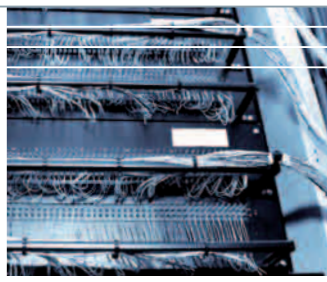
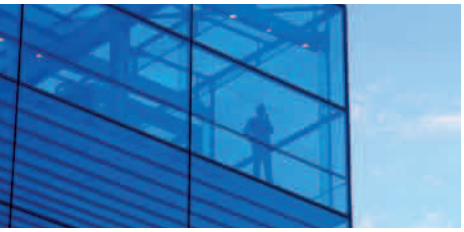
MICROSENS

Economical in-house networking for public administration



MICROSENS fiber optic solutions -
intelligent, reliable, high-performance



FIBER TO THE OFFICE (FTTO)

MIGRATION FROM FTTD TO FTTO

OPTICAL TRANSPORT NETWORKS

CENTRAL POWER SUPPLY CONCEPT

MICROSENS

EDITORIAL

Dear reader,

In view of E-government and future-oriented administration, decision makers from municipalities, government agencies and ministries see themselves faced with a number of new challenges. Viewpoints with respect to in-house networking have also changed. Previously considered more as a means to an end, a perspective is increasingly prevailing which regards the IT-infrastructure as a part of the whole. This particularly applies to IT-energy and life cycle costs, which are also being assigned increasing significance in the most recent revision of the Regulation on the Award of Public Contracts.

This is why MICROSENS is using especially energy-saving chipsets and mains adaptors with a high degree of efficiency in the context of Fiber To The Office. This makes it possible to achieve clear savings in operating and energy costs. The subject of network security is also increasing in importance for public administration. This is why all software functions relevant for security are being continuously developed. For example, our Micro Switches support all important security protocols.

As a German provider of fiber optic transmission systems with local production and development, MICROSENS is always in close proximity to the requirements of the market. As a manufacturer, we work closely with specialist planners and the creators of customised solutions for government agencies, administrative institutions and ministries.

On the following pages you will learn more about how you, as a decision-maker in the public sector, can use MICROSENS' fiber optic solutions to implement future-proof network structures.

Enjoy reading this brochure!

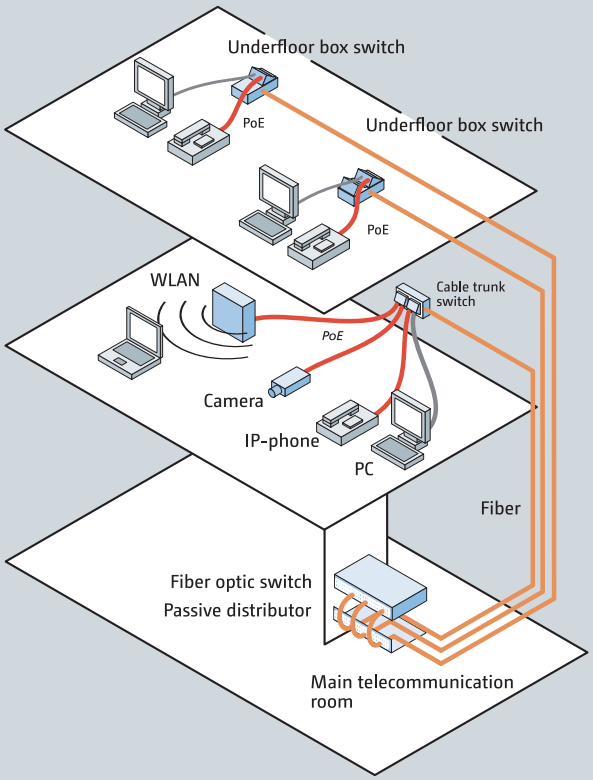
Dipl.-Ing. Hannes Bauer
Technical Director and Founder of MICROSENS GmbH & Co. KG

Future-proof, plannable, energy-efficient
FIBER TO THE OFFICE (FTTO)

Economical in-house networking with hybrid technology for government agencies and public administration

In the context of IT-powered transformation processes, the public sector is modernising more and more rapidly. This means a constant increase in the importance of the IT-building infrastructure, because it is the technical foundation of all IT-systems.

