

Case Study by DCT-DELTA

Innovative network architecture enables shared use of hybrid fiber optic coax infrastructure

In the greater Paris area, the CATV networks of several French network operators were converted to shared use and modernized. The example shows how this can be achieved in the age of FTTH while at the same time optimizing the total cost of ownership (TCO). By Marc Flick, Director International Sales DCT DELTA AG

In November 2020, the French telecommunications provider Prizz Telecom was awarded the contract by SIPPEREC (Syndicat intercommunal de la périphérie de Paris pour les énergies et les réseaux de communication) to modernize networks for the transmission of cable television services in the Parisian periphery in the Île de France region. Prizz Telecom is a subsidiary of the Infra Group, which specializes in infrastructure projects. With a proven technical, commercial and financial expertise, the Infra Group have been working on the energy transition and the development of modern telecommunications for over ten years. In line with the company's commitment to sustainable development, Pascal Hamm, CTO, and Guillaume van Imbeck, Head

of Operation & CTO Infra Corp, designed a specific architecture for managing multiple MSOs over a single hybrid fiber-coax infrastructure. This was accompanied by a network upgrade of around 230,000 households.

The technology used

The answer to such a disruptive technological challenge for a CATV Network could not only be based on "off the shelf hardware", but included the latest customer specific tuned hardware, software, and R&D intelligence. Added to this was flexibility, a strong supply chain and the involvement of several business partners such as DCT DELTA AG and braun teleCom.



Figure 2: Line Extender LHD and Optical Node ONC, equipped with the device management FOSTRA-F 2.5

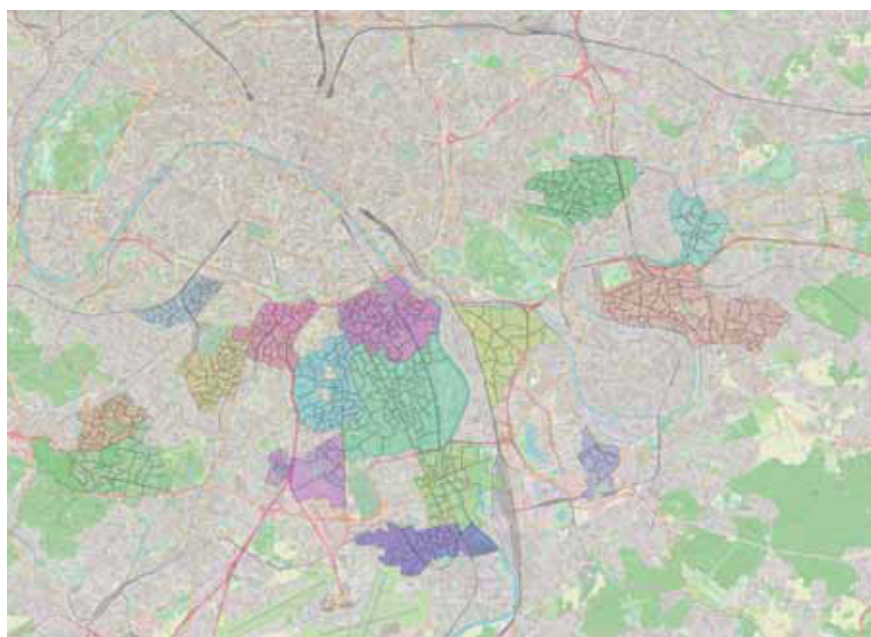


Figure 1: On the outskirts of Paris, Prizz Telecom is modernizing the networks for 230,000 cable TV households. The work takes place in the districts highlighted in colour.

The innovative network architecture combines a range of end-to-end-technologies to lower TCO (Total Costs of Ownership) and manage multiple MSOs over a single Cable TV infrastructure.

To meet this challenge, Prizz Telecom together with DCT DELTA AG implemented low power consumption amplifiers (LHD43-1 (R) GA ECO 100) with less than 13W per device, optical nodes (ONCR 12XX F-10-2-100) with eco functionality and less than 17 W and the customized RLK 100MHz diplex-filter to serve both MSOs over one coax connection.

State-of-the-art FOSTRA-F 2.5 FSK transponder-based device management with 0.18 W/per module, which enables remote configuration of parameters such as "attenuation", "slope" and "ingress switching" in the up/downstream, reduces field deployments during installation and operation.

The headends at the Vitry Sur Seine and Châtenay-Malabry sites are connected to DELTA's optical platform (1.2 GHz, XFP

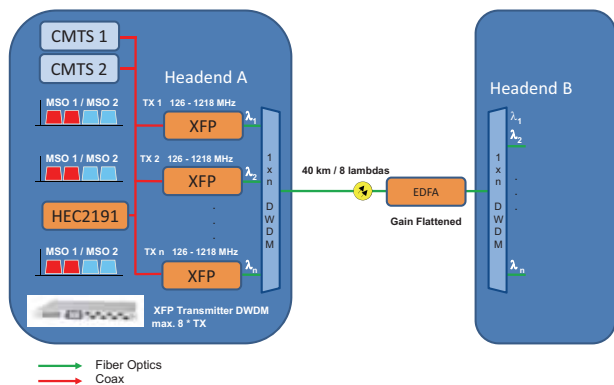


Figure 3: The DWDM downstream link between the Vitry Sur Seine and Châtenay-Malabry headend sites

