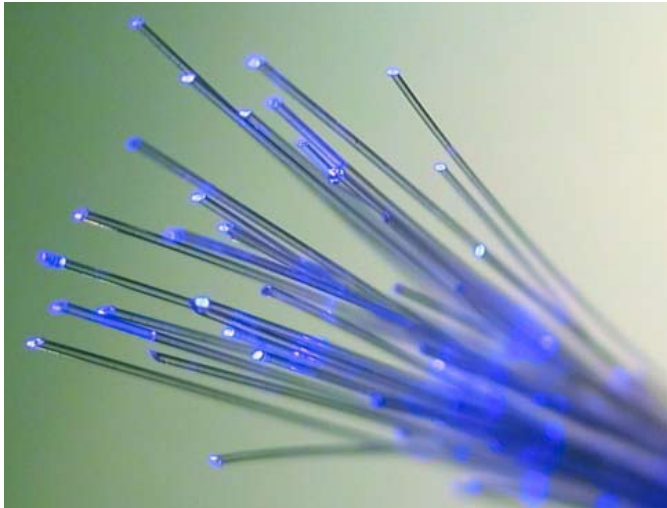


Providing fiber optic infrastructure for Rotterdam



Background

With the continued demand in advanced technologies such as video on demand and high speed internet access, the demand for fiber is increasing. Recent technologies (i.e. copper) are unable to meet the necessary requirements such as capacity, speed and performance. FTTX is the access network infrastructure that enables full triple play to deliver voice, data and video for the connected home or business.

FTTX refers to several different optical fiber architectures including Fiber to the home (FTTH), Fiber to the premises (FTTP), Fiber to the building (FTTB) and others. These architectures can all be grouped under one category: Fiber to the x (FTTX).

In 2004, IDATE was commissioned by the FTTH Council Europe to give an overview of the FTTH deployments in Europe at mid 2005. At this date, IDATE has identified 166 FTTX projects in Europe of which 13 are new initiatives since mid 2004. In terms of homes or buildings passed, countries like the Netherlands or France are showing a growth of respectively 85% and 147% between June 2004 and June 2005 - and numbers will continue to grow.

With the continued advancement in multimedia services, the limitations of current broad-band technology (i.e. copper) will be reached within years. Investments in fiber networks are starting now in order to have fiber networks in place to meet future demand.

“Fiber-to-the-home (FTTH) telecom networks will reach more than 14 million European households by 2012.”

Frost & Sullivan

The Challenge

Rotterdam Development Corporation (OBR) is a local governmental organisation responsible for stimulation of the city's economic development and the development of industrial areas, office locations and housing.

Early 2001, the Dutch ministry of economic affairs made a strong recommendation that the city of Rotterdam should be promoted as the first of the G5 Randstad cities where a high performance broadband infrastructure should become available for business, governmental and private use.

In January 2002, the former minister of economic affairs Mr. Koos Andriessen presented a global broadband study for such infrastructures in the Netherlands “the Andriessen report”, provided a detailed implementation plan for Rotterdam for a fibre optic infrastructure “de glazen Maas”. The European Commission sponsored these studies.

In May 2002, the city council of Rotterdam approved budget allocation for a pilot project for the city districts of Nesseland and Lloydkwartier. This pilot would provide high speed IP connectivity to all major business locations in these districts and fibre-to-the-home connections for 7000 houses.

After a positive feasibility study for the pilot districts, the city council gave approval in July 2002 for a master plan to implement a fibre optic infrastructure throughout the entire city and surrounding communities. Approximately 4 Million people live in this “Greater Rotterdam”. The goal is to build this infrastructure within 10 years.

In 2004 euNetworks were selected to provide the core network for the Rotterdam metropolitan area as part of the Dutch Government's initiative to implement a high performance broadband infrastructure available for business, Government and private use to be able to meet the requirements and recent developments in the market.

Solution Overview

During 2003, the implementation plan, the “open” business model and operational procedure details were worked out.

The Primary focus areas for the use of the network were:

- Fast communication and efficient resource sharing between Rotterdam city departments
- Enable a fast and transparent IP environment for the business (mainly logistics) environment
- Fast Internet connectivity for private homes and in particular for students and “knowledge workers”
- Low cost (IP) telephony and distribution of high quality digital television signals

