 - 2.3.2 Network architecture..... 10
 - 2.3.3 Functions of IPLOOK’s VoLTE solution..... 12
 - 2.3.4 Deployment plans..... 12
 - 2.4 Solution for communication of islands in New Zealand..... 12
 - 2.4.1 Project background..... 12
 - 2.4.2 Network Architecture..... 13
 - 2.4.3 Functions of VoLTE solution in New Zealand..... 14

1 About IPLOOK

Guangzhou IPLOOK Technologies Co., Ltd. starts-up in early 2012, and formally founded with our new brand “IPLOOK” in Dec., 2014. IPLOOK specializes in the research and development of LTE core network products with flexible customized solutions and services. IPLOOK dedicates to be a leader in LTE and 5G core network.

IPLOOK has successfully built a LTE product line to meet the requirements of telecom operators for LTE core network. Based on 3GPP standards and specifications, our products like MME /SGW /PGW/ HSS/ PCRF/ IMS/ VoLTE /Wi-Fi Calling have developed with high capacity of user access. Up to now, such products have completed the IOT test of S1, S6a, S10, S11, GA, etc. with ZTE, Huawei, Fiberhome, Ericsson and many other small cell vendors to ensure high performance and good compatibility. IPLOOK has established a long term relationship with SPIRENT, and a SPIRENT Landslid C100 testing environment has also been constructed to undergo significant tests for the best performance and stability.

IPLOOK provides LTE network communication technology solutions, virtualized solutions of 4G/5G Cloud Computing based on NFV/SDN, related software and hardware product design, development. Committing to lead and promote LTE network market, IPLOOK dedicates to transform from communications equipment vendor to integrated services provider.

IPLOOK will continue to focus on LTE and 5G core network and spare no effort to provide the best services for all customers at home and abroad.

2 IPLOOK's Cases

2.1 EPC IMS Solution for an ISP in the Southeast Asia

2.1.1 Project background

The network now has been deployed in 6 major cities of Cambodia, including Phnom Penh, Sihanoukville, Kampong Cham, Battambang, Siem Reap, Kampot. The network provides high-speed wireless broadband access and voice services for the individuals, families, enterprises which estimate over 1 million users.

2.1.2 Network architecture

- The whole network topological graph is shown in the figure 2.1.2-1.

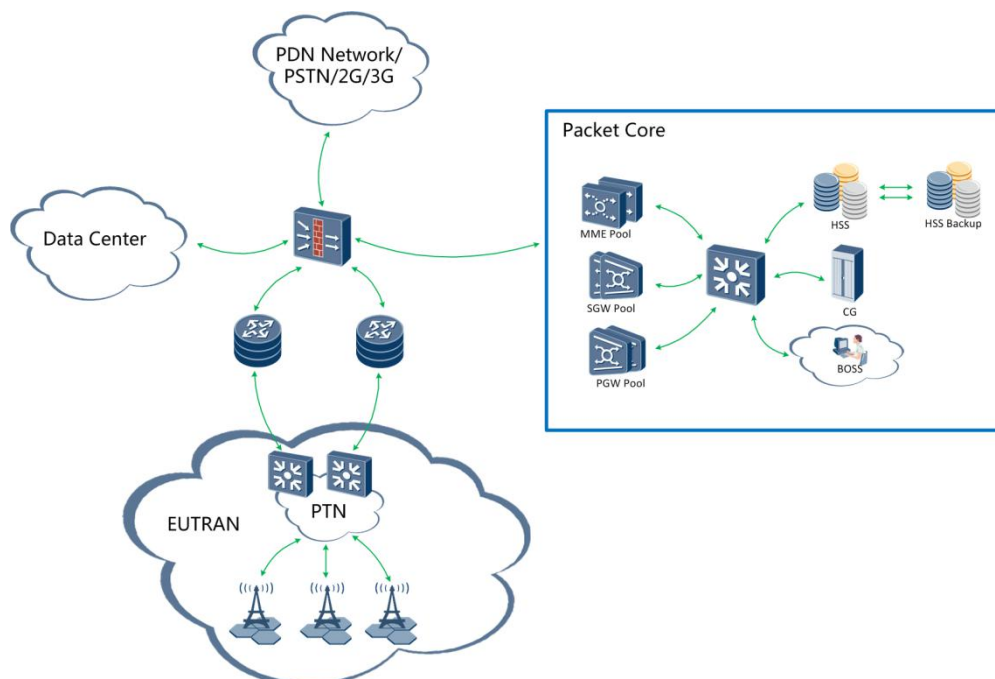


Figure 2.1.2-1

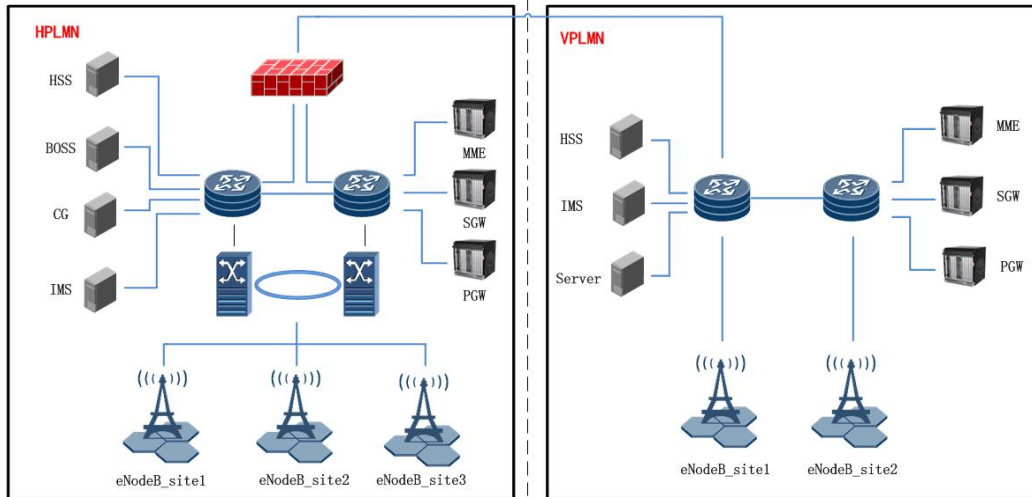


Figure 2.1.2-2

- The network diagram of backup solution is shown in the figure 2.1.2-3.

