

# Optical transceiver market growing at 15% CAGR to \$24.7m in 2027

New applications are driving an expanding data-center infrastructure sector, says Yole.

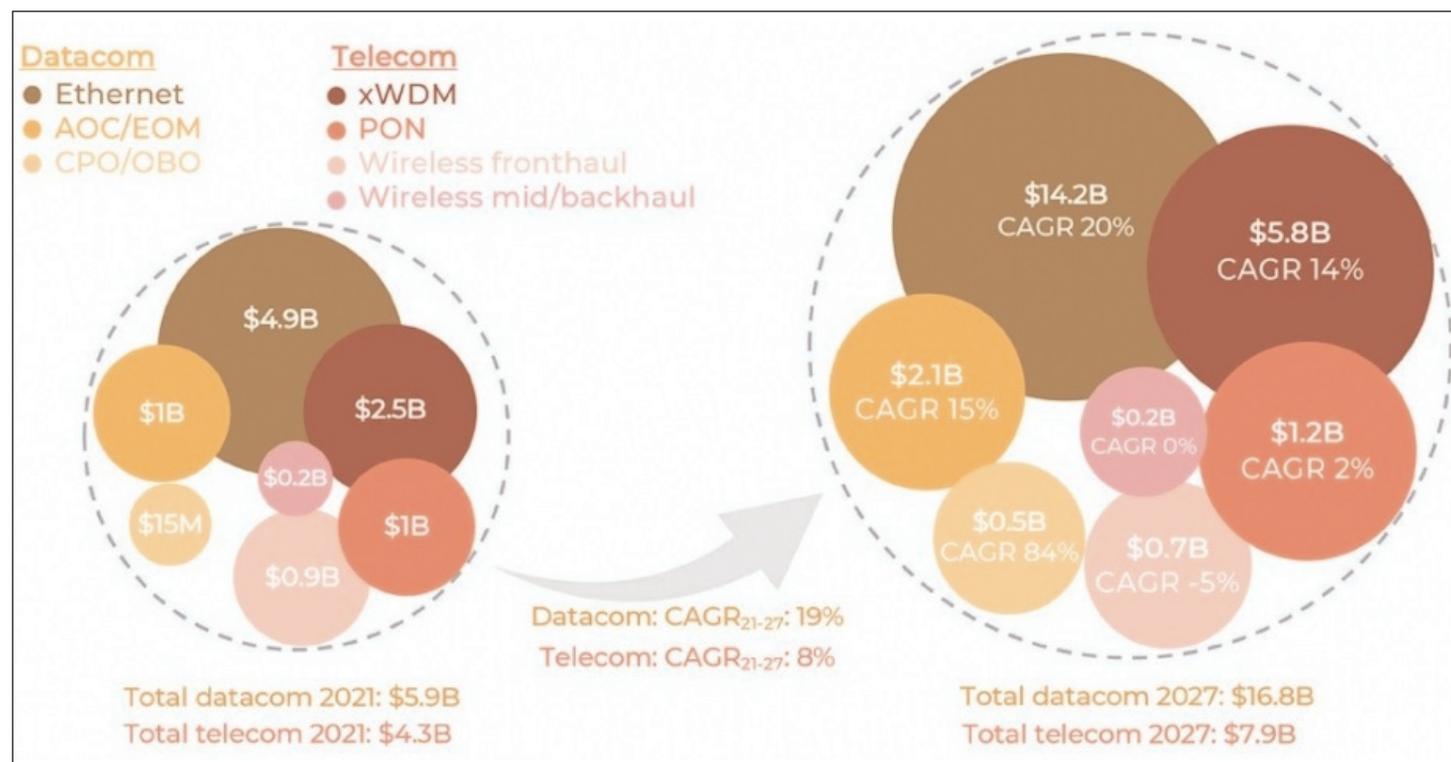
The optical transceiver market is rising at a compound annual growth rate (CAGR) of 15% from \$10.4bn in 2021 to about \$24.7bn in 2027, estimates the report 'Optical Transceivers for Datacom & Telecom 2022' from Yole Group.

Despite the profound implications of the COVID-19 outbreak for the telecom infrastructure supply chain, consumers and business users worldwide continue to demand new networking and cloud services. Social networking, business meetings, video streaming in ultra-high definition (UHD), e-commerce and gaming applications will continue to drive growth, notes the report. With the advent of new digital devices with improved capabilities and intelligence, adoption rates are increasing year by year.

In addition, expanding machine-to-machine applications, such as smart meters, video surveillance, healthcare monitoring, connected drives, and automated logistics, contribute significantly to device and

connection growth and push the expansion of data-center infrastructure. Optical modules have become an essential technology in telecommunication infrastructure. The development of semiconductor technologies such as lasers, modulators and digital signal processors (DSPs) has enabled increased bandwidth and accelerated data rates. Optical interconnects are ubiquitous and are intended to provide high bandwidth even for very short-reach applications, such as high-power computing and artificial intelligence/machine learning (AI/ML) applications within data centers. Silicon photonics (SiPh) as a technology platform, co-packaged optics assembly as a new switch architecture, and coherence in compact form factors are the trends that will drive the market for the next five years, reckons Yole.

"Growth is driven by high-volume adoption of high-data-rate modules above 400G by big cloud service operators and national telecom operators requiring increased fiber-optic network capacity," notes



Optical transceiver revenue growth forecast by datacom application, 2021–2027.

Martin Vallo Ph.D., senior analyst, Photonics (specializing in optical communication and semiconductor lasers within the Photonics and Sensing division at Yole Intelligence, part of Yole Group).

The evolution of multiple technologies has enabled data rates of 400G, 600G, 800G and beyond across data-center infrastructure and in long-haul and metro networks. 400GbE deployments are ramping across data-center networks. Many cloud providers and telecom operators are now starting to deploy an 800Gbps optical ecosystem to increase bandwidth capacity and keep pace with the growing demand for data. Today's modern Ethernet-switch application-specific integrated circuits (ASICs) providing 25.6Tb/s total capacity are running at a 50Gbps SerDes (serialization/deserialization) lane rate driven by 50G PAM-4 modulation technology. In line-cards, a re-timer is typically needed to synchronize PAM-4 data from the switch to the optical interface. In 400G optical modules, an additional silicon gearbox chip can be used to convert 50G PAM-4 electrical inputs and outputs (I/Os) to 100G per wavelength optical I/Os to connect to 100G single-wavelength optics. The next generation of ASIC chips expected in 2023 will provide 51.2Tb/s total capacity and run at a 100Gbps SerDes lane rate. This significantly simplifies electro-optic conversion within the switch system and accelerates the exchange of high-speed optical modules. Yole anticipates high popularity for 800G modules as



**Datacom and telecom market shares, 2021.**

they take advantage of 100G single-wavelength optics already proven in 400GbE systems and thus can be technically and cost-effectively implemented in QSFP-DD and OSFP form factors.

Yole Group is collaborating with the 24th China International Optoelectronic Expo (CIOE 2022) in Shenzhen, China to organize the Forum on Optical Transceivers and Silicon Photonics on 8 September. ■

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