

XTM II

## XTM II CLOUD SCALE METRO PLATFORM

High-capacity metro packet optical with low latency, leading low power consumption, and small footprint

Infinera's XTM II platform expands the XTM Series into cloud-scale metro networks. It is optimized to transport the ever-increasing amount of capacity required to support bandwidth-intensive applications including 4G and 5G mobility, over-the-top services like video and virtual/augmented reality, and the Internet of Things (IoT). New fiber deep access architectures are being built to support these trends, including Remote PHY (physical layer) in cable networks, cloud radio access networks (C-RAN)/5G in mobile networks, and passive optical networking (xPON) in fixed networks. These new architectures require high-capacity, low-latency transport in metro networks, coupled with the ability to support increasingly dynamic traffic flows.

A key consideration in the trend toward fiber deep networks is that access networks and supporting metro wavelength-division multiplexing (WDM) aggregation networks need to use existing physical infrastructure and facilities that were not designed for high-capacity optical networking and are therefore constrained in terms of available space and power. The XTM II was designed for exactly this challenge, taking capacity in metro networks to new heights while keeping power consumption to an absolute minimum and footprint small.

A key value of the XTM II is that it is both forward and backward compatible with the existing XTM Series installed base, providing full investment protection.

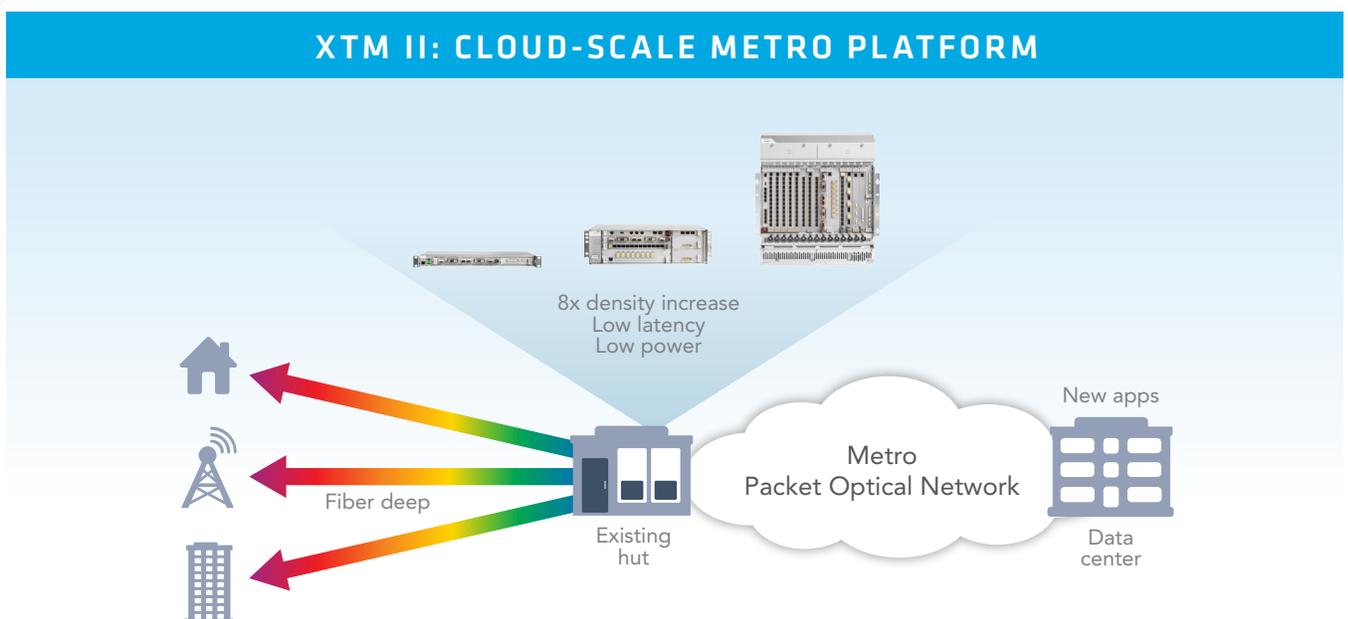


Figure 1: The XTM II cloud-scale metro platform is built for high-capacity, low-latency packet optical transport with the industry's lowest power consumption per 100G service and a small footprint, and uniquely addresses increasingly dynamic traffic patterns

## XTM II Building Blocks

The XTM II includes a range of traffic units that provide 200 gigabits per second (200G) per wavelength, enhanced chassis options, software-defined network (SDN) management and control, and an open line system that is 400G+ per wavelength-ready, which increases total fiber capacity from 8 terabits per second (8T) to 24T. The new capabilities in the XTM II provide network operators with the tools they need to provide high-capacity, low-latency, and highly dynamic networks.

### 200G per Wavelength Traffic Units

The XTM II's 200G per wavelength traffic units utilize state-of-the-art technology in the form of QSFP28 optical modules on the client side and CFP2 optical modules on the line side. Pluggable interfaces enable a cost-efficient, pay-as-you-grow approach to networking.

**400G Flexponder.** At Layer 1, the 400G Flexponder enables the flexible mapping of up to four individual 100G client signals to a choice of 100G or 200G coherent line signals. The unit achieves this by operating either as a dual 100G transponder, a dual 200G muxponder, or a hybrid of the two modes of operation (hence the name "flexponder"). With its small footprint, occupying only a single slot in an XTM II chassis, and typical power consumption of 20 watts (W) per 100G, the 400G Flexponder is a market leader for high density and low power per 100G in metro and regional networks.

