QoS in SIP-based NGN – introducing fundamental requirements and a new approach

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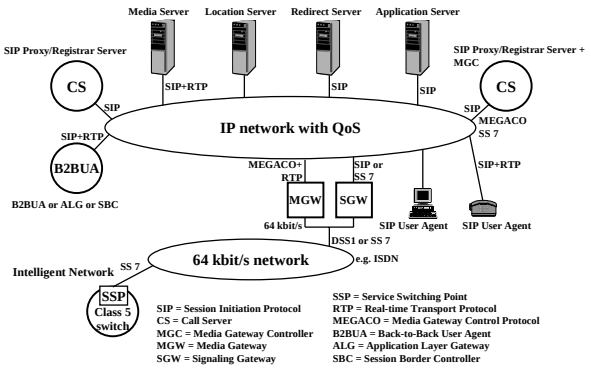
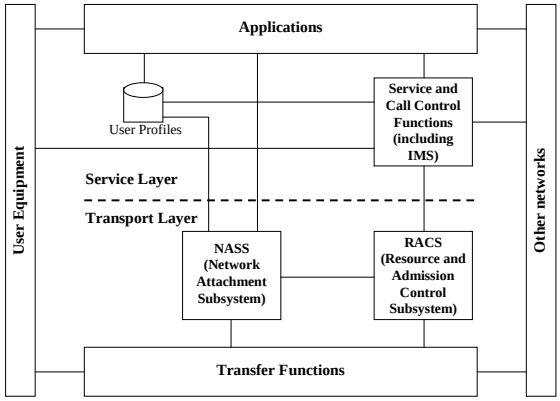
Dipl.-Ing. (FH) Frank Weber, Prof. Dr.-Ing. Ulrich Trick – Research Group for Telecommunication Networks. FH Frankfurt/M. – University of Applied Sciences

QoS and resource control in SIP-based NGN



Functional QoS architecture



Deficiencies of NGNs' (Next Generation Networks) QoS (Quality of Service) architecture

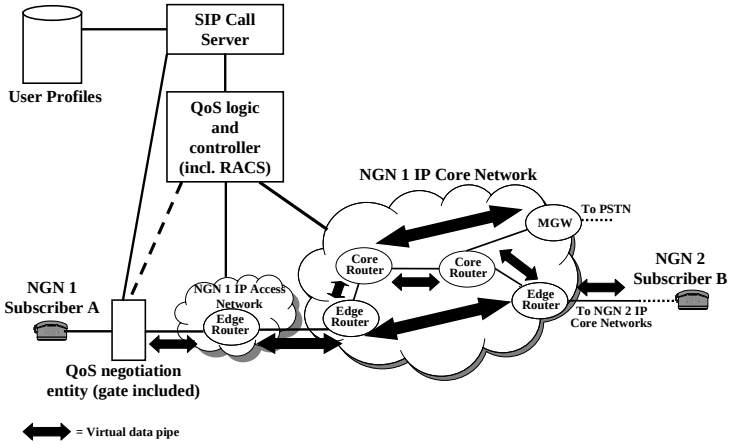
– **Lacks of scalability**	– **Amount of QoS/resource control traffic is influenced by factors that are not efficiently controllable by NGN provider** (such as average session duration)

Fundamental requirements to QoS management in SIP-based NGN

– **Functions and mechanisms needed to provide trustworthy QoS for media sessions more efficiently/scalable**	– **End-to-end QoS and resource control, including access and core networks, and inter-domain QoS negotiation**
– **Simple and resource saving resource control/management approaches, based on standardised protocols and architectures**	– **Both, session-based multimedia services and non-session-based services** (e.g., email and internet access) **should be accessible within the same network. NGN's resource control has to be aware of a certain amount of traffic that is not session-based**
– **Independent of underlying transport/QoS technology** (such as MPLS, ATM, VLAN)	

Integrated framework for comprehensive QoS control

New approach: Integrated framework for comprehensive QoS control in NGN



Features of the integrated framework for comprehensive QoS control

– **QoS negotiation entity** * **Located at subscriber** (CPE) **or within provider's access network → traffic can only enter IP network if approved by QoS logic and controller** * **SIP for session initiation and QoS negotiation with Call Server** * **Gate functionality for media streams**	– **QoS logic and controller** * **Algorithm-based ascertainment of the virtual data pipes** * **Observing IP network's topology and traffic → IP network conditions, also for non-session-based traffic** * **Computes data provided by SIP Call Server →aware of session-based traffic** (SIP) * **Compiling traffic profiles** (required for prediction of bandwidth and QoS of data pipes) * **Assignment of media streams to existing virtual data pipes, modification of virtual data pipes if necessary** * **Controls gate within QoS negotiation entity**
– **Virtual data pipes** * **Represent certain bandwidth and QoS conditions on a certain path within the IP network, shared by several media streams** * **Active control not mandatory → resources can be saved** * **Independent of underlying transport technology** (such as MPLS, ATM)	