



IPLOOK GTP Router PRODUCT INFORMATION

IPLOOK Technologies

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1 Overview

GTP, the abbreviation of GPRS Tunneling Protocol, is a group of IP-based communications protocols used to carry general packet radio service (GPRS) within GSM, UMTS and LTE networks. IPLOOK GTP Router is a proxy for P-GW and GGSN nodes, as well as GTP-C and GTP-U traffic, which supports multi-MNO and MVNO.

The GTP control plane and user plane use a variety of messages for message interaction, such as:

- Route management message
- Tunnel management message
- Location management messages
- Mobility Management Message
- Information Element IE (Information Element), etc.

The GPRS network is a bearer network transformed from the existing GSM network by adding some network elements (such as SGSN, GGSN). These network elements are collectively called GSN (GPRS Supporting Node).

To ensure the communication between newly added network elements and between these network elements and other networks, new interfaces collectively called G interfaces have been added. These interfaces are Gb, Gn, Gp, Gi and other data interfaces, Gr, Gs, Signaling interfaces such as Gd and Gf. In the application scenario of the USG9000, three interfaces, Gn, Gp, and Gi, need to be focused.

- Gn:

The interface between different GSNs in the same PLMN. The Gn interface runs GTP (GPRS Tunneling Protocol) to ensure the intercommunication between SGSN and GGSN in the same PLMN.

- Gp:

The interface between GSNs between different PLMNs is used to implement data roaming services between different PLMNs. The Gp interface runs the GTP protocol to ensure intercommunication between SGSN and GGSN between different PLMNs.

- Gi:

The interface between GGSN and PDN. This interface realizes the interconnection between GPRS network and external data network. Gi interface runs IP protocol to ensure data transmission between GGSN and external network.

GTP is a tunnel protocol defined for Gn and Gp interfaces to support data communication between GSN. GTP is based on the UDP protocol, including GTP control plane (GTP-C) and GTP user plane (GTP-U).

- GTP control plane (GTP-C)

In the control plane, the signaling mechanism is used to create, modify, and delete tunnels.

- GTP user plane (GTP-U)

In the user plane, a tunnel mechanism is used to transmit user data packets.

GTP includes two versions, Version 0 and Version 1. The former belongs to the 3GPP Release 97 protocol and is used in GPRS networks; the latter belongs to the 3GPP Release 99 protocol and is used in 3G networks. GTP Version 1 is compatible with Version 0, and the two can be distinguished by the value of the version field in the GTP header.

In addition, GTP also includes GTP' protocol for charging.

2 Feature list

Feature List	Feature details
3GPP 23.401, 29.274 and 29.060 standards compliant	
Act as Proxy for PGW and GGSN nodes	<ul style="list-style-type: none"> • PGW/GGSN Reselection • Topology Hiding • Session Modification /Enforcement
Operate as Proxy for both GTP-C and GTP-U traffic	Stateful GTP-C/GTP-U Termination
Flexible Operator	<ul style="list-style-type: none"> ▪ Simplify Home Routed Gateway Selection (Outbound Roamers) ▪ Handle Roaming Interoperability Issues ▪ Traffic Inspection &Enforcement
Support GTPv2 and GTPv3	
Supports Offline CDRs (Ga/Local) and Online (Gy) Charging	Used for CDR reconciliation
Handles 2G, 3G and 4G GTP procedures	Including failures
All GTP IEs will be passed as unchanged where possible	
Supports S5, S8, Gn, Gp GTP interfaces	
Stateful Geo Redundancy	

3 Deployment

3.1 Redundancy

Single PGW/GGSN node provide 5 Gbps data throughput and 50k+ subscribers.

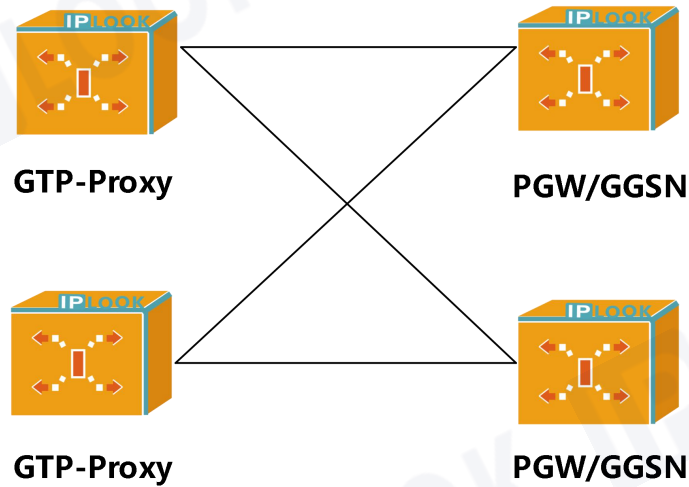


Figure 1 : GTP-Proxy Redundancy

3.2 Multi MNO and MVNO

- IPLOOK GTP Router provides interoperation between multi MNO and multi MVNO.
- It supports GTPv2 and GTPv3.

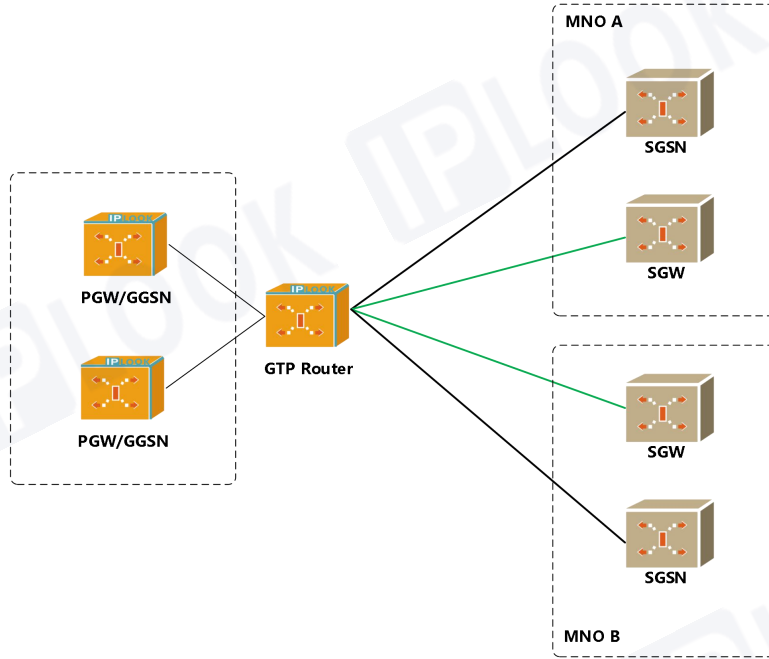


Figure 2: Multi MNO and MVNO