ECI
THE ELASTIC NETWORK

NEPTUNE
METRO PACKET TRANSPORT
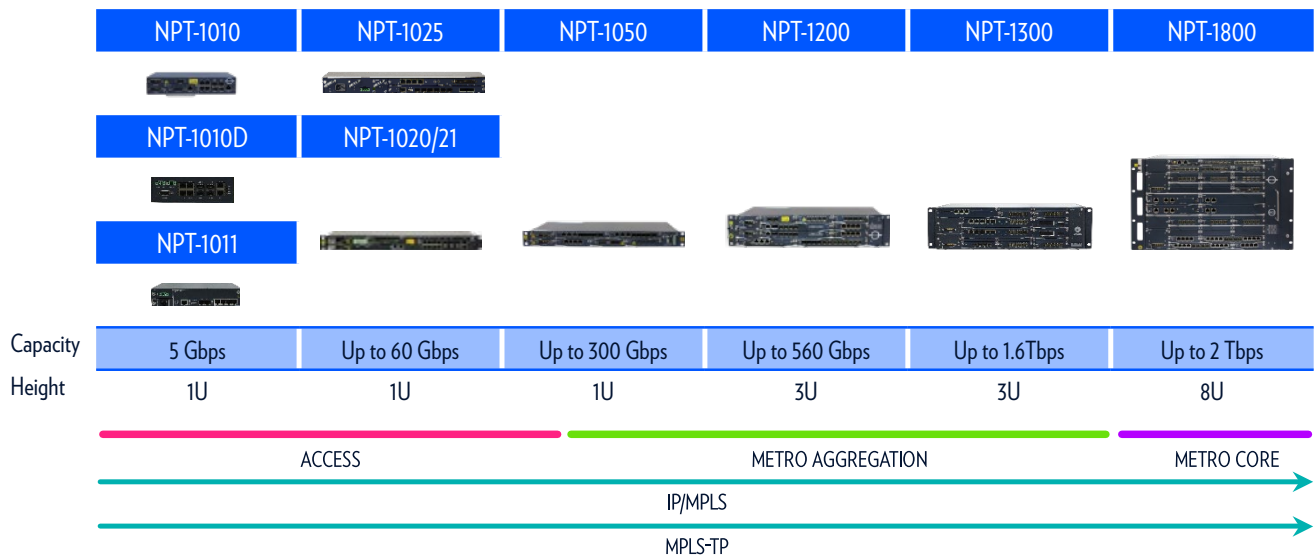
ELASTICALLY SCALING THE METRO NETWORK

Metro networks must support an extremely diverse set of services and customer needs, ranging from simple point-to-point private connections to the complex multipoint networks, which will be required for 5G backhaul. The Neptune product family, powered by ECI's unique Elastic MPLS is able to economically support all these diverse service needs on a right-size platform that can be grown with in-service expansion options. Evolving customer needs call for ever-increasing, always-on services. Neptune supports this with resilient hardware and advanced operations software. Customers also expect more flexible and dynamic services. To host VNFs, Neptune leverages the Mercury™ NFV platform using the Muse™ VNF library.

| **Multiservice with Elastic MPLS**	**Cost-efficient Elastic Scalability**	**Always-on Service Assurance**	**Elastic Evolution with SDN and NFV**

NPT-1010	NPT-1025	NPT-1050	NPT-1200	NPT-1300	NPT-1800
NPT-1010D	NPT-1020/21				
NPT-1011					

Capacity	5 Gbps	Up to 60 Gbps	Up to 300 Gbps	Up to 560 Gbps	Up to 1.6Tbps	Up to 2 Tbps
Height	1U	1U	1U	3U	3U	8U

