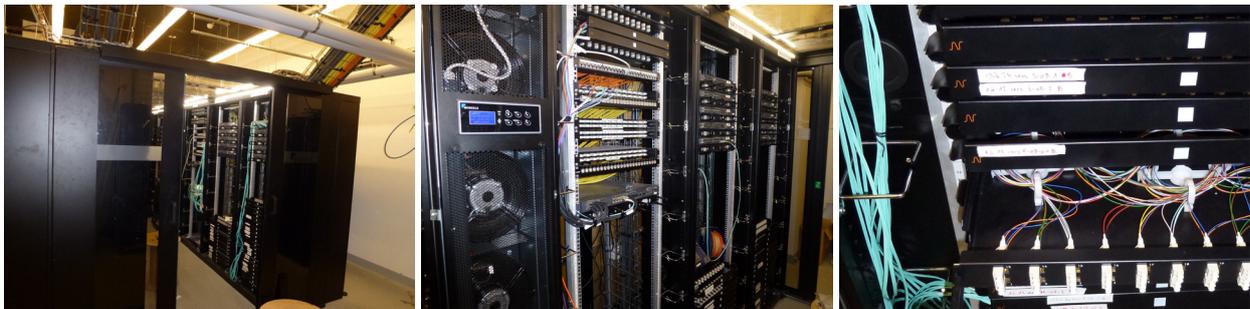


CRAMIF A New Recipe for Network Efficiency



CRAMIF, the Regional Office for Health Insurance of Ile-de-France, France, had to modernize its enterprise network. The installation had to take place without service interruption, be scalable and future-proof with bandwidth reserves. Furthermore it was very important to find a solution that would be both energy efficient and long-lasting.

Modern companies know too well about the inexorable increase in data rates on local area networks (LAN). The Regional Office of Health Insurance of the Ile-de-France (CRAMIF) was confronted with the necessity to upgrade its infrastructure to increase its data transfer rates, too. Considering the daily data transfer load to be processed (See the box "About CRAMIF"), it was a very challenging task as interruption of operation was unacceptable. After examining network modernization options the decision fell on LANactive FTTO Solutions by Nexans.

OBSOLESCENCE OF THE COPPER NETWORK

The site of CRAMIF in Paris is comprised of four buildings, the highest reaching 100 meters, and represents a surface of 45 000 m² with seven to nine floors and three levels including basement. The installed communication networks were based on copper cables dating from 1985 for telephony and from 1998 for the computing network, serving approximately 7,000 RJ45 ports and 13 technical rooms with sub-distributors. Inside these rooms, racks were equipped with CBE modules and with category 5 cords (120 Ohms). The vertical backbones were multimode fibre optic cables, but of older OM1 and OM2 grades.

With time, the IT-infrastructure had grown outdated, with connections degrading and insufficient bandwidth for new applications such as video surveillance, videoconferencing, video-training and Wireless Access Points. Action was needed to put in place a modern and efficient network infrastructure.

NEW IT-INFRASTRUCTURE

CRAMIF studied both possible solutions: a traditional copper network with fibre backbone - a well mastered and known technology, and a jump towards a network based primarily on fibre optics, with fibre optics in the secondary and tertiary cabling. Two facts were favourable for a fibre solution: flexibility and no floor distributors needed.

Fibre based installations offer enough bandwidth to support numerous users and applications.

Such networks can survive evolution of data rates without the need to change the medium of transmission, which is an environmental benefit in itself. Moreover, fibre based installations do not need technical rooms for distribution in the way that traditional structured cabling requires. The longer transmission distances achievable enable network architects to eliminate dozens of floor distribution rooms (SER's) with just a single central data centre (MER). CRAMIF, for example, used the recovered floor space for establishing shared centres for printing & photocopying.

NETWORK COMPONENTS

FTTO is a modern concept for LAN cabling based on the so called "collapsed backbone" network design. FTTO architectures include four main elements: optical fibres, a single technical room (MER), fibre patch panels and FTTO Switches at the workplace. The last 3-5 m to the workstation are covered by standard RJ45

copper patch cords connecting end user devices with the FTTO Switch.

At CRAMIF, Optical fibres are OM3. Their characteristics allow for the transmission of protocols with speeds of up to 10 Gbps on distances of at least 330 metres.

The single technical room (MER) houses both core switches and patch panels to connect to the FTTO Switches.

From the technical room, the architecture spreads out in a star topology towards the floors via 24 fibre cables arriving at Zone Distribution Boxes. These Zone Distribution Boxes (ZDB) are mounted in the ceiling and provide sub-distribution. From the ZDB, distribution occurs via LC/ LC fibre patch cords directly to the FTTO Switches.

