

# **IPLOOK** **Networks**

3G/4G/5G Core network



**IPLOOK Networks Co., Ltd**

**Website:** [www.iplook.com](http://www.iplook.com)

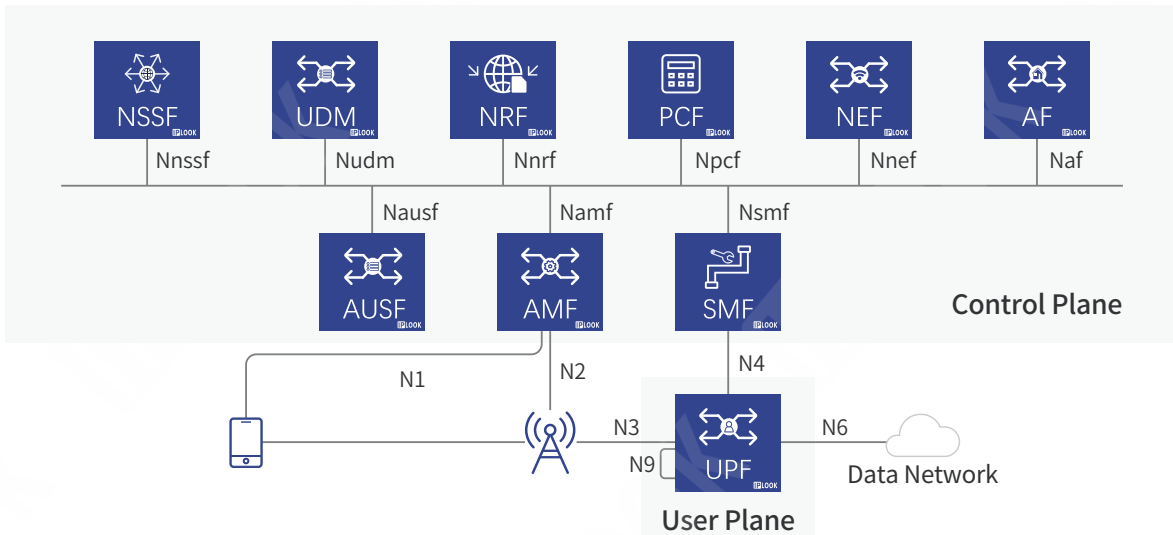
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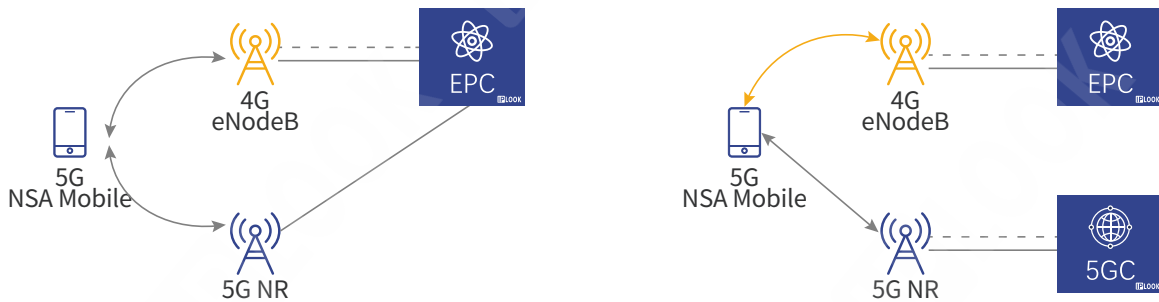
# 5G Core network

The 5GC Architecture is also called SBA, Service-Based Architecture. The function is sliced into different parts according to service category-high data rate for High-Definition video, low latency for autonomous driving, massive connections for IoT etc.



5GC Architecture

# Application scenario



## Option 3x NSA (EPC+LTE+NR)

- The control plane signaling is forwarded by LTE, while the data is distributed by gNB and eNB;
- Not be able to support all 5G services;
- EN-DC dual connection is required by user devices.

## Option 2 SA (5G + NR)

- UE does not need to support both LTE and 5G at the same time.
- Roaming and switching through interoperability with 4G network.

# Roadmap

IPLOOK has already released the first 5GC version which includes AMF, SMF, AUSF, UDM, UPF, NRF, NEF and NSSF.

The 5GC has been done IoT test with multiple gNodeB vendors and completed the 5G end-to-end services like data service, VoNR and SMS.

Besides, IPLOOK's 5GC supports deployment in parts, with which its NEs are able to interconnect with 5GC from other vendors easily.

Full functionality	5GC Full function	5GS interworking	R17 feature compliance others
SGW GGSN/PGW HSS/HLR MME PCRF IMS(VoLTE) DRA STP NB-IoT GTP-Router MEC Before2020 >>>>	UPF/UDM/SMF AUSF/AMF/PCF NRF/NSSF THE IoT with NR VoNR 5GC NFV Architecture Cloud Native Docker 2020 >>>>	PGW-C/SMF PGW-U/UPF PCRF/PCF N26 interface MME AMF/UPF 4G platform R16 feature compliance Others NEF 2021 Q1 >>>>	HTTP2 GW MCPTT SMSF SEPP UDR 2021 Q4 >>>>