FIBER TO THE OFFICE



The implementation of MICROSENS FTTO Switches allows an extension of the fiber optic cabling into the tertiary level (cable trunk, floor tank as well as wall and desktop installations). Floor distributors are waived intentionally.

Energy efficiency in the focus of public regulations

Long service life and energy efficiency are especially important for IT-networking in the public sector. This is also often confirmed by amendments to the Regulation on the Award of Public Contracts that puts a new economic focus on energy efficiency and life cycle costs.

Energy aspects of the IT-building infrastructure in the overall view

Energy aspects already play an important role in the conception of public buildings. Here the alignment of the building, the distribution of heating and cooling, the insulation materials and many other aspects are considered in order to save energy. The energy efficiency of the IT-building infrastructure used plays a decisive role here. This is why MICROSENS already takes the increasing requirements of energy efficiency into account when developing new components and uses only energy-saving chipsets and mains adaptors with a high level of efficiency. Thus MICROSENS Fiber To The Office serves as an important building block of the IT-infrastructure to provide a high-performance network and to reduce energy and operating costs.

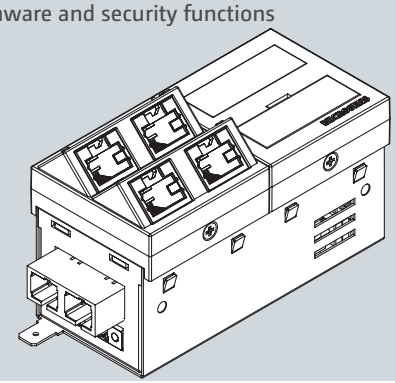
Investment protection and reduced life cycle costs

Fiber To The Office combines the best of two worlds. For one thing, it offers the technical advantages of fiber optic cabling: long range, interference immunity, security against interception. Fiber To The Office also brings the flexibility of twisted pair at the end device back into play. In this way important technologies like Power-over-Ethernet and VoIP can be effectively and universally used. Avoiding floor distribution enables considerable savings potential in comparison to structured cabling solutions: less active network components and lower costs for climate control and UPS systems. In addition to this, the horizontal cabling is maintained in its entirety in the event of a future technology change. In this way, the FTTO concept of MICROSENS unites the investment protection of fiber optic cabling with the flexibility of twisted pair close to the user.

State-of-the-art security standards, easy administration, quick installation

The Micro Switches are suitable for a wide variety of installation scenarios. MICROSENS also provides special series with special surfaces in accordance with customer wishes. Firmware and security functions are constantly kept up-to-date by our German development team.

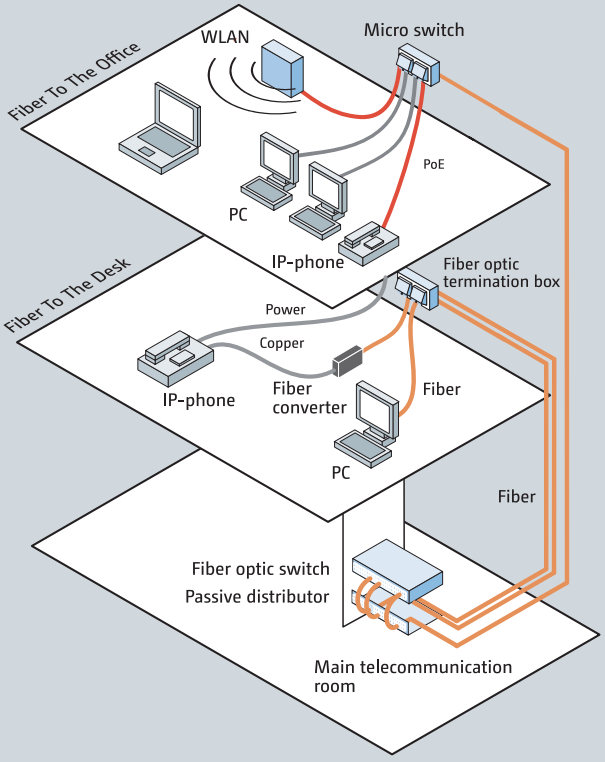
- Gigabit Ethernet technology with fiber optic uplinks in ST, SC or SFP connection technology
- Including all important security protocols (authentication in accordance with IEEE 802.1X, RADIUS)
- Power-over-Ethernet with external mains adaptor and galvanic separation
- Management software (NMP) with SNMPv3 and SSH
- LLDP auto-discovery
- Tool-free installation, vertical and horizontal



New flexibility through migration of Fiber To The Desk to FTTO

MICROSENS makes Power-over-Ethernet and VoIP telephony possible in FTTD networks

Fiber optics is the medium of the future. This is why many bodies of public administration, government agencies and ministries have decided in favour of purely fiber optic-based in-house cabling according to the Fiber To The Desk (FTTD) model. These installations in some case originate from the time long before the wide distribution of Voice-over-IP and Power-over-Ethernet. However, the decision for building networking with fiber optics does not have to be a dead end. A migration from FTTD to FTTO enables the use of Power-over-Ethernet, creates new flexibility and exploits the advantages of the already existing fiber optic cabling.



