

MICROSENS

Optical Transport Platform

Bandwidth expansion on demand



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

Optical Transport Platform

The MICROSENS Optical Transport Platform provides scalable high performance networking solutions with an extended life cycle. Due to its modular design the transfer capacity of the MICROSENS Optical Transport Platform can easily grow with the ever increasing demand for new bandwidth of modern businesses and telecommunication providers, without the need to install additional costly fiber optic routes.

Demand-oriented expansion of bandwidth capacities

Because of its modular design, the MICROSENS Optical Transport Platform enables businesses to upgrade the transfer capacities of their fiber optic routes incrementally and based on the actual customer demand. Thus, businesses and operators are able to keep the ideal balance between future-readiness and investment cost, while always staying flexible. If new locations have to be added to the network, or additional data centers need to be interconnected, the MICROSENS Optical Transport Platform can easily cope with these challenges and increase bandwidth capacities up to several 100 Gbps.

Paving the way to more cost efficiency with SMART technologies

The MICROSENS Optical Transport Platform is designed to reliably deliver high amounts of data with an optimal cost-per-bit ratio. The system achieves an excellent relation of transmission capacity to total cost of ownership (TCO) by incorporating a combination of SMART technologies that lowers overall operational cost and capital expenditure.

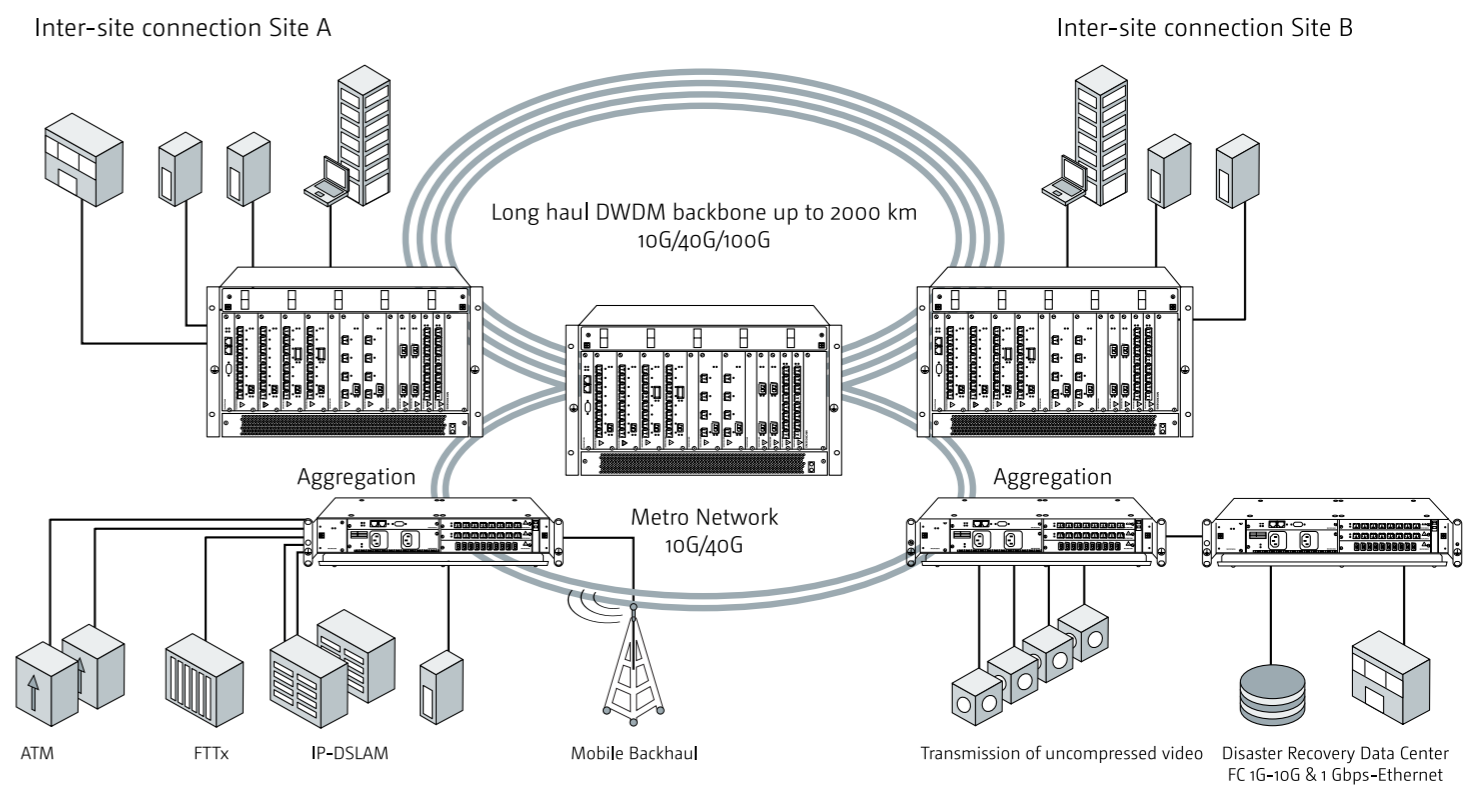


2 U Carrier Class Chassis



7 U Carrier Class Chassis

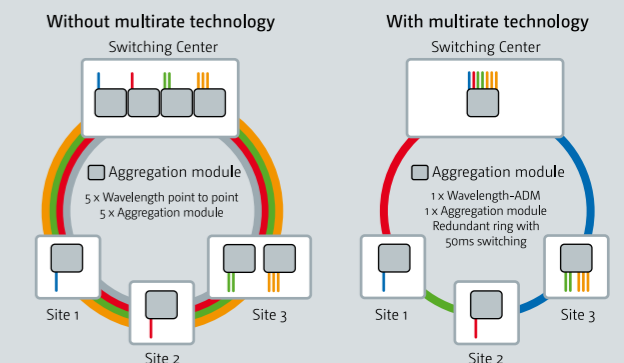
Application scenario for the MICROSENS Optical Transport Platform



Technical advantages

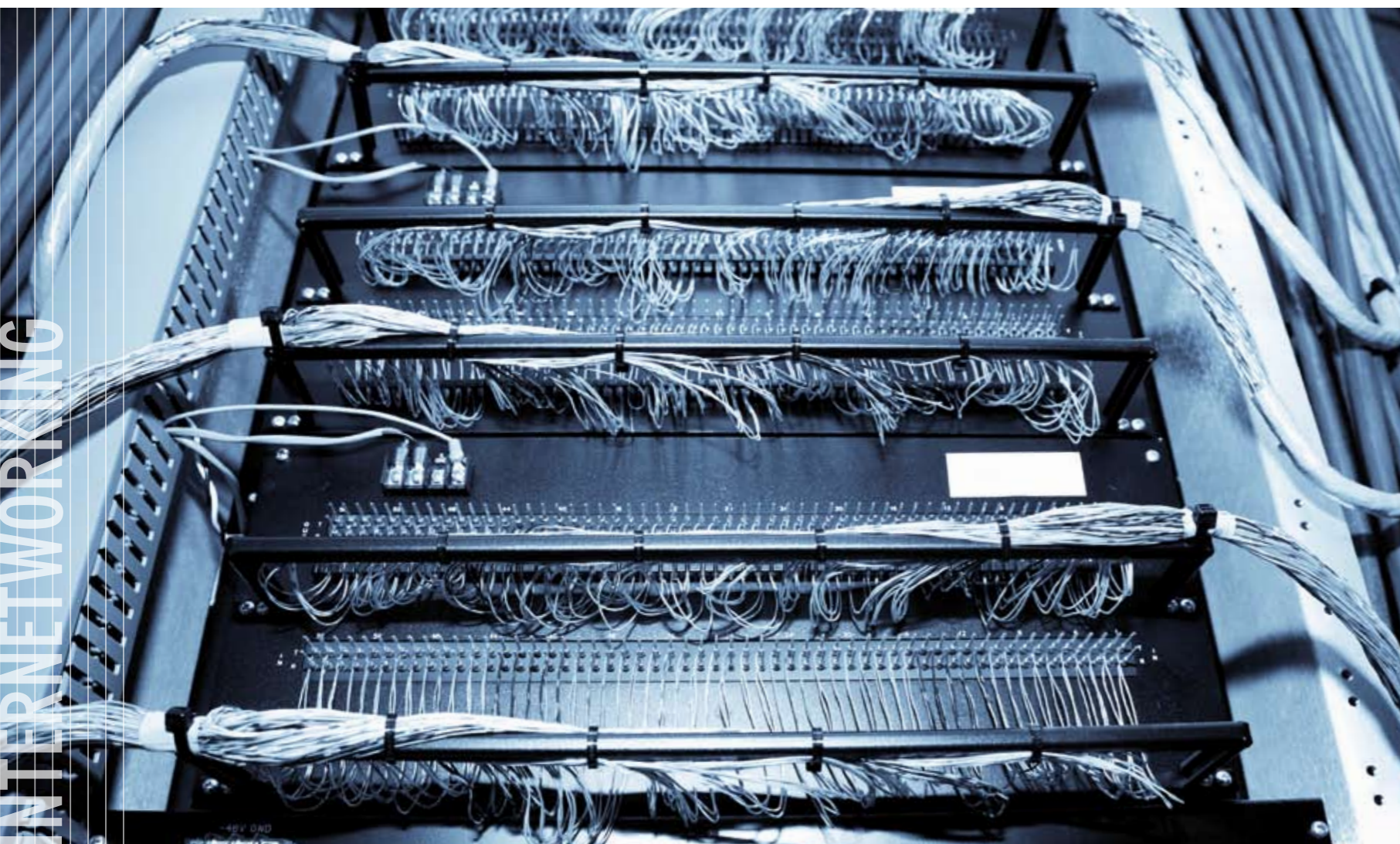
- Efficient **Green-IT technology** – advanced single-chip technology achieves a cost reduction of up to 25 percent compared to most multi-chip solutions.
- Enhanced **interoperability with legacy systems** (SONET/SDH) ensures a reliable operation of WDM-technology on SONET/SDH infrastructure via native- or foreign wavelength
- **Hut-Skipping technology** reduces the number of units needed for signal regeneration (up to 300 km reach without inline optical amplifiers) and lowers operational cost and infrastructure spending
- **Single fiber transmission** of up to 128 bi-directional 10G services over one fiber line lowers the leasing cost for dark fiber by up to 50 percent