ACCESS — METRO AGGREGATION — METRO CORE

IP/MPLS

MPLS-TP

TRANSPARENT LOW-LATENCY MULTISERVICE TRANSPORT

The Neptune product portfolio provides a cost-optimized elastic, multiservice, platform capable of meeting all packet transport needs of the network operator across the metro network, from access to core. It supports a full range of platforms, ranging in size from 5G to 2T, and continuous innovation ensures that the platform evolves in alignment with customer needs.
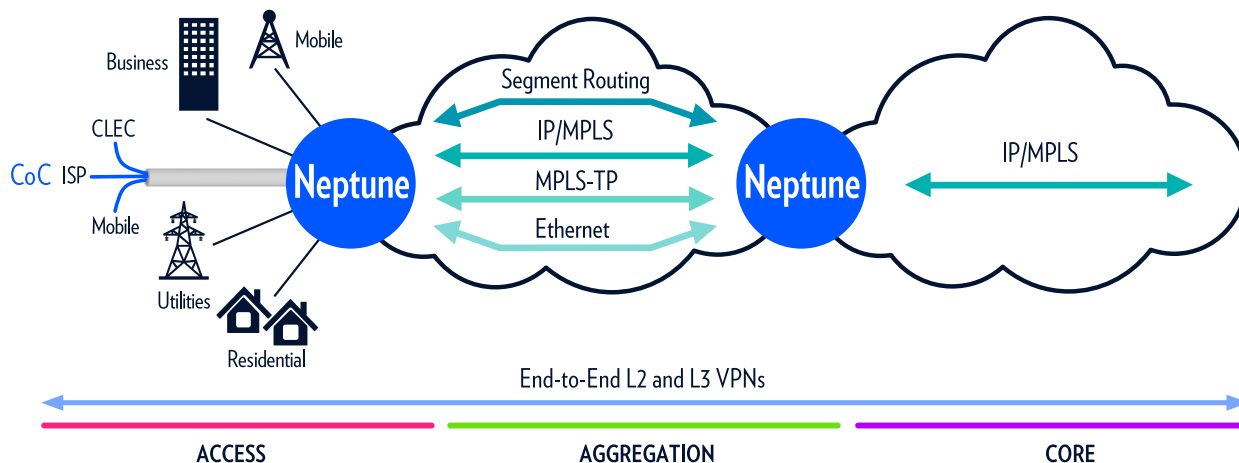
MULTISERVICE PLATFORM

Neptune is a platform able to support packet, OTN, optical, and TDM transport. Packet services, such as MEF CE 2.0 services, L3 VPNs, and L2 VPN, can be transported using IP-MPLS, MPLS-TP, and segment routing, giving the service provider the freedom to choose the most appropriate technology for them. With OTN mapping, the platform supports a wide range of OTN transparent services, including TDM, Ethernet, video, and storage. With support for native TDM and circuit emulation, Neptune also allows the service provider to phase out legacy TDM networks. A full range of optical transceivers enables Neptune to integrate with WDM networks easily.

ELASTIC MPLS

Elastic MPLS technology powers Neptune's packet transport, bringing the flexibility and agility to combine any mix of IP-MPLS, MPLS-TP, segment routing, and Ethernet. This flexibility allows the creation of solutions that best suit customer needs.

COST EFFICIENCY

Metro networks continue to grow in size and complexity. In such a dynamic environment, total cost of ownership (TCO) is key. Neptune achieves low TCO through:

- cost-optimized modular hardware
- smooth evolution to 100GE
- multiple transport technologies
- advanced operations software to simplify planning, provisioning, and assurance

IN-SERVICE ELASTIC SCALABILITY

In-service elastic scalability gives operators pay-as-you-grow flexibility with unique in-service expansion capabilities. The switch matrix is expanded by adding matrix cards and the number of deployed nodes is increased by adding an expansion unit.

ALWAYS-ON SERVICES WITH ELASTIC EVOLUTION

As services move into the cloud, customer business models and expectations are changing. They now seek to evolve to services that are always-up, tailored to their specific needs, and allow capacity and connection modification in real-time. Neptune incorporates the SDN and NFV innovation required to progress to such a dynamic service model, while continuing to provide the network resilience required to deliver always-up services.