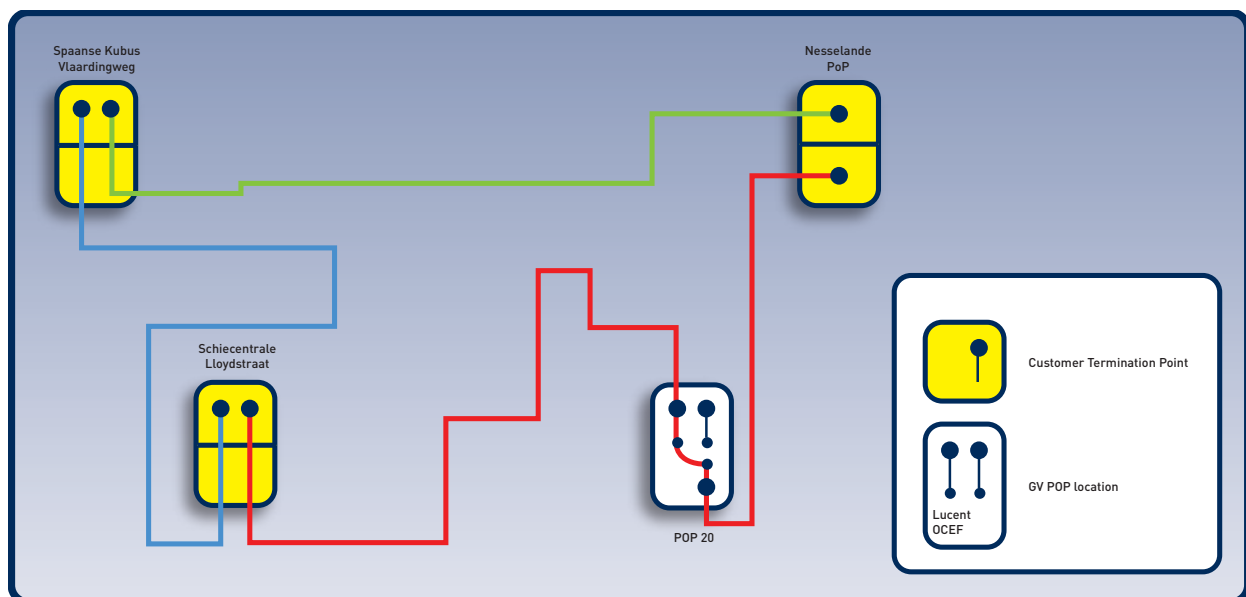
Solution Features

Unlimited Capacity, Limitless Possibilities.

euNetworks infrastructure meets all of the requirements for secure, fast, low cost connectivity throughout Rotterdam. euNetworks owns and operates high capacity optical fiber networks and duct infrastructure across 15 leading European cities, including Rotterdam, with an average of 6 sub-ducts throughout each city and at least one sub-duct containing an average of 432 strands of optical fiber. euNetworks metro networks provide access to key locations including business and industrial parks, educational centres, financial centres, Government buildings and Internet exchanges.

In early 2004, euNetworks were selected to provide the fiber network infrastructure for the Rotterdam metropolitan area. In December 2004 euNetworks completed construction of the central backbone ring structure with a fiber connection between the three main POP locations: Spaanse Kubus, Schiecentrale and Nesselande. This first ring will handle the traffic and interconnects for the Nesselande and Lloydkwartier plot locations. From this core ring connections will be made to “sub-POPs” from which star networks will be built for connection to the end-users. The street or apartment building distribution points will be connected through redundant ring structures, from there point-to-point connections will be made to the homes using mini-duct distribution systems. euNetworks provides the passive dark fiber infrastructure for the POP connections.

Interconnection of the two pilot areas Nesselande and Lloydkwartier and Internet Access at Spaanse Kubus.



Case Study with OBR - Rotterdam Development Corporation

Conclusion

This high-performance communications solution enables OBR and the people of Rotterdam to take full advantage of all next generation applications, technologies and protocols and therefore meets the requirements of the developments in the communications market.

“We have chosen euNetworks because the existing routes of their network in Rotterdam match the hotspot locations we want to open up with this network. Additionally, euNetworks uses one of the highest quality fibers (G652.C of Lucent Technologies) and are able to provide additional fiber capacity very fast.”

Roel Coert, Project Manager at OBR



About euNetworks

euNetworks owns and operates one of Europe's highest capacity fiber networks and provides mission critical communication infrastructure and services to large corporates, carriers, and service providers. Constructed at a cost in excess of €1.3 billion, euNetworks all-fiber optic network uniquely combines 'long-haul' inter-city network linking Europe's largest economies, with high density 'last-mile' metropolitan fiber networks in 15 of Europe's leading cities. euNetworks was recently awarded the prestigious title of "Best New Entrant" by leading telecommunications publication, Capacity Magazine. The award was granted to euNetworks following their acquisition of a pan European fiber network thus extending their unique proposition of delivering private fiber networks – an offering the judges felt is of immense value to large Corporates and carriers alike. euNetworks, a member of the Global Voice Group, is headquartered in Frankfurt, publicly listed on the Singapore stock exchange (SGX: H23.SI). euNetworks is a member of euro-one – a collaboration of Europe's leading fiber optic network providers to deliver infrastructure and next generation networking solutions connecting Central, Eastern, Western Europe and North America (www.euro-one.com).

Key solution benefits

- Transfer large amounts of data at up to 10 Gbps
- Collaboration in real-time
- Guaranteed quality of service
- Unprecedented bandwidth
- Reduced costs
- Future proofed for next generation applications and technologies

Why euNetworks:

- Robust metropolitan pan-European infrastructure
- Highest network availability
- Single provider with single SLA
- Tier 1 IPT provider
- Strong, referencable customers
- Quality bespoke solution design skills
- Flexible pricing models
- Track record of 99.999% availability
- European based NOC for 24 x 7 monitoring and maintenance

euNetworks is a member of the **Global Voice Group**. For more information about euNetworks please visit us at www.euNetworks.com. To find out more contact euNetworks:

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