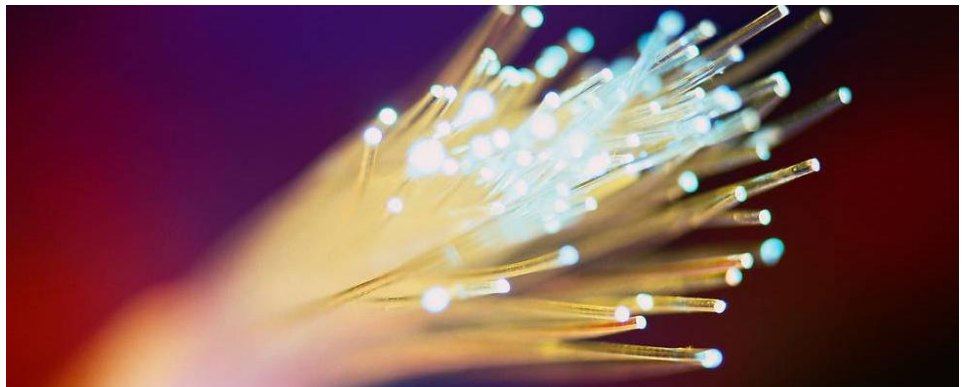


# The Cutting Edge is

## **NetRing<sup>®</sup> TN Series**

**PACKET OPTICAL TRANSPORT SOLUTION**

**"Connecting and optimizing next generation networks"**



### **OFFERING NEW OPPORTUNITIES**

Mobile devices and cloud services have dramatically changed the way that people live, work, think and communicate. As a leading network infrastructure provider, UTStarcom takes advantage of our state-of-the-art network technologies and advanced software capabilities to enable customers' infrastructure to be "simple network, simple operation" to meet their increasingly sophisticated needs.

In alignment with this philosophy, the NetRing TN Series of Packet Optical Transport products from UTStarcom employs cutting edge technologies to provide an optimal MAN transport solution for telecom operators and enterprises. Managed with the feature-rich NetMan management system, and optionally coupled with our innovative SDN solution, the TN series helps carriers to achieve reduced capital expenditure and operational expenses, while maintaining high level of reliability, performance and security.

## Table of Contents

ADDRESSING KEY CHALLENGES .....	Page 3
PRODUCT PORTFOLIO .....	Page 4
KEY APPLICATIONS .....	Page 6
VALUE PROPOSITION .....	Page 7



