

IP multimedia services in the NGN

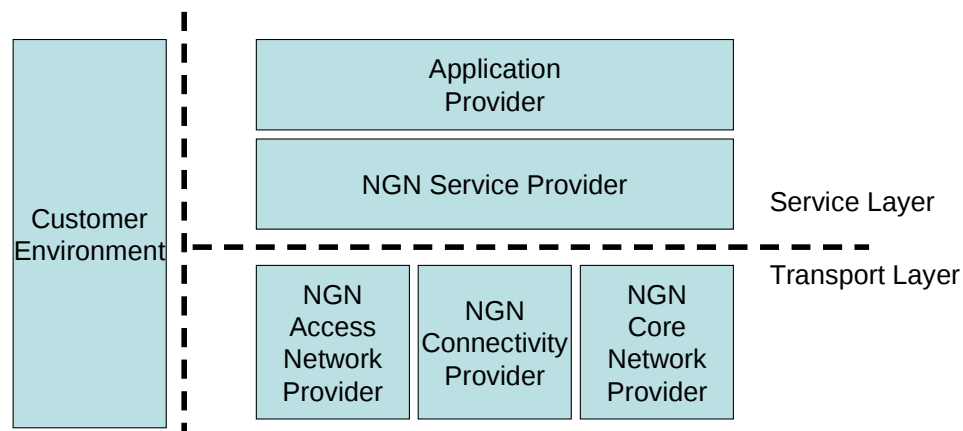
- In the ETSI the working group TISPAN (Telecommunications and Internet converged Services and Protocols for Advanced Networking) has already defined many NGN standards
- A relevant part of these standards covers the interconnection of multiple NGN network, of different operators

IP multimedia services in the NGN

- High-level requirements :
 - QoS must be negotiated both at the connection setup and when the connection is already established
 - QoS negotiation must be enabled also in case of roaming between different operators
 - IP multimedia session must support a wide set of audio/video codecs
 - IP multimedia services must, as much as possible, be provided to a variety of access technologies available to the user UTRAN, WiMAX, ...

Service layer e transport layer

- The Figure shows the logical division among the service layer and the transport layer in the NGN:
- **NGN Access Network Provider (NANP)**: concentrates traffic from multiple access lines towards one or more NGN Connectivity Providers
- **NGN Connectivity Provider (NCP)**: provides connectivity to NGN Core Network Provider
- **NGN Core Network Provider (NCNP)**: aggregates traffic from edge nodes of multiple access networks towards external networks
- **NGN Service Provider (NSP)**: provides services requiring transport onto the NGN. Performs authentication, service control & management, billing. In case of IPTV services performs content ingestion & Digital Rights Management (DRM)



Service requirements

- Two interconnected NGN operators offer end-to-end services
- Quality of Service must be guaranteed in end-to-end fashion through coordination among operators
- Example: carrier-grade VoIP services

VoIP Service requirements

- ETSI TISPAN identifies the emulation/replacement of PSTN/ISDN services as a key issue of the
- With service emulation, a new service is provided through the NGN with identical features of the old service
- Replacement means that some features of the new service may be slightly different