# Application scenario



Railway



Power Grid



Mining Industry



Mobile Operator



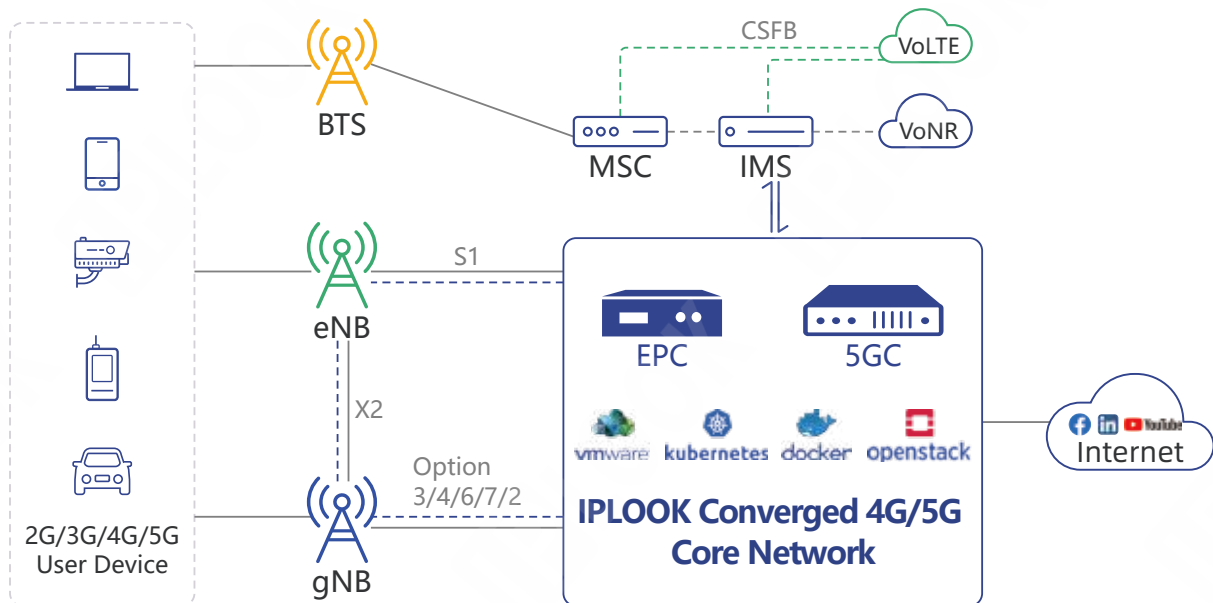
Education



Earth Station of  
LEO Satellite

# Products & Solutions for MNO

When it comes to mobile operator, VoLTE, high speed data service and SMS are often provided to subscribers. IPLOOK's core network is an fully-completed 3G/4G/5G core network system, in which the services above can all be implemented. Since the whole system are based on software, the CAPEX and OPEX can be decreased for deployment and maintenance.



## The Network elements:

- 5GC
- vEPC
- vPCRF
- vIMS
- SBC
- MGW
- SMSC

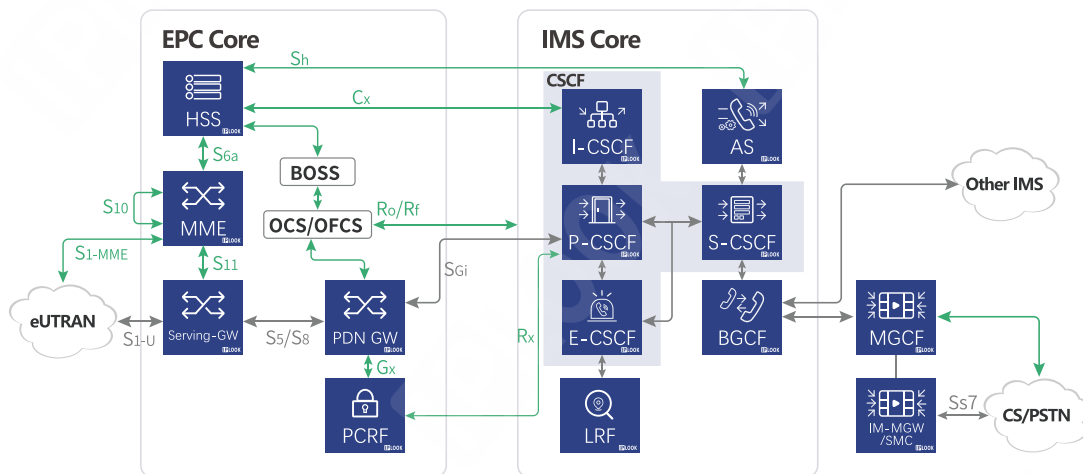
## The Strengths:

- Fully virtualized on COTS server and Cloud
- Simplify operator' s network architecture
- End-to-end mobile core solution
- Support all eNodeB vendors openly
- Reduce Total Tost of Ownership(TCO)