**A World of Better Communication**

# NetRing<sup>®</sup> TN Series

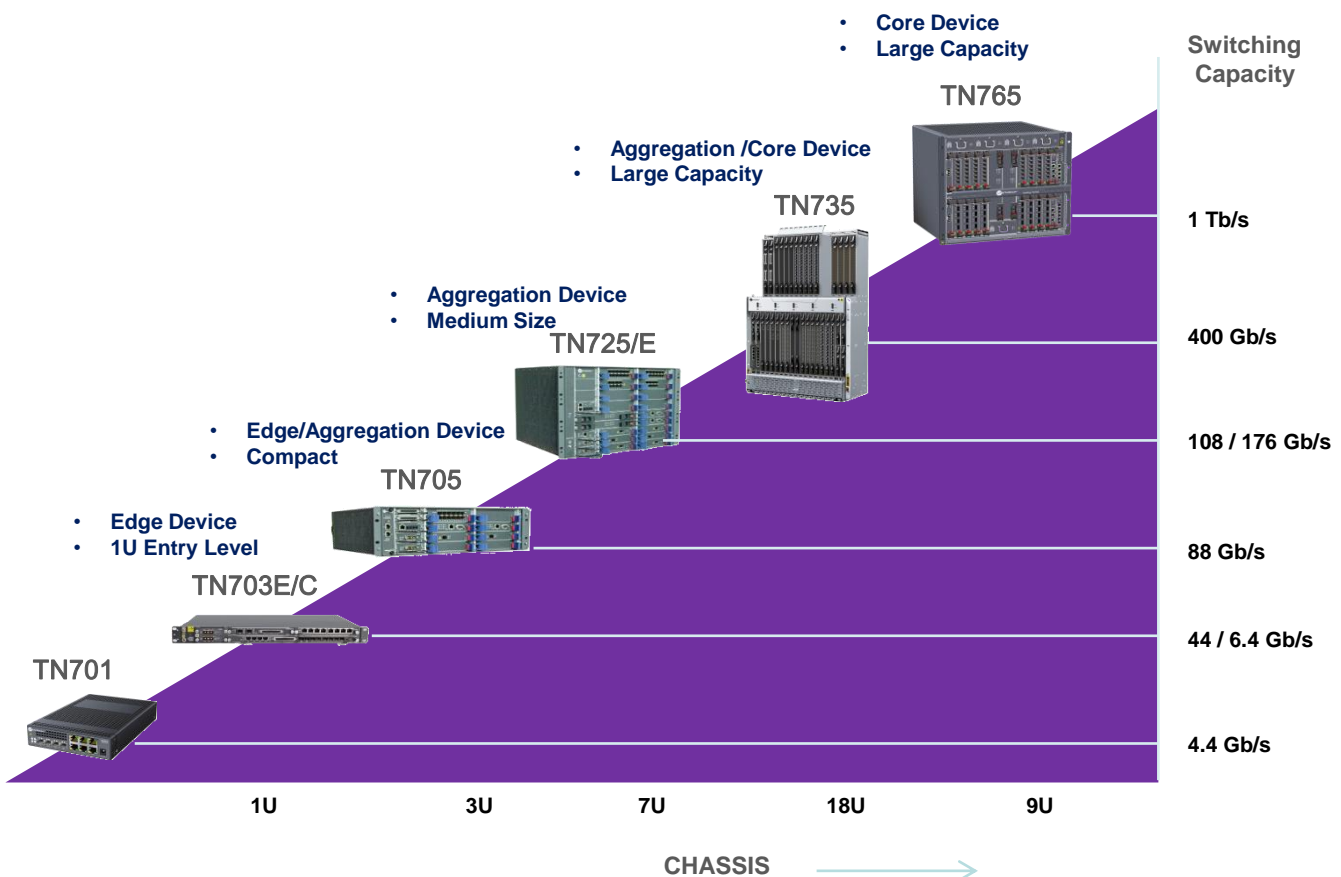
## PACKET OPTICAL TRANSPORT SOLUTION

### ADDRESSING KEY CHALLENGES

The exponential growth of data traffic on both fixed line and wireless networks has been the defining character of next generation networks. Traditional mobile backhaul networks were built and optimized to carry voice traffic to/from a cell via ATM or TDM interfaces. With the evolution to 3G and LTE based networks, the majority of cell's traffic is data that is sent through Ethernet interfaces. The TN Series provide an ideal solution for mobile operators to converge their backhaul network and reduce their OPEX and CAPEX by offering integrated access solutions for TDM, ATM and Ethernet traffic.

Increasing data traffic poses another problem for network operators in the fact that revenues (ARPU) no longer grow linearly with the traffic. Existing TDM and ATM networks are difficult to scale efficiently for data traffic. The UTStarcom TN series offer carriers investment protection by offering wide ranging support for legacy ATM and TDM interfaces while seamlessly allowing them to migrate to a packet based transport infrastructure optimized for emerging data intensive applications. In addition, SOO SDN solution helps operators to introduce new revenue-generating services fast, and further increases network utilization efficiency and service provisioning automation.

Based on MPLS-TP standards, the TN products offer resiliency on par with traditional TDM networks, provide network synchronization over packet networks and enable carriers to offer new services with guaranteed QoS and SLA enforcement.



## PRODUCT PORTFOLIO

### NetRing® TN765

The TN765 is a MPLS-TP based core device with full duplex and redundant 1T switching fabric. The TN765 has a highly modular architecture and supports redundancy for all critical modules, offering a true carrier-class core solution. The TN765 provides a wide range of client interfaces and high capacity network interfaces to optimize capital expenditures. Available in a 9U form factor, the TN765 offers GE, 10GE, 100GE interfaces.