When migrating to FTTO, a fiber optic termination box is replaced by a Micro Switch. Thus, there will be up to four PoE copper connections for end devices instead of only one fiber optic access point. Moreover, the need for fiber ports in the central switch will be reduced considerably.

Great flexibility of Fiber To The Office reduces IT-operating-costs

Fiber optic cabling provides a long service life, great reliability and excellent interference immunity; however, close to the user it does not offer the flexibility of copper cabling. The possibilities for universal usage of VoIP and Power-over-Ethernet are thus greatly limited with pure fiber optic cabling. This is a factor that can be problematic for government agencies, because it makes the introduction of VoIP telephony more difficult. With a conversion to Fiber To The Office, government agencies and ministries can increase the flexibility of their building infrastructure in a targeted fashion and restore the perfect balance between security for the future and cost efficiency.

Seamless integration into the existing building structure

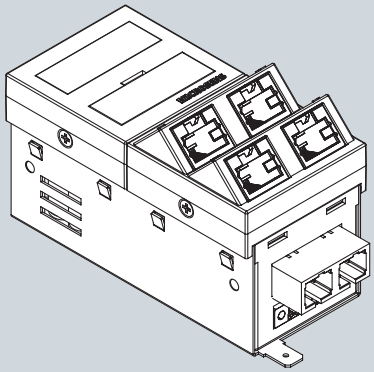
MICROSENS Micro Switches are the ideal solution for enabling universal usage of PoE within FTTD installations. The unique design of the MICROSENS Micro Switches enables tool-free installation within dado trunking or underfloor tanks and thus seamless integration into the respective conditions of the building. The switches replace the passive fiber optic outlet boxes and provide an efficient PoE power supply directly in the cable trunk. Through combination with the central PoE power supply concept of MICROSENS, it is also possible to further increase the reliability and energy efficiency of the FTTO installation

New capacities for the connection of computer workspaces

Another benefit of the conversion to FTTO is the multiplication of ports. Up to four copper ports are created from one fiber optic connection as a result of the migration to FTTO. These can be used as desired for the connection of work space computers, printers and VoIP telephones. In this way, considerably more network connections are made available with minimal investment. Government agencies thus acquire more flexibility for potential expansions and make optimal use of the already existing infrastructure in the process.

Government agencies and public administration thus profit from FTTO in the following ways:

- Universal usage of Power-over-Ethernet enables VoIP telephony
- Minor installation work and optimal usage of the already existing fiber optics infrastructure
- Seamless integration into the existing building structure with cable trunk installation
- Provision of additional network connections for the connection of work space computers
- Cost reductions due to energy-efficient power supply of PoE devices and the observance of the highest security standards and central management

