ITU - Definition

A Next Generation Network (NGN) is a packet-based network able to provide services including Telecommunication Services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

Next Generation Network ??

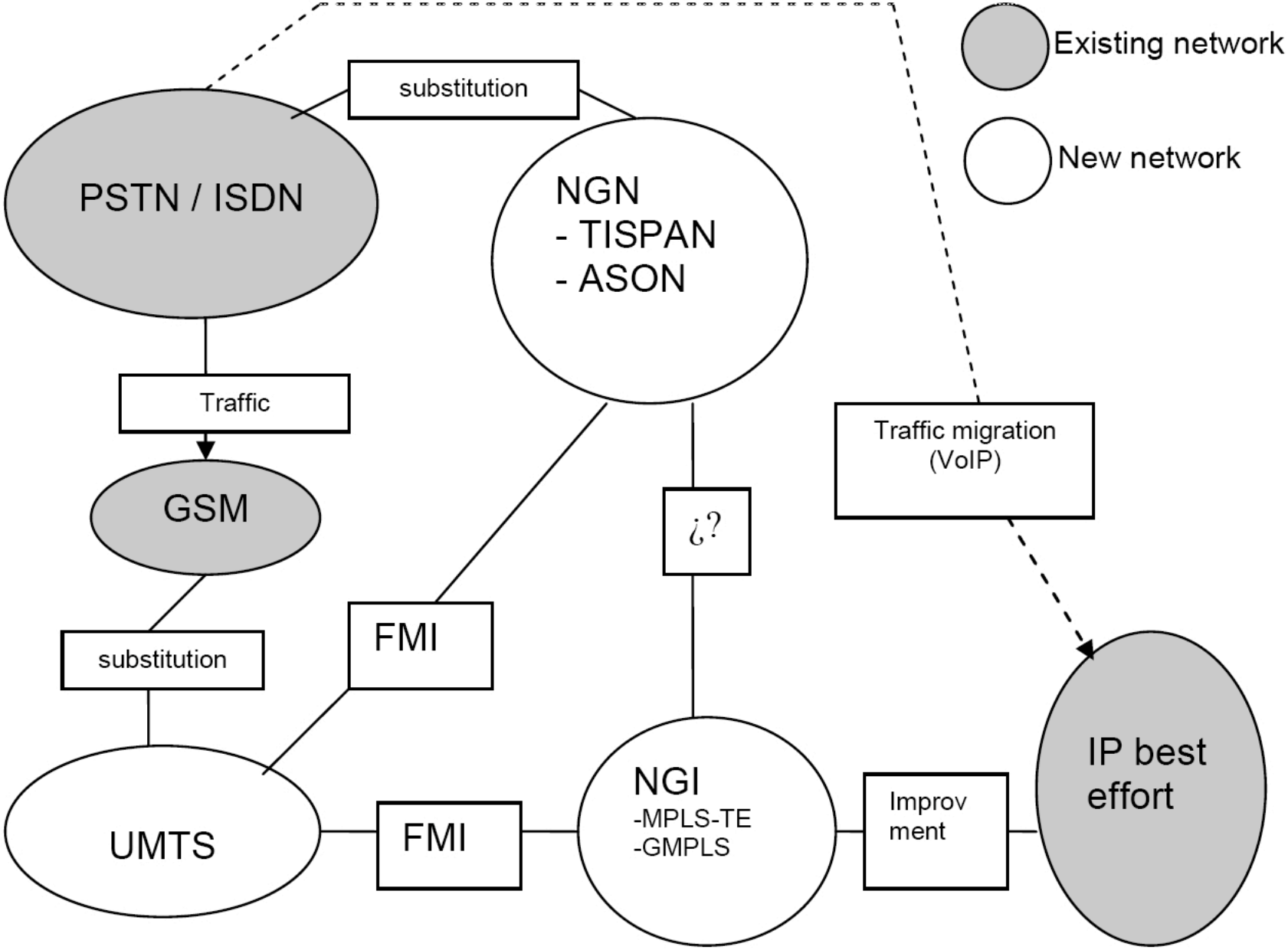
ITU - Definition

The NGN is characterized by the following fundamental aspects:

- Packet-based transfer
- Separation of control functions among bearer capabilities, call/session, and application/ service
- Decoupling of service provision from network, and provision of open interfaces
- Support for a wide range of services, applications and mechanisms based on service building blocks (including real time/ streaming/ non-real time services and multi-media)
- Broadband capabilities with end-to-end QoS and transparency
- Interworking with legacy networks via open interfaces
- Generalized mobility
- Unrestricted access by users to different service providers
- A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks
- Unified service characteristics for the same service as perceived by the user
- Converged services between Fixed/Mobile
- Independence of service-related functions from underlying transport technologies
- Compliant with all Regulatory requirements, for example concerning emergency communications and security/privacy, etc.

Next Generation Network ??

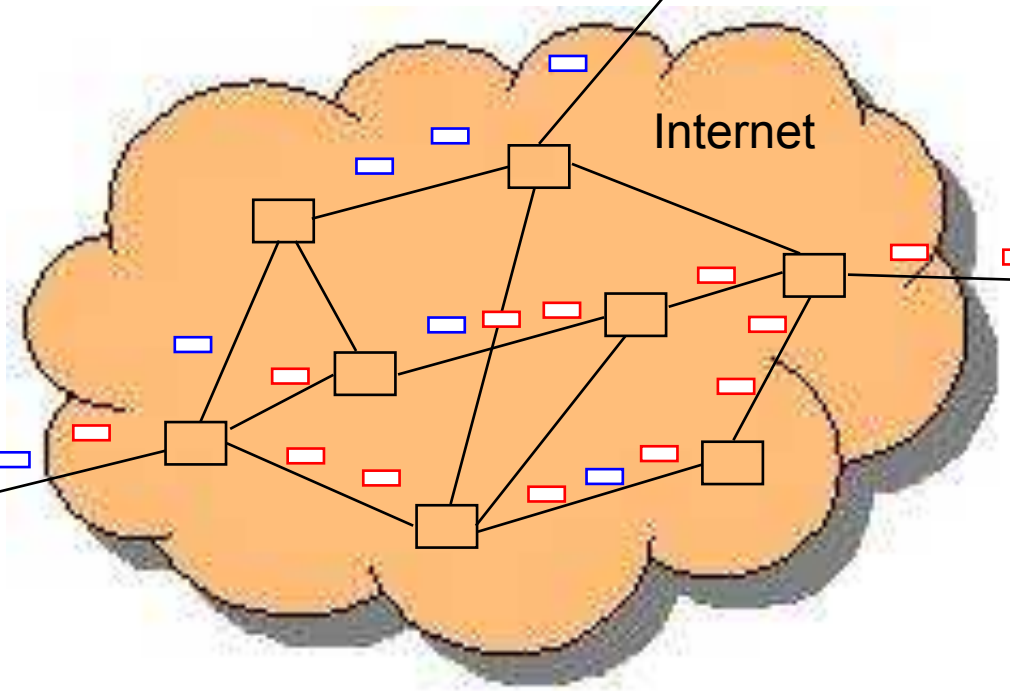
Expected Developments for Public Networks