### NetRing® TN735

The TN735 is a MPLS-TP based core and aggregation device with full duplex and redundant 400G switching fabric. The TN735 has a highly modular architecture and supports redundancy for all critical modules, offering a true carrier class core solution. The TN735 provides a wide range of client interfaces and high capacity network interfaces to optimize capital expenditures. Available in a 18U form factor, the TN735 offers E1/T1, STM1 (ATM, CES, POS), FE, GE, 10GE interfaces.

### NetRing® TN725/E

The TN725 is a MPLS-TP based Aggregation device with full duplex and redundant 108G/176G switching fabric. The TN725/E has a highly modular architecture and supports redundancy for all critical modules, offering a true carrier class aggregation solution. The TN725/E provides a wide range of client interfaces and high capacity network interfaces to optimize capital expenditures. Available in a 7U form factor, the TN725/E offers E1/T1, STM-1 (ATM, CES, POS), FE, GE, 10GE, STM-16 POS and STM-64 POS interfaces.



## PRODUCT PORTFOLIO

### NetRing® TN705

The TN705 is a MPLS-TP based aggregation device that can be used either as a customer edge or as a first level aggregation device. Based on the same modular architecture as the TN725, the TN705 provides an 88G full duplex, redundant switching fabric. Available in a 3U form factor, the TN705 offers E1/T1, STM-1 (ATM, CES, POS), FE, GE, 10GE, STM-16 POS and STM-64 POS interfaces



### NetRing® TN703 E/C

The TN703 is a MPLS-TP based compact customer edge device and is ideally suited for mobile backhaul applications with its support for multiple interfaces. The TN703 comes in a 1U package and supports a 44G /6.4G switching fabric. Interfaces supported on the TN703 include E1/T1, STM-1 (ATM, CES, POS), FE, GE, 10GE interfaces.

### NetRing® TN701

The TN701 is a MPLS-TP based compact customer edge device and targeted at the Access Application. It is ideal for heterogeneous (3G/LTE) Mobile backhaul applications. The TN701 comes in a smaller box and supports a 4.4G switching fabric. Interfaces supported on the TN701 include FE, GE interfaces.



