

INFINERA DTN-X XT-500

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Delivering super-channels with scalability, efficiency and programmability for regional and long-haul interconnects

Mobile data services, video traffic, and cloud computing are driving exponential growth in the demand for bandwidth on optical transport networks. New traffic patterns are emerging as networks transform to the simplified model of cloud services (Layer C) and intelligent transport (Layer T). Traditional user to datacenter traffic is being overshadowed by the massive growth in datacenter to datacenter traffic. These new east-west traffic patterns are leading to an emerging requirement for high bandwidth interconnects for multi-reach applications including regional and long-haul.

Designed to create efficient next-generation transport networks, the DTN-X XT-500 is a compact Ethernet transport platform for high bandwidth interconnect applications. It integrates Infinera's photonic integrated circuit (PIC) technology to deliver 500 gigabits per second (500G) of line-side super-channel bandwidth while supporting a flex-

ible combination of 10, 40, and 100 gigabit Ethernet (GbE) clients. The XT-500 is purpose-built to provide seamless integration with the Infinera FlexILS™ line system and to support fixed and flexible grid to maximize spectral efficiency within regional and long-haul WDM networks. The XT-500 is designed to provide high levels of reliability, low space and power consumption, and to enable network operators to scale bandwidth and accelerate service innovation while simplifying optical network operations.

Multi-application High-bandwidth Interconnect Ethernet Transport Platform

As services become more varied, key challenges include increasing network availability and meeting customer service level agreements



Figure 1: Infinera DTN-X XT-500

(SLAs). The XT-500 is purpose-built to offer high bandwidth, flexible reach, simple installation, and easy operation to support a wide range of regional and long-haul WDM applications.

Seamless integration with FlexILS™ line system enables the XT-500 to take advantage of Colorless, Directionless, and Contentless (CDC) reconfigurable optical add/drop multiplexer (ROADM) architecture. This enables traffic switching at the optical layer, L0. In an

optical mesh network, service providers can allocate high bandwidth interconnect traffic, which does not require digital switching, to XT-500 and switch it at the super-channel level across the network over the optical layer, (Figure 2). This improves overall network switching capacity, thereby, enhancing network efficiency.

Greater geographical reach, compact stackable design, and ultra-low-latency enables the XT-500 to play a key role in long-haul data-

