KPN's vision on FTTH

Ethernet in the First Mile

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Last Mile Solutions

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Introduction

★ People have been talking about FTTH since the introduction of fiber in the 70's

★ FTTH market is growing the last couple of years
  - Numerous amount of pilots and trials around the globe
  - Commercial roll-outs in Europe, North-America and Japan
  - Local initiatives by local authorities

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KPN and FTTH

★ A lot of local authorities show interest in FTTH and have the money to invest

★ KPN is participating in some major FTTH initiatives within The Netherlands
- Kenniswijk Eindhoven: signed MoU with infra provider
  30.000 homes planned
- Almere: signed Letter of Intent with local government
  2.000 homes planned
- Besides these, KPN is involved in many other initiatives
  - Rotterdam, Amsterdam, etc.

KPN and FTTH

★ KPN wants to explore the FTTH market by developing certain real-life pilots in the Netherlands

★ After these pilots (depending on the results of the pilots), KPN will start commercial roll-out of FTTH

★ Commercial roll-out will probably begin in new-build
  - potential of 60.000 - 80.000 homes passed per year

KPN and FTTH

* KPN promotes an open business model
  - the access network should be open for several end-2-end providers and service providers
  - KPN rents the fibers from the infrastructure providers, so doesn't own the outside plant

* The access network should be able to transport all existing and future services:
  - Fast Internet Access
  - Telephony, traditional voice and videophony
  - (Interactive) video services: VoD, broadcast TV, HDTV
  - Gaming
  - Local communities
  - ……...

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KPN and FTTH

★ The network should be open to other providers
- The network should be as simple as possible
- Easy to manage and maintain.
- Scalable and flexible

★ KPN as access provider offers transport channels to and from the subscribers
- Bandwidth
- QoS
- Multicast
- ......

KPN and FTTH

* KPN believes that at the moment the P2P Ethernet solutions are the most mature
    - Current FTTH solutions are based on P2P Ethernet
    - Ethernet is a well-known and cost-effective technology
    - Open transport for all services

* Ethernet platforms and standards are still developing
    - EPON
    - IEEE EFM

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Why 100 Mbps over dual SMF?

⭐ **100 Mbps is enough to offer all existing and new broadband services to the customer**
  - GigE in the access is relatively expensive compared to 100Mbps
  - In the core 1GbE will be used to connect to the E2E and service providers

⭐ **MMF in the first mile limits the distance to be reached and is not future proof**
  - Migration from 100 Mbps to 1 GbE over MMF is not possible
  - Future proof fiber infrastructure: > 25 years
  - Future proof FTTH access platform: > 5 years
  - High operational costs

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Why 100 Mbps over dual SMF?

★ Fiber infrastructure providers will put in a bundle of fibers (4-8) to every home
  - The major cost are in digging up the street not in the number of fibers
  - 2 fibers will be available to offer dual Ethernet

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Economical aspects

★ Interfaces should be interchangeable
  - Easy and cost-efficient upgrade from 100 Mbps → 1 GbE

★ Future-proof fiber infrastructure
  - Replacement of fiber is not desired (MMF -> SMF)

★ For mass deployment of FTTH the cost per subscriber line is an important issue
  - Optimising both the fiber infrastructure and the access transport network
  - Due to cost differences on the short term MMF could be an option. For mass deployment SMF is the optimal solution.

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The need for a 100 Mbps SMF standard

★ Interoperability
  - The open business model will result in devices from different suppliers. The CPE can be from a different supplier.

★ The design of a FTTH access network should not be affected by the maximum reach of Ethernet
  - A reach between 5 and 10 km is sufficient for most locations
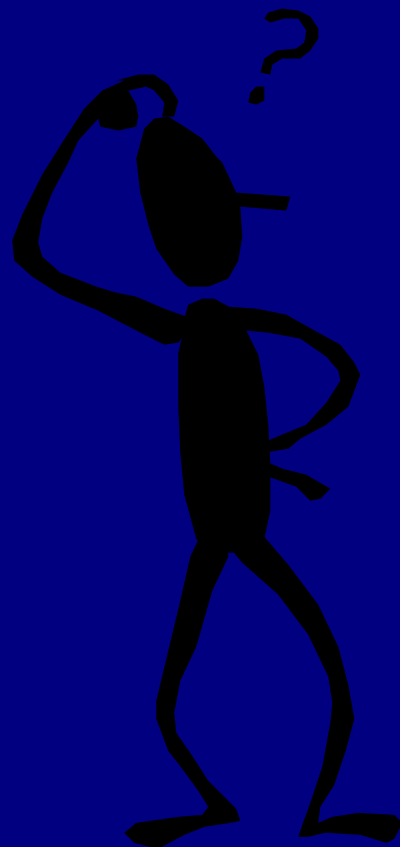
★ Port and interface costs will go down

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Conclusions

* KPN recognises the benefits of P2P 100 Mbps Ethernet over SMF

* KPN supports the standardisation activities on 100 Mbps Ethernet over SMF
    - interoperability
    - extended reach
    - cost savings for mass deployment

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Questions and discussion

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