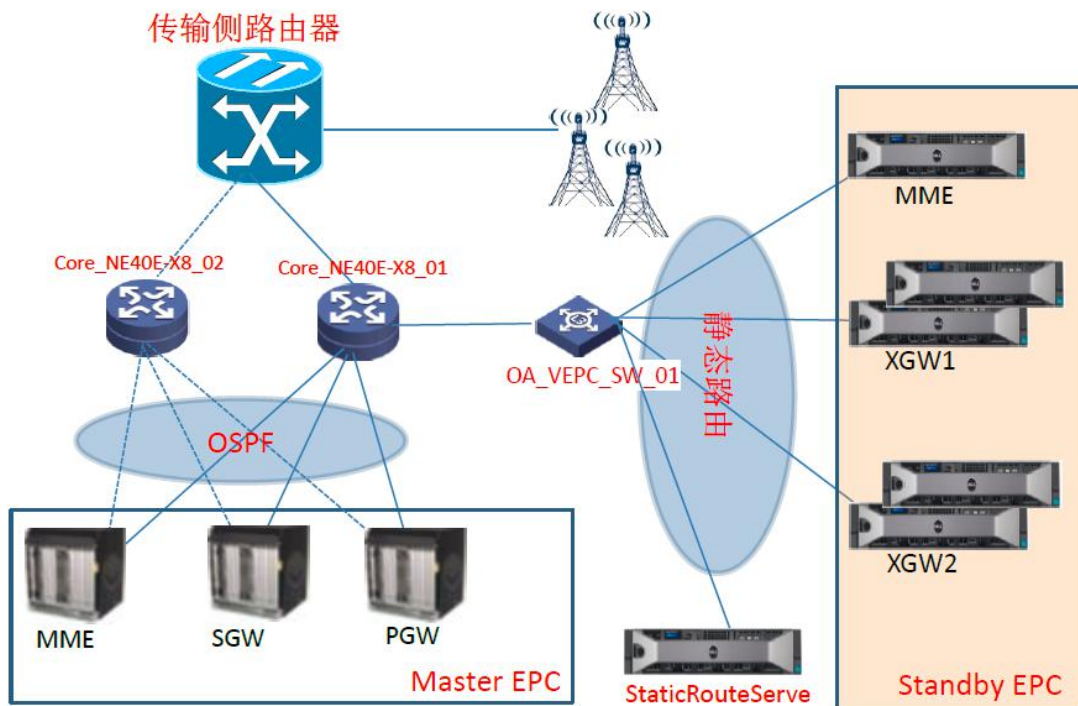


Figure 2.1.2-3

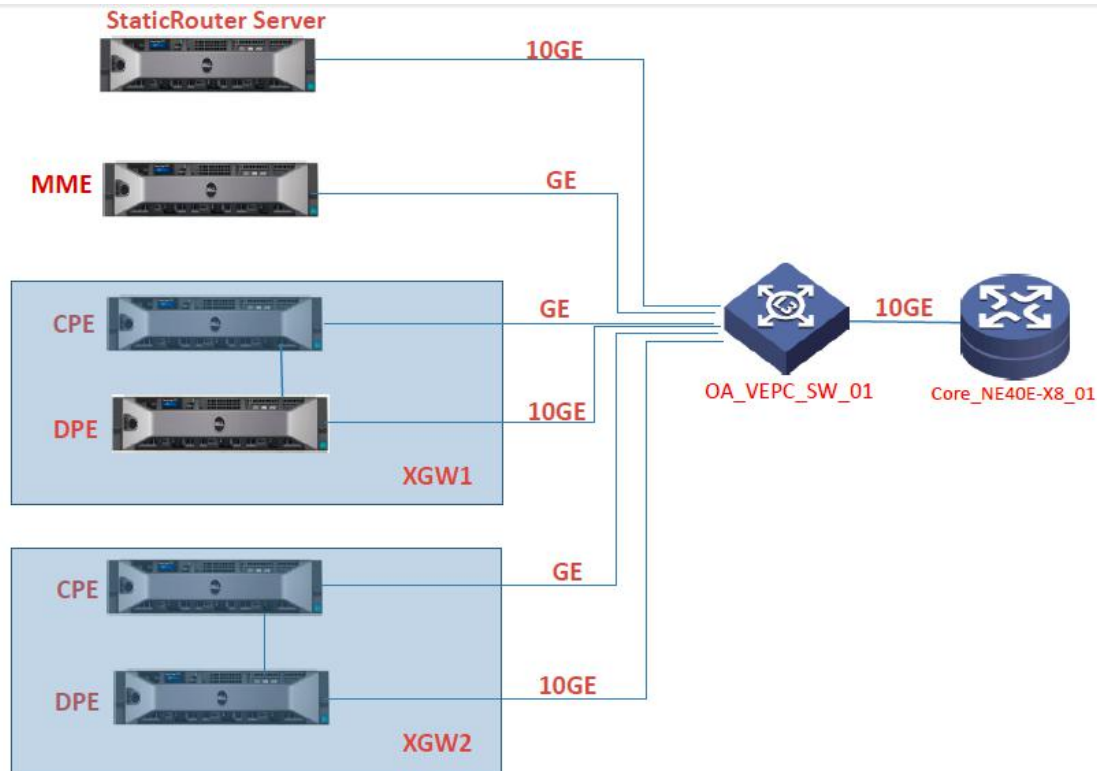


Figure 2.1.2-4

2.1.3 Functions of IPLOOK's EPC+IMS solution

- It is a solution for national communication. Users utilize the wireless terminals to connect the core network. The EPC provides authentication, identification and billing for different application as well as high-speed forward and traffic diversion.