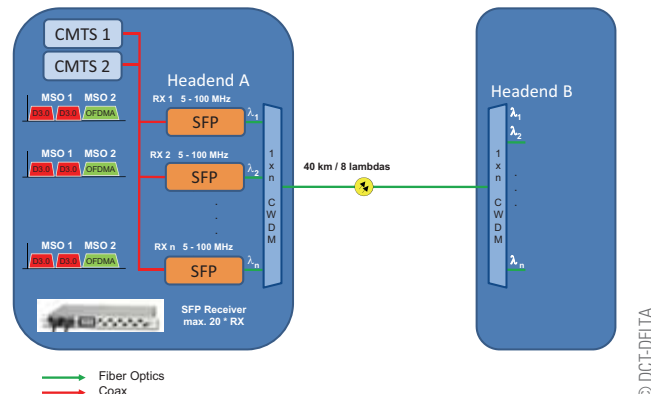


Figure 4: The DWDM upstream link between the two sites

DWDM transmitter and SFP receiver). Technical highlights are the very low power consumption (0.75 W per US RX and 2.5 W per TX), the extremely high density (max. 8 TX and 20 RX per chassis) and the optimized gain flattened EDFA, which bridges over 40 kilometers fiber optic cable. Embedded NMS functions such as SNMP3 and REST-API complete the headend platform.

ScanApp for complete documentation and monitoring

However, standard CAPEX- and OPEX optimization is not enough to reduce TCO. Additional information is collected via the latest software tool ScanApp 2.0 for complete, efficient and paperless documentation of all installation work on site to reduce construction time and manage the project. This is particularly

important to Prizz Telecom as this is an upgrade of an existing network so downtime and troubleshooting during the upgrade phase must be minimal. The information collected, such as the installation location and the setup values, are uploaded to the central DELTANET database via the mobile app. In the overall structure, the HEC 2191 headend controller acts as a gateway between the device management and the network. Each technician has real-time access to complete network documentation, installation images, setup values, device geo-location and network architecture diagrams via their iOS or Android-based smartphone or tablet. Finally active upstream and downstream monitoring of received and transmitted signals is performed to continuously monitor the performance and health of a network and to optimize NOC effi-

ciency during network disruptions. The combination of the DELTA Optical Platform GUI with the Kronback Tracer S16 enables maximum transparency of the network. ■



Contact:
DCT DELTA GmbH
Bodanrückstraße 1
78351 Bodman-Ludwigshafen
Germany
Phone: +49 7773 9363-0
info@dct-delta.de
www.dct-delta.de

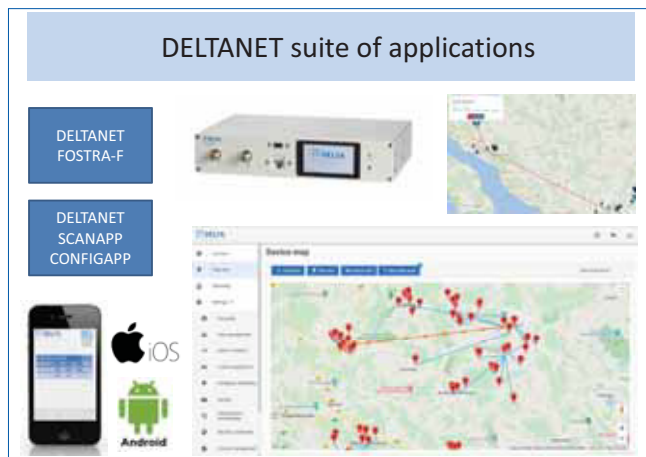


Figure 5: The interaction of the DELTANET applications mobile App, SCANAPP, CONFIGAPP, headend controller

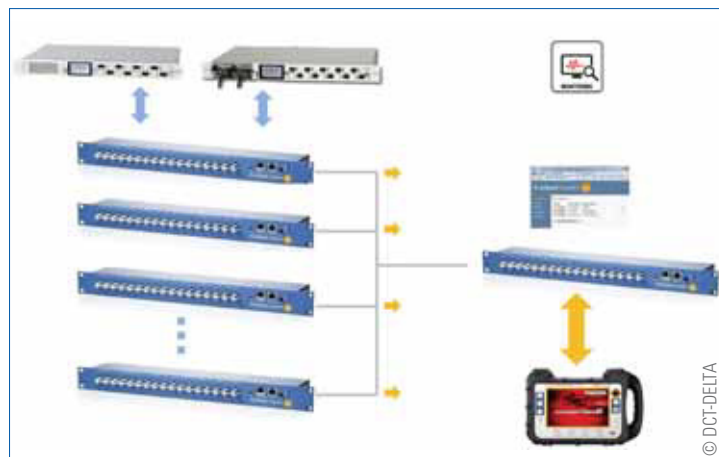


Figure 6: Downstream and Upstream monitoring – performance and health check of a network