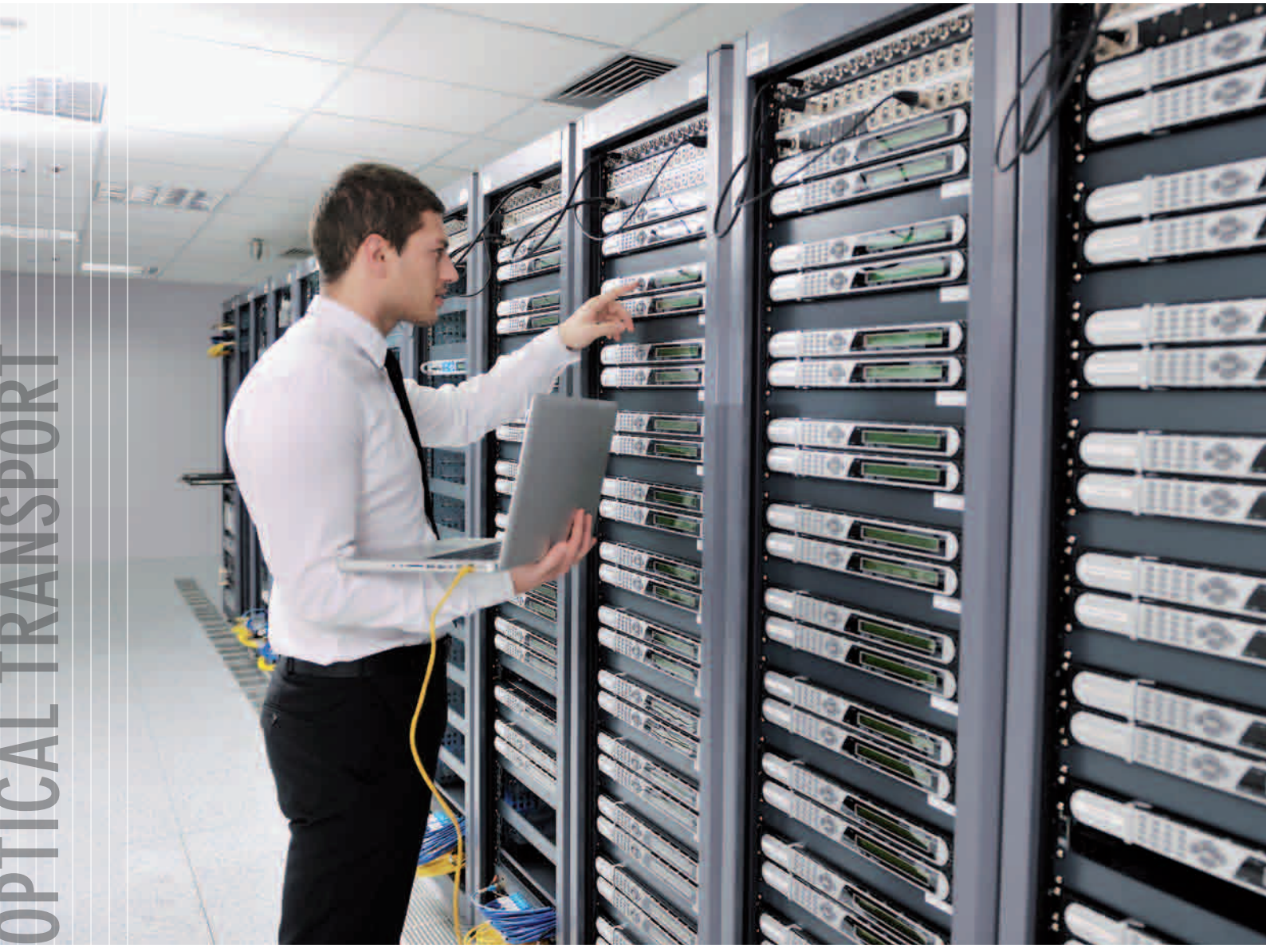


Optical Transport Platform

Ready for the future –

Use fiber optics capacity more efficiently with xWDM

With around 400 locations, the German administrative system is one of the largest operators of computer centers in Germany. The focus is on process optimisation and consolidation in the context of cost reduction measures. Whether Shared Service Center or the coupling of computer centers, the key to increased cost efficiency lies in high-performance networking that can promptly react to rapidly growing broadband requirements.



Cost-efficient usage of fiber optic capacities

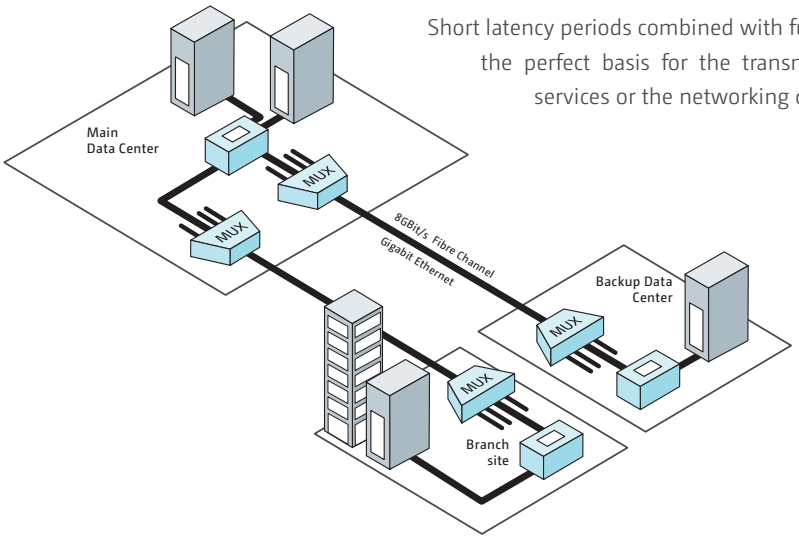
The optical multiplex technology makes it possible to economically multiply the capacity of existing fiber optic lines. Parallel transmission of multiple wavelengths over one fiber optic connection enables transmission rates of up to several hundred Gigabits per second with no need to lay any additional fiber optic cables. MICROSENS accompanies major public sector projects in close cooperation with expert planners and integrators. Decades of experience and the most modern measurement methods thus ensure the optimal integration of the MICROSENS Optical Transport Platform into the customer infrastructure.