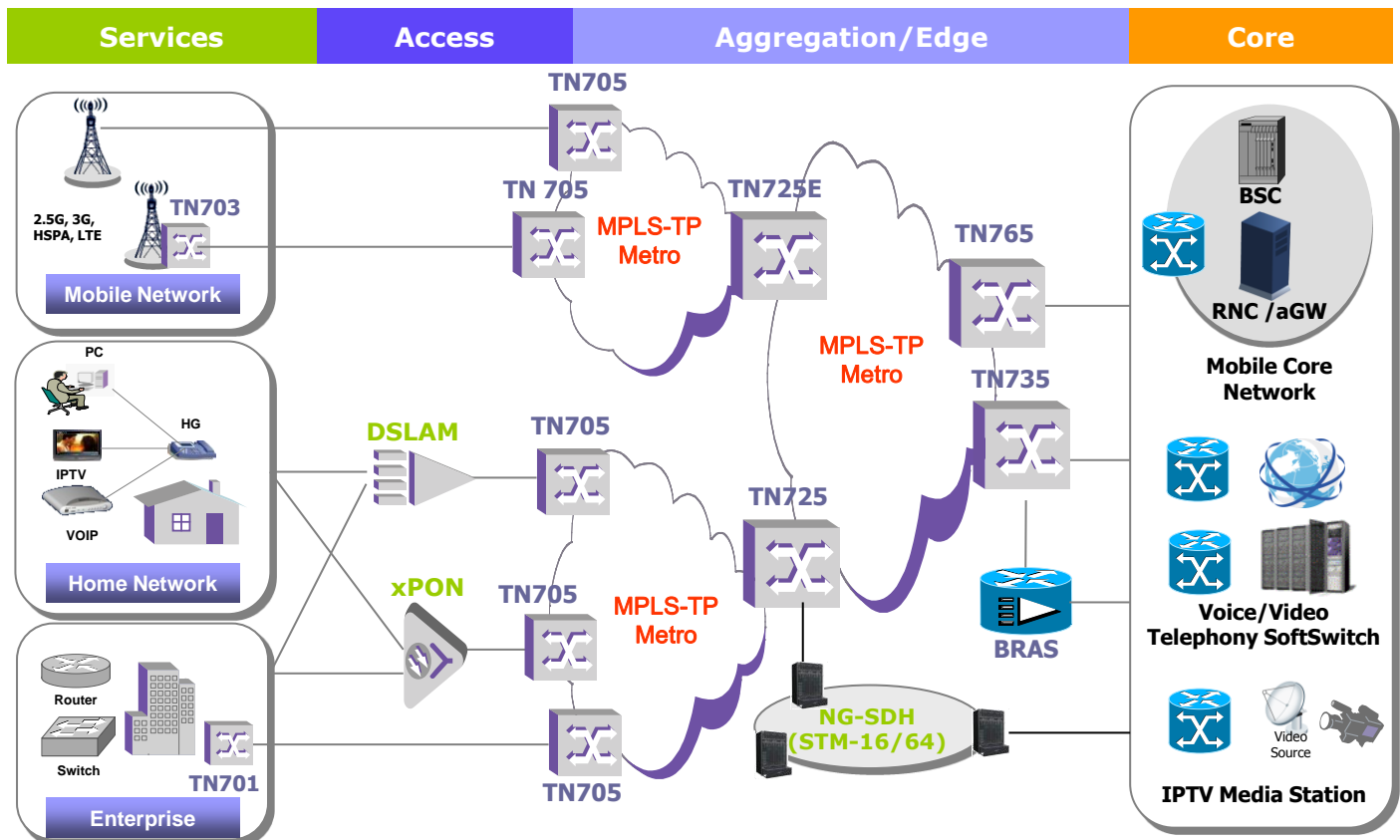
## KEY APPLICATIONS

### MOBILE BACKHAUL/BROADBAND AGGREGATION/ENTERPRISE

The NetRing TN Series PTN products are designed to offer mobile operators an efficient and cost effective solution to backhaul legacy and emerging mobile voice and data traffic over a converged network.

Using NetRing PTN Solution, carriers can deploy a next generation future-proof network that is based on simple, easy-to-operate, and cost-efficient MPLS-TP technology. Use of this technology drives down the OPEX significantly, because it uses less power, less space, and makes use of existing personnel and their skill set. MPLS-TP supports deterministic-data plane (This means that the forward and return path for a LSP traverses through the same set of nodes) enabling it for predictable performance for all different traffic types. Furthermore, its enhanced OAM capabilities make the trouble-shooting and fault localization much more predictable and reliable.

With NetRing PTN solution, a mobile operator can provide complete end-to-end backhaul solution while maintaining the connectivity to existing IP/MPLS core and TDM/SDH/Microwave backhaul network. NetRing PTN solution also meets the stringent clock synchronization requirements for 3G/LTE backhaul. It supports Sync Ethernet and 1588v2. It also has very high clock accuracy of 0.05ppm holdover over 24 hour time-period. Clock synchronization capability will eliminate the need for local GPS or primary clock source reducing the OPEX further.

