

Q&A

General Information

Webinar Name

Passive infrastructure of FTTH networks: an overview

Total Attended

238

Session Details

Questions Asked by Attendee		Answer
About splitters: Are they used in "one way" transmissions, e.g. TV? If "two way", how is the different customer data separated in the "return direction"?		This is "two way". For the upstream direction (from customer to operator), a multi access protocol is required. For the common PON technologies this is based on TDMA (Time Division Multiple Access), whereby the OLT will assign different timeslots to different ONTs/customers. This is done dynamically, allowing to flexibly allocate timeslots/bitrate to the active users.
Can you mention any concrete experience of fibre optic deployment through the residential gas distribution network?		There are a number of examples of such deployments in Germany. Please get back to us regarding specific references.
could you please share more details of your calculations for the CAPEX on passive vs active?		These calculations were made using FiberPlanIT to automatically generate an FTTH design according to different rules (P2P vs P2MP, different cable deployment methods) for different areas (other density, other size, other take rates) and with different unit cost (labour rates for installation of cables, ...). But the comparison was based on the same scope of costs (including OLT and ONT and everything in between). More details could be shared in a one-to-one meeting.

<p>Do you take into account cable radio constraints when designing manholes?</p> <p>So then P2MP makes use of somehow multiplexing, isn't it?</p> <p>Do you have to consider the chance of fiber upgrading from one fiber to another?</p> <p>Is there any EU Directive for the harmonization of FTTH?</p>	<p>1. First question is unclear.</p> <p>2. Yes, P2MP fiber plants use multiplexing for upstream and downstream traffic, employing PON technologies - see question and answer above</p> <p>3. An upgrade of a fiber will not likely be needed soon. However this should be looked at with a very long time horizon in mind, for example 20 to 50 years. It is impossible to predict what will happen over such a long time. Looking back at the situation with copper: some of the copper installed is 50 years old, and still operational, but not at all ideal for the current needs (for example with DSL). If an easy upgrade would be possible (not only to a new copper cable, but today upgrading the copper cable to a new fiber cable immediately), this would be a cheap alternative today for a network upgrade. So such an option has value in the long term.</p> <p>4. Your question is quite broad so I will address it from a different angle. The EU Commission is very cautious not to show any preference for any technology choice. Therefore the treatment of all technologies and their variants is the same from a regulatory perspective. The fibre products themselves may be harmonised under the REGULATION (EU) No 305/2011 (A regulation laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC). Finally, there has been a recent directive which seeks to harmonise the way in which infrastructures are shared for the purpose of deploying broadband infrastructures DIRECTIVE 2014/61/EU (on measures to reduce the cost of deploying high-speed electronic communications networks). (source: Tony Shortall)</p>
<p>does a split ration need to be the same throughout the network? ie could it be 32 in the city and 8 in the country for instance</p>	<p>answered during webinar (short summary: although not that common it is possible to do so. Can be interesting for mixed areas with a combination of dense and rural parts, for example to limit the attenuation when reaching out to far-away rural parts in the area).</p>
<p>How does one find the place of a digging damage of a fiber in a PON system? It could be in many different places.</p>	<p>answered during the webinar (short summary: OTDR systems in PON exist and allow to detect such damages; in practice digging damages are also easily identified if you go to the neighborhood quickly as the ground will still be open and the construction company (hopefully) is still present at the spot.</p>
<p>How would you compare TCO for a P2P vs P2MP topology?</p>	<p>There is no easy and short answer to this. There are significant differences from case to case. In a specific case, the comparison can be made by simulating both scenarios and determining all costs (CAPEX and OPEX) inside a TCO cost model. More information can be shared in a one-to-one meeting if needed.</p>
<p>In countries with low or no experience with micro-ducts, the most frequent questions is: What major advantages are coming with using micro-ducts compared to standard ducts or direct buried cables? In terms of installation and price. What are the pros & cons?</p>	<p>Such a comparison should be made on a case by case basis, but some general pros and cons for microducts are: (+) high flexibility/ easy to install new cables at any time in the future, either for extra capacity or for replacement of cable. (+) as such also allowing to postpone cable installation until it is needed (eg with low take rate it can be useful to blow fiber cable into Customer premise when connecting the customer); (+) better to cope with changing customer demand (new houses, changed building usage, ...); (-) Overall investment/CAPEX could be higher, although depending on timeframe and dynamics of the network;</p>

