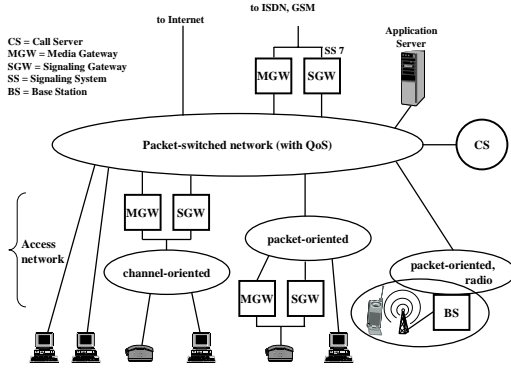


VoIP – SIP-based via Internet or NGN

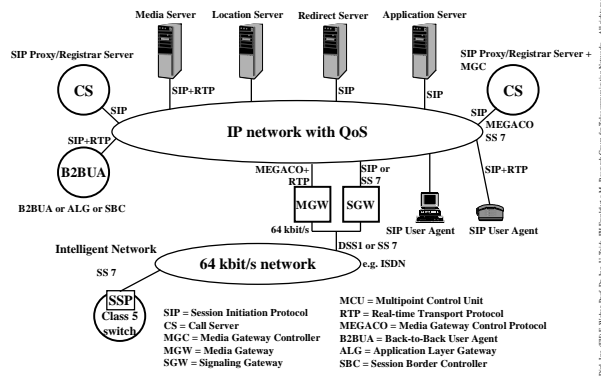
6th Wuerzburg Workshop on IP: Vision of Future Generation Networks

Dipl.-Ing. (FH) Frank Weber, Prof. Dr.-Ing. Ulrich Trick – Research Group for Telecommunication Networks, FH Frankfurt/M. – University of Applied Sciences

Voice over Internet or NGN



Network elements and protocols for NGN with SIP

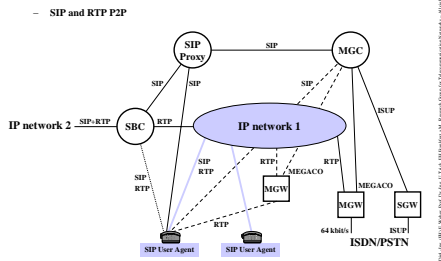


Key features of Next Generation Networks (NGN)

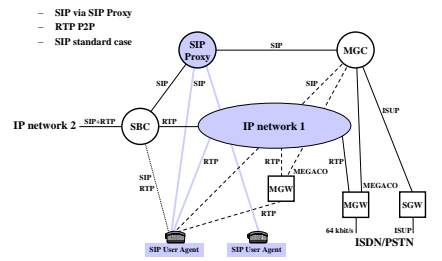
1. Packet oriented (core) network for all services	9. Overall unified network management
2. Quality of Service (QoS)	10. Mobility
3. Utilizability for new services	11. Integrated security functions
4. Separation of call/service control and user data transport	12. Service-appropriate billing
5. Integration of any existing, important telecommunication network, especially access networks	13. Scalability
6. Application Server (AS)	14. Unrestricted access by users to different networks and service providers
7. Multimedia services	15. Consideration of applicable regulatory requirements
8. High bit rate	

Use of SIP network elements in NGN

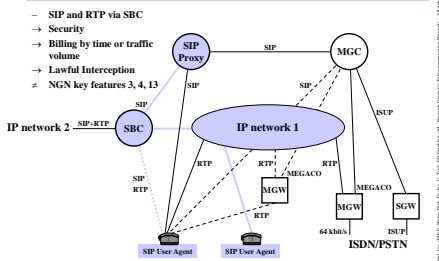
Peer-to-Peer Communication (P2P) of SIP User Agents



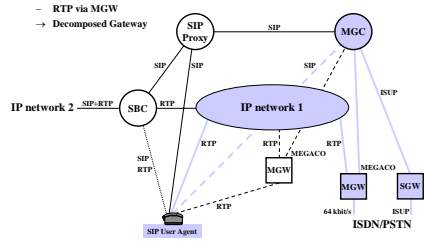
SIP Communication via SIP Proxy Server



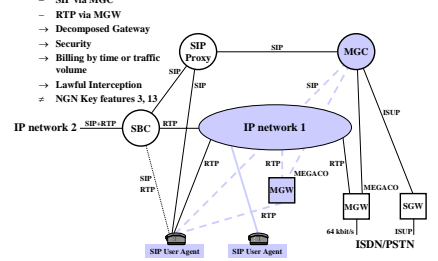
SIP and RTP Communication via Session Border Controller (SBC)



Interconnect Communication with circuit-switched network via Media Gateway (MGW) and Signaling Gateway (SGW)

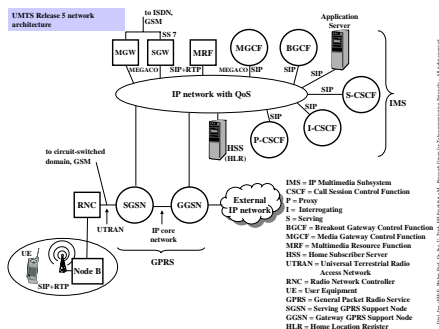


RTP IP Communication via Media Gateway (MGW)

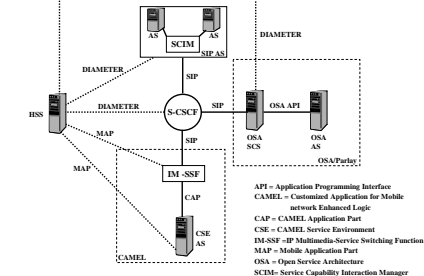


UMTS Rel. 5 – IP Multimedia Subsystem (IMS)

Session Management and Routing	Interworking
P-CSCF (Proxy-CSCF) → ~ SIP Proxy Server	BGCF (Breakout Gateway Control Function) → ~ SIP Proxy Server
I-CSCF (Interrogating-CSCF) incl. THIG (Topology Hiding Inter-network Gateway) → ~ SBC for signaling only	MGC (Media Gateway Control Function) → ~ MGC
S-CSCF (Serving-CSCF) → ~ SIP Registrar/Proxy Server	IM-MGW (IP Multimedia-Media Gateway) → ~ MGW
Services	SGW (Signaling Gateway) → ~ SGW
AS (Application Server) → ~ SIP Application Server	Data base
MRF (Multimedia Resource Function) → ~ Media Server	HSS (Home Subscriber Server) → ~ Location Server



Connecting Application Servers to the IMS



NGN IMS Convergence according to ITU-T and ETSI