Source: WIK Studie im Auftrag Bundesnetzagen-

Registrar

- Mapping of Service related addresses (e.g. SIP-URI) to IP-addresses



UA - I
(Terminal)

UA - II
(Terminal)

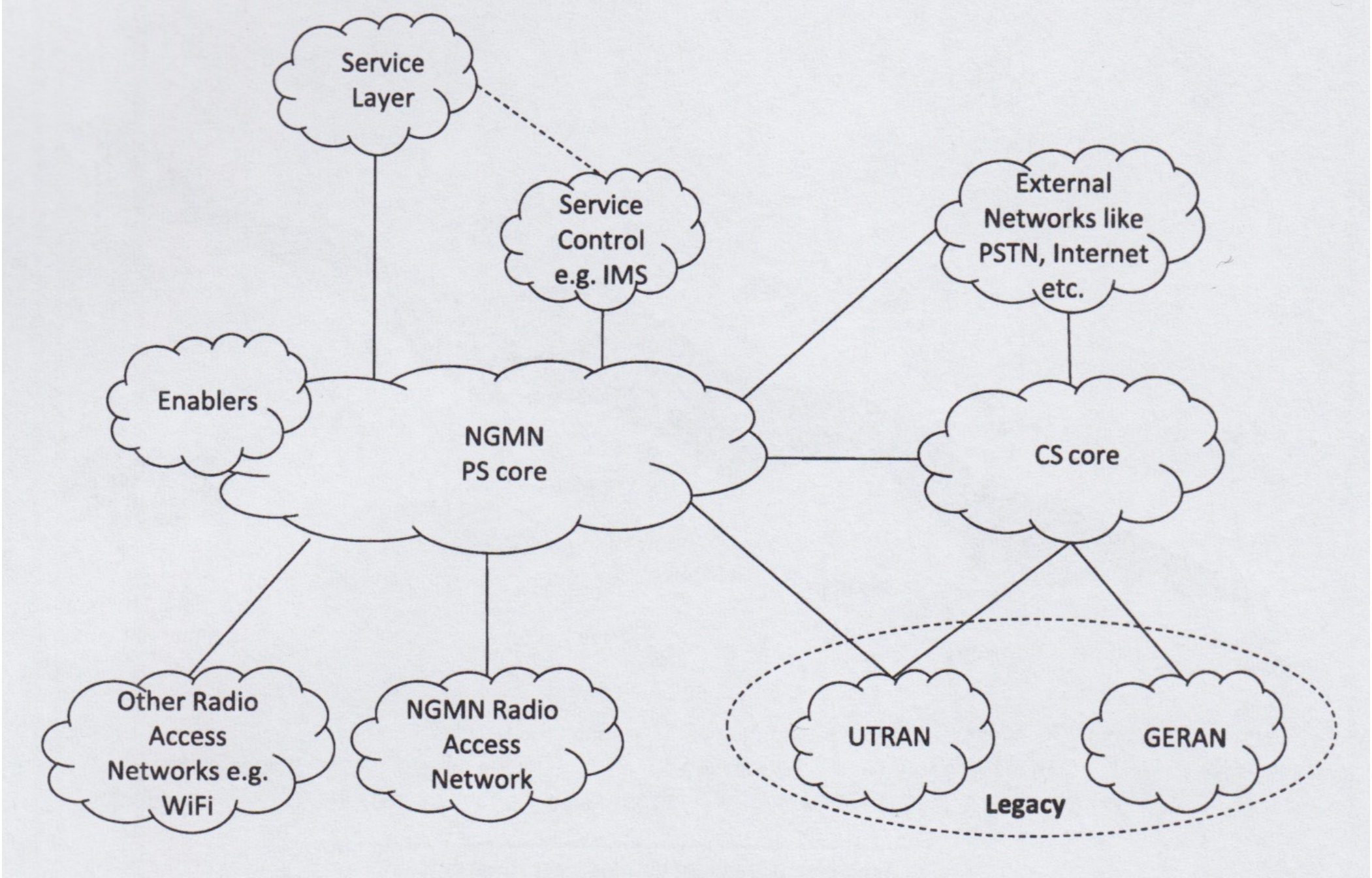
Router

Transmission