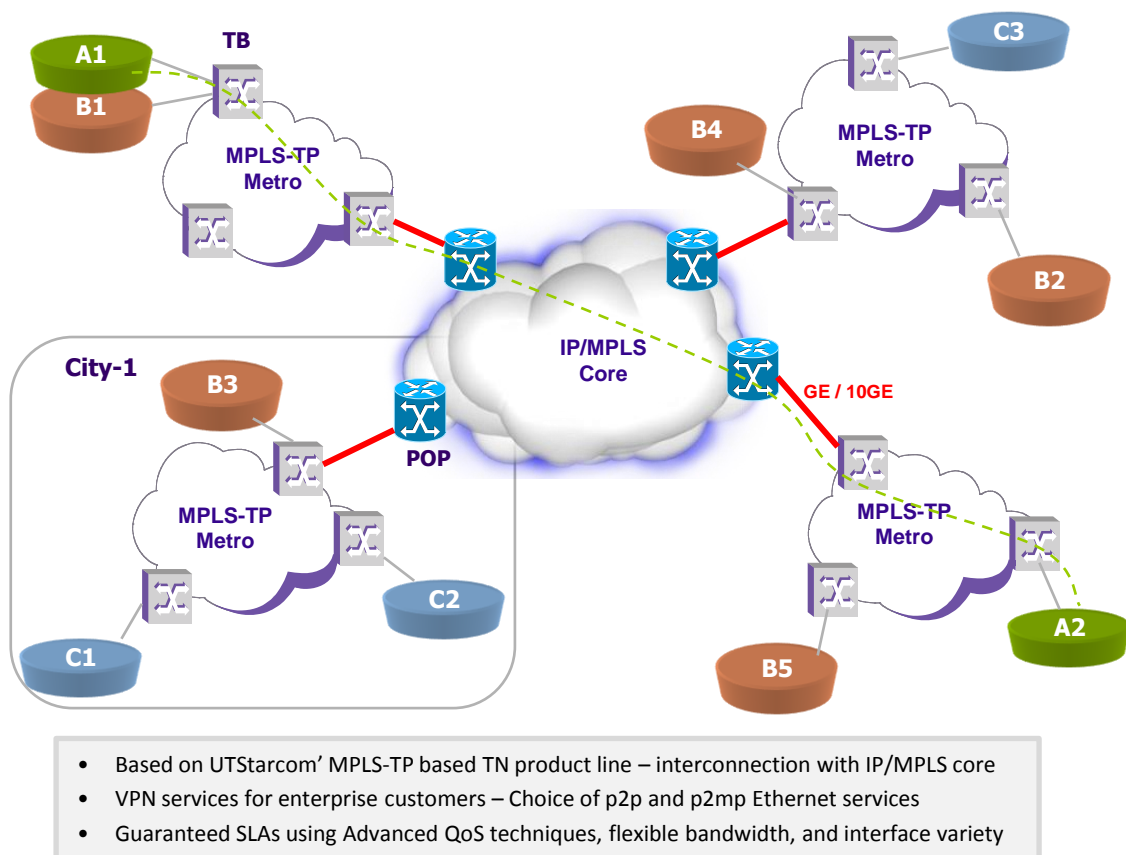


## KEY APPLICATIONS

### SDH REPLACEMENT & ENTERPRISE SERVICES

With technologies that enable resiliency at par with existing TDM networks, the TN Series offer carriers a cost effective and efficient option to gradually replace their existing SDH based networks to a converged packet transport solution that is designed to handle the growing volume of data traffic.

TN products offer network operators the ability to increase their ARPU by providing enterprise customers with business critical services at guaranteed SLAs.



## VALUE PROPOSITION

The TN Series of products offer future proof investment to network operators by providing all interfaces and technologies needed to meet existing and emerging architectures for mobile backhaul and broadband aggregation.

The TN Series lower operating expenses by providing converged transport solution for multiple technologies and simplified network management architecture. Comprehensive OAM techniques help maintain high network availability and one of the lowest power consumption in the industry, the TN series help reduce energy consumption.

The TN Series also help lower capital expenditure by providing carriers a cost effective method of scaling their network to growing traffic.

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### About UTStarcom, Inc.

UTStarcom is a global telecom infrastructure provider, focused on delivering innovative carrier-class broadband transport and access (both Wi-Fi and fixed line) products and solutions, optimized for mobile backhaul, metro aggregation, broadband access and Wi-Fi data offloading. UTStarcom was founded in 1991 and began trading on NASDAQ since 2000. It has operating entities in Tokyo, Japan; San Jose, USA; Hangzhou, China; and Delhi and Bangalore, India. In 2011, the Company deployed a revamped growth strategy that concentrates on broadband and selective investments into innovative companies providing media operation support services. For more information about UTStarcom, please visit <http://www.utstar.com>.

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