- **Multirate technology** – simultaneous transmission of different protocols (Ethernet, SDH, Fibre Channel) and data rates (100 Mbps – 10 Gbps) over a single wavelength. Lowers – depending on the network structure – the spending for aggregation infrastructure and network operation of up to 60 percent
- **Next-Generation FEC** (Forward Error Correction) achieves a optical signal gain of up to 10-12 dB instead of the usual 6 dB. Therefore, lowering the spending on dispersion fiber and providing better latency



High-performance internetworking as competitive factor for modern businesses

The ability to interconnect is one of the key elements for modern businesses to reach more productivity and better cost efficiency. The highly scalable MICROSENS Optical Transport Platform offers businesses a future proof basis for their rapidly growing bandwidth needs. Thereby, system stability and redundant design are just as important as financial sustainability within IT cost-management.

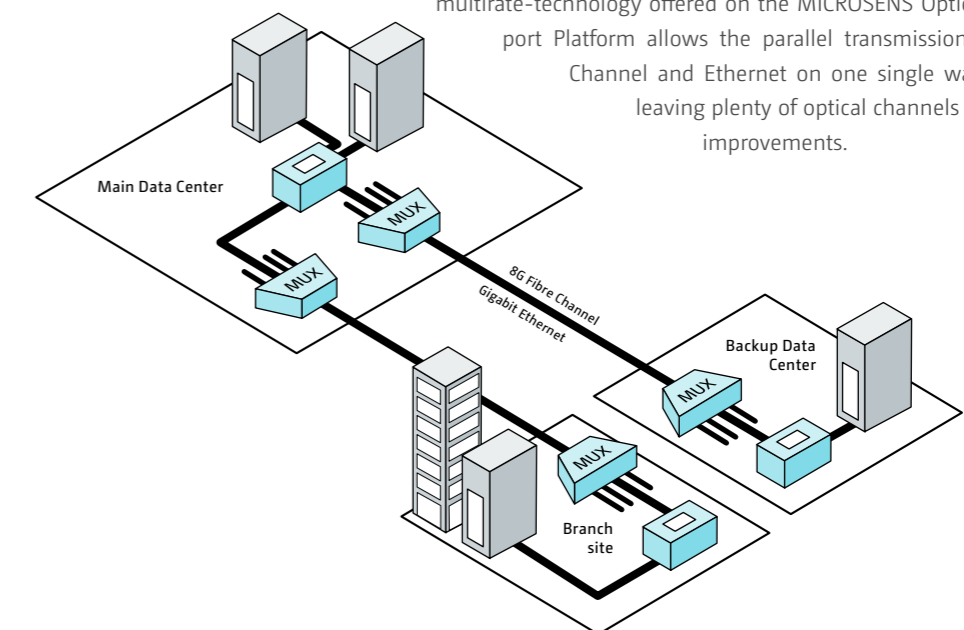


Flexible allocation of new bandwidth capacities

Consolidation and centralization are the key factors for a cost efficient data center infrastructure. The increasing number of business critical systems and ever increasing data volumes that are caused by enhanced requirements for data-backup and archiving, demand new powerful data transmission technologies. MICROSENS's optical multiplexing transmission system allows businesses to flexibly employ new capacities for data transfer on existing fiber optic routes. Alternatively, companies have the option to rent low-priced dark fiber routes and independently run them on their own networking hardware.