HARDWARE RESILIENCE

Neptune provides five 9s hardware availability with comprehensive redundancy on all units; 1+1 and 1:1 protection is available for the common cards, and 1:1 for all other cards and interfaces.

SERVICE RESTORATION

Neptune provides a comprehensive set of end-to-end service protection and restoration schemes for each technology it supports. This enables you to choose the optimal protection scheme for each technology and service.
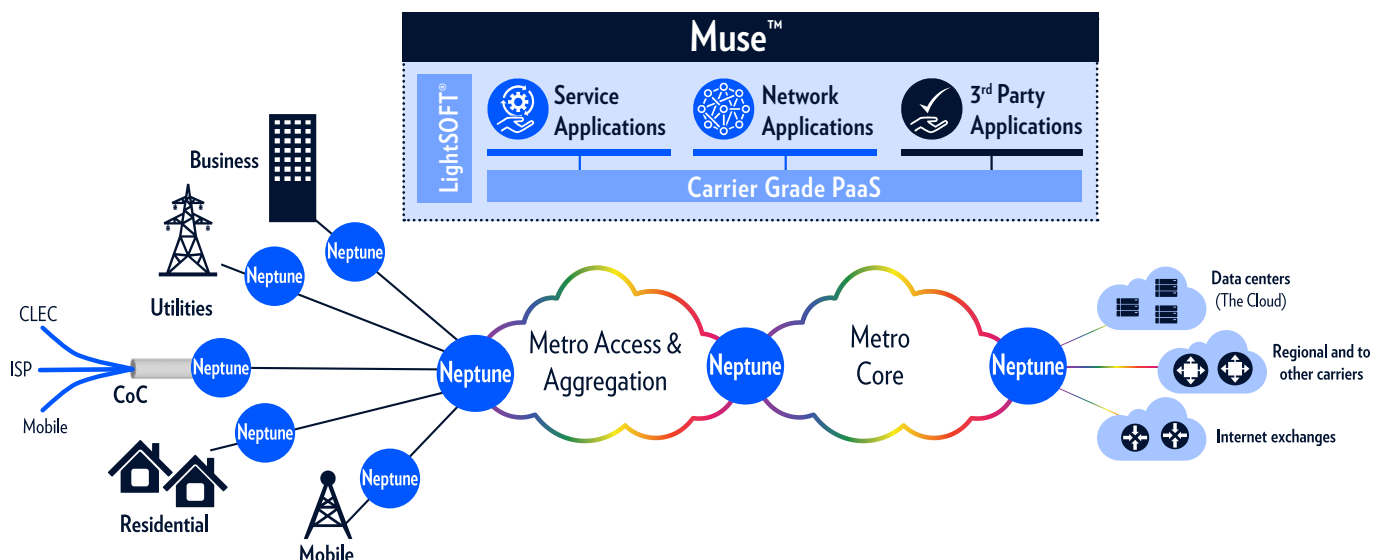
TIMING

Accurate timing is essential for the delivery of services, such as mobile backhaul and multi-access edge computing (MEC). Neptune supports both SyncE and 1588v2, enabling the most efficient synchronization solution for each service type.

ADVANCED OPERATIONS

The advanced capabilities provided by Neptune are all controlled and monitored from the Muse software suite. Muse delivers real-time control over ECI's network portfolio and automates the service and network operation life cycles. It guarantees that the right people and systems get the right capabilities for their requirements through intuitive, straightforward user interfaces, or industry-standard APIs. Muse provides the unified multilayer, end-to-end management required for intuitive management of a modern network.

SERVICE EVOLUTION

Neptune uses the Mercury NFV platform to host VNFs from the Muse VNF library. As services become more dynamic, Neptune easily evolves to support SDN with segment routing incorporated as part of elastic MPLS, with proven NETCONF/ YANG interfaces to the SDN control functionality.