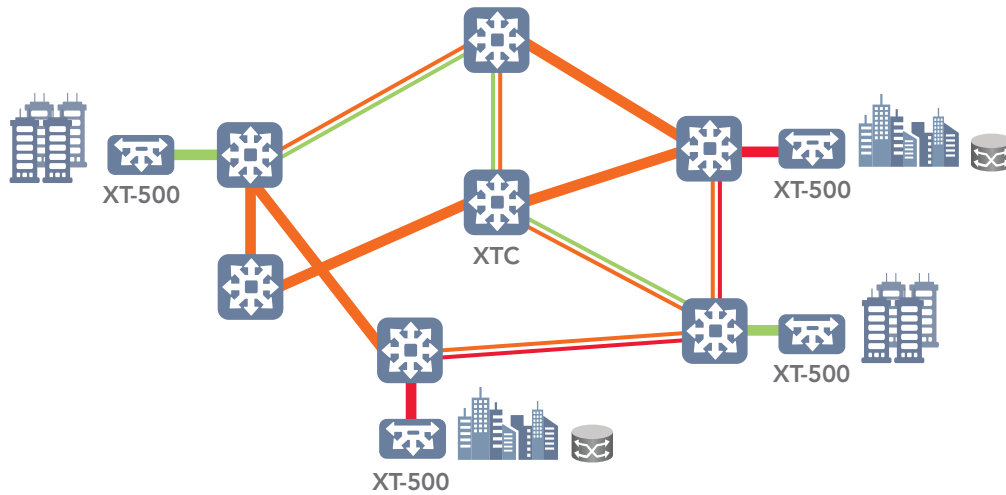


Figure 2: Super-Channel Mesh

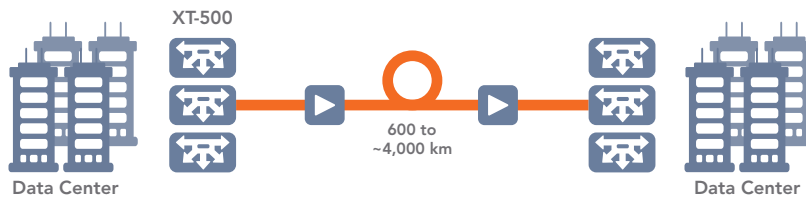


Figure 3: Long-haul DC Interconnect Application

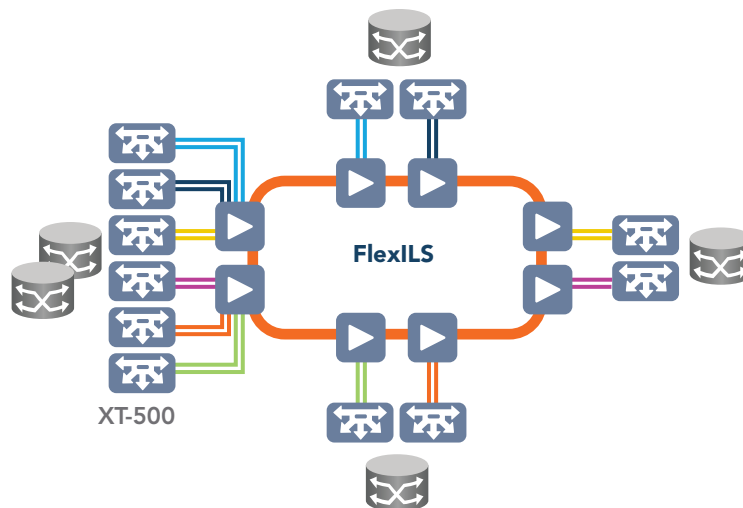


Figure 2: Drop and Continue Application

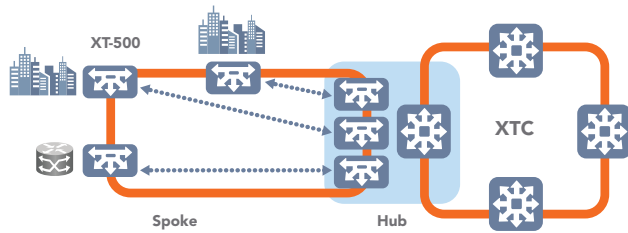


Figure 4: Hub and Spoke Application

center interconnect applications (Figure 3). In a drop and continue configuration (Figure 4), service providers can deliver traffic to multiple sites within regional networks. In a hub-and-spoke configuration (Figure 5), the XT-500 provides connectivity to multiple sites from the central location.

High Bandwidth in a Compact Footprint

The XT-500 is based on Infinera’s leading-edge 500G super-channel technology with 10 GbE, 40 GbE or 100GbE clients. The XT-500 fits in two rack units (2RU) of rack space and consumes only 1 Watt of power per G. The XT-500 offers high density, enabling up to 10.5 terabits per second (10.5T) of line-side capacity in a single rack. Additionally, Instant Bandwidth™ allows providers to adopt a cash-

flow efficient business model, in which additional bandwidth may be rapidly deployed as necessary without the need to order, install and deploy additional equipment.

Plug and Play Efficiency

The XT-500 is designed to integrate with the Infinera FLEXILS line system to support both fixed and flexible grid. Flexible grid technology allows transmission throughout the 4.8THz extended C-Band to deliver 9.5T of bandwidth over a single pair of optical fibers, maximizing bandwidth and fiber spectrum efficiency. The platform’s support for GMPLS based network intelligence and integration with the rest of the DTN-X Family allows plug-and-play efficiency in an optical mesh network configuration. Integration with FlexILS also enable service providers to remotely configure intermediate nodes, eliminating truck rolls and resulting in rapid service delivery and simplified operations.

