Next Generation Networks (NGN): Quality of Service Issues & Consumer Protection

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Session No 6 (Day 2)
Agenda

- Convergence: Regulatory Challenges & Issues
- Consumer Protection: NGN QoS
- Quality of Service Issues – Broadband Service (Indian Experience)
Convergence

Before Convergence

- Telecommunication license
- Broadcasting License
- ISP License
- VAS License

Convergence

- Content Services
- Application Services
- Network Services
- Network Facilities
Next Generation Network (NGN) By & for!

- By Fixed
- By Mobile
- By wireless

NGN = Broadband Managed IP Network

- for Services
- for Businesses
- for Providers
- for Users
Convergence User Experience

Devices from each ‘world’ having

- Similar functions; e.g. TV over Internet, Internet on smart phones
- All able to connect to each other, wirelessly
- Exchanging and sharing multimedia content
Convergence - perspectives

- **Service convergence**
  - Communications, information, entertainment, multimedia

- **Network convergence**
  - Capacity, coverage, performance, efficiency

- **Device convergence**
  - Functional flexibility, features, interoperability

- **Regulatory convergence**
Challenges in convergence

**Regulatory**

- Relevance of competition, self-regulation and technology-neutrality
- New media regulation in IP environment, including SPAM and content
- Active involvement for NGN-based network to promote new growth areas, competition and investments

**Institutional**

- Greater collaboration, address new challenges in protecting consumer, social issues and new media.
- Additional focus on improving infrastructure availability
- Enhancement of monitoring and enforcement to keep abreast of socio-technological advancements
Increasing and Diversified Complaints against Telecom and Broadband Internet Services

Broadband Internet service generally ranks top in consumer complaints.

- Unfair charges
- unfair subscription
- provisioning of chargeable Value added services without explicit consent
- Broadband Speed not provided as per plan
Changing Market/Regulation Environment

Market

- Advanced & integrated network
- New convergence services, e.g. IPTV
- Broadcasting & telecom bundling services
- Cut-throat competition

Regulation

- The focus of telecom regulation moves from ex-ante to ex-post.
- Increasing uncertainty of regulation
- A greater possibility of harming consumer benefit

Increasing risk of new damages/Complaints

Growing importance of Consumer Protection
Regulatory Issues: Consumer Protection

Consumer protection/safeguards/education

- Access to emergency services
- Digital media literacy, Internet safety awareness, inappropriate content
- Naming, addressing, identity

Unsolicited communications

- Spam – voice, SMS, email...
- Do Not Call Register
- Call ‘spoofing’ – voice, SMS
Next Generation Networks (NGN), provides new opportunities to increasing consumer choice.

It also raises new challenges for Quality of Service (QoS) & consumer protection.

Consumers have expectations of PSTN voice quality

need access to comparable, reliable and independent information about price, quality and service features to empower them to switch with confidence.

consumer need protection against threats to cyber security- identity theft by phishing, malicious virus dissemination via SPAM, the transmission of harmful content, etc.
Consumer Protection: NGN QoS

There are a number of QoS-related aspects that need to be addressed as NGN is deployed. These include:

- Service disruption during migration from PSTN to NGN.
- Management of end-to-end voice quality of service.
- Access to emergency services & call location.
- Differentiation of QoS.
- Network integrity.
- Network security.
In NGN need is to differentiate between

- real-time interactive services, eg voice and video telephony;
- Audio and video quality consistency, interactive multimedia environment
- real-time non-interactive services, eg television transmission;
- and near real-time interactive services, eg instant messaging.
Consumer Protection : NGN QoS

- For voice telephony - important is to control delay, jitter, error rate and packet loss

- video telephony demands a higher guaranteed bandwidth to maintain a certain quality of service

- Delay is less important for delivering quality in “streaming” services like television

- and for instant messaging only a minimum level of service quality across the parameters is needed

- Reliability and performance of a VoIP service
Consumer Protection: NGN QoS

QoS: What matters for consumers?
- Consumer may be prepared to pay more for faster Internet speeds - access to new content & applications.
  - the relevant QoS information needed to differentiate

Parameters:-
- Network Latency.
- Packet Loss.
- Bandwidth Utilization / Throughput.
- Service Availability/ Uptime.
- Service Provisioning/ Activation Time.
- Fault Repair/Restoration Time.
Broadband Services Network Architecture

- PSTN
  Telephone Exchange
- Telephone Line
- Broadband Network & ISP
- Gigabit Ethernet (GE)
- DSLAM
- ADSL Access Mux
- ADSL Linecard
- Customer Premises
- Phone
- PC
- STB
- ADLSL CPE
- Broadband Network & ISP
Broadband Services Network Architecture

PSTN

PHONE

DSLAM

INTERNET ACCESS

INTERNET

Router

CONTENT PROVIDER

BB/IP-MPLS Network

VIDEO ACCESS

VIDEO ON DEMAND SERVER

INTERNET ACCESS
Consumer Protection: NGN QoS

1. **Network latency:** Latency is the measure of duration of a round trip for a data packet between specific source and destination CPE’s/Router Ports.

2. **Packet loss:**

   This is the %age of packets lost to the total packets transmitted between two designated points CPE’s/Router Ports.
Consumer Protection: NGN QoS

3. Bandwidth utilization/throughput:-

![Diagram showing the flow of data from User to Internet NAP through ISP Node and IGSP/NIXI.]
### QOS Regulation - Broadband Service: Indian Case Study

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<tr>
<td><strong>1. Packet Loss</strong></td>
<td>&lt;1%</td>
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<tr>
<td><strong>2. Network Latency</strong></td>
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<tr>
<td>• User reference point at POP / ISP Gateway Node to International Gateway</td>
<td>&lt;120 msec</td>
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<tr>
<td>• User reference point at ISP Gateway Node to International nearest NAP port abroad</td>
<td>&lt;350 msec</td>
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<tr>
<td>• User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)</td>
<td>&lt;800 msec</td>
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QOS Regulation - Broadband Service: Indian Case Study

3. Bandwidth Utilization/Throughput:
   a) Bandwidth Utilization
      i) POP to ISP Gateway Node <80% link(s)/route bandwidth utilization during peak hours (TCBH).
      ii) ISP Gateway Node to International Gateway Node upstream Link(s) for International connectivity
         If on any link(s)/route bandwidth utilization exceeds 90% = Congestion

   b) Broadband Connection Speed (download) Subscribed Broadband Speed to be met >80% from ISP Node to User
4. Service Availability/uptime:-
   - Service availability means the operational hours of the service (% age);
   - Benchmark => 98%

5. Provision/Activation Time:-
   - the time taken from the date of receipt of valid application to the date when the service is activated.
   - Benchmark: 100% within 15days

6. Fault Repair/Restoration Time:-
   - the time taken to restore a service from the time of the fault was reported
   - Benchmark - Next day: > 90% & within 3 days: 99%
7. Billing Performance

- Billing complaints per 100 bills < 2%
- % age of Billing Complaints resolved 100% within 4 weeks
- Time taken for refund of deposits 100% within 60 days

8. Response time to the customer for assistance

- % age of calls answered by operator (Voice to Voice)
  - Within 90 seconds > 80%
QUESTIONS?

Thank you