As shown in the Figure 2.1.2-1, IPLOOK provides MME /HSS /SGW /PGW /PCRF /IMS to implement the EPC. Charging services are provided by CG and BOSS which come from third-party company. The project has had 400+ HUAWEI eNodeBs and 150+ ZTE Macro eNodeBs accessed IPLOOK 4G core network. More than 1,000,000 subscribers in 8 cities are provided 4G wireless services.

- As shown in the figure 2.1.2-2, IPLOOK's redundancy scheme is characterized by its effectiveness. When the master MME goes down, the base station automatically connects to the backup MME, and the backup MME takes over the master MME to work. When the master GW goes down, the MME chooses back up XGW for online user migration and new user on-line attachment. During the master GW failure, two XGWs carry the

service in parallel. During any XGW failure, and the other XGW can take over the broken XGW's service with the collaboration of the static routing server to ensure that all users network. Iplook EPC has been put into operation for more than 2 years with 0 failure and gained its high appraisal since 2014.

2.2 EPC solution for a telecom company in the Southeast Asia

2.2.1 Project background

This is an initial solution for small network with 3 HUAWEI eNodeBs and 6 users according to the Metro Telecom.

Metro Telecom have two frequency band: one is BAND 38 (TDD) like china mobile, and the other is FDD, we will use BAND 38 to set up 4G wireless network at initial stage, and establish PoC of IPLOOK's EPC to do the testing with HUAWEI equipment.

2.2.2 Network architecture

As shown in the figure 2.2.2-1, IPLOOK will deploy a core network incorporates MME/SGW/PGW /PCRF, and HSS, which are the most important network elements of EPC.

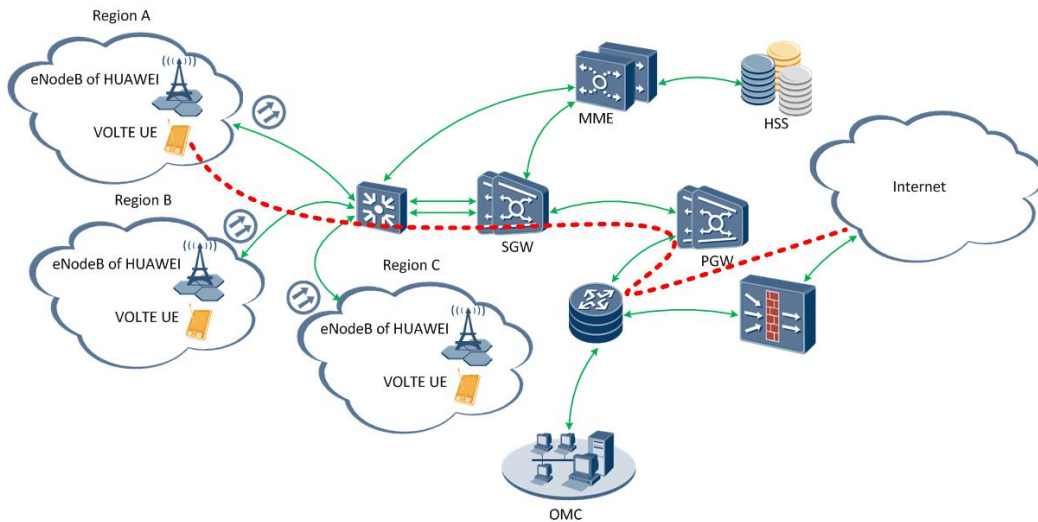


Figure 2.2.2-1

2.2.3 Functions of EPC solution

It supports the large capacity, redundancy, disaster recovery and other functions. IPLOOK provides MME/SGW/PGW/HSS to implement EPC and support high-speed internet access.

2.2.4 Deployment plans

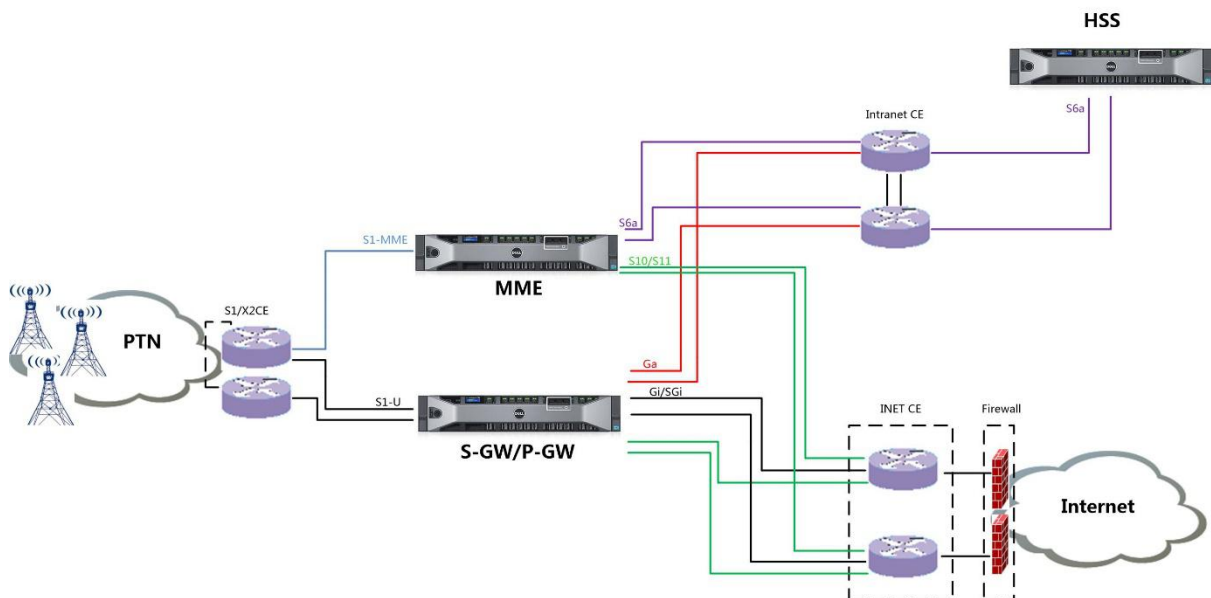


Figure 2.2.4-1 Actual deployment of EPC

- Deployment Plans

- 1、 Deploy the basic EPS Service to provide data service for subscribers.
- 2、 Deploy eNodeB and EPC System.
- 3、 UE and CPE can access to the Internet through LTE network.

