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# Regulatory aspects of QoS with regard to IP and NGN

Volker Sypli

Federal Network Agency (Germany)

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# Regulatory aspects of QoS with regard to IP and NGN
## - Overview -

- Comparison legacy vs. IP/NGN networks
- Traditional focus and objectives of regulatory activity
- New challenges
- Technical aspects
- Main QoS regulatory task
- Required technical basis for QoS Regulatory purposes

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# Regulatory aspects of QoS with regard to IP and NGN
# - Comparison -

## Legacy networks

- circuit-switched
- harmonized infrastructure
  - terminals/network elements
  - protocols
  - transmission plan
- well defined and few services (mainly telephony)
- basic regulatory framework was set-up under a monopolistic environment

## IP/NGN networks

- packet-switched
- Diversity of infrastructures
  - convergence/different technologies
  - various protocols in use
  - Different approaches towards transmission planning/QoS routing
- separation between network and service layer
- variety of services
- liberalized and deregulated market

# Traditional focus of regulatory activity

**(tasks with QoS aspects)**

- Universal Service

  (i.e. to ensure equal provision nation wide of basic telecommunications services)
- Access/Interconnection
- Informed choice of the user

  (availability of transparent QoS information)
- Emergency telecommunications
- Lawful interception
- (Type approval)

# QoS Regulation has never been a big issue:

- Stable and harmonized infrastructure
  - TDM-based/synchronized PCM structure
  - Harmonized transmission plans
  - Few manufactures of network elements
  - In principle just one service (voice telephony service)
- Obligatory QoS reporting of European Universal Service Directive does not include transmission quality (2002/22/EC Article 11 in combination with Annex III)
- For emergency telecommunication services and lawful interception resulting "best effort" quality was felt to be satisfactory

# Traditional Regulatory Framework was (is) focused on:

- Access to existing infrastructure (Open Network provision/last Mile)
- Interconnection
- Support and availability of telephony service (signaling, numbering)
- Critical Regulatory factor **not QoS**, but **Price** for last mile and interconnection (miles & minutes)

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# Regulatory aspects of QoS with regard to IP and NGN
## - Challenges -

- In NGN/IP world QoS is expected to be an important differentiating factor
- Markets for low and high quality will develop
- Convergence of different technologies
- Separation of service and network layer
- New services and applications can be developed and deployed more easily
- QoS/Network Performance can be used as means for degrading/preventing services of competitors
- Transition period form legacy to IP/NGN networks

## Technical aspects to be addressed:

- Identification of important Network Performance Parameters
  - Interoperability and integrity of networks
  - Interoperability of services
  - Interconnection
- Identification of important QoS parameters
  - For various services
  - User information
  - Quality objectives for services and parameters
- Interrelation between Network Performance Parameters and QoS
- Performance objectives for networks and terminals
  - QoS bearer classes/network classes
  - Interconnection

# "New" Regulatory concept:

- technological neutrality
- QoS needs have to be reflected in access interconnection regulations
- Non-discriminatory access to infrastructure and services of competitors
- Maintainance of traditional services whilst not hampering development of new infrastructures and services

➢ Regulatory objectives are in principle the same, but QoS aspects – as a new factor - have to be incorporated into the regulatory framework
(thus adding more complexity to the technical Regulation)

# Main future regulatory tasks with QoS aspects:

- Maintainance of Universal service
  - Voice service
  - Fax service
  - Data service
  - Functional internet access
- Interoperability of services with respect to QoS
- Interconnection regulations depending on type, category and QoS to be developed
- Transparent QoS user information to allow for informed choice

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# Regulatory aspects of QoS with regard to IP and NGN
## - Basis for technical QoS Regulatory -

- Overall QoS Framework needed
  - technologically neutral and for all services
  - “Break down” to specific parameters and network elements
  - Identification of service elements and network functions
- Routing and signaling mechanisms to support QoS
- QoS network and service classes and interrelation
- Interoperability issues of services and networks
- Framework for QoS and Network Performance Parameters for user information purposes

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# Regulatory aspects of QoS with regard to IP and NGN
## - Contact details -


Volker Sypli

Federal Network Agency (Germany)

Technical Regulation Universal Services and Open Network Provision

Tel.: +49 6131 18-2234

Fax: +49 6131 18-5608

Email: volker.sypli@bnetza.de

http://www.bnetza.de