**200G OTN Muxponder.** Also at Layer 1, the 200G Muxponder provides flexible multi-service aggregation and enables a wide range of client formats (8G/16G/32G Fibre Channel, 10/40/100 Gigabit Ethernet [GbE], OC-192/STM-64, Optical Transport Network [OTN] OTU2/OTU2e), at data rates from 8G up to 100G, that can be dynamically multiplexed to a flexible 100G or 200G coherent line signal. This mix-and-match ability makes this two-slot unit a versatile component in any metro application. In addition, by pairing two 200G Muxponder devices, a cost-efficient OTN add-drop multiplexer (ADM) solution can be achieved.

**EMXP440.** At Layer 2, the EMXP440 packet optical transport switch delivers a significant capacity increase to the existing XTM Series-based range of EMXPs. The EMXP440 supports dual reconfigurable 100G/200G ports and up to 24 x 10G ports. 12 x 10G ports are provided on the board and a further 12 x 10G ports are available using the PTIO-10G client unit. The EMXP440 supports Carrier Ethernet and Multiprotocol Label Switching - Transport Profile (MPLS-TP), packet transport with sub-50 millisecond (ms) protection, Metro Ethernet Forum (MEF) Carrier Ethernet (CE) 2.0 service creation, and quality of service (QoS)-aware traffic aggregation, and it has full feature harmonization with the EMXP/IIe range and PT-Fabric.

### 400G+ per Wavelength-ready Open Line System

The XTM II includes a flexible grid line system, offering up to 24T with 200G 16QAM wavelengths, and the ability to support the wider channels used in future high-baud-rate transmission. Flexible grid ROADMs are provided, with both four-way and nine-way units. Optical amplification options are extended to include a hybrid erbium-doped fiber amplifier (EDFA)/Raman capability for increased reach when using high-order modulation formats.

### Enhanced Chassis Options

The XTM II includes enhanced chassis options with the TM-102/II (1RU), TM-301/II (3RU), and TM-3000/II (11RU) chassis. The enhanced chassis are backward compatible with the existing range of XTM Series traffic units. Likewise, the installed base of older XTM Series chassis are forward compatible with the new 200G traffic units, although for maximum utilization of chassis footprint with the new traffic units, the enhanced chassis are required. With the range of XTM II low-power chassis options, network operators can deploy high-capacity nodes that deliver 100G services using right-sized fuses to best match the space and power constraints in metro and metro access deployments.

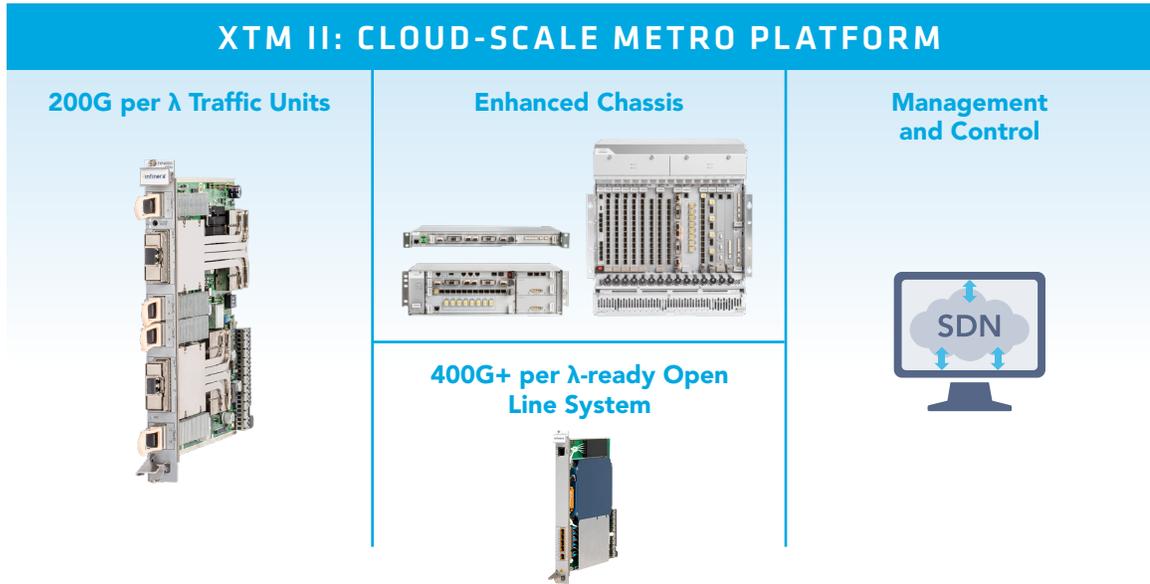


Figure 2: Building blocks of the XTM II platform, consisting of a series of high-capacity Layer 1 and Layer 2 traffic units, 400G+ per wavelength-ready open line system, enhanced chassis options, and Transcend SDN control

**Transcend SDN Control and Network Management**

As part of the XTM Series, the XTM II is supported by Infinera’s Transcend Software Suite for network management and SDN control and orchestration. Together, these tools provide unified end-to-end management and multi-layer control of the entire network.

**Summary**

Providing three times the fiber capacity, an eightfold density increase, and industry-leading low power per bit, the Infinera XTM II is a major enhancement to the XTM Series metro platform.

Combining 200G per wavelength traffic units, a 400G+ per wavelength-ready open line system, enhanced chassis options, and end-to-end Transcend SDN control, the XTM II delivers the high capacity and density, low latency, low power consumption, and support for highly dynamic traffic flows required for demanding metro architectures. All this is provided in a platform optimized for real-world deployment scenarios utilizing existing real estate in space- and power-constrained environments.

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