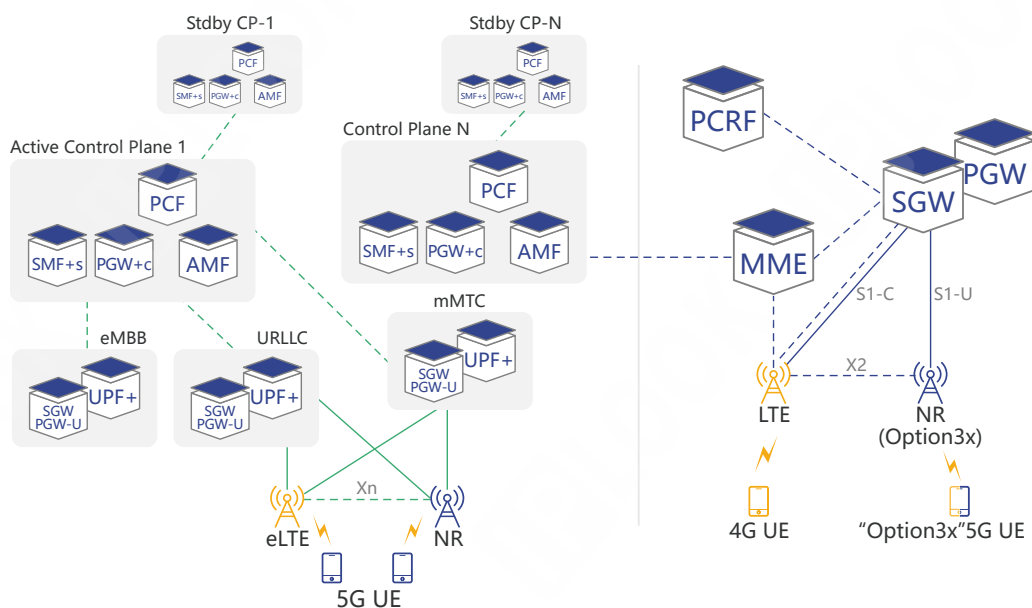
# The Solution

To help operators simplify their network structure and reduce their O&M costs, IPLOOK core network can support software upgrade to 4G/5G converged platform which can help TIER 1, medium and small-sized operators to achieve network modernization.

IPLOOK 5G NSA Packet Core solution will enable Operators with IPLOOK EPC to launch 5G service in shorter time, leverage existing investment and infrastructure for some time for 5G. Thus it will provide seamless option to launch 5G with very less disruption in the network. Eventually, it could be upgraded to 5G SA Packet Core smoothly.



**LTE Network architecture for MNO**



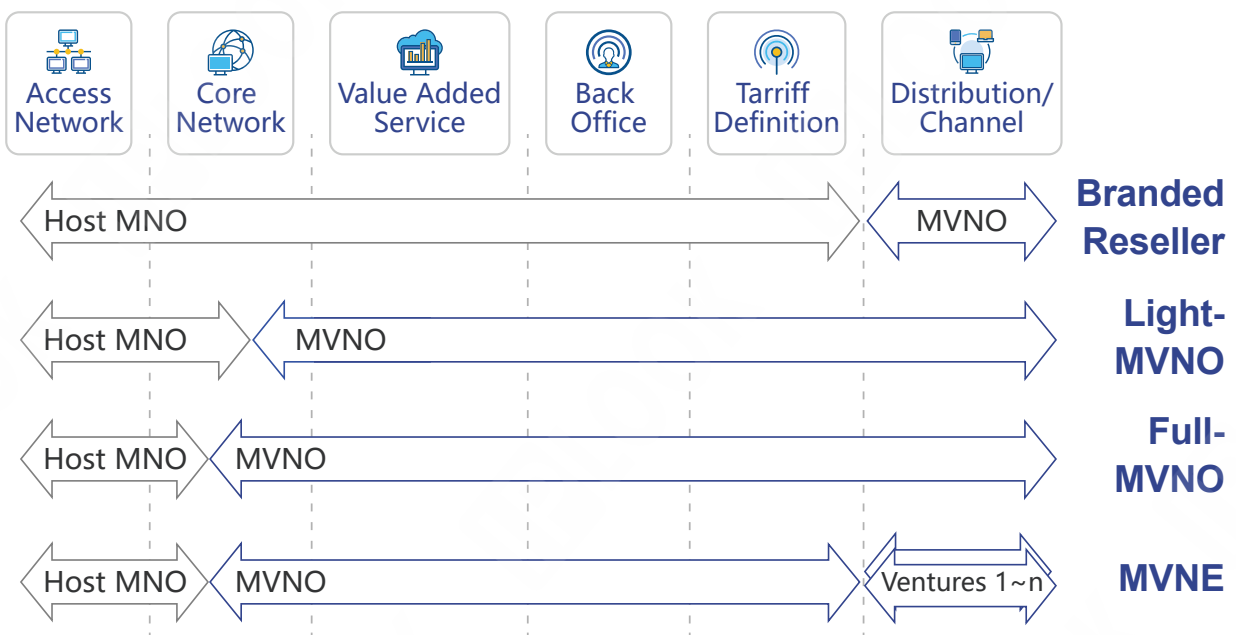
**5G SA Core Network**

**4G Core+5G NSA NR**

# Products & Solutions for MVNO

MVNO, Mobile Virtual Network Operator, provides mobile network services to clients with radio network of other operators. MVNOs don't build their own radio network and only has their core network which takes charge of storage and communication functions.

IPLOOK MVNO solution is complete end-to-end and modular solution. It enables the MVNOs can focus their efforts on the challenges of their business.