2.3 IMS Solution for a WISP in the Middle East

2.3.1 Project background

This is a proposal for an operator which want to set up 4G Wireless network in the Middle East, including EPC, HSS, OCS.

Our clients plan to deploy a national LTE network in IRAN, so the EPC and IMS with VOLTE product will be deployed. IPLOOK, a EPC and IMS vendor, could provide the solutions for them. At the first step, the PoC should be done in Teheran. The test cases cover MME, SGW, and PGW functional testing and IMS products verification. Then, Centralized deployment is in the second step and distributed deployment is used to be mainly to extend SGW/PGW (xGW) in the third step.

2.3.2 Network architecture

- PoC network topology

As the first step, only basic function test will be done. As shown in the figure 2.3.2-1, the 3rd party equipment should be integrated for the IOT with 2/3G and PSTN,

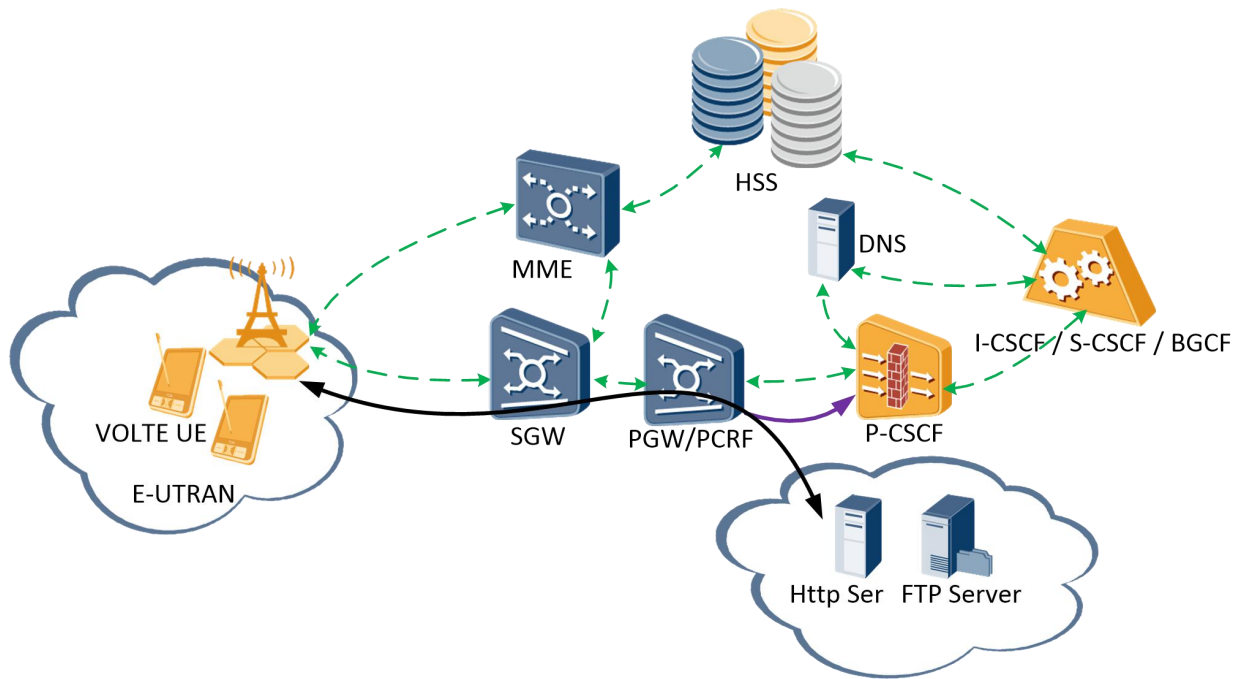


Figure 2.3.2-1

- The main topology of IPLOOK's solution for them is shown in the figure 2.3.2-2.