<p>Is FTTH infrastructure cost greater than copper infrastructure in "new-build" or Greenfield deployment?</p> <p>What is the incremental cost per customer of upgrading a copper infrastructure to FTTH infrastructure?</p> <p>What is the highest count fibre cable?</p> <p>Are there any regulation that determine whether an overhead or underground deployment can be implemented?</p>	<p>1. No with current practices and technologies, a greenfield deployment using copper will normally be more expensive than with fiber.</p> <p>2. "upgrading" copper can come in many flavours: can you reuse ducts or do you need to dig new trenches? Do you have many MDUs (requiring also in-building upgrade to fiber) or more SDU? Do you already have FTTC (cabinet) network in place or is the entire access network to be upgraded... In general it does not make sense to upgrade on a per customer basis: efficiently replacing copper with fiber would require to do such migrations in bulk (per neighborhood), including the path from the access node to such neighborhoods in order to make efficient use of the civil works. For determining the incremental cost of an upgrade on a neighborhood level, this can be simulated on a case by case basis, and it is important to optimise the order of upgrading so that this migration is done in the most economical way possible.</p> <p>3. Fibre cables exist that contain 720 fibers, 864 fibers or even more than 1000 fibers.</p> <p>4. Regulation is very different across the world. But in most European countries you will indeed need a permit from government/regulation to deploy cables overhead and or underground.</p>
<p>Is it possible to have different splitting ratio in a p2mp network?</p> <p>Does the Example 3 imply that centralized splitter are at the AN? It seems that US service providers have their centralized splitters in the field?</p>	<p>1. Yes, different split ratios are possible. See answer above.</p> <p>2. Centralised splitters are not necessarily in the AN, there are many variations with splitters installed at different locations/levels in the network, and for which different names can be used (this is not really standardized). We just wanted to show the most obvious case of centralising the splitters, which is the extreme case of putting them in the AN (you can't put them more centralised than that).</p>
<p>Is there any recommendation related to IP level protection, I mean the grade of environmental protection of the different components in the FTTH network</p>	<p>The degree of protection depends on the location of any particular component in the network, whether it is deployed indoor outdoor. In the case of outdoor deployment the appropriate protection against water and mechanical damage is required.</p>
<p>What are the costs of testing optical infrastructure (equipment, tests....) ?</p>	<p>We do not have visibility of the real cost. Please get in touch with the vendors of such equipment.</p>
<p>What is the recommendation of spilitting ratio</p> <p>what is the recommedation for splitting levels</p>	<p>General recommendations are difficult. We do see a lot of 1:32 end-to-end split ratios being deployed, but this choice will depend on the (max) bitrates you want to provide to your customers, the size of your AN coverage area (linked to the max attenuation of the signal), etc. Also on splitting levels the optimal choices are very much depending on the type of area and other design choices (size of FCP, occurence of MDUs of different sizes, ...). Our recommendation is to evaluate these different scenarios on your own areas in order to determine the optimal choice in terms of splitting stages, locations, etc</p>
<p>When we use splitters, the fiber signal will be splitting. finally ,will we get low signal at the end?</p> <p>Or is there any fiber signal amplllification tool in mid level line?</p>	<p>Normally there is no amplification of the signal (splitters are passive - no powering). This indeed means the signal is significantly weaker after being split. That is why the power levels in a PON network need to be checked carefully</p>
<p>Wich European standards regulate how to install cable in utilities (gas etc.) infrastructure?</p>	<p>There is a set of European standards available for this sort of deployments. Please get back to us directly on this.</p>