Emerging policy and regulatory challenges of Next Generation Networks (NGN)

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ComReg workshop: “NGN in Ireland”
8 March 2007, Dublin

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Why NGN?
- Why should we migrate from today’s networks to tomorrow’s NGN?
- Where does Ireland rank?

Today’s trends
- Telcos still heavily dependent on voice revenues
- But, the trend is towards bundling and flat-rate pricing
- Voice revenues will drive NGN investment

Regulatory challenges
- Investment incentives versus unbundling
- Complexity versus simplicity
- Mobile versus fixed termination
- IP versus PSTN call termination
### What is an Next Generation Network?

<table>
<thead>
<tr>
<th>Today’s PSTN network</th>
<th>Next Generation Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Circuit-switched.</td>
<td>• Packet-based, based on Internet Protocol (IP).</td>
</tr>
<tr>
<td>• Limited mobility of end-user services.</td>
<td>• Broad-based ‘generalised mobility’.</td>
</tr>
<tr>
<td>• Vertical integration of application and call control layers, with dedicated networks.</td>
<td>• Horizontally-integrated control layers, with simultaneous delivery of applications. Service-related functions independent of transport-related technologies.</td>
</tr>
<tr>
<td>• Non-responsive network.</td>
<td>• NGN will be able to identify and adapt to user needs in real-time.</td>
</tr>
</tbody>
</table>

Source: ITU Internet Reports 2005: The Internet of Things
But, doubts persist over NGN

- NGN represents the marriage of the Telco and IP worlds. But will it be a collision?
- Is the NGN just another a telco attempt to recreate an “Intelligent Network” with centralised intelligence?
- Is the NGN primarily an overlay or a new-build?
- Is it just a clever marketing name?
- Who pays for what, where, when and to whom in an NGN environment?
So, what might be the benefits of a Next Generation Network?

- **For the Operator:**
  - Lower costs in having a single IP-based network to invest in and maintain, and fewer switching locations
  - Single billing contact with the customer ("internet with billing") and interface for 3rd party content providers
  - Possibility to offer multiple play (voice, video, data etc) and faster time to market for new service roll-out

- **For the customer:**
  - Possibility to use the same customised environment between different platforms
  - Possibility of lower prices through bundled service offerings
  - Integration of user-generated content (e.g., photos, music and video library, website) with that of service provider
Where does Ireland fit? (Broadband penetration)

OECD Broadband subscribers per 100 inhabitants, by technology, June 2006

**Broadband penetration:**

- Within OECD, ranked 24th out of 30 economies, June 2006
- 14th fastest growing OECD economy, Q2 2005 – Q2 2006
- Global level, ranked 36th out of 206 economies, Dec 2005
Where does Ireland fit? (Broadband prices)

### Broadband prices:
- Within OECD, ranked 22nd most expensive (per 100 kbit/s) out of 30 economies, August 2006
- Global level, ranked 42nd out of 206 economies, August 2006

### Digital Opportunity Index
- In ITU/UNCTAD composite “Digital Opportunity Index”, Ireland ranks 31st in 2006 of 180 economies (same as in 2005)
Some regulatory challenges of NGNs

- **Pricing**: Will NGN offer prices that are significantly lower than those available today?
- **Bundling and billing**: How to distinguish real price of bundled services (predatory pricing)?
- **Interconnection**: Will current interconnection models (based on per-minute settlement) work in an NGN?
- **Security**: If much greater capacity is available at the edges of the network, how to guarantee security?
- **Investment**: Will unbundling discourage new infrastructural investment?
- **Traffic prioritisation**: Is the Net really “neutral”?
- **Emergency services**: What level of universal service obligation to impose?
- **Competition policy**: Significant market power will not go away in an NGN environment
- **Consultation**: compensation for stranded assets?
Long-term telecom revenue trends

Revenue (US$ billion)

Source: ITU Information Society Statistics Database.
Nevertheless, voice revenues are relatively stable as % of total telco revenue.

Source: ITU Information Society Statistics Database.
The trend towards bundling

UK households taking bundled packages

Source: OFCOM
The trend towards flat-rate pricing

Global trends in broadband pricing schemes

- **Data**: Price packages with bit caps
- **Time**: Time-metering
- **Both**: Packages with both data and time caps
- **Flat-rate**: Unlimited monthly use

Note: Data” refers to price packages with bit caps. “Time” refers to time-metering. “Both” refers to packages with both data and time caps. “Flat-rate” implies unlimited monthly use.

Growth in broadband speeds

Trends in broadband pricing, global

- **International survey of broadband prices**
  - Based on 133 economies that had broadband as early as 2004

- **Methodology**
  - Based on price in US$ per 100 kbit/s

- **Price trends**
  - Median price has fallen by 41% p.a.
  - Median speed has risen by 66% p.a.
  - Faster than Moore’s Law

Triple-play bundles: The example of Free.fr (Iliad)

- 29.99 Euros per month (US$40)
- DSL Internet at 28 Mbit/s (down) 1Mbit/s (up)
- Unlimited VoIP calling to 49 countries worldwide (+domestic calls in France)
- 100 video channels (+ 150 options)
- But … only available in France
NGN interconnection options

- Towards complexity
  - Differentiate between different traffic streams with different QoS
  - Differentiate between different user terminal devices (e.g., fixed, wireless, portable)
  - Provide interconnection options based on per-minute, per-volume, per-service type and per-content type

- Towards simplicity
  - Sender keeps all (bill and keep)
  - Arrangements based on interconnection capacity
## Termination rates worldwide

<table>
<thead>
<tr>
<th>Region</th>
<th>Average fixed rate</th>
<th>Average mobile rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia-Pacific</td>
<td>11.69</td>
<td>16.58</td>
</tr>
<tr>
<td>Africa</td>
<td>13.62</td>
<td>20.57</td>
</tr>
<tr>
<td>Europe and Mediterranean</td>
<td>3.11</td>
<td>32.86</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>4.88</td>
<td>16.43</td>
</tr>
<tr>
<td>North America</td>
<td>2.81</td>
<td>6.07</td>
</tr>
<tr>
<td><strong>Global average</strong></td>
<td><strong>5.77</strong></td>
<td><strong>21.76</strong></td>
</tr>
</tbody>
</table>

*Source: ITU-T, based on survey of regional tariff groups.*
Spot the odd one out ....

Ratio between fixed and mobile call termination rates

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<th>Region</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia-Pacific</td>
<td>1.42</td>
</tr>
<tr>
<td>Africa</td>
<td>1.51</td>
</tr>
<tr>
<td>Europe and Mediterranean Basin</td>
<td>10.57</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>3.36</td>
</tr>
<tr>
<td>North America</td>
<td>2.16</td>
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<tr>
<td>Global average</td>
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Source: ITU-T, based on survey of regional tariff groups.
Conclusions

- NGN business case still unproven, but voice revenues continue to drive investment
- Inter-operator settlements remain important (but become more complex) in an NGN environment
- Trends toward bundling and flat-rate pricing in retail market will be mirrored by capacity-based pricing in wholesale market
- **Short-term**: Per-minute settlement is preferred choice for carriers, but hard to sustain. Rates are dropping.
- **Longer term**: shift towards capacity-based pricing and/or towards “Sender Keeps All”
- But, migration to NGN will not make concerns over Significant Market Power (SMP) disappear
Thank you.

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