These FTTO Switches are the cornerstone of FTTO based networks and key to Nexans LANactive offering. Equipped with four Gigabit Ethernet ports they support PoE/PoE+ according to the latest standards. FTTO Switches are connected via copper patch cords to PCs and feed IP phones, Wireless Access Points, IP cameras as well as other peripherals with data and power. Usually, they are installed in classic 45x90 cable duct plates. They are remotely manageable via SNMPv3, SSHv2, HTTPS and the Nexans management software (NexMan) for a quick and easy configuration and monitoring. This management tool offers a powerful overview of each active device of the FTTO infrastructure, avoiding time-consuming on-site inspection. This is another step to increased operational efficiency with FTTO.



The Picture shows the FTTO Switch „GigaSwitch V3“ for installations in Cable Ducts, Floor Tanks, Communication Pillars, on the Wall, etc.

CHALLENGES

There were two important issues for CRAMIF to consider when rolling out FTTO:

1. the highest level of redundancy, and
2. no interruption of the daily operations and services.

This is how these issues were addressed.

REDUNDANCY

Every wing of the building has a double cable path between the zone distribution box (ZDB) and the technical room. FTTO Switches, equipped with 2 uplinks, are connected by two different paths to the core switches. The network protocols STP (Spanning Tree) and VRP (Virtual Router Redundancy Protocol) manage the traffic. Therefore the architecture remains available in case of a defect – be it on a fibre path or in a switch - and the service goes on, despite localized failures (the dual redundancy concept).

NO INTERRUPTION OF DAILY OPERATIONS

The network refurbishment for CRAMIF had to take place in a “busy environment”, i.e. during normal operation hours. This spurred a special interest in a star topology with pre-terminated cables and patch cords.

Nexans Pre-Term technology was found to be best for the purpose. The pre-terms feature a protective tube and a pulling eye system for ease of installation. They were pre-tested and labelled prior to delivery.

CONCLUSION

Advantages of Nexans LANactive Solutions as realised at CRAMIF:

- A future-proof installation, with a life span of over several decades thanks to a high bandwidth fibre,
- Floor space released thanks to a dozen technical rooms no longer required,
- Easy roll-out thanks to a reduced weight and smaller size of fibre optic cables, minimum congestion in cable trays,
- No need for separation in pathways as would be the case with power and copper data cables,
- Dual Redundancy (a high level of link security both at the physical and the logic level),
- A great flexibility in dealing with company changes (moves, add-ons, etc.),
- Centralized concept management,
- Strong benefits in terms of energy efficiency.

KEY FIGURES

The new FTTO network at CRAMIF features:

- 220 fibre optics sections with a total length of 13 km
- 220 Zone Distribution Boxes
- More than 1,500 FTTO Switches and over 1,500 fibre patch-cords totalling 21 km of fibre

In the central Data Centre Room (MER) there are:

- 110 patch panels installed, with 2,640 LC connectors
- Approx. 50 switches receiving signals from the FTTO switches (1 SFP Slot per FTTO Switch, i.e. over 1,500 SFP Slots. The FTTO Switches are cascaded via the fifth TP-Port)
- 2 core switches, linked redundantly for maximum data availability.

ABOUT CRAMIF

CRAMIF as the Regional Office for Health Insurance of Ile-de-France has the following missions: to pay social insurance benefits, to calculate the AT / MP taxes, to prevent occupational hazards, to train social workers, to monitor the SHI-accreditation of suppliers of equipment, to propose an accessible offer of care, to advise the disabled, etc. The CRAMIF is committed to offering a personalized quality service and fast response.

About Nexans

Nexans brings energy to life through an extensive range of cables and cabling solutions that deliver increased performance for our customers worldwide. Nexans' teams are committed to a partnership approach that supports customers in four main business areas: Power transmission and distribution (submarine and land), Energy resources (Oil & Gas, Mining and Renewables), Transportation (Road, Rail, Air, Sea) and Building (Commercial, Residential and Data Centers). Nexans' strategy is founded on continuous innovation in products, solutions and services, employee development, customer training and the introduction of safe, low-environmental-impact industrial processes.

In 2013, Nexans became the first cable player to create a Foundation to introduce sustained initiatives for access to energy for disadvantaged communities worldwide. Nexans is an active member of Europacable, the European Association of Wire & Cable Manufacturers, and a signatory of the Europacable Industry Charter. The Charter expresses its members' commitment to the principles and objectives of developing ethical, sustainable and high-quality cables. We have an industrial presence in 40 countries and commercial activities worldwide, employing close to 26,000 people and generating sales in 2015 of 6.2 billion euros. Nexans is listed on NYSE Euronext Paris, compartment A.

For more information, please consult: www.nexans.com

In the field of LAN Cabling Systems, Nexans Cabling Solutions offer a complete range of products and value added services providing improved reliability and reduced cost of ownership for Network Managers, together with faster installation times for installers.

In addition to LANmark brand cabling systems and LANactive brand FTTO systems, Nexans also specialises in LANsense Intelligent Infrastructure Management (IIM) products including Environmental Monitoring and Access Control (EMAC) devices. Nexans offers an unrivalled choice of LAN infrastructure solutions to a global customer based through an extensive network of regional offices and Key Account Management team.

More information on: www.nexans.com/LANsystems

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