Modelling the impact of Next Generation Access (NGA) on voice termination cost

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Agenda

• Modelling Approach

• Modelling Results

• Conclusions
Demarcation Points in FTTEXchange, FTTC and FTTH/P2P architectures

Demarcation Points
- Active equipment

FTTex
- Core network
- Concentration network
- MDF
- DSLAM
- Feeder Cable: copper
- Drop Cable: copper

FTTC
- Core network
- Concentration network
- MPoP
- DSLAM
- Feeder Cable: fibre
- Drop Cable: copper

FTTH/P2P
- Core network
- Concentration network
- MPoP
- DSLAM
- Feeder Cable: fibre

MDF – Main Distribution Frame
DSLAM - Digital Subscriber Line Access Multiplexer
MPoP – Metropolitan Point of Presence
FTTH PON (Passive Optical Network) technology concentrates fibres closer to the user: Less but shared fibre in the feeder segment

OLT – Optical Line Terminal
ONT – Optical Network Terminal
ONU – Optical Network Unit

GPON: ITU-T G.984
Gigabit PON
We have used a Bottom-Up cost model to calculate the cost of NGA deployment by a stand-alone competitor in denser regions of Germany

- Base: WIK NGA model used in 2008 & 2009 studies on NGA economics
  - Calculate network cost (up to demarcation point)
  - Allocate according to traffic share of voice termination in overall traffic

- Key assumptions
  - Deployment passes all buildings
  - 50% become customers. Average customer demands
    - 1000 voice minutes per month
    - Sensitivities on bandwidth demand
  - All telephony is VoIP
  - Simplification: Same core and concentration network cost for all architectures
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1) Double Play base case

Reducing the dedicated part of the local loop increases voice termination cost.

Double Play base case (65kbps data usage)
FTTH/P2P = Index 1,00
2) Double Play data demand increase
Strong reduction of termination cost

Double Play (65kbps vs. 250kbps data usage)
FTTH/P2P base case = Index 1,00

- FTTH/P2P
- FTTC
- FTTH/PON demarcation at distribution point
- FTTH/PON demarcation at building
- FTTH/PON demarcation at CPE

Bar chart showing the comparison of 250 kbps and 65 kbps average BH data bandwidth for different fiber optic network types.
3) Triple Play

Multicast IPTV creates heavy load in the drop and feeder segment: Termination cost ~equalized

**Triple Play (65kbps data usage + IPTV)**

FTTH/P2P base case = Index 1,00

- FTTH/P2P
- FTTC
- FTTH/PON demarcation at distribution point
- FTTH/PON demarcation at building
- FTTH/PON demarcation at CPE

![Bar chart showing Triple Play (IPTV inband) and Double Play costs for different FTTH/PON scenarios.](chart.png)
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When taking the regulatory framework for determining termination cost to the NGA we found:

- Different demarcation point locations, some debateable (PON)
- Voice termination cost can become equalized at level of MPoP cost
Further Questions

- Will future data & IPTV usage scenarios lead to drastically reduced voice share?
- Termination rates per architecture or per operator?
- Can regulators define one or a few “efficient” architectures?
- “Unwanted” investment incentives?