TECHNICAL SPECIFICATIONS

MULTISERVICE	**PACKET** • **Services**: MEF CE2.0 (E-Line, E-LAN, E-Tree, E-Access), Ethernet, L2/L3 VPNs, MPLS-TP, IP/MPLS • **Transport:** IP/MPLS, Segment Routing, MPLS-TP • **Service Interfaces**: FE, 1GE, 10GE, 100GE
	OTN • **Capacity**: 3 x 40G • **Services**: Ethernet, Storage, Video, SDH/ SONET • **Service interfaces**: 10GE, FC-1/2/4/8/10, SDI, HD-SDI, DVB-ASI, STM-16/64, OC-12/48 • **Transport interfaces**: OTU-1, OTU-2, OTU-2e
	WDM • CWDM, DWDM, Muxponder, Amplifiers
	TDM • **Services**: Native TDM, CES (SAToP, CESoP and CEP) • **Service interfaces**: n x 64Kbps (FXO, FXS, 2/4W E&M, V24, V35, V36, V11, RS422, RS449, C37.94, OMNI, G.703 64K), E1/T1, E3/DS3, STM-1/OC-3, STM-4/OC-12, STM-16/64
	Flexibility • **Switching platform**s: Packet +TDM, Packet only • **Topologies**: Mesh, multi-ring, ring, star, linear • **Protocol conversion**: IP/MPLS and MPLS-TP stitching, pseudo-wire headend termination
ELASTIC SCALABILTY	**In-service scalability** • **Elastic Modularity**: Expansion unit provides 3 slots for in-service capacity and technology expansion • **Switching fabric expansion**: Adding extra switch cards for increased switch matrix capacity
ALWAYS-ON, EVERY TIME	**Protection and restoration** HW redundancy for common units, IO Hardware protection (IOP), G.8032 Ethernet Ring Protection (ERP), MPLS-TP FRR, Dual FRR, 1:1 Linear protection, PW Redundancy, FRR with LFA (local and remote),Virtual Router Redundancy Protocol (VRRP), MS-PW, IEEE 802.3ad Ethernet Link
	Timing and synchronization SyncE, 1588v2, External timing 1PPS and TOD, Internal Stratum 3 clock (holdover state), Primary and secondary sources (supports SSM bits), ACR, DCR, loop timing on SAToP, BITs (2MHz/2Mbit)
	Operations, Administration and Maintenance (OAM) Ethernet OAM (IEEE 802.1ag and ITU-T Y.1731 PM), IP/MPLS OAM (LSP Ping, LSP Trace-route), MPLS-TP OAM (CC/AIS/RDI/LB/LT/DM), Bidirectional Forwarding Detection (BFD), RFC 2544 generator, Y.1564
	Traffic Management and security • **Traffic Management**: Traffic Classification (based on Port, VLAN, Port+VLAN, IEEE 802.1p, IPv4/IPv6 TOS and DSCP), Network-wide Call Admission Control (CAC), 8 Classes of Service (CoS) • **Security**: Access Control List (ACL), Radius, IEEE802.1x, SSH, SSA, Encrypted OSPF (HMAC-SHA256)
EVOLUTION TO SDN AND NFV	**Traditional networks** • **Interfaces**: SNMPv2/v3, CLI • **Management Systems**: Muse Software Suite, LightSOFT®, LightINSIGHT™, Muse Cyber Security Suite, EMS-NPT, LCT
	SDN • **SDN Interfaces**: OpenFlow, NETCONF/YANG, PCEP, BCP-LS
	NFV • Neptune uses the Mercury NFV platform to host VNFs from the Muse VNF library.

Specifications subject to change without notice

Contact us to find out how our ELASTIC networks can help you grow

ABOUT ECI

ECI is a global provider of ELASTIC network solutions to CSPs, utilities as well as data center operators. Along with its long-standing, industry-proven packet-optical transport, ECI offers a variety of SDN/NFV applications, end-to-end network management, a comprehensive cyber security solution, and a range of professional services. ECI's ELASTIC solutions ensure open, future-proof, and secure communications. With ECI, customers have the luxury of choosing a network that can be tailor-made to their needs today – while being flexible enough to evolve with the changing needs of tomorrow. For more information, visit us at **www.ecitele.com**

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