## The Network elements:

- HSS/HLR
- PGW/GGSN
- PCRF
- GTP-Proxy
- STP/DRA
- SMSC/USSD

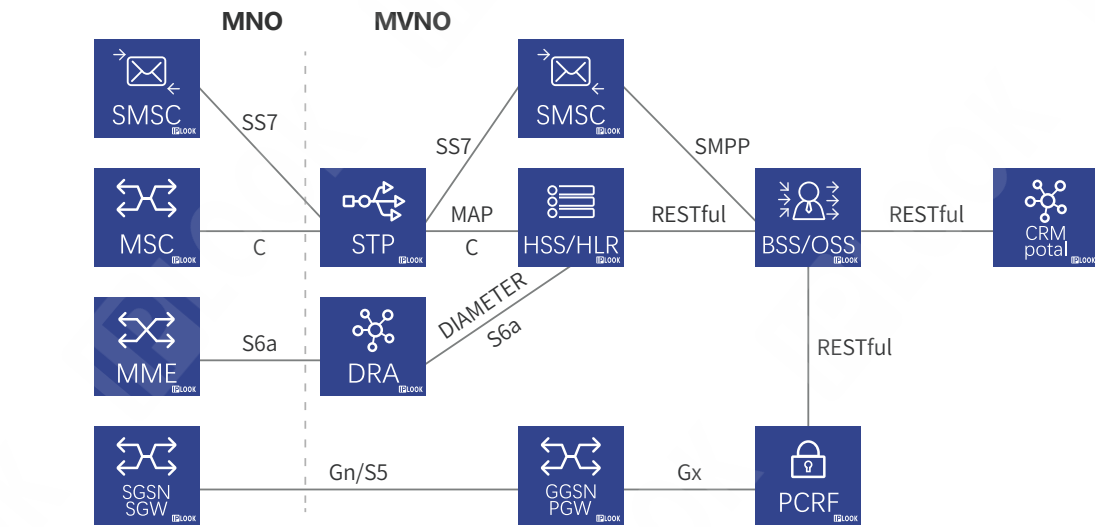
## The Strengths:

- Field-proven products
- Multi-level redundancy
- Convenient to Management
- Flexible deployment strategy
- Save CAPEX and OPEX

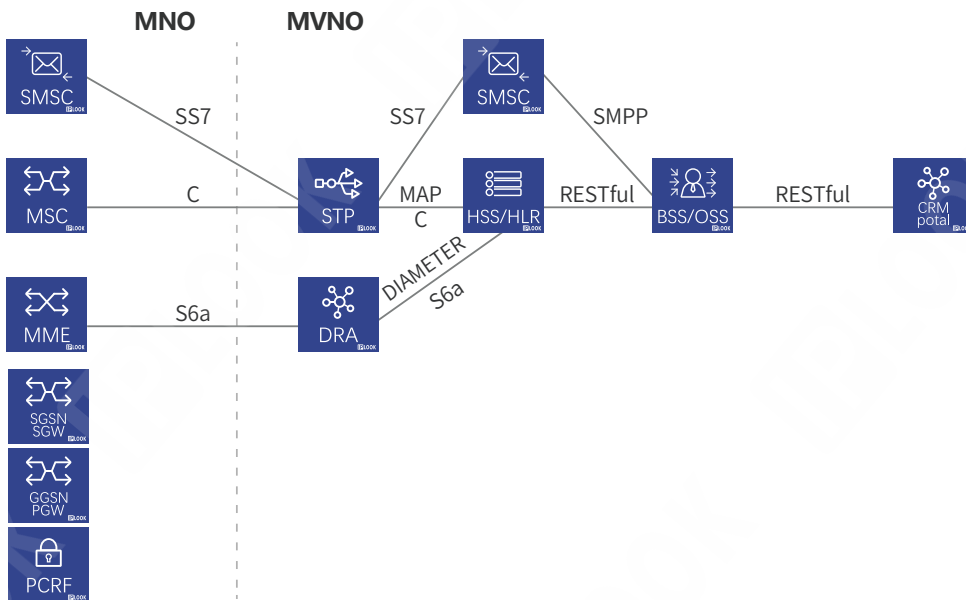
# The Solution

Based on the degree of network and system involvement, IPLOOK provides two MVNO models.