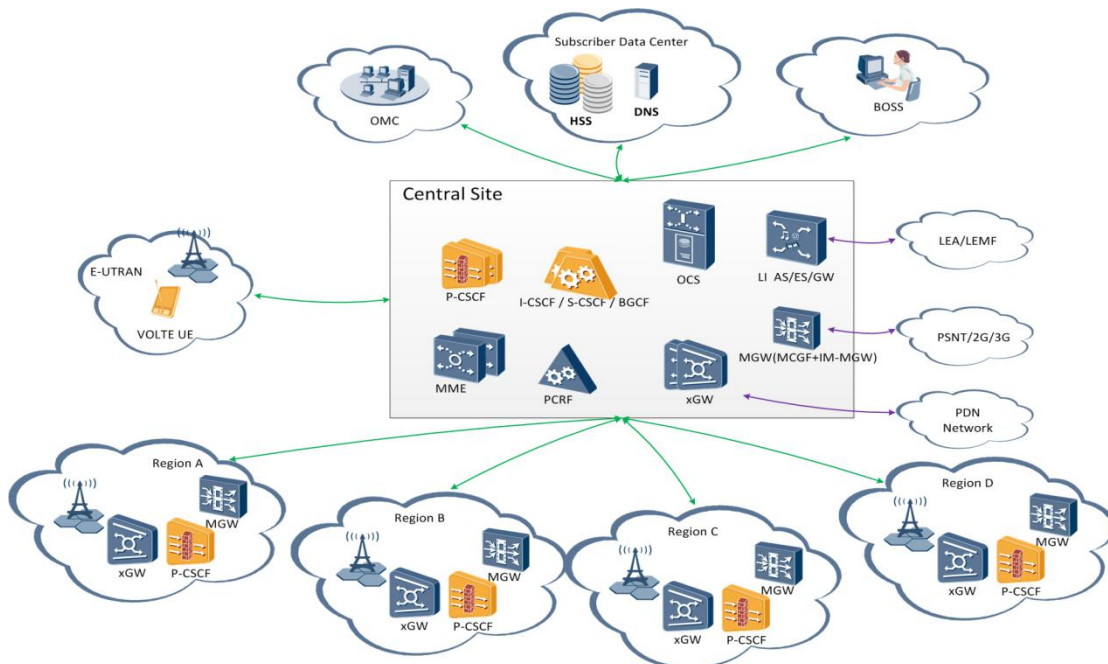


Figure 2.2.2-2

2.3.3 Functions of IPLOOK's VoLTE solution

This is a solution for the 31 region expansion. For each region, IPLOOK can deploy the equipment less than one week even in a redundant way. In the central site, two NEs are deployed for load sharing and redundancy. For region X site, IPLOOK can also deploy two NEs for redundancy. Now IPLOOK has achieved 1200 Ericsson Macro eNodeBs accessed to the core network in Iran.

It supports redundancy backup, MME/HSS uses two-way configuration, main-slavery backup, and xGW uses distributed deployment mode. It also supports OCS billing, and has the same standard billing interface with HSS/PGW/IMS. There are a SMC (communicate with 2/3G) and a MGW (it can happen between 2G/3G/PSTN and system). IMS has functions that are VoIP and VoLTE, so customers can select if they need such functions based on self-condition.

2.3.4 Deployment plans

● Phase 1 Data Service

Deploy the basic EPS Service to provide data service for subscribers.

Deploy eNodeB and EPC System.

UE and CPE can access to the Internet through LTE network.

● Phase 2 Voice Service

Deploy IMS system with VOLTE feature to provide voice service for subscribers.

For user access with 4G smart phone, provide voice service with VOLTE.

For user access with CPE, provide voice service with VOIP.

2.4 Solution for communication of islands in New Zealand

2.4.1 Project background

It is a solution for an operator in the South Pacific with HUAWEI eNodeB in New Zealand. In this proposal, communication between island and mainland is

our main objective.

2.4.2 Network Architecture

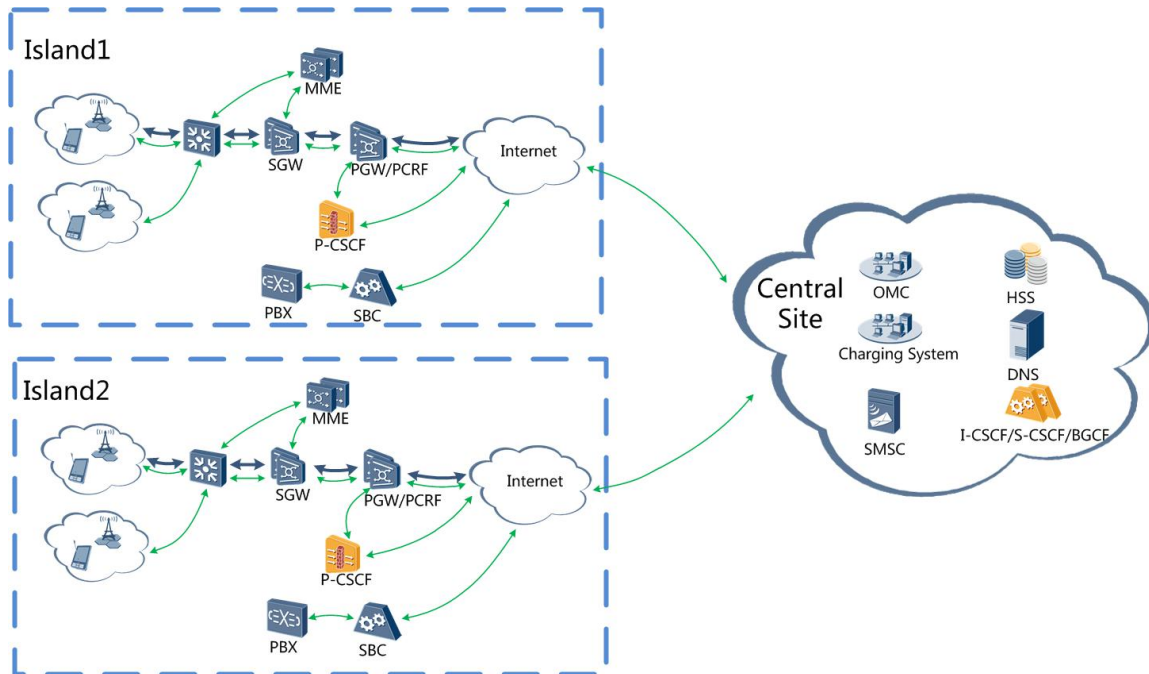


Figure 2.4.2-1

This EPC&IMS system deployed in Tokelau provides data, VoLTE and SMS for 3 islands. As shown in the Figure 2.4.2-1, IPLOOK deploys a core network in each island and mainland with satellite communication.

