SL Core Networks Solutions

04056300-04056499
• Over 7 years, SL has accumulated commercial experiences of telecommunication industry with 3G/4G/5G core network
• 60+ employees with over 80% are R&D or technical support engineers
• Dedicates on 3G/4G/5G core network
  • EPC (MME, SGW, PGW, HSS, PCRF)
  • IMS
  • 3G elements (HLR, GGSN)
  • 5GC
• Field-proven products in China, South-east Asia, Africa, Middle east countries etc.
• Standard and High availability 3G/4G/5G products and customized services for: MVNO, WISP, MNO, Vertical Networks
Global Networks

3G/4G/5G Core Network
<table>
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<tr>
<th>3G Core</th>
<th>4G Core</th>
<th>4G IMS</th>
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<tbody>
<tr>
<td>• 3G network elements include <strong>HLR</strong> and <strong>GGSN</strong></td>
<td>• LTE EPC in 4G mobile communication</td>
<td>• LTE IMS in 4G mobile communication</td>
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<td>• High Availability or N+1 backup support</td>
<td>• SaaS and Virtualized core support X86 servers or even cloud</td>
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<td>• Better scalability to support both small private networks and mobile</td>
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<td>operator's networks</td>
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<td>• Interoperability Test with various eNodeB vendors</td>
<td>• VoLTE functions supported</td>
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5G C

- Conform to 3GPP R15 standard
- Standalone architecture of 5G network
- Based on NFV technology
- With MEC (Mobile Edge computing) feature over 5G core network
- Support the combination of 3G, 4G, 5G network elements like HLR/HSS/UDM, GGSN/PGW/UPF etc.

C-SGN

- NB-IoT core for smart cities, like metering, sharing bicycle, Asset's location etc.
- With C-SGN (enhanced MME, SGW, PGW), NB-IoT features are supported
- PSM mode, Extended periodic timer, eDRX parameter,

MEC GW

- MEC GW for densely populated areas like shopping mall, Campus, smart factories.
- Based on 4G mobile network, the local data are able to breakout in MEC GW and relief the load in public network
Solution for WISP

As is shown in the diagram, the network provides high speed internet services to users. In some urban area which the fiber doesn't reach, the operator can provide wireless internet service by SL-'s network. It cooperates vEPC core network, small cell or compact eNodeB and CPE. Moreover, the vEPC supports the 5G NR (also called gNB) to form the 5G NSA architecture.
Solutions

Solution for MVNO

This is a total solution for Full MVNO with HSS/HLR, PGW/GGSN, PCRF etc. With these core network elements, the MVNO is able to configure its own subscribers and provide data or short message services. The STP and DRA could make sure MVNO’s network is able to interconnect with multiple operators.
Solutions
Solutions

Solution for Vertical Networks

The solution for vertical networks scales with your business. It ranges from hundreds of to thousands of users. SL provides all of the necessary nodes to enable the 4G data, voice etc. In some cases, SL-'s private core network is able to interconnect with the public core network infrastructure which is built by 3rd party.
Solution for IoT

SL's IoT solution is NB-IoT core commercially used in 2016. In 5G application scenario, IoT is the an extremely important part so called mMTC. SL's NB-IoT products connect to 3GPP R13 with PSM mode, Extended periodic timer feature. It incorporates C-SGN and HSS with API interface to connect with IoT platform.
With its NEV technology, SL’s core network are all software. As a result, the simplicity and convenience of maintainance and deployment could be achieved. Finally, it saves the CPEX & OPEX.

SL has accumulated a serial of cases in the last 7 years. Its 3G/4G/5G core network conforms to 3GPP standard and could be easily integrated with network from third party.

It has 3G, 4G and 5G core network to make sure a smooth upgradation. At the same time, SL support the eNodeB from third party whose products are standard.

Customized services are provided to satisfy the requirements of vertical networks or MVNOs.
CSFB function
eMBMS function
PCRF product
NFV EPC
HSS support 1000K

Conform to R13 Spec
SDN/NFV Platform
vEPC Management
Converged HSS&HLR
NB-IoT Product
eMTC Product

NB-IoT Deployment
5G NSA trial
MEC Deployment
LTE-R/LTE-M

SBA implementation
5GC First release
The combination of
✓ HSS/HLR/UDM
✓ GGSN/PGW/UPF
✓ PGW/SMF
✓ PCRF/PCF

3G/4G/5G Core network
References

- Full MVNO solution with HSS/HLR, PGW/GGSN, PCRF for a MVNO in Hongkong
- Combined HSS/HLR implement for a MVNE in Hongkong
- vEPC for a WISP in Cambodia
- LTE network for communication among Islands in Tokelau
- LTE coverage for 31 regions in Middle Eastern countries
- Vertical Networks for mining in north-east of China
- vEPC on Cloud provision in North America
- vEPC+Billing in Kenya for WISPs
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