## Full MVNO: Its own HSS/HLR, Billing System, STP/DRA, SMSC



## Light MVNO: Its own HSS/HLR, Billing System, STP/DRA, SMSC.



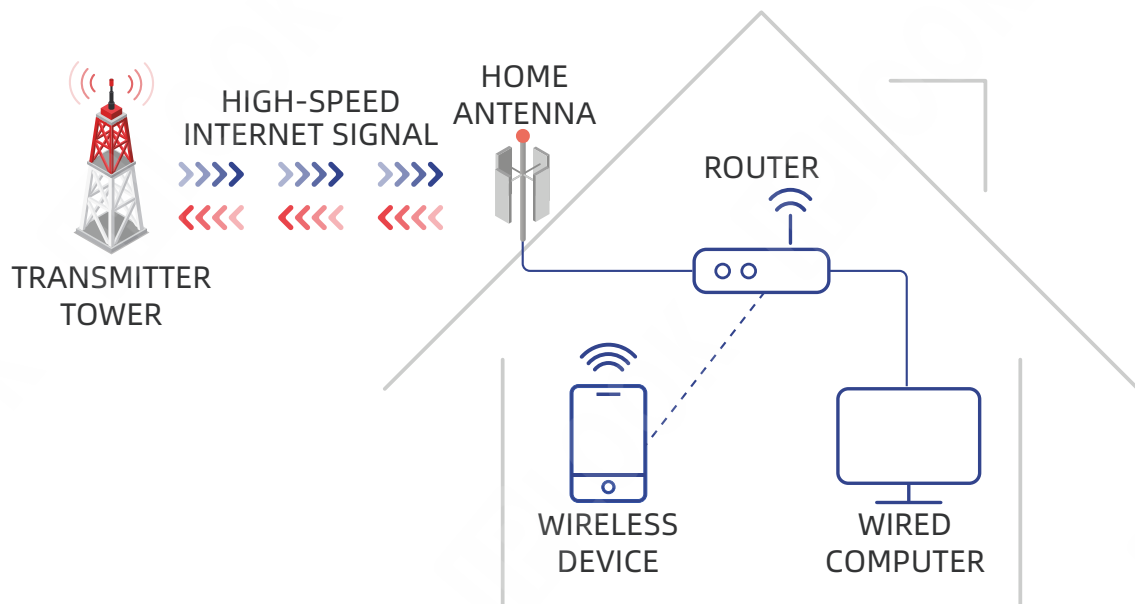
IPLOOK's MVNO solution can be deployed on X86 common servers or even cloud computing platform. As a result, IPLOOK is able to reduce the CAPEX and OPEX of MVNOs. Base on your personal requests, IPLOOK will provide more customized services.



## Products & Solutions for WISP

LTE has become one of the main technologies being applied to broadband wireless access.

Considering the demand in broadband access industry for LTE, IPLOOK designed a dedicated vEPC which is all software and can be deployed on common X86 servers or virtual platforms even cloud like AWS, Azure etc.