2.4.3 Functions of VoLTE solution in New Zealand

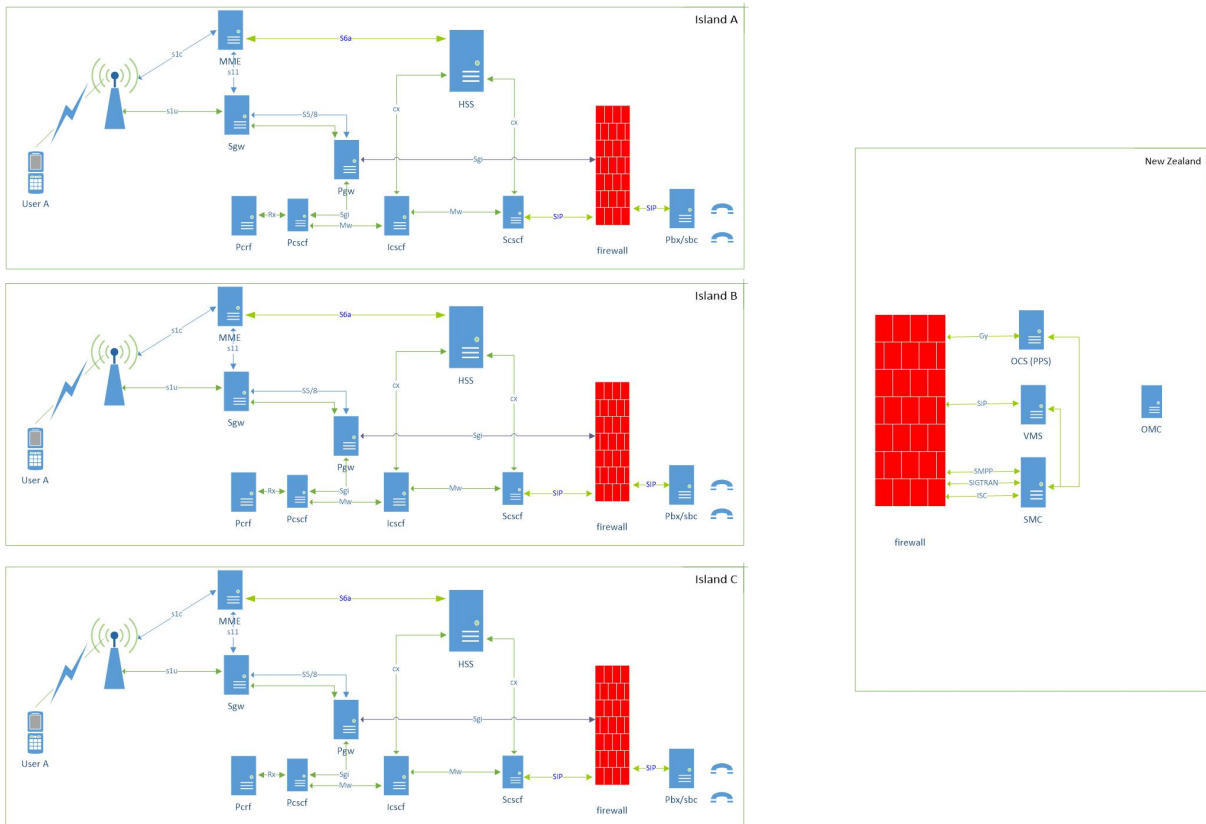


Figure 2.4.3-2

This EPC&IMS system deployed in Tokelau provides data, VoLTE and SMS for 3 islands. As showed in above figure, the islands are connected to New Zealand over satellite. On each island, there are eNodeB/ EPC/ HSS/ IMS/ OMC.

In New Zealand, there are OCS(PPS)/ SMC/ VMS/ OMC

All subscribers are prepaid thus they will be charged real-time by OCS when the satellite link is normal. When the satellite link is down, all services should not be affected while the calls are not charged.

2.5 Solution for MNVO of Middle East for Hong Kong and Singapore

2.5.1 Project background

SCT and BM are large corporations active in Internet service providing and Internet connectivity solutions. Now, SCT has been authorized to be a MVNO. MME, HSS, SGW, and PGW will be deployed in this phase to make sure basic data service and other streaming media services. Also, the EPC IPLOOK provides can support VoLTE if IMS is deployed.

2.5.2 Network Architecture

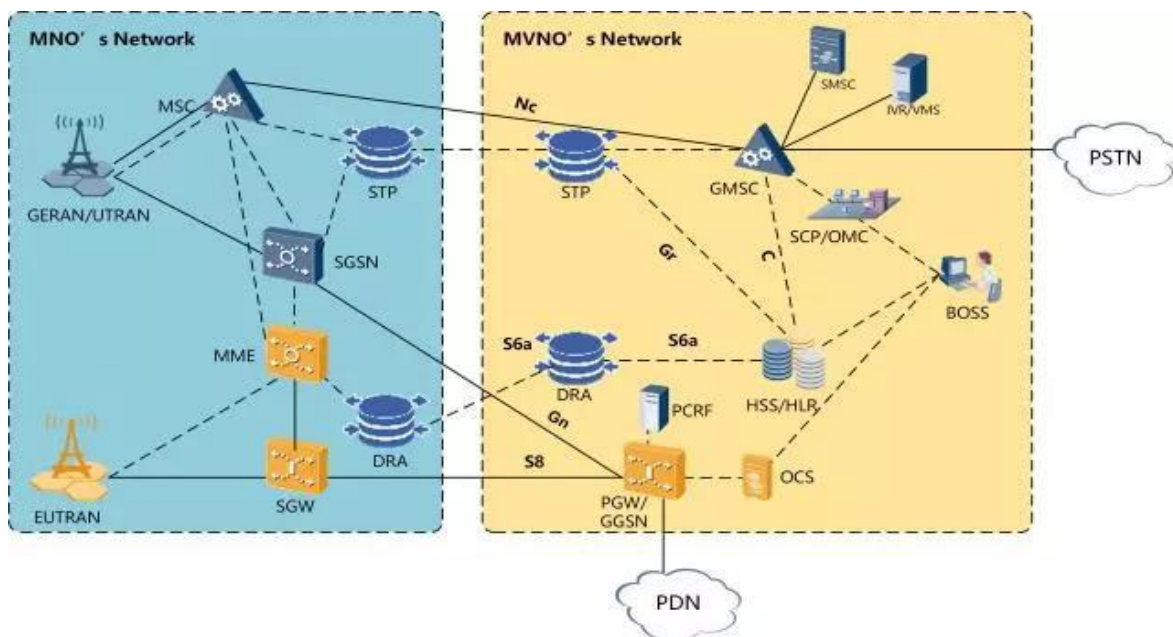


Figure 2.5.2-1

The EPC are deployed in packet core room. EPC will be deployed over four 2U servers. MME and HSS will be deployed on two separated servers, and another two servers are for DPE and CPE of XGW.

