MATERIALS THAT MATTER

Optical Communications Products for Telecom and Datacom Networks

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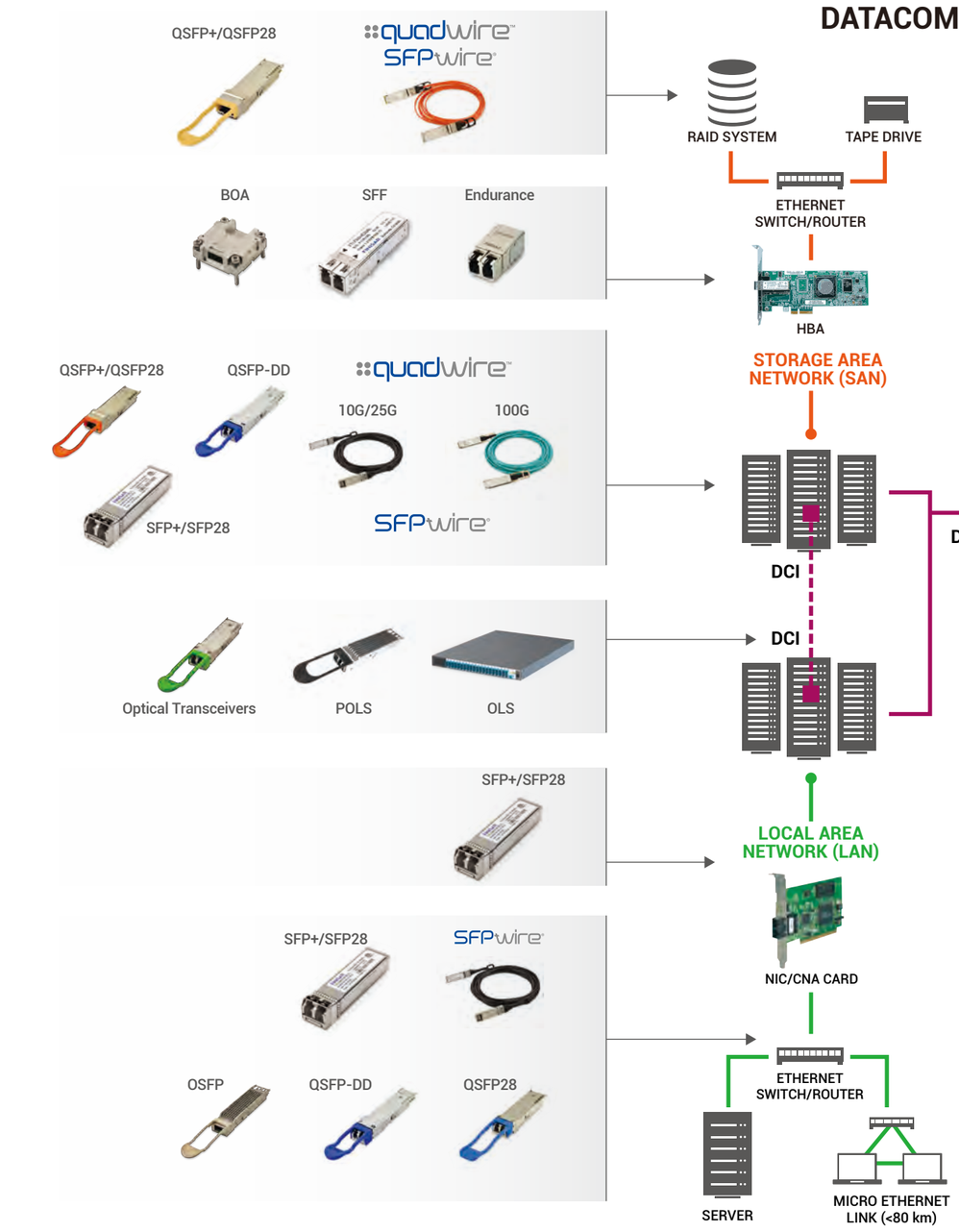
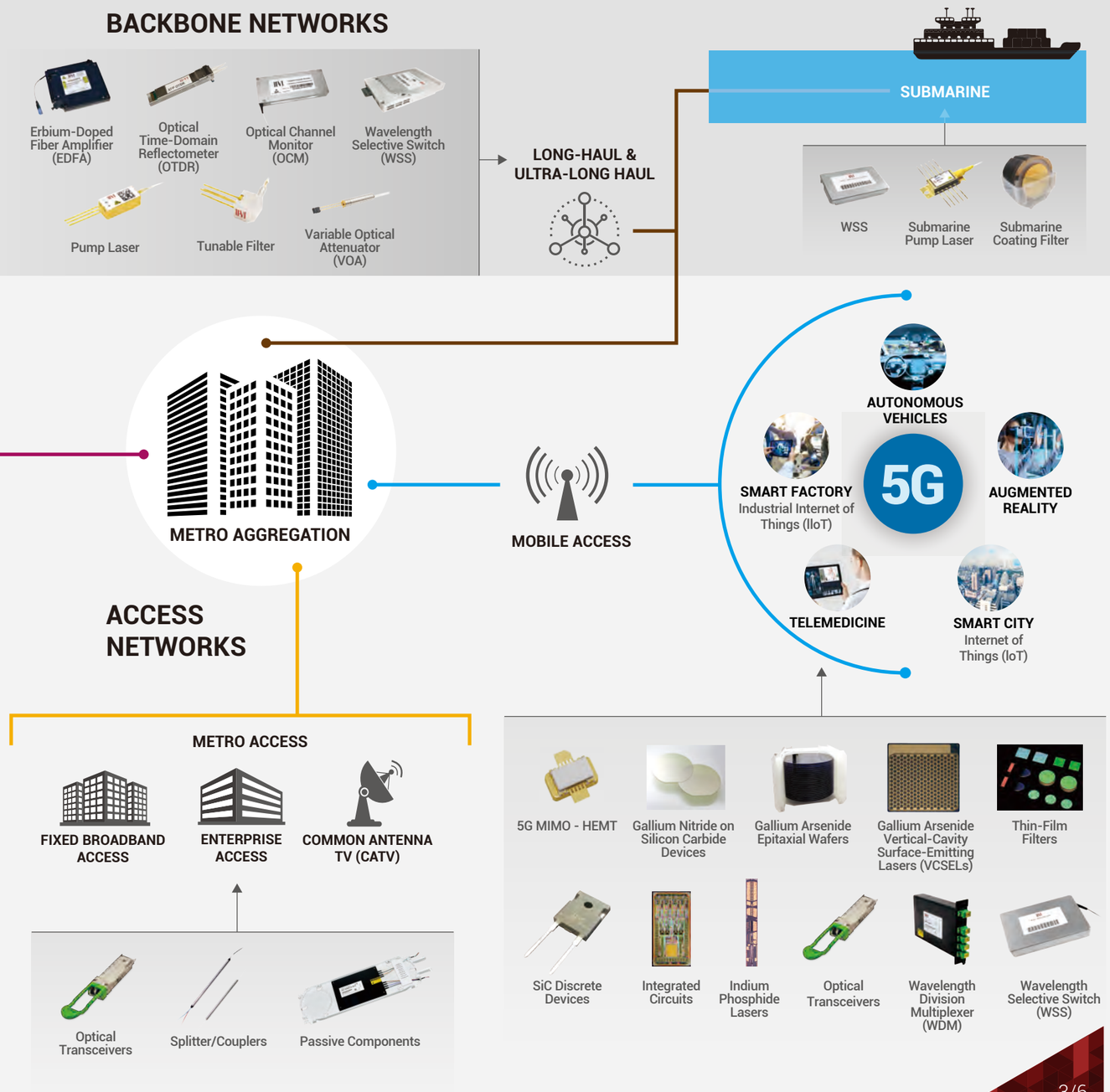
Rev. 01