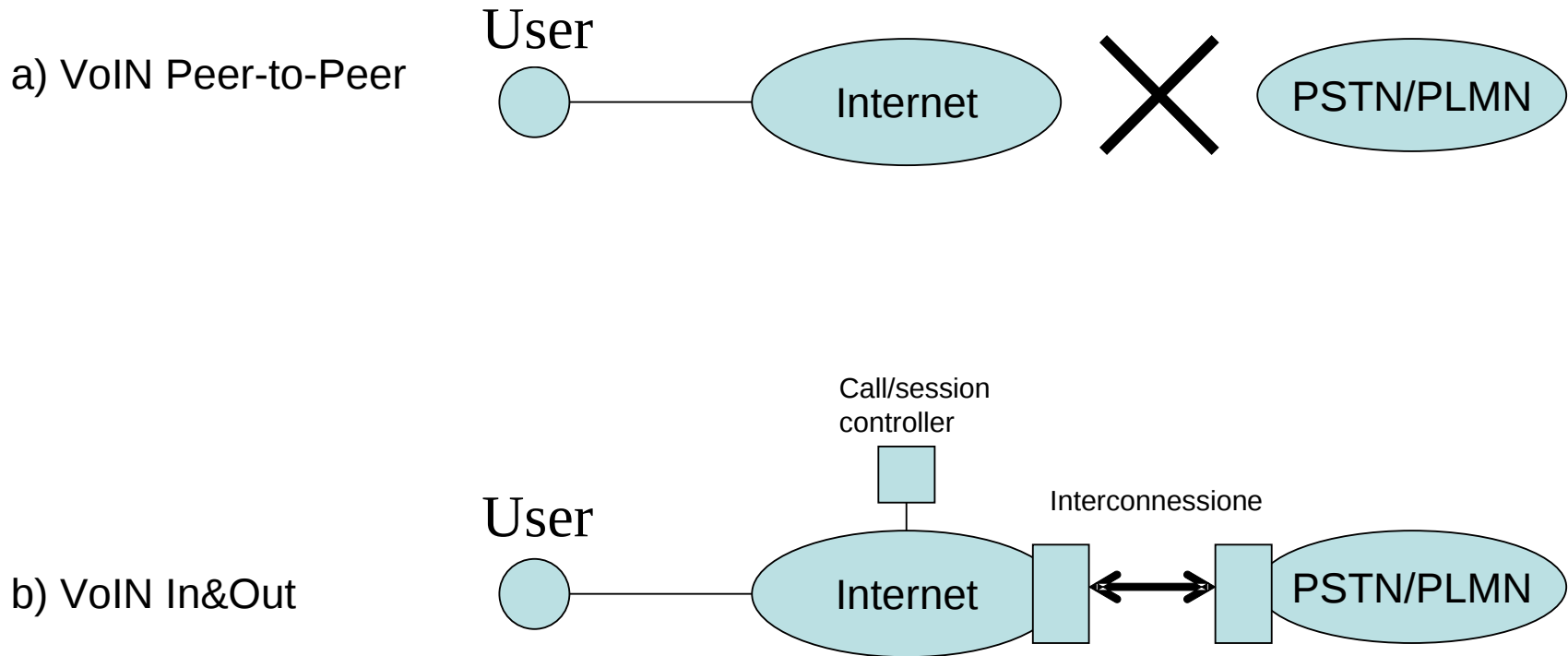
VoIP Service requirements

- Basic requirements of the classic PSTN/ISDN service:
 - Numbering plan must be preserved
 - Lawful Interception (LI) must be guaranteed
 - Emergency services must be guaranteed
 - Malicious Call Identification (MCID) service must be guaranteed
 - Anonymous Call Rejection (ACR) service (LI) must be guaranteed
 - Interoperability with the old PSTN/ISDN service must be guaranteed
- Two basic categories of telephone services are devised:
 - **Publicly Available Telephone Service** (PATS);
 - ECS (**Electronic Communication Service**).
- PATS is the service mapping for the classic PSTN/ISDN service and has more tight requirements than ECS

VoIP Service requirements

- The emulation of the classic PSTN/ISDN service is usually referred to as ToIP (Telephony over IP), to distinguish it from ECS services, such as VoIN (Voice over Internet)
- In the VoIN service network operators usually do not control the service and do not guarantee qos
- Typical VoIN services are p2p telephony such as Skype, among others
- The VoIN In&Out service allows users to interconnect through external networks such as PSTN/PLMN

VoIP Service requirements



VoIP Service requirements

	Calls to PSTN & PLMN	Additional services (emergency calls, number portability, telepowering, special number, connection through other networks)
VoIN Peer-to-Peer	NO	NO
VoIN IN&OUT	YES	YES (no emergency calls, number portability, telepowering, special number)
ToIP	YES	YS (no telepowering)

NGN Interconnection

- NGN interconnection is standardized by ETSI/TISPAN
- In ETSI standards, interconnection can be performed in two ways::
 - Service-oriented Interconnection (Solx);
 - Connectivity-oriented Interconnection (Colx).
- Solx operates at the service layer, Colx operates at the transport layer

