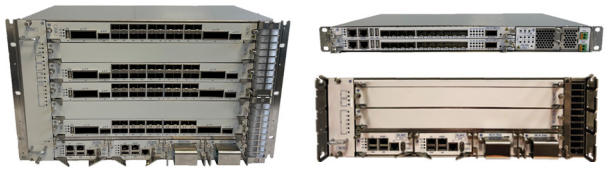
EKINOPS360



PRODUCT BROCHURE 08 | 2021

EKINOPS TRANSPORT SWITCH

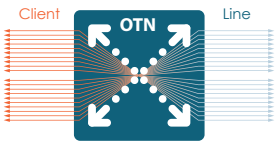
EKINOPS*ETS*
OTN Switch Platform

FEATURES & BENEFITS

- Scalable OTN switching and coherent WDM transport capacity in a single shelf
- Configurable for pure switching, pure transport or mixed applications
- Multiple form factors for space, power and capacity optimization per site
- 500Gbps per slot, scalable to 1Tbps
- Agnostic, non-blocking, packet-ready switch fabric
- Centralized switch fabric for larger nodes and blade-based, through-backplane switching for low capacity sites
- Point-and click service provisioning
- Automatic discovery
- Common software management and feature set shared across all shelves
- Redundant management, switching, timing and power
- ASON-based control plane
- Multiple protection and restoration schemes—1+0, 1+1, 1+R, SNC/S 1+1 protection with TCM
- Interoperable with Ekinops360 WDM transport systems

The massive capacity created by coherent transport means thousands of services can now be carried on a single link. However, unless you have a way to effectively pack all that bandwidth with revenue-generating services, you may just be throwing a lot of that bandwidth—and your money—away. Optical Transport Network (OTN) technology effectively uncouples usable capacity from the optical channel itself and provides a mechanism for managing individual service flows that is independent from managing the raw capacity that coherent provides.

The Ekinops Transport Switch (ETS) platform is a standards-based OTN switch that can be seamlessly integrated into any transport network.

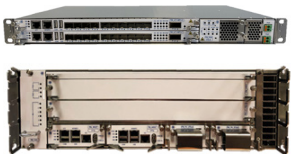


The ETS platform improves the efficiency, flexibility and reliability of your transport network by "virtualizing" valuable optical resources allowing you to right-size capacity to meet demand. Maximizing bandwidth utilization minimizes transponder costs for lower overall CAPEX as your network grows.

It is a G.709 standards-based OTN switch that integrates Layer 1, 2 and 3 networking capability to provide a highly functional, service-oriented solution for the efficient delivery of any client service. The ETS is designed for all applications from the edge to the core and is available in multiple form factors. The ETS de-couples client and line side interfaces, eliminating the service scalability limitations inherent in pure WDM transport solutions, and virtualizing valuable optical resources to make them more efficient and profitable.

The ETS platform is designed with a pay-as-you-grow architecture that allows for cost-effective solutions for installations of all sizes. Its agnostic cell-based switching fabric delivers the functionality and efficiency service providers need to support any service type. Centralized switch fabrics operate either in an N+1 or 1+1 configuration while the control and timing functions provide 1+1 redundancy for high availability and carrier-grade reliability. Blade-based switching for the edge uses the same switch fabric technology allowing for hardwired connectivity across the backplane and eliminating the need for—as well as the cost of—a central fabric at sites with low capacity. The ETS platform provides ODUk level granularity from ODU0 to ODU4—including ODUFlex with hitless adjustment (HAO)—so it can switch any service regardless of size including using ODUFlex to switch Layer 2 VLANs or any tributary traffic different from the ODUk G.709 standard.

The ETS platform uses a distributed ASON-based software control plane that enables service configuration and performance monitoring. It also provides link verification, discovery of network elements and trails, as well as multilayer resource availability functions providing all nodes full knowledge of the network state in real time. The software also abstracts and simplifies the underlying switch complexity using an interface adaptation layer that allows the operator to configure the OTN switch using simple commands from the management system. The control plane, in combination with the ETS NMS network management system, supports multiple line protection schemes including 1+1 and 1+R to maximize the availability of high priority traffic.