2.5.3 Functions of IPLOOK employment

The throughput of EPC system can reach 5Gbps at most. The connection between eNodeB and EPC will be achieved through VPN server. Our EPC network configuration is in Annex V-3

2.6 Solution for communication of Reunion island in French

2.6.1 Project background

This is a proposal for an operator which want to communication in the Reunion island, including EPC, IMS, BOSS.

Reunion island is a French oversea province in Eastern Africa. Ocean company plans to deploy a full set LTE network in Reunion, so the product not only need deploy VOLTE with EPC and IMS, but also a BOSS is essential. IPLOOK provide to Professional technical solutions for them. At the first step, order to client's requirement, design a solution that meets the requirements, the PoC should be done in Reunion. The test cases cover MME、SGW、PGW、HSS、

DRA、DNS、STP、OMC、PCSCF/SBC、IMSCore、MMTel-AS、DNS、SMS/SMSC、OMC, etc. Then, Centralized deploy EPC is in the second step and distributed deploy IMS at two places is in third step.

2.6.2 Network Architecture

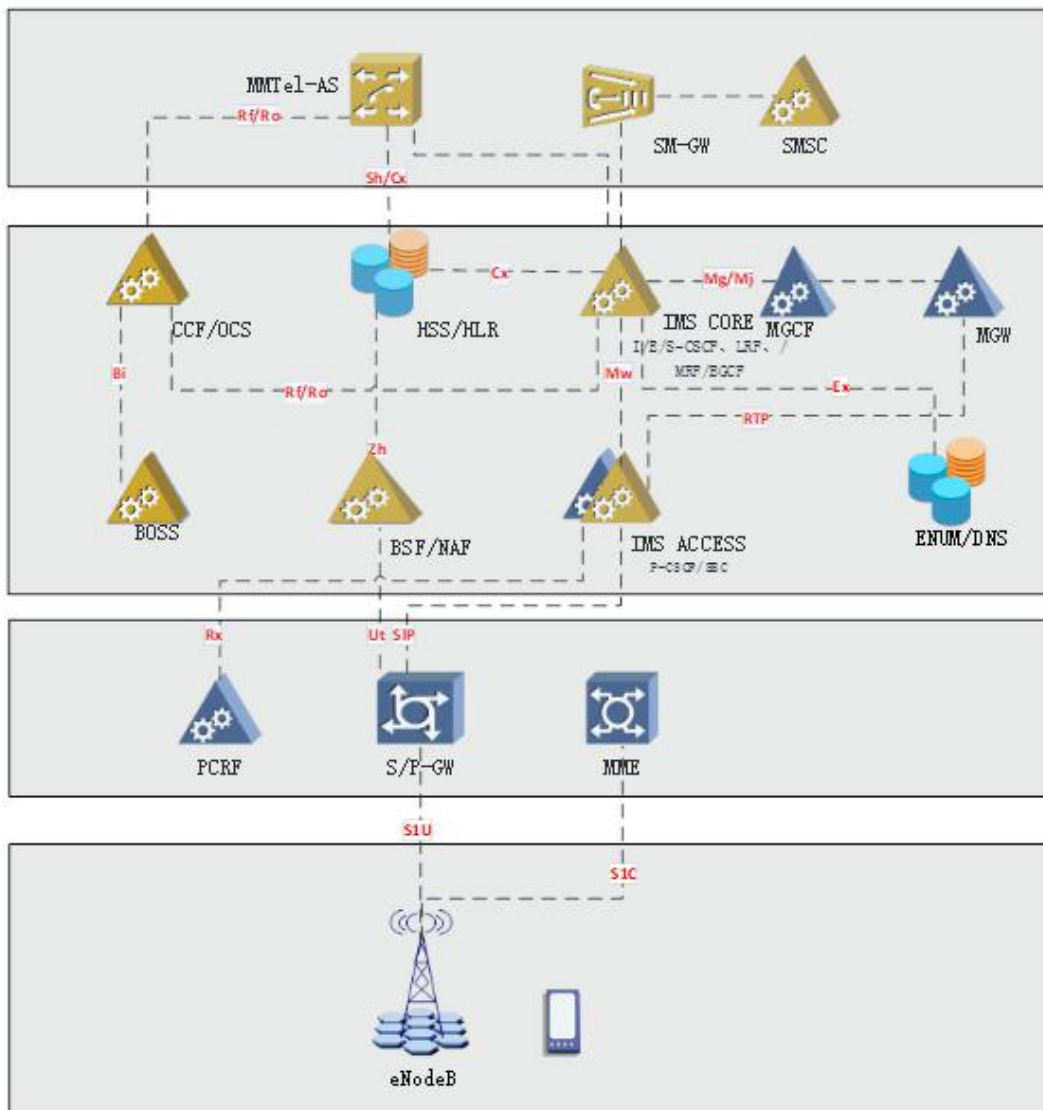


Figure 2.6.2-1

As shown in figure 2.6.2-1, it displays a standard solution with LTE core network. The Ocean company just has eNodeB, so IPLOOK will provide other elements to deployed.

