Chapter III

ITU-T Next Generation Network Vision
Layering in next generation networks

- Services (Basic services + value-added services)
- Transport (Below IP + IP + transport layer)
Layering in next generation networks

- Services (value-added services) also called application/services
- Services (Basic service) also called call/session
- Transport (Below IP + IP + transport layer) also called bearer
Examples of technologies for next generation networks

- Transport technologies (Examples)
  - Wimax, long term evolution (LTE)
  - Impact all layers
- Call / session technologies (Examples)
  - SIP, H.323
- Value added services (or services technologies) - Examples
  - SIP servlets, Web services
The ITU-T Vision of Next Generation Networks

- Fundamental characteristics
- Architectural framework
Fundamental characteristics (or requirements, or design goals)

Categorization scheme used in this lecture

- Layer independent characteristics
  - Impact all layers
- Layer specific characteristics
  - Impact specific layers
Fundamental characteristics (or requirements, or design goals)

Categorization scheme used in this lecture

• Layer independent characteristics
  – Business model
  – Separation of concerns
  – Regulatory issues
  – Inter-working with legacy

• Layer specific characteristics
  – Network capacities
  – En-user services and their provision
Fundamental characteristics

Layer independent characteristics

• Business model
  – Unrestricted access to different service providers
    • Has a lot of implications
      – Plug and play by end – users when it comes to subscriptions
      – Last mile from provider A
      – Internet access from provider B
      – Telephony services running on the last mile from provider C
      – Streaming services running on last mile from provider D
Fundamental characteristics

Layer independent characteristics

- Separation of concerns
  - Separation of control functions between bearer, call/session and application / service
  - Decoupling of service provision from transport and provision of open interfaces
  - Independence of service related functions from underlying transport technologies
Fundamental characteristics

Layer independent characteristics

• Compliance with all regulatory issues
  – Emergency communications
  – Lawful interception
  – Security
Fundamental characteristics

Inter-working with legacy

• Through open interfaces
Fundamental characteristics

Layer dependent characteristics

• End-user services and their provision
  – Support of a wide range of services, applications and mechanisms based on building blocks
  – Generalized mobility (terminal, end-user and services)
  – Unified characteristics for the same service as perceived by the user
  – Converged services between fixed and mobile
Fundamental characteristics

Layer dependent characteristics

• Transport and service layer
  – Broadband
  – Multiple last mile technologies
  – Packet based transfer
Architectural framework

- e.g., Video services (TV, movie, etc.)
- e.g., Data services (WWW, e-mail, etc.)
- e.g., voice telephony services (audio, fax, etc.)

CO-CS, CO-PS and CLPS layer technologies

NGN services

NGN transport
Architectural framework

Infrastructural, application, middleware and baseware services

NGN service

Resources

Service management functions
Service control functions

Transport management functions
Transport control functions

Transfer functional area

NGN transport
Architectural framework

Other NGNs

IWF

NGN

IWF

IWF

IWF

PLMN

Internet

PSTN

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References

- C-S and D. Knight, Realization of the Next Generation Network, IEEE Communications Magazine, October 2005, Vol. 43, No. 10