Optical Communications Products for Telecom and Datacom Networks

Cloud computing is driving the buildout of all segments of the optical network. Within datacenters, it is increasing the bandwidth requirements between servers, switches, and routers. Between megascale datacenters, cloud computing is also driving a massive buildout in metro, regional, long-haul, and submarine networks.

Fifth-generation (5G) wireless networks promise to provide consumers and machines on-demand access to cloud computing power, enabling computationally intensive applications such as big data analytics, blockchain transactions, machine learning, and artificial intelligence.





Optical Communications Products for Telecom and Datacom Networks

Optical Transceivers

Our transceivers are compliant with Ethernet, Fibre Channel, Infiniband, SONET/SDH/OTN, CPRI, OIF, and PON standards and operate at data rates in excess of 100 Gbps. They are capable of distances ranging from very short reach within a datacenter to campus, access, metro, and long-haul reaches, by utilizing a broad portfolio of internally designed and fabricated optical components such as 850 nm VCSELs, DFB lasers, EML lasers, wavelength-tunable lasers, and coherent photonic integrated circuits. Our products also feature outstanding performance over extended voltage and temperature ranges, while minimizing jitter, electromagnetic interference (EMI), and power dissipation.

II-VI offers additional patented cost-saving features for Automatic Wavelength Tuning (Flextune™) and for remote Digital Diagnostic Monitoring (T2DOC). Our transceivers include a microprocessor and a diagnostic interface able to provide information on the data link and on the module itself, implementing a highly accurate and cost-effective tool for reliable performance monitoring.