Signalling Package

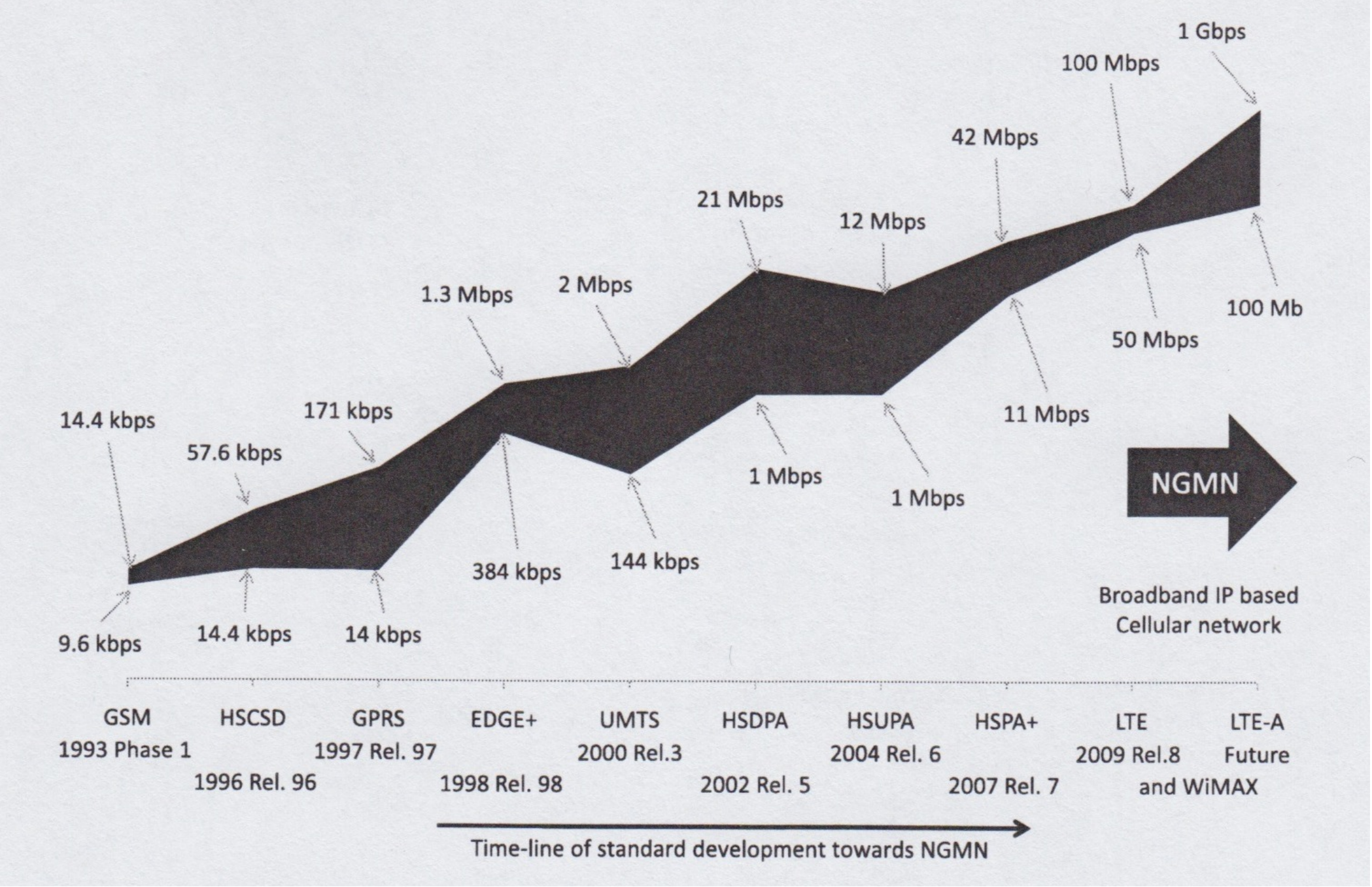
Media Package

Multimedia-Sessions Using the Public Best Effort Internet



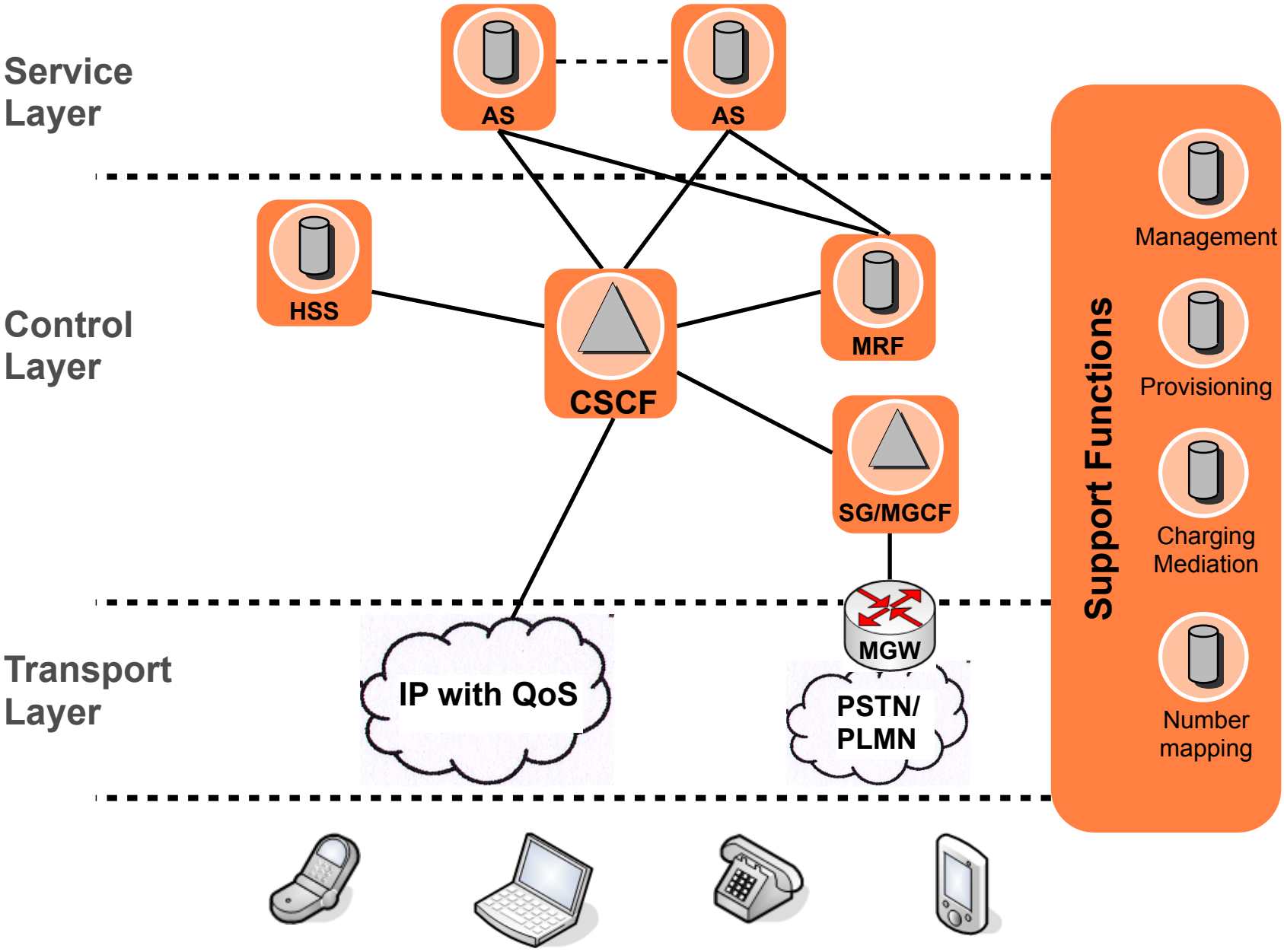
Source: Prasad; Security in NGMN

High-Level NGMN Architecture

