THE NBN REBOOTED: COMMERCIAL CONSTRUCTS

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Bronwyn Howell,
General Manager
INTERNATIONAL EVIDENCE

Commercial constructs based upon
  – applications (not internet connections)
  – willingness to pay (marginal benefits relative to costs, alternatives)

Data from
  – Cisco
  – WIK (debt to Scott Marcus)
  – Ookla
GLOBAL INTERNET TRAFFIC TRENDS

Source: Cisco VNI (2012), WIK calculations.

Full report, page 16.
AVERAGE BUSY HOUR TRAFFIC PER USER

\[ y = 0.1897e^{0.198x} \]

\[ R^2 = 0.9965 \]


Source: Cisco VNI 2011 data, WIK calculations.
TRAFFIC PER HOUSEHOLD

Few HH need large bandwidth (whether average or peak hour).

<table>
<thead>
<tr>
<th>Household generating more per month than GB</th>
<th>Mean BW &gt; Mbps</th>
<th>Busy Hr BW &gt; Mbps</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>552</td>
<td>555</td>
<td>540</td>
<td>512</td>
<td>465</td>
<td>419</td>
</tr>
<tr>
<td>50</td>
<td>0,15</td>
<td>0,27</td>
<td>62</td>
<td>79</td>
<td>105</td>
<td>126</td>
<td>150</td>
<td>175</td>
</tr>
<tr>
<td>100</td>
<td>0,31</td>
<td>0,53</td>
<td>35</td>
<td>49</td>
<td>61</td>
<td>77</td>
<td>103</td>
<td>125</td>
</tr>
<tr>
<td>200</td>
<td>0,62</td>
<td>1,06</td>
<td>9</td>
<td>19</td>
<td>33</td>
<td>44</td>
<td>58</td>
<td>72</td>
</tr>
<tr>
<td>500</td>
<td>1,54</td>
<td>2,65</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>1.000</td>
<td>3,09</td>
<td>5,31</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Cisco VNI 2011, WIK
TRAFFIC ASYMMETRY

Video plays a huge role in traffic.
Meanwhile, peer to peer not growing in relative importance.

Source: Cisco VNI (2012)
USAGE CORRELATES WEAKLY WITH SPEED

MB / subscriber / month in selected countries (2012)

Source: Cisco VNI online database (2013), WIK calculations
EFFECTIVE DOWNLOAD SPEEDS

Source: Ookla/Speedtest netindex, WIK calculations.
A CHANGING MIX OF DEVICES

Figures in legend refer to traffic share in 2017.
Source: Cisco VNI Mobile Forecast, 2013
OVERALL ADOPTION

• Coverage and adoption are not the same thing.

OECD Fixed (wired) broadband subscriptions per 100 inhabitants, by technology, Dec. 2012

Source: OECD
COST IMPLICATIONS OF DIFFERENT TECHNOLOGIES

Upgrades to FTTN/VDSL or to FTTH become more expensive on a per-subscriber basis as population density declines.

LTE less expensive than fixed where population density below 3,000 inhabitants per Km2.

Cable DOCSIS 3.0 upgrade costs do not depend on density.


Full report, page 60.

Annualized cost (€) per user to cover different geotypes in Spain


Full report, page 60.
A CHANGING MIX OF DEVICES

Exabytes per Month

66% CAGR 2012–2017

- Other Portable Devices (0.2%)
- Non-Smartphones (1.4%)
- M2M (5.1%)
- Tablets (11.7%)
- Laptops (14.0%)
- Smartphones (67.5%)

Figures in legend refer to traffic share in 2017.
Source: Cisco VNI Mobile Forecast, 2013
Q33. In a typical day, for how long do you use your mobile devices in each of the following locations?

- Your Home
- Friend’s Home
- At Work at Normal Location
- At Work but at Remote Location
- Retail Locations**
- Public Locations*
- Travel Locations
- On the Go

Source: Cisco IBSG (2012)

N=varies

* Public – e.g., stadiums, parks, schools
** Retail – e.g., stores, restaurants
A CHANGING MIX OF APPLICATIONS

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cellular</th>
<th>Wi-Fi</th>
<th>Roaming</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Browsing</td>
<td>Browsing</td>
<td>Browsing</td>
</tr>
<tr>
<td>2</td>
<td>Facebook app</td>
<td>YouTube</td>
<td>Facebook app</td>
</tr>
<tr>
<td>3</td>
<td>Tethering</td>
<td>Video and audio streaming</td>
<td>Google Maps</td>
</tr>
<tr>
<td>4</td>
<td>YouTube</td>
<td>Downloads</td>
<td>E-mail</td>
</tr>
<tr>
<td>5</td>
<td>Downloads</td>
<td>iPlayer</td>
<td>Tethering</td>
</tr>
</tbody>
</table>

Source: Informa / Mobidia (2013)
HOW MUCH MOBILE OFF-LOAD IS TAKING PLACE IN THE EU?

Data Sources: Cisco VNI (2012), Mobidia/Informa (2013), WIK calculations
CLOSING THOUGHTS

The cost of storage has fallen nine times faster than the cost of transmission in the past 10 years

Data transmission volumes becoming more, not less asymmetric as video streaming comes to dominate residential use

Scarce resources are

- the human information processor (residential)
- a conducive contractual, legislative and regulatory environment (commercial, especially Cloud, applications)

The realities of scale and distance

- 22.7 million Australians may talk faster to each other
- but local data storage key for video apps
SOME REFERENCES


