

ETSI TS 129 061 V15.7.0 (2021-08)



**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);**

(standard, iteh.ai)

5G;

**Interworking between the Public Land Mobile Network (PLMN)
supporting packet based services and
Packet Data Networks (PDN)**

(3GPP TS 29.061 version 15.7.0 Release 15)



Reference

RTS/TSGC-0329061vf70

Keywords

5G,GSM,LTE,UMTS

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Sous-Préfecture de Grasse (06) N° 7803/88

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Modal verbs terminology

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Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document describes the network interworking for the Packet Domain. Interworking to various external networks is defined together with the interworking for data forwarding while subscribers roam within the 3GPP system.

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1 Scope

The present document defines the requirements for Packet Domain interworking between a:

- a) PLMN and PDN;
- b) PLMN and PLMN.

The present document is valid for a PLMN in A/Gb mode as well as for a PLMN in Iu mode. If text applies only for one of these systems it is explicitly mentioned by using the terms "A/Gb mode" and "Iu mode". Please note, that the A interface does not play any role in the scope of the present document although the term "A/Gb mode" is used.

For inter-working between EPC PLMN and external networks, the present document is valid for both 3GPP accesses and non-3GPP accesses.

The present document also defines, in clause 17, the protocol for the Gmb interface, in clause 20, the protocol for the SGmb interface, and in clause 19, the protocol for the Mz interface.

The present document also defines, in clause 18, the usage of Radius at the Pk Reference Point between the GGSN and the Presence Network Agent.

The term "Packet Domain" includes both EPC based and non-EPC based Packet Domains.

The present document also defines the specific requirements for rate control related to CIoT optimisations.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific. <https://standards.iteh.ai/catalog/standards/sist/a879845-940b-4429-a00a-aff0b55a6880/etsi-ts-129-061-v15-7-0-2021-08>
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- [3] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".
- [4] Void.
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- [6] Void.
- [7] Void.
- [8] Void.
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3 Definitions and abbreviations

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3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 22.060 [2], 3GPP TS 23.060 [3], 3GPP TS 23.401 [77], 3GPP TS 23.402 [78] and the following apply:

2G- / 3G-: prefixes 2G- and 3G- refers to functionality that supports only A/Gb mode GPRS or Iu mode, respectively, e.g., 2G-SGSN refers only to the A/Gb mode GPRS functionality of an SGSN. When the prefix is omitted, reference is made independently from the A/Gb mode GPRS or Iu mode functionality.

A/Gb mode: indicates that the text applies only to a system or sub-system which operate in A/Gb mode of operation, i.e. with a functional division that is in accordance with the use of an A or a Gb interface between the radio access network and the core network.

Iu mode: indicates that the text applies only to a system or a sub-system which operates in Iu mode of operation, i.e. with a functional division that is in accordance with the use of an Iu-CS or Iu-PS interface between the radio access network and the core network.

IP-CAN session: association between a UE and an IP network

The association is identified by a UE represented by an Ipv4 address and/or an Ipv6 prefix together with a UE identity information, if available, and a PDN identity (e.g. APN). An IP-CAN session incorporates one or more IP-CAN bearers. Support for multiple IP-CAN bearers per IP-CAN session is IP-CAN specific. An IP-CAN session exists as long as the related UE Ipv4 address and/or Ipv6 prefix are established and announced to the IP network.

EPC based Packet Domain: Packet domain which makes use of EPC nodes (e.g. P-GW, S-GW, etc.).

Packet Domain Bearer: A transmission path between a UE and a GGSN/P-GW, terminating at the User Plane protocol stack under the IP layers.

3.2 Abbreviations

Abbreviations used in the present document are listed in 3GPP TR 21.905 [42]. For the purposes of the present document, the following additional abbreviations apply:

5QI	5G QoS Identifier
AMBR	Aggregate Maximum Bit Rate
APN	Access Point Name
ARP	Allocation and Retention Priority
ATM	Asynchronous Transfer Mode
APCO	Additional Protocol Configuration Options
BG	Border Gateway
BM-SC	Broadcast/Multicast Service Centre
CHAP	Challenge Handshake Authentication Protocol
CIoT	Cellular Internet of Things
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6
DNS	Domain Name System
DSMIPv6	Dual-Stack MIPv6
DVMRP	Distance Vector Multicast Routing Protocol
EPC	Evolved Packet Core
ePDG	Evolved Packet Data Gateway
EPS	Evolved Packet System
FQDN	Fully Qualified Domain Name
GBR	Guaranteed Bit Rate
GFBR	Guaranteed Flow Bit Rate
GGSN	Gateway GPRS Support Node
GTP-U	GPRS Tunneling Protocol for user plane
ICMP	Internet Control Message Protocol
IETF	Internet Engineering Task Force
IGMP	Internet Group Management Protocol
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPCP	IP Control Protocol (PPP NCP for IPv4)
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IPV6CP	IPv6 Control Protocol (PPP NCP for IPv6)
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LAC	L2TP Access Concentrator
LAN	Local Area Network
LNS	L2TP Network Server
MBMS	Multimedia Broadcast/Multicast Service
MBR	Maximum Bit Rate
MFBR	Maximum Flow Bit Rate
MIP	Mobile IP
MLD	Multicast Listener Discovery
MME	Mobility Management Entity
MOSPF	Multicast Open Shortest Path First
MS	Mobile Station
MT	Mobile Terminal
MTC	Machine Type Communication
MTU	Maximum Transfer Unit
NAI	Network Access Identifier
NCGI	NR Cell Global Identity
PAP	Password Authentication Protocol
PCC	Policy and Charging Control
PCO	Protocol Configuration Options
PCRF	Policy and Charging Rules Function
P-CSCF	Proxy Call Session Control Function
PDCP	Packet Data Convergence Protocol
PDN	Packet Data Network