

WHY CHOOSE A 2-BOX SOLUTION?

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Introduction

Considering market trends and developments in fiber rollout to the home, DKT presents a unique and innovative product line that distinguishes itself ergonomically and functionally from the competition. With its unmistakable minimal form-factor, this solution is highly-suited to dense and structured home network installations. A user-friendly concept places the onus for activation and upgradeability with the end-user, thereby minimizing technical support and operator CAPEX.

Being technically advanced it allows application such as FTTB MDU termination. This is because it allows for reducing the number of required fibers when applied as a media converter serving multiple apartments (separated with VLANs) with limited set of fibers. These are all important factors that secure the investment and strengthen the initial FTTB business case.

During the past few years, we in the industry have experienced very differing approaches in fiber expansion. This is especially apparent in fiber termination and service activation at the end customer. This is partly due to demographic and technological conditions, but equally due to subjective preferences and conditions regarding placement and determination of the “demarcation point”.

Product strategy

DKT has developed a series of Fiber Termination Units (FTUs) / CPEs for Active Ethernet, Point-to-Point infrastructure. This includes a two-part solution with a passive FTU and an active unit based upon a sophisticated System-on-Chip (SoC) solution that encompasses a layer 2 gigabit Ethernet switch. This solution implies that fiber termination and service activation occur as part of the operator’s “demarcation point” to the end customer. This intends to further process the

customer's services in an external router/media gateway. The industry terms this a "2 box solution", where there is clear differentiation between FTU/CPE and the router/media gateway.

CPE Business Case Pitfall

DKT's experience in the FTTH market indicates that a typical investment in a user installation, including last mile fiber, CPE, irrespective of the Service Box required by the customer (Routers, STB, etc.), as well as man hours has to be written off over 5 to 8 years lifetime. As the CPE investment is a significant part of the total cost, there is risk that a "1 box CPE solution" may be outdated from a technology perspective before this happens.

How to optimize FTTH Connections?

DKT FTUs consist of a neutral low-cost base in which fiber can be spooled, connected and terminated. This is with the intention for service activation at a later time. The FTU has a flexible design, allowing installation with fiber feeding from various angles, this being from the side panels (via breakaway) or from the rear panel (when using a wall-mounted housing).

Even if the customer does not want to activate the services, the household is prepared for the fiber installation, which can be activated at a later time. The installation's value helps define property rental and sales values, which is typically not a negligible value.

The advantage of this type of fiber termination is that the household requires only a single visit by a technician. This is when performing the fiber termination/installation, following which the customers can themselves, at the necessary time, be responsible for their own activation and maintenance.

Mounting of the FTU occurs at the most practical place in the house. This is by considering the property's shape, external factors such as excavation possibilities and rain and wind conditions, and this without consideration of optimal placement

with regard to service distribution in the home (for example WiFi conditions, suggested placement of set top boxes and routers).

Furthermore, the FTU solution is “technology agnostic”, allowing it to be used with third-party equipment. For example, it can be used for patching to GPON or WDM PON equipment or even in Do-it-Yourself installations with drop cables. In the first example the fiber in the FTU would be terminated and a patch cable used to connect to an external GPON ONT. There is also place for a WDM filter in the FTU, this for splitting the wavelengths into FTTx and CATV with regards to the WDM PON.

In the second example one can envision a pre-connected FTU with a 10/25/50m drop cable on a drum that the customer can install on an indoor wall. They can pull the fiber, for example, to a cellar, where the final fiber splicing can be performed. Again, only a single visit by a technician would be necessary. The FTU form factor matches that of a standard Euro outlet and will appear to the customer as a wall socket. This is analogous to power, CATV and telephony outlets, where the utility company and the operator apply clear demarcation points between the network and the home installation. The FTU is available with various types of connectors (for example SC/UPC, SC/APC, LC/APC), pigtails and pre-connected patch cables. The investment is protected as technology evolves. The passive unit can still be used and the customer can perform their own upgrade.

As regards point-to-point service activation, the customer can, whenever they desire, receive an active part, for example a router/media gateway or set top box. This they can mount themselves for distribution of services in the home.

Here there is a CAPEX advantage for operators. The active part, being the expensive part of the investment, is only used when/if the customer is ready to activate the service. It is not associated with extending the fiber network. The operator can, if desired, let the investment of the active unit be partially covered by the customer as a sign-on fee. This eases the business case and lowers the CAPEX.

Again, the solution is built in a way that allows the customer to perform the activation when they receive the necessary equipment. This is analogous to that seen in activation of other technologies such as analogue telephony, ISDN, xDSL, and cable-TV. The combined solution for FTU and CPE is formed in an extremely compact form factor, 88 x 88 x 65 mm, and will be regarded by the customer as an outlet.

Feature overview

High level features for the active unit include:

- Fiber part is 100/1000 Base-BX-U, single mode, autosense, Rx: 1490/1550 nm, Tx: 1310 nm.
- Autosensing on the optical interface allows operators to deploy 100 Mbps to the customer and at a later stage upgrade to gigabit speeds; this without network interruptions except from a short link down. The device automatically detects speed changes.
- RJ-45 part is either 1 or 4x 10/100/1000 Base-TX (RJ-45).
- The media converter includes a gigabit switch engine, Layer 2 wire speed packet switching, support for IEEE 802.1Q VLANs incl. Q-in-Q and up to 10k jumbo frames support for optimized IPTV multicast services.
- CATV Input is 1310...1550 nm signal, supported from -10...0 dBm level.
- Output is a single F-connector with sufficient signal power (type 85 dBuV) for home installations.
- The level can feed multiple TV-sets, avoiding the need for an external amplifier.
- The device is powered by an external 5 V power supply adapter and power dissipation is only a few watts.

Conclusion

DKT's mission is to make our customers' business more competitive with our industry innovations and focus on operator processes and business cases. DKT's solution allows for reducing future Operating Expenses (OPEX) as technician visits

are unlikely when customers want to subscribe, upgrade, downgrade or even terminate their service.