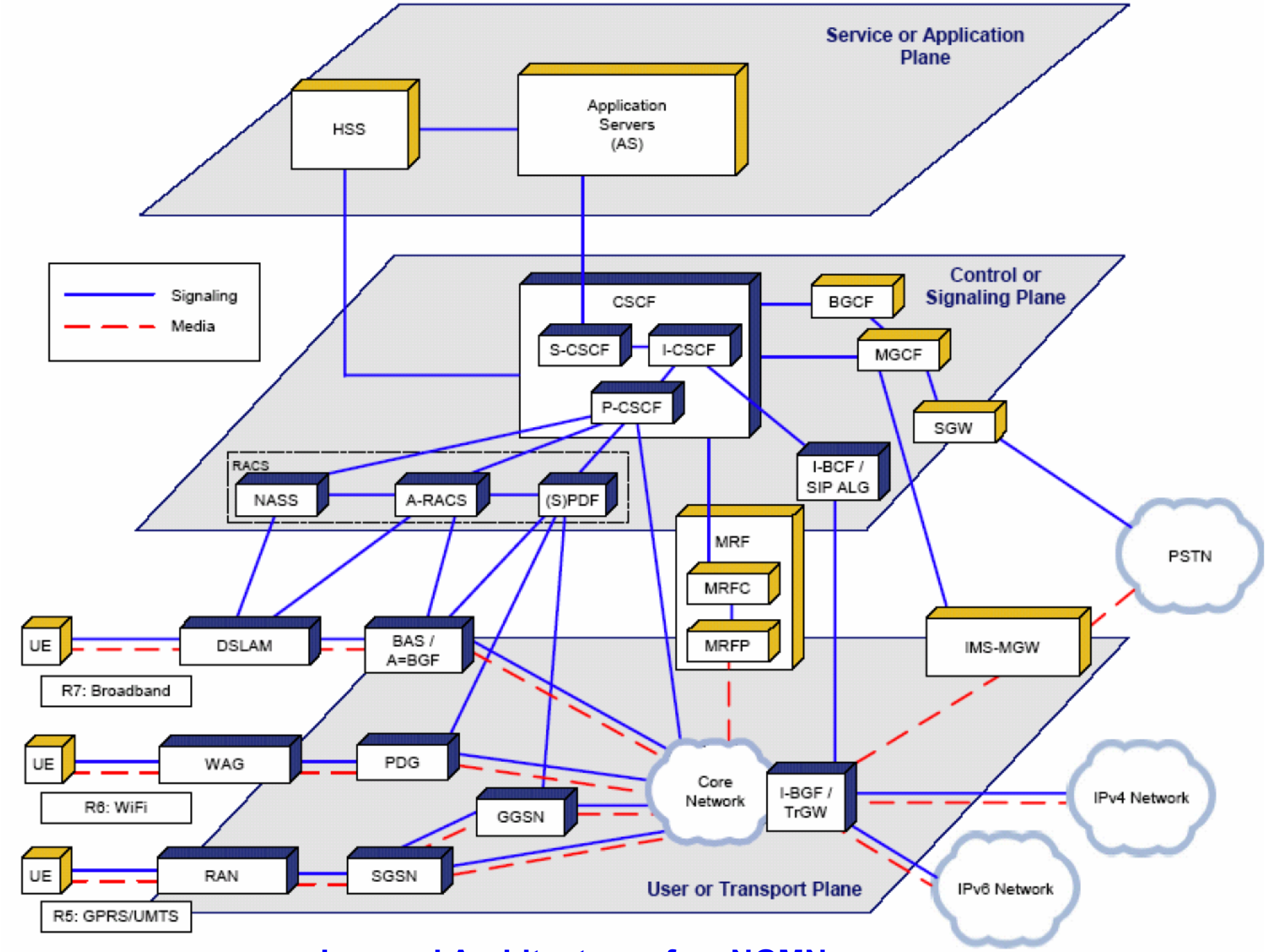


Source: Prasad; Security in NGMN

Development of Radio Access Network (RAN) Towards NGMN

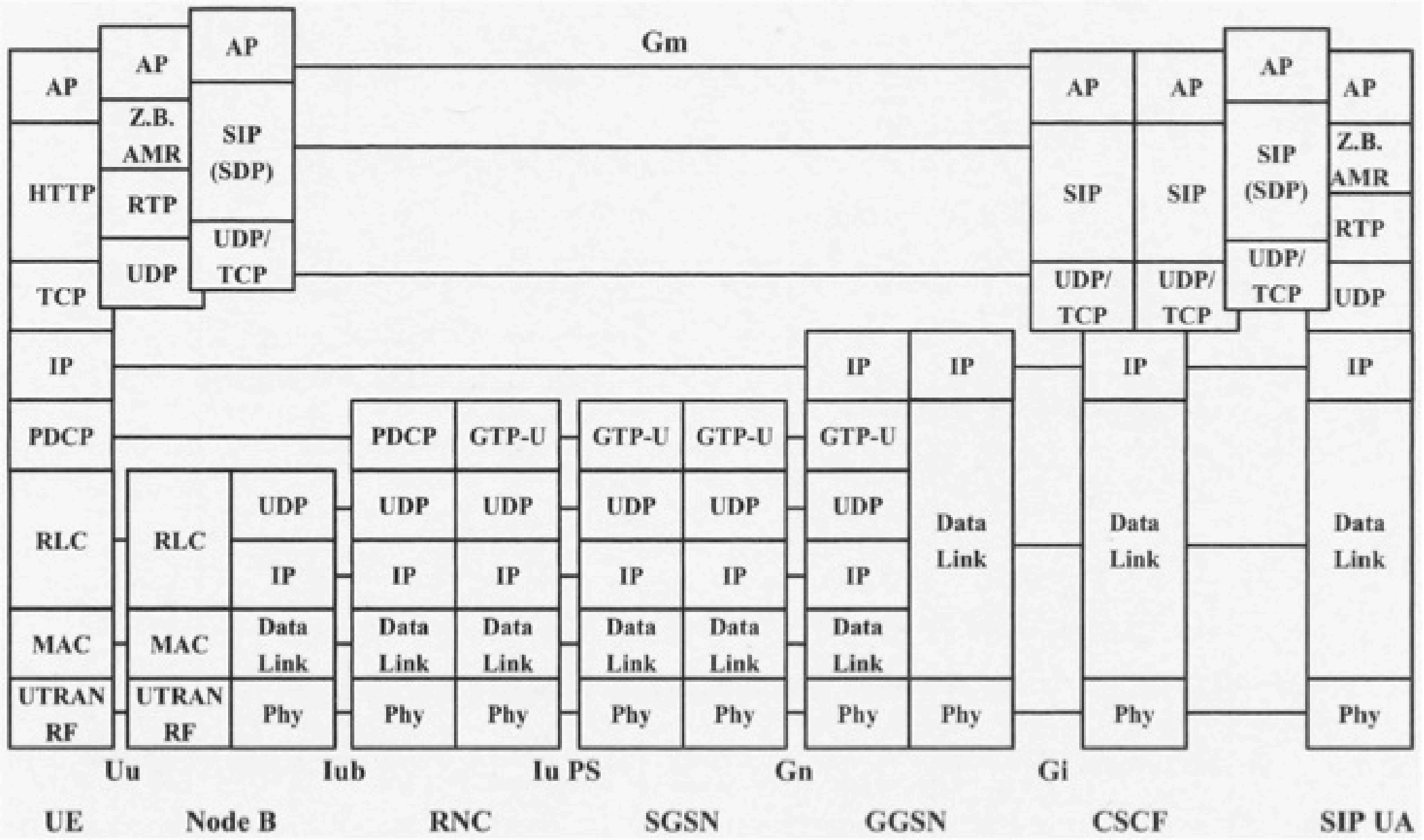


Layered Architecture of an NGMN (simplified)