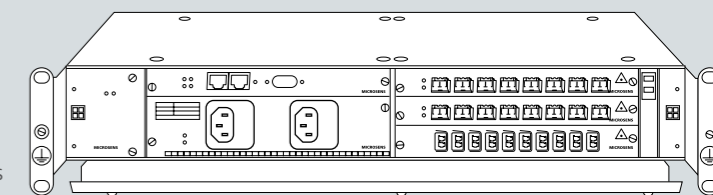
Interconnection of data centers and high rate inter-site networking

Low latency connections and protocol transparency are the ideal basis for the transmission of mission-critical services for remote storage replication or inter-site networking. Additionally, the multirate-technology offered on the MICROSENS Optical Transport Platform allows the parallel transmission of Fibre Channel and Ethernet on one single wavelength leaving plenty of optical channels for future improvements.



MICROSENS 2 U Optical Multiplexing Chassis

- High system reliability, redundant design scalability
- 1G, 2G, 4G, 8G, and 10G Fibre Channel
- Brocade data center verification
- Multirate-technology allows the simultaneous transmission of ATM, Gigabit Ethernet, ESCON/FICON, Fibre Channel, iSCSI, SDH/SONET on a single wavelength with different data rates
- Excellent legacy system interoperability allows to run Fibre Channel on SDH/SONET wavelengths
- CWDM / DWDM modules for data rates starting at 100 Mbps up to 40 Gbps
- Channel encryption (optional)
- Hut-skipping transmission allows up to 300 km reach without amplification
- Bi-directional data transmission of 128 x 10G on a single fiber line



Highly energy-efficient transmission platform for the carrier network of tomorrow

Operational cost under control – more than just pay-as-you-grow

Sky-rocketing expenses for power and environmental control have an increasing influence on the profit development of local carriers. Although, high system scalability prevents high capital cost, the rising part of operational cost puts the pay-as-you-grow concept under more and more pressure. Therefore, MICROSENS combines modular system design with energy-efficient single-chip technology, high system interoperability and multirate-transmission capability to a long-term profitable carrier class WDM-Transmission System.



Green-IT as important factor for economical carrier networks

Because each watt in power consumption of an optical transport system is directly connected to additional cost for air-conditioning and UPS (Uninterruptable Power Supply), highly energy-efficient system design plays a major role in the overall profitability of a carrier network. By incorporating state-of-the-art single chip technology MICROSENS succeeded to reduce the power consumption of its optical transmission systems significantly.

Cloud-services as a market driver for local carriers

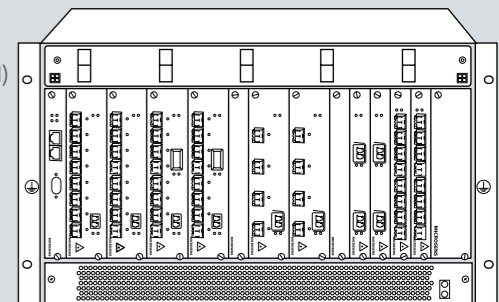
Cloud-Computing is one of the market segments with the highest growth rates in the IT-industry. One reason for the high growth in cloud-services is that businesses and end customers are demanding tailored telecommunication solutions that offer high scalability. This opens a highly profitable field of business to local carriers that is combined with high requirements for the deployed optical transmission systems. Since the required bandwidth for cloud-services like online-backup, virtualization and application services has to be delivered to the customer without delays. The flexibility that optical transport systems from MICROSENS offers is provided through advanced technologies like multirate data transfer, Hybrid-CWDM/DWDM and bi-directional transmission on single fiber.

Establishing the basis for cost efficient convergent networks

The foundation to enable future oriented technologies like cloud-services, Next Generation Networks (NGN) or Carrier Ethernet in a cost efficient way are scalability, energy efficiency and to make optimal use of existing fiber optic routes. This is because convergent networks and cloud services are indeed increasing the demand for more bandwidth, but the overall drop-off in prices makes it hard to allocate additional costs to the customer in an appropriate relation. That's why MICROSENS combines energy-efficient design with advanced multirate-technology to a modern data transfer solution for carrier networks that contributes to a significant reduction in operational cost.

MICROSENS 7 U Optical Multiplexing Chassis

- High reliability (NEBS-3 compliant), redundant power supply 48 VDC / 230 VAC
- Brocade Verification
- ITU G.709 compliant for OTN (Optical Transport Network)
- 3R signal regeneration (module dependant)
- Protocol transparency with multirate card support (Fibre Channel, Ethernet, SONET/SDH)
- Energy efficient single-chip design
- Hybrid CWDM/DWDM
- Data rates of 100 Mbps to 100 Gbps with up to 160 channels
- Enhanced reach of up to 300 km without signal amplification
- LAN to WAN interconnect (OC-192 / STM-64 to LAN)
- Transmission of uncompressed video (SD-SDI/ASI)
- Standard SFP/XFP support



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