Active Optical Cables

Our active optical cables accelerate data connectivity for storage, networking, and high-performance computing (HPC) applications. This product line includes C.wire® for 100 GbE, InfiniBand QDR/FDR, and PCIe-Gen2/3/4; Quadwire® for 40/100GbE, InfiniBand QDR/FDR/EDR/HDR, Omni-Path, and PCIe-Gen2/3/4; and SFPwire® for applications up to 25 Gbps. Each cable solution leverages fiber-optics technology for the transmission of data while reducing the weight, density, and power consumption of traditional copper solutions. Key advantages of active optical cables include low weight for high port count architectures; small bend radius for easy installations; and low power consumption, providing the lowest total cost solution for datacenters.

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Optical Engines

II-VI's optical engine family comprises BOA (board-mount optical assembly) parallel fiber-optics modules. These compact, high-bandwidth modules provide the lowest-power and highest-density optical interface for systems interconnects in the industry. II-VI brings a wealth of experience and technical expertise to our optical engine product line, with hundreds of thousands of II-VI BOAs deployed around the world.

Communications Components

II-VI offers one of the industry's broadest portfolios of high-performance photonic components for communications. II-VI's transmission lasers, pump lasers, coherent integrated optics, detectors, receivers, and passive components are widely recognized as best-in-class in each of their individual categories. Our photonic components enable leading-edge performance in existing and next-generation coherent transmission, from 100 Gbps to beyond 1 Tbps, in terrestrial and undersea fiber-optics networks.

Wavelength Management

II-VI offers the industry's broadest portfolio of wavelength-management products for the next generation of dynamically reconfigurable optical networks. II-VI's portfolio of products includes all the key functional blocks of ROADM line cards, including wavelength selective switch (WSS) modules, optical amplifier modules, optical monitoring modules, and passive optics. These modules benefit from II-VI's deep vertical integration, including materials growth, device manufacturing, component packaging, and module assembly. II-VI's modules are integrated with electronics and software that have been developed over decades for a broad range of advanced and always-evolving customer requirements. II-VI's modules and subsystems are highly differentiated by their embedded intelligence and have a proven track record of carrier-class reliability.

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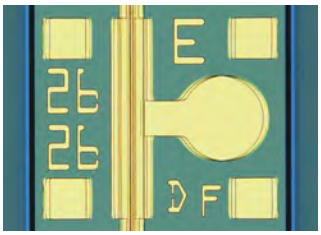
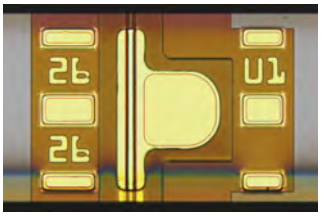
Optical Instrumentation

The WaveShaper® family provides a range of programmable optical filtering and switching solutions for optical R&D and production test applications. Based on II-VI's high-resolution, solid-state Liquid Crystal on Silicon (LCoS) optical engine, the WaveShaper® family delivers extremely fine control of filter characteristics, including center wavelength, bandwidth, and shape. The WaveShaper® 1000, 4000, and 16000 provide additional benefits of dispersion and attenuation control. The WaveAnalyzer™ family allows high-speed and high-resolution Optical Spectrum Analysis in a benchtop or portable format. A variety of instruments are available combining picometer resolution and high-speed spectral analysis with a real-time measurement update rate of up to 10 Hz.

Optoelectronics

The world's communications infrastructure depends on semiconductor lasers and, in particular, those based on indium phosphide technology. Indium phosphide lasers are engineered to emit at wavelengths that are optimal for long-distance transmission through fiber optics. In short, they enable the optical networks that form the global internet. II-VI's semiconductor lasers are some of the most advanced in the world, based on our gallium arsenide and indium phosphide technology platforms. With decades of field-proven reliability, these lasers can be relied on for the most mission-critical networks, from high-speed datacenters in the cloud, to the 5G optical access infrastructure, and the global optical network in-between.





About II-VI

II-VI Incorporated, a global leader in engineered materials and optoelectronic components, is a vertically integrated manufacturing company that develops innovative products for diversified applications in communications, industrial, aerospace & defense, semiconductor capital equipment, life sciences, consumer electronics, and automotive markets. Headquartered in Saxonburg, Pennsylvania, the Company has research and development, manufacturing, sales, service, and distribution facilities worldwide. The Company produces a wide variety of application-specific photonic and electronic materials and components, and deploys them in various forms, including integrated with advanced software to support our customers. For more information, please visit us at www.ii-vi.com.