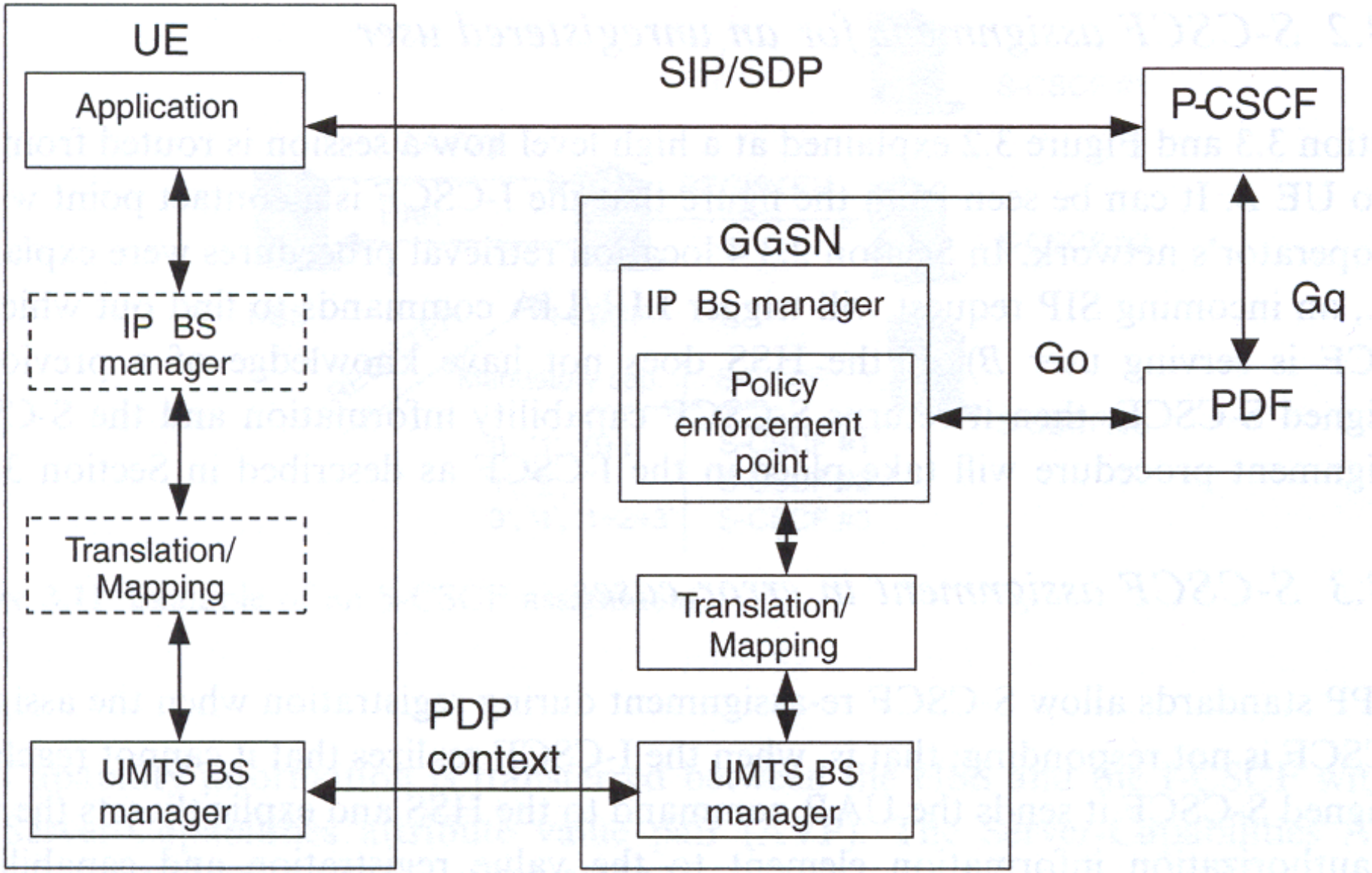
Layered Architecture of an NGMN

Source: Dataconnection



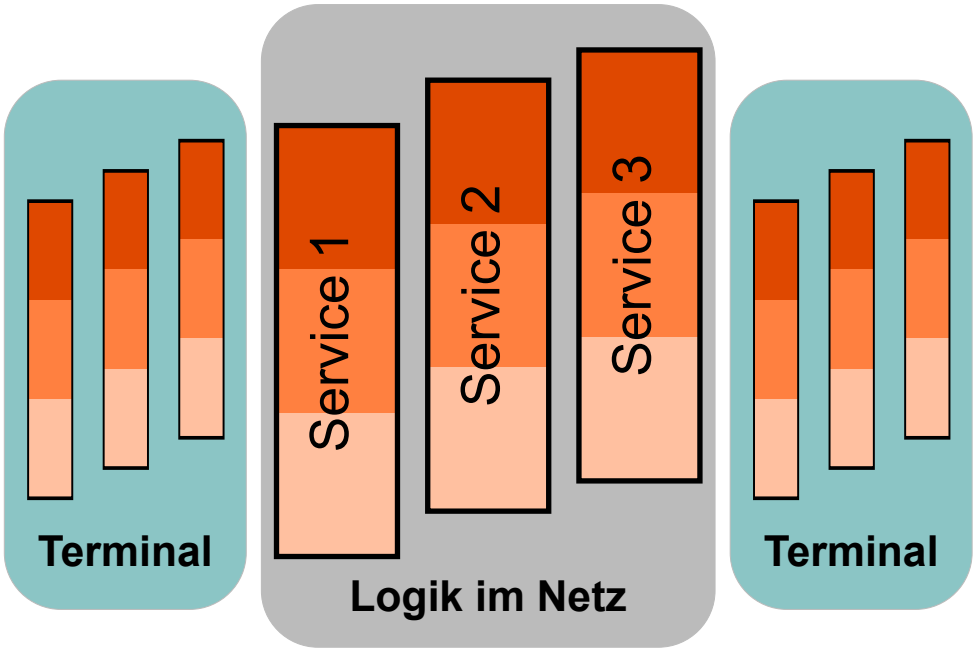
Source: Trick

IP-over-IP Tunneling Used in NGN for Mobility Support