### The Network elements:

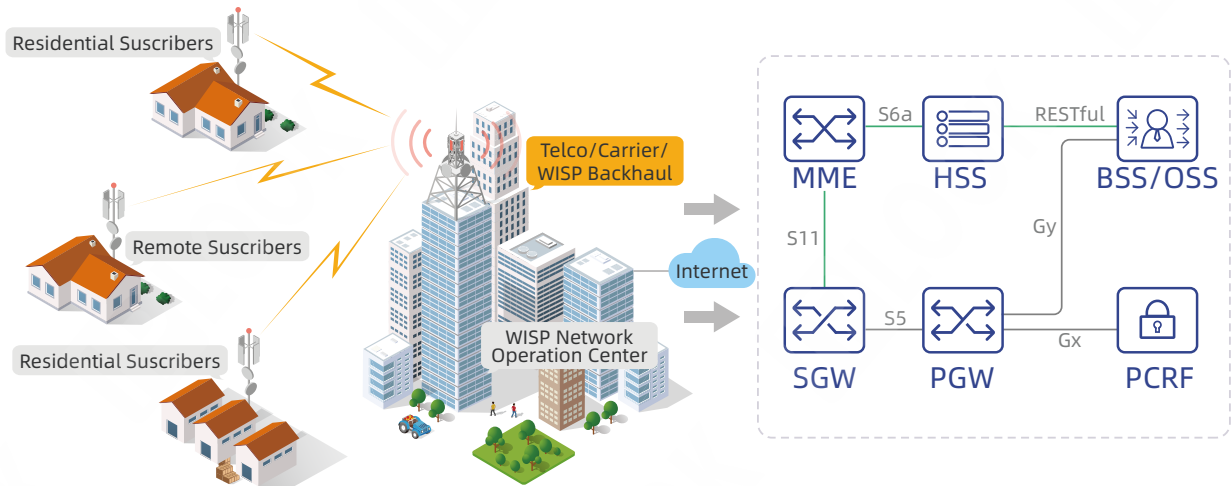
- MME
- HSS
- SGW
- PGW
- PCRF
- 5GC

### The Strengths:

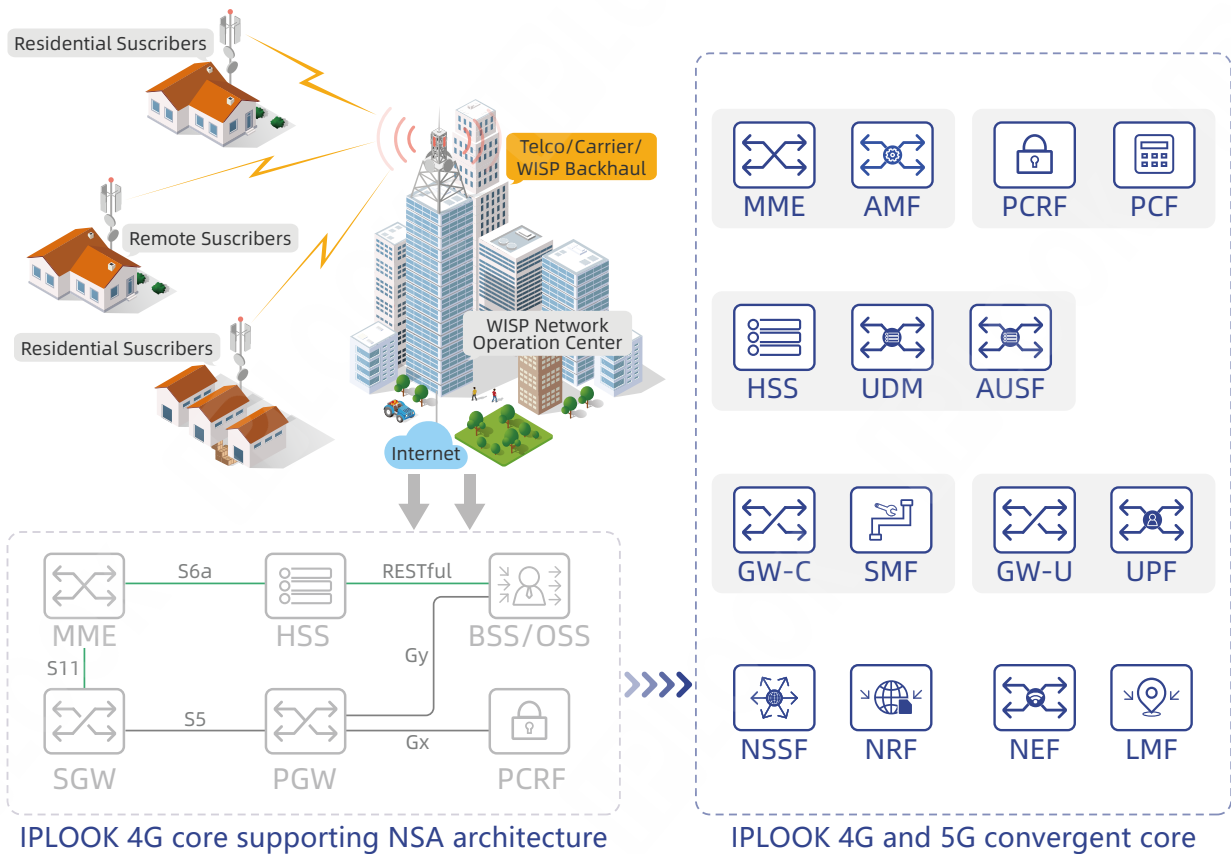
- High Speed Data Links (Up to 3G bps)
- Cost effective access for prolonged use and multiple users
- Rapid deployment at a low set up fee
- Multi charging mode: RADIUS, OCS, CG
- Multi-vendor's eNodeBs supported
- Reliable and instant 24 hour Internet access

# Solution for WISP network

As the fastest-growing branch of the broadband access industry, wireless broadband access is being chased by entrepreneurs with its good revenue, and rapid technological revolution. Until now, IPLOOK has already launched its WISP projects in West Africa, Southeast Asia and North America.



## Centralized core or distributed with LGW in eNodeB



IPLOOK 4G core supporting NSA architecture

IPLOOK 4G and 5G convergent core

## 5G NSA and SA supported

# Vertical Network

IPLOOK dedicates to help you connect the world, improve lives, and build a better future . Base on different requirements, IPLOOK provides all types of LTE or 5G Vertical Network with customized service.

Vertical Network communication refers to the communication network built in some industries, departments or units to meet their needs of organization and management, production safety, scheduling and command.



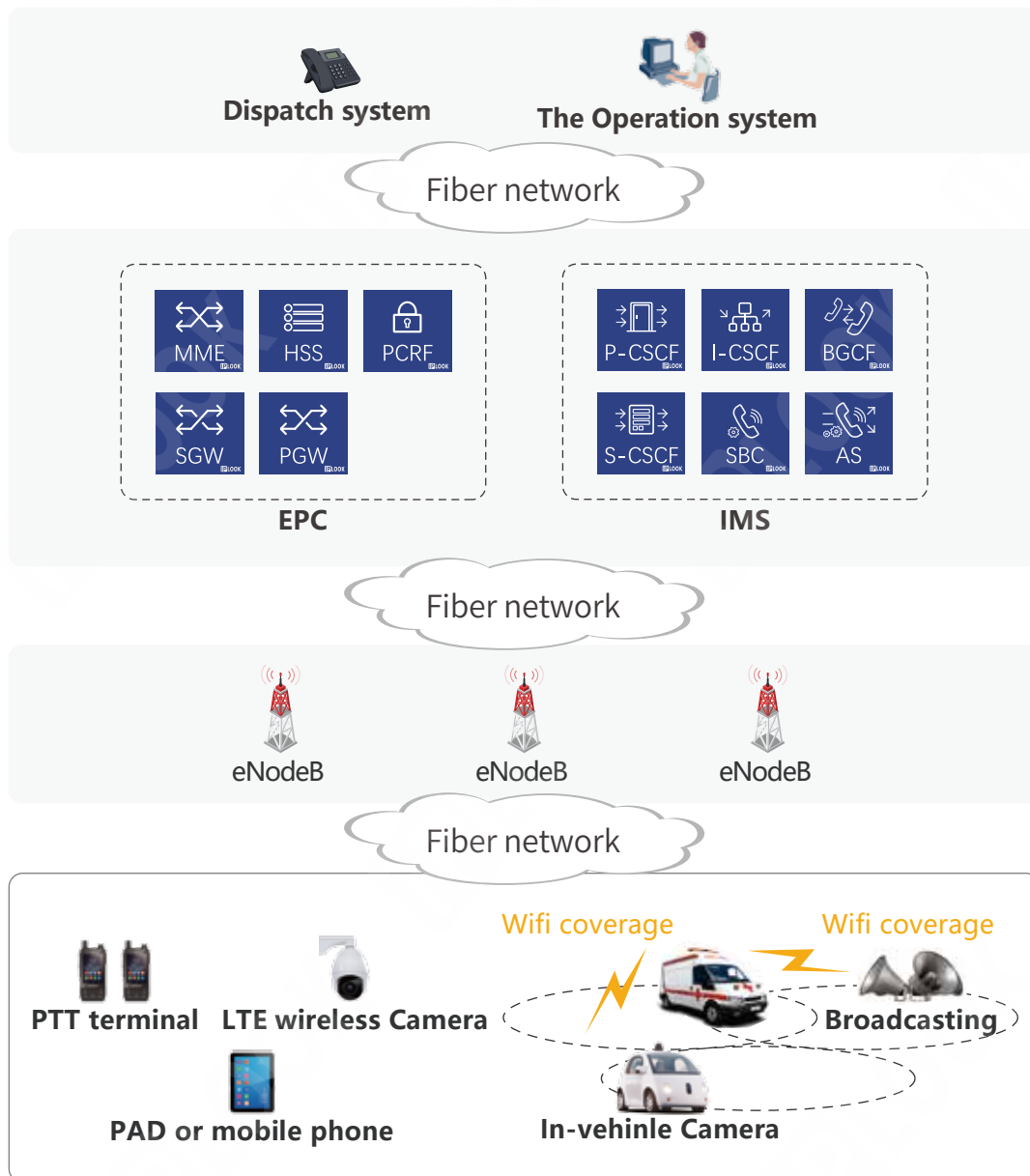
## The Network elements:

- vEPC
- vIMS
- vPCRF
- MGW
- SBC
- 5GC

## The Strengths:

- Field-proven products
- Multi-level redundancy
- Interoperability with other networks
- Open to different eNodeB vendors
- Customized development
- Save CAPEX and OPEX

# Solution for vertical network



## The end-to-end solution for Police or Mining

As is shown in the figure, EPC, IMS and dispatch system are deployed respectively to serve the policeman training field or mining industry. In order to provide wireless access service for those certain places, the compact eNodeB or small cell will be installed. At the same time, external public network connection is completed through the central machine room, with which the user can initiate a phone call to public UE. To ensure the reliability of the network, backup EPC and IMS can be deployed.

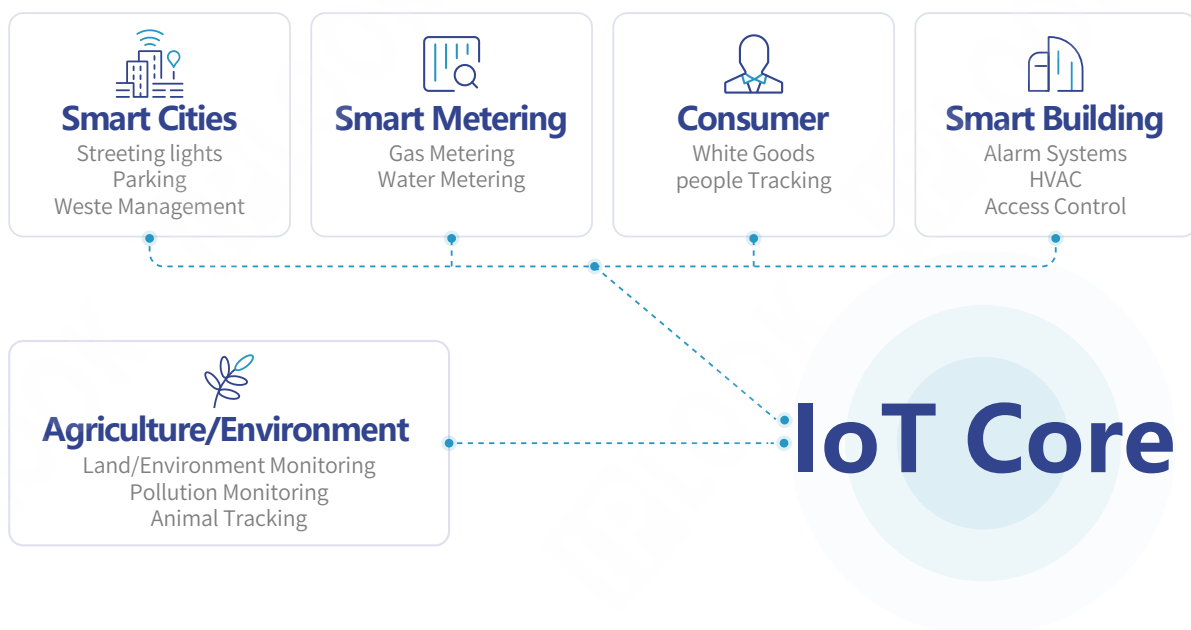
# Products & Solutions for IoT

IoT is widely used in the integration of networks through intelligent sensors, identification technology, pervasive computing and other communication perception technologies.



The Internet of things is the application expansion of the Internet. It is not so much a network as a business and application.