Minor initial investment, low operating costs, always scalable

The "pay-as-you-grow" idea has long been a prevalent investment planning principle among telecommunications providers, and today it is equally applicable to the networking of computer centers in the public sector. This is because the economy and the public sector are both increasingly subject to the same business management principles. The modular design of the MICROSENS Optical Transport Platform enables the optimal reconciliation of investment costs and needs. Should transmission performance requirements increase or additional services be required, additional modules can be retrofitted without a loss of investments.

High-performance location networking and computer center coupling

Short latency periods combined with full protocol transparency form the perfect basis for the transmission of sophisticated SAN services or the networking of locations.



Innovative benefits of the Optical Transport Platform

- High reliability, redundant construction, scalability, protocol transparency
- Efficient **green IT-technology**: Single-chip technology helps reduce operating costs by up to 25 per cent compared to conventional multi-chip solutions.
- Storage support: 1G/ 2G/ 4G/ 8G/ 10G Fibre Channel, InfiniBand, ECON/FICON and all other relevant protocols
- Perfect integration into the customer infrastructure through Brocade certification
- **Multi-rate technology** enables the parallel transmission of various protocols (Ethernet, SDH, Fibre Channel) and data rates (100 Mbps – 100 Gbps) on one wavelength. Depending upon the network structure, reduces the infrastructure costs for aggregation and operation by up to 60 per cent.
- Legacy interoperability enables transmission on SONET/SDH wavelengths.
- CWDM / DWDM modules for bandwidths from 100 Mbps to 100 Gbps
- FIPS compatible Fibre Channel encoding
- Hut-skipping transmission; range of up to 300 km without an additional optical amplifier

Energy-saving power supply concept

for Power-over-Ethernet applications

The power supply of network terminal devices via Power-over-Ethernet offers impressive advantages for government agencies and public administration. Access points for area-wide WLAN and VoIP telephony can be supplied by PoE effectively and cost-efficiently with power. MICROSENS offers a central power supply concept for this application; one which uses redundant construction to increase total availability while also allowing exact dimensioning of the necessary supply capacity.

High energy efficiency

Central 48 VDC power supplies provide numerous advantages over the use of separate mains adaptors. They are much more economical to use, as precise dimensioning makes it possible to operate power supplies at optimum efficiency, thereby reducing power consumption and lowering operating costs significantly.

Easy scalability

The entry-level solution for a central power supply of PoE components is comprised of up to three compact 500 W rectifier modules in a 1 HU-sized housing, for a total capacity of up to 1,500 W. The next stage of expansion results in a 2-HU solution with a total capacity of 4,500 W, consisting of up to up to three 1,500 W rectifier modules plus a carrier chassis and an electrical distribution chassis.

Redundant construction in UPS operations

Central power supply systems can be constructed with some redundancy and also buffered with battery power (UPS). MICROSENS offers especially compact solutions with high power density. With a broad operating temperature range from -20 to +50 °C, complicated room climate control also becomes unnecessary.

Capacity overload protection

MICROSENS Micro Switches' power management systems work together with the central power supply system perfectly. The overall load is monitored continuously, which prevents incorrect or defective terminal devices from overloading the power supply.

- Cost-efficient thanks to high efficiency, even in areas of partial-load operation
- Compact construction – little space required
- Variants from 500 W (1 HU) to 4,500 W (2 HU) for precise dimensioning
- No climate control necessary within broad range of operating temperatures (-20 to +50°C)
- Easy installation and commissioning
- Modular construction provides flexibility in expansion

MICROSENS fiber optic solutions - intelligent, reliable, high-performance

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