Control of "Quality of Service" in UMTS, Rel. 5

Vertikal integrierte Dienste



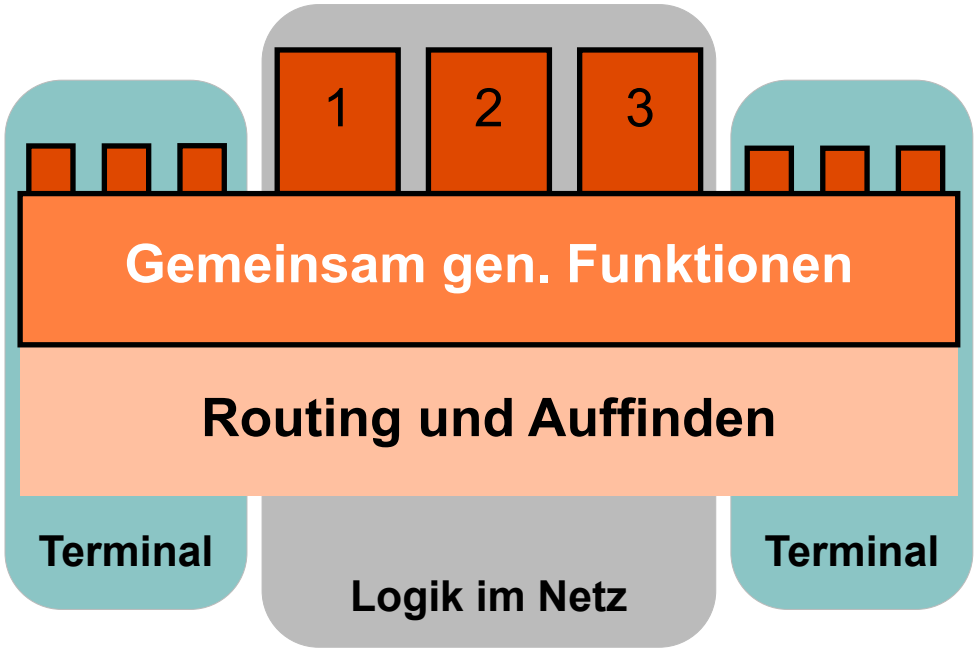
Nicht wiedernutzbar

Anwendungs-Logik

Gleiche Funktionen

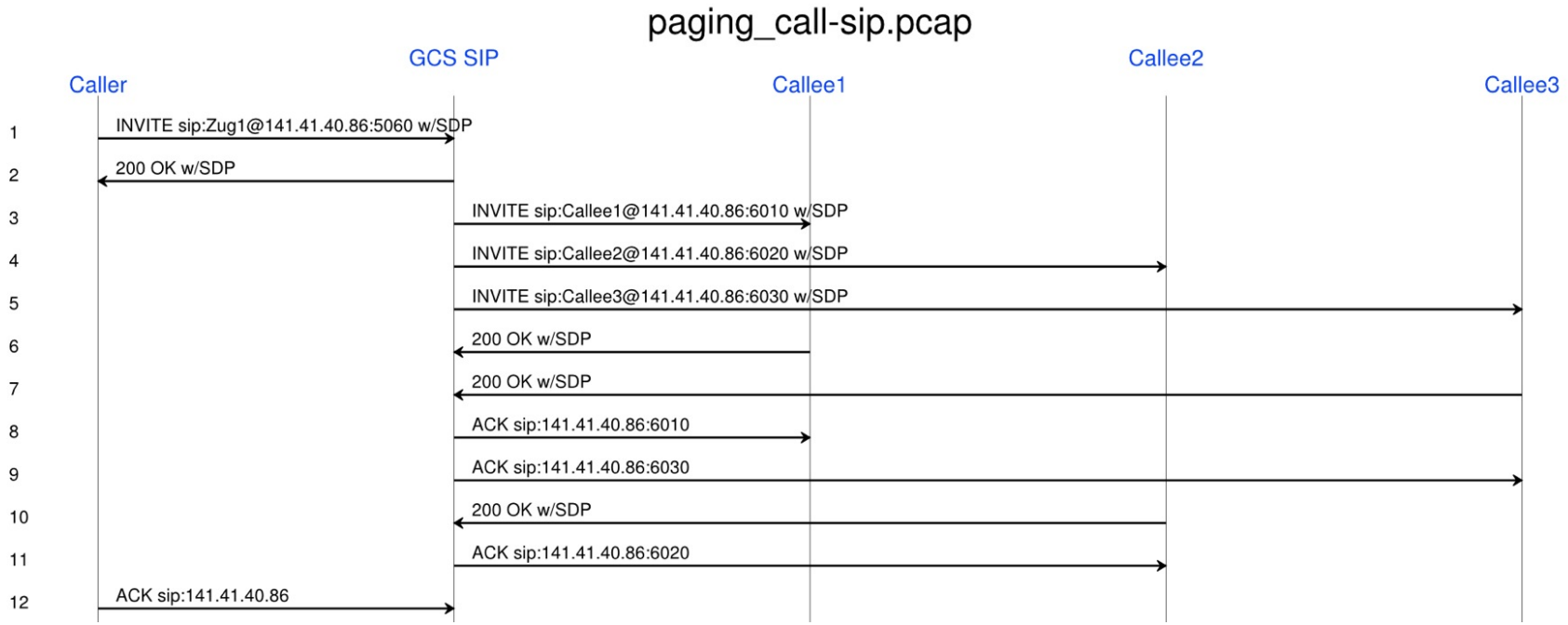