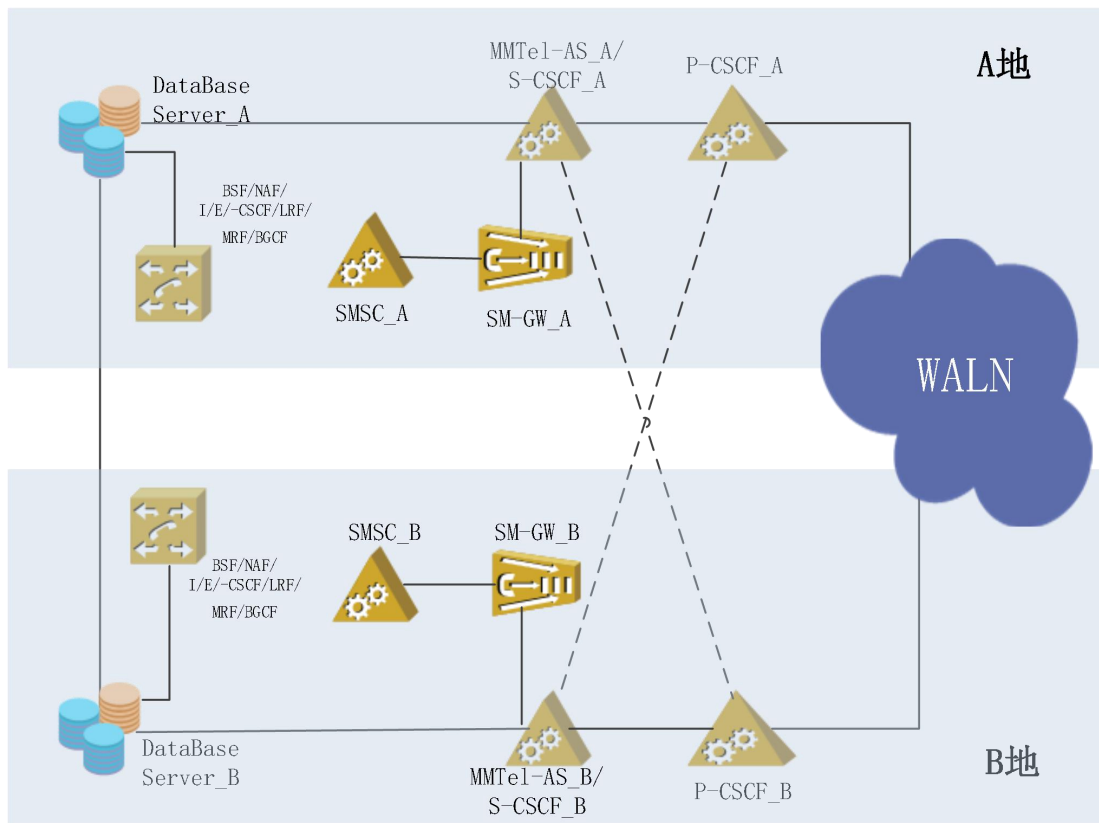


Figure 2.6.2-2

The figure is IPLOOK provide IMS dual active system at different place. It means deploy the two IMS systems in A and B, normally just process to information location. When it has something wrong with anyone, the other one will process all information.

2.6.3 Functions of IPLOOK's LTE solution

This solution supports to 1.6 million person's national communication. The

distinct IMS deployed has higher reliability. IPLOOK's redundancy scheme is characterized by its effectiveness.

2.7 MEC Solution for LTE in Dongguan

2.7.1 Project background

This proposal is an operator which want to the LTE network coverage of Humen port for berth 9 and 10. IPLOOK will provide high speed, low delay and high reliable LTE to clients.

Compare with the traditional LTE, this solution will introduce MEC technology which Realize the distribution of local business (data transmission, video transmission) and non-local business (ordinary telephone, Internet, WeChat, etc.)

2.7.2 Network Architecture

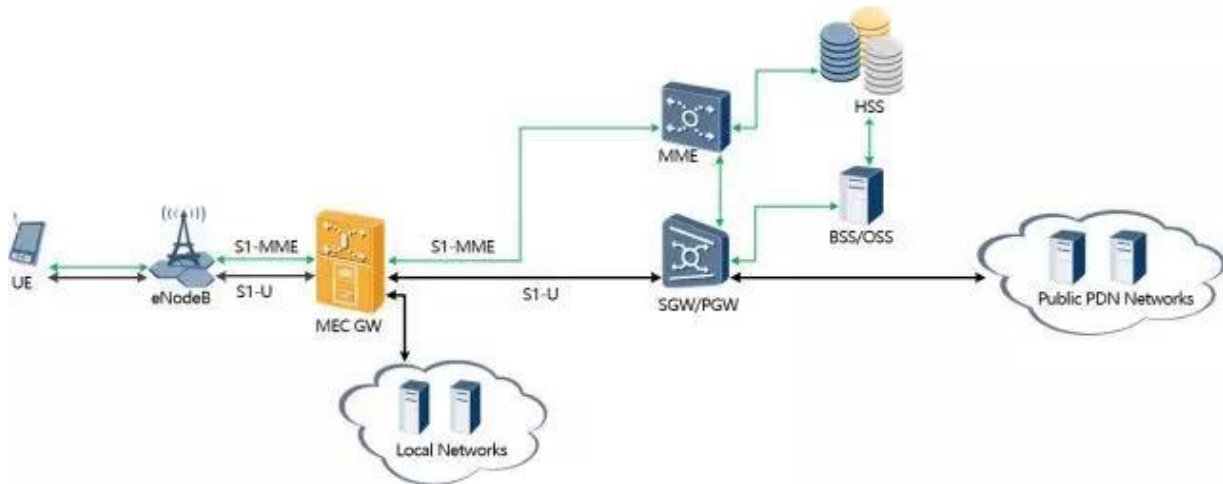


Figure 2.7.2-1

MEC is mobile edge computing, it ensures to local computing, storage and distribution function for the edge network. It's opened the wireless network for internet, bearing localization services, improve the user experience, build to more value at the edge of the network.

2.7.3 Functions of MEC solution

It supports the high speed, low delay and high reliable, disaster recovery and other functions. Use to traditional s1 interface in 4G, MEC distribute technology through parsing packet to identify local or non-local businesses. So it keep Humen port's businesses location and security.