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

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services (value-added services)</td>
<td>also called application / services</td>
</tr>
<tr>
<td>Services (Basic service)</td>
<td>also called call/session</td>
</tr>
<tr>
<td>Transport (Below IP + IP + transport layer)</td>
<td>also called bearer</td>
</tr>
</tbody>
</table>
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.)

NGN services

CO-CS, CO-PS and CLPS layer technologies

NGN transport

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Architectural framework
Architectural framework
References

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