Routing und Auffinden

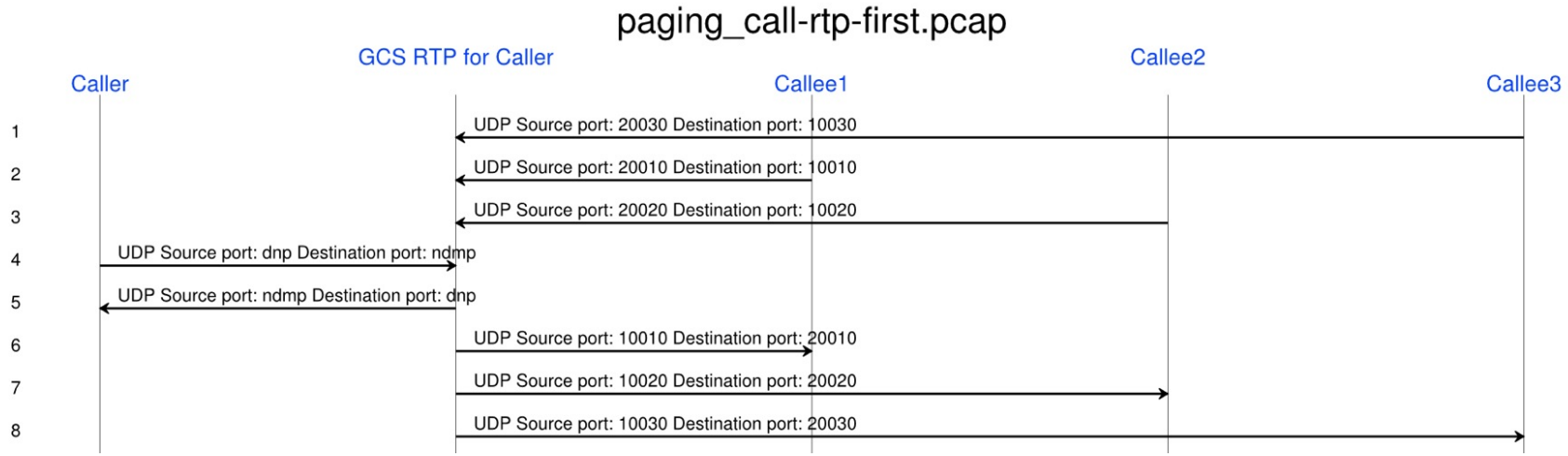
Horizontale Integration



Gemeinsame Nutzung v. Funktionen

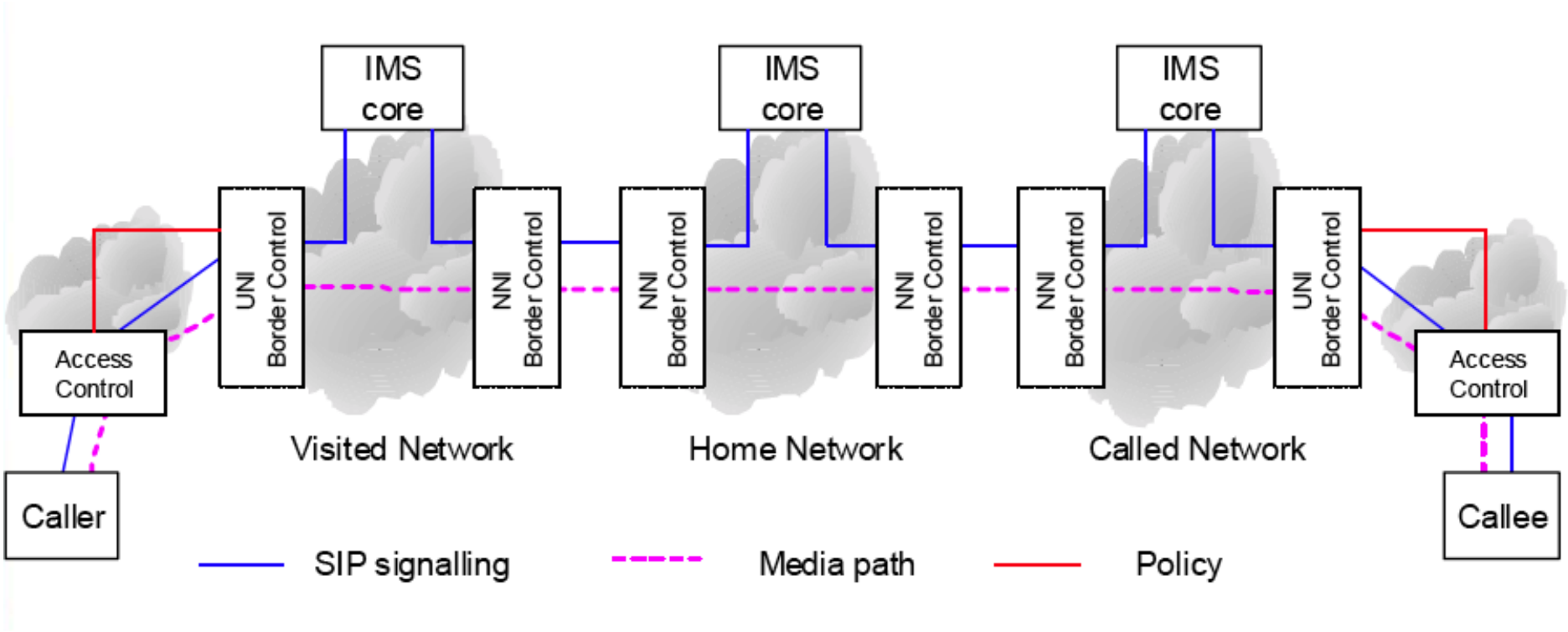
Konzept einer integrierten Dienste-Plattform => IMS