Simple and Programmable

The XT-500 can be managed through tools such as Infinera’s network management system DNA (Digital Network Administrator) and TL-1 (Transaction Language 1), which provide for simplified end-to-end fault, configuration and performance management. Open application

500G PIC

Tx Rx

- 500G “WDM on a chip”
- Low Power, High Density
- Ultra-Reliable Optical Engine

3rd Party Discrete Optics

INDUSTRY’S ONLY 500G LARGE SCALE PHOTONIC INTEGRATED CIRCUIT

Figure 6: Photonic Integrated Circuit Technology

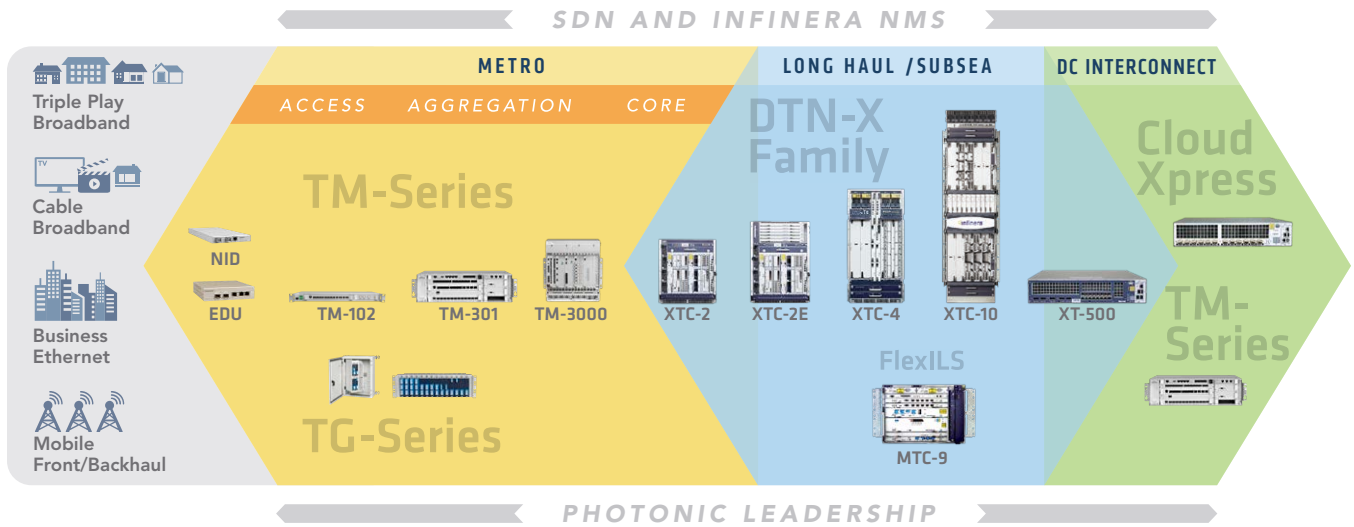


Figure 7: The Infinera Intelligent Transport Network Portfolio

programming interfaces (APIs) are supported in a software defined network (SDN) environment, resulting in a high degree of programmability. The XT-500 interoperates with the Infinera Open Transport Switch (OTS) to offer abstraction and allows operators to automate the delivery of innovative on-demand services.

PIC Economics

Infinera’s standard 500G PIC forms the fundamental building block of the XT-500, which delivers a 500G super-channel. PICs (Figure 6) combine hundreds of discrete optical functions on a single chip, greatly improving density, power consumption, heat dissipation, and reliability. The line-side interface includes the Infinera FlexCoherent™ technol-

ogy, which is designed to allow customers to optimize bandwidth and reach for a given link. The high bandwidth super-channel technology combines several optical carriers to create a composite signal of desired bandwidth, which is provisioned in one operational cycle to deliver scalable, bandwidth without compromising on optical reach.

The XT-500 is a member of the DTN-X Family in the Infinera Intelligent Transport Network portfolio, as shown in Figure 7. To meet the challenges of efficient deployment of high-bandwidth connectivity, Infinera has extended its award-winning DTN-X Family with the introduction of the XT-500 Platform. The XT-500 integrates with the Infinera FlexILS line system to offer high bandwidth interconnects for Ethernet transport over regional and long-haul links to deliver scale, efficiency, and programmability

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