ETSc1

ETSc2


ETSc6

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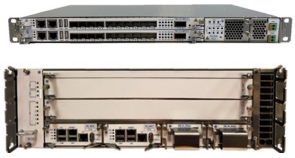
Empowering Networks

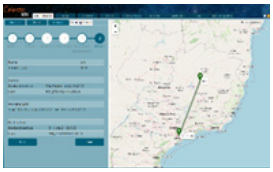


EKINOPS TRANSPORT SWITCH

EKINOPS*ETS*
OTN Switch Platform

- **ETSc1**: A 1RU OTN micro-switch, the ETSc1 delivers 200G of blade-based switching and transport capacity to the network edge along with 1+1 protection for both ring and linear configurations. Designed for small capacity applications, the ETSc1 increases network agility and bandwidth optimization by efficiently mapping up to 16 Gigabit Ethernet interfaces into ODU0 payloads or 10GbE interfaces into ODU2e for further aggregation to OTU4 uplinks to the network core while providing service-level fan out to client devices.
- **ETSc2**: A 3RU OTN compact-switch, the ETSc2 provides additional capacity for larger edge and small aggregation sites with up to 2T of blade-based switching and transport capacity. ETSc2 supports up to 20x10G, 4x100G or 4x200G.
- **ETSc6**: With six (6) card slots, the ETSc6 is designed for medium to large capacity aggregation sites. At 6RU, it provides up to 4T of OTN switching and transport in small form factor with up to 80x10G, 16x100G or 4x400G interfaces making it deployable in any location with high capacity requirements. The ETSc6 provides an optional centralized switch fabric that can be deployed in unprotected or 1+1 protected configurations with simultaneous support for blade-based switching using direct backplane connectivity between line cards.

Celestis
nms



MANAGEMENT

Part of Ekinops' Compose software suite, Celestis NMS is the gateway for managing the ETS platform which delivers service-based management tools for the OTN product line, networks and services. It has a distributed architecture in order to ensure flexibility for managing a variety of network technologies, high availability, high performance and scalability. ETS management system applications can be installed in a single standalone server for managing small networks or in multi-server clusters to ensure high availability and scalability when managing large networks. SDN-ready, the ETS management system connects to the Control Cards via NETCONF while the Northbound interface (NBI) is based on REST/JSON and SNMP.

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Empowering Networks

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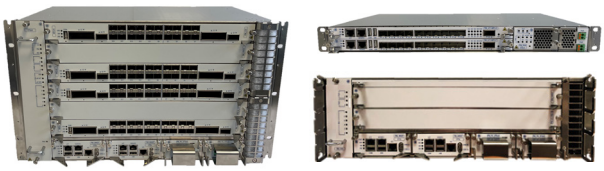

EKINOPS TRANSPORT SWITCH

TECHNICAL INFORMATION

SWITCH & TRANSPORT CAPACITY

Crossponder Mode

ETSc1:	400Gbps
ETSc2:	2Tbps
ETSc6:	6Tbps

OTN Switch Mode

ETSc1:	400Gbps
ETSc2:	1Tbps
ETSc6:	2Tbps
Full system:	35.2Tbps

Wavelength support: 88 wavelengths in C-band

Switch Matrix: ODUk *(k=0, 1, 2, 2e, 3, 4)*; ODUflex *(n x ODU0)*

CLIENT INTERFACES

Anyrate:	100Mbps-10Gbps
Ethernet:	1GbE/10GbE/25GbE/40GbE/100GbE
OTN:	OTU1/OTU2/OTU2e/OTU3/OTU4
Fibre Channel:	1G/2G/4G/8G/10G

LINE INTEFACES

400G/200G/100G
DWDM coherent or gray optics

SERVICE CONFIGURATIONS

1+0 *(unprotected)*
1+1
SNC/S 1+1 protection with TCM
1+R

SYSTEM MANAGEMENT

Out of band: 1510nm OSC
In-band: GCC0 Tandem Connection Monitoring *(TCM)*: 1 to 6, supporting TTI, BIP-8, BEI, BDI, STAT

ENVIRONMENTAL CHARACTERISTICS

Operating Temperature: 0 °C to +40 °C / +32 °F to +104 °F
Storage Temperature: -40 °C to +70 °C / -40 °F to +158 °F

PHYSICAL CHARACTERISTICS

ETSc1:	1RU *(H)* x 19"/475mm *(W)* x 9.6" / 240mm *(D)*
ETSc2:	3RU *(H)* x 19"/475mm *(W)* x 9.6" / 240mm *(D)*
ETSc6:	6RU *(H)* x 19"/475mm *(W)* x 9.6" / 240mm *(D)*

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