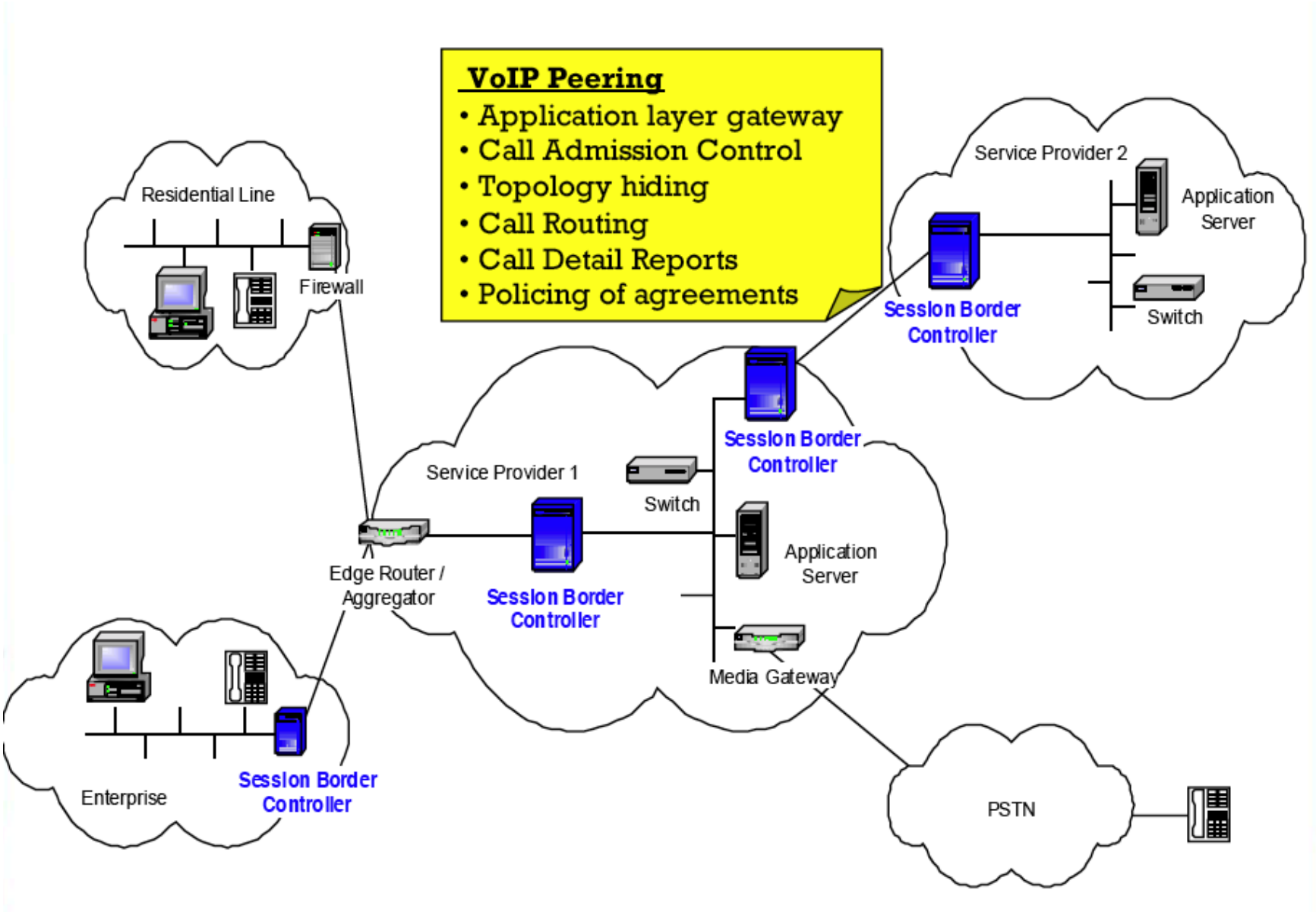
Example Application Server:

Conference Server as Basis for a GroupCall Service



Session Boarder Controller

as Part of a Multi-Operator NGMN Szenario



Interconnection of NGN: Session Boarder Controller

QoS and Access Control	Interoperability / Reach	Privacy	Monitoring
Authentication DoS protection Bandwidth theft protection Emergency call prioritisation SLA policing Network congestion avoidance Policy based routing	IPv4/v6 interworking Signalling Protocol Interworking: SIP↔H.323, MGCP↔H.248, different protocol variants. Firewall/NAT traversal VPN bridging and overlapping address resolution Bad protocol detection / correction Media transcoding DTMF interworking Policy interworking (QoS, Identity, Charging)	Topology hiding Anonymization Encryption	Lawful intercept Billing SLA compliance checks

Source: Dataconnection

Session Boarder Controller:

Requirements / Functions