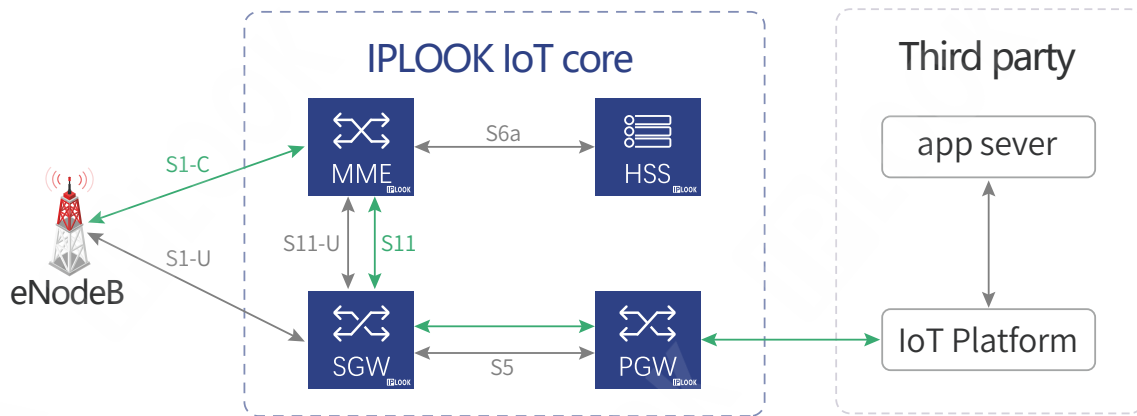
IPLOOK's core network supports two IoT models as NB-IoT and eMTC. Currently, its NB-IoT system are maturely applied worldwide.



# The Solution

IPLOOK IoT core integrates enhanced MME, HSS, SGW, PGW functions to provide mobile management, subscriber and TAU services for NB-IoT and eMTC scenario.

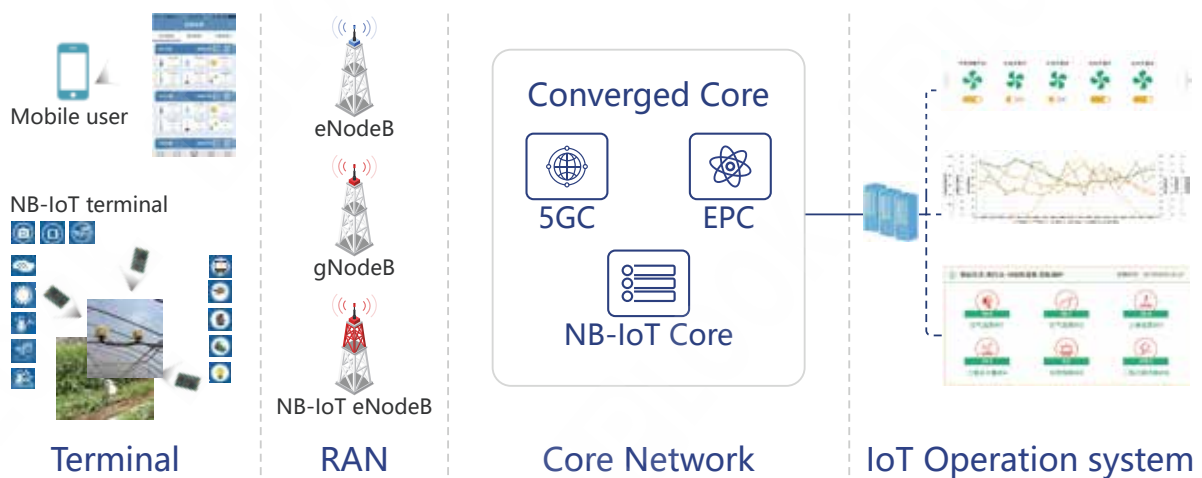
For various kinds of service model like car networking, big data, smart city, its network is able to be applied successfully.



This network architecture is the end-to-end IoT solution.

The IoT core provided by IPLOOK has the following strengths:

- Flexible deployment with compact version and distributed version
- New-built NB-IoT or eMTC network co-exist with LTE networks, even 5G network.
- The eNodeB can be from multiple suppliers.



## NB-IoT Solution

## Company Profile

IPLOOK Networks Co., Ltd (branded as IPLOOK) is a global 3G /4G / 5G core network and solution provider. Since 2012, it starts to develop its own core network products. Its main products include MME/SGW/P-GW/HSS/HLR/GGSN/STP/DRA/IMS and 5G related products, like compact 5GC, AMF/SMF/AUSF/UDM/UPF/PCF/NRF/NEF/NSSF, NB-IoT, MEC GW etc.

With the NFV-based proposition, those products could be deployed on virtual platform or X86 servers as it's required. Moreover, the flexibility of its marketing strategy is also a very competitive highlight. The operator could start up with a small capacity to decrease CAPEX at the first stage.

In terms of the development of these years, IPLOOK has more than 30 million mobile users or devices all over the world. They are mainly from WISPs (like Connect, K-Net, GB solution), MVNOs (like Yellow Mobile, NPN), MNOs (like Tokelau telecom) and some vertical networks. In the future development, it will keep progressive and make its clients lead into the 5G era.

Please contact us by [sales@iplook.com](mailto:sales@iplook.com) for more information.

## Customers & Partners



# 3G+4G+5G



Operators 30+ Corporates 100+	Subscribers 30M+	Countries 30+	Plus 9 Years
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## About Us

