LIGHTMODE OTN

The LIGHTMODE (LM) OTN micronode is part of a family of new generation optical micronodes. The LM OTN micronode comes in an extremely small form factor providing muxponder/transponder capabilities as well as OTN multi-services aggregation and switching with pluggable I/O interfaces up to 400 Gbps.
SDN native by design, these micronodes are based on a fully redundant and protected architecture and allow abstraction to the optical domain SDN controller, multi-domain/multi-layer controller or Service orchestrator, supporting open standards APIs (YANG models with RESTCONF based on the ONF T-API specifications).

The LM OTN micronode offers various multi-service (e.g. Packet, OTN, SAN etc.) client ports and multiple OTN line ports. The LM OTN micronodes support SynchE/1588v2 timing transport and distribution (over an Optical Timing Channel) and also performs the Grand master and Boundary Clock functions making it ideal for 5G X-haul/Backhaul networks.
All the optical ports are highly flexible supporting Flex-I/O. Flex-I/O allows the ports to be custom configured by software to operate either as client or line interfaces, thus allowing a better fit for each site's specific traffic needs. The port bit rate and protocol (Ethernet, Fiber Channel, OTN etc.) is also software configurable.

LM OTN 100G COHERENT

All the optical ports (Grey, C/DWDM and Coherent) use pluggable optical modules and can either connect to any xWDM infrastructure (new or existing) as an alien wave or can use the SM-Optics microROADM as a line system.

When used with the microROADM, the LM OTN micronode and the microROADM can be stacked and treated as a single network element.

OPTICAL TRANSPORT NETWORK (OTN)

Why use OTN as your transport layer

- OTN flexibly supports a wide variety of client signals into standard payload formats, including sub-port services, with a direct mapping over WDM.
- OTN is Transparent to all protocols: no manipulation, delay introduction or sync impacts.
- OTN allows for infrastructure sharing with no capacity contentions, optimal for virtual operators and carrier's carriers, or just sharing networks.
- OTN is an ITU standard, multivendor by design.
- OTN has the lowest transport latency, highest availability and lowest cost per transported bit.
- OTN provides secure and "hard" slicing of the network resources.

LM OTN SERIES

The LM/OTN Packet 10G is designed to operate in access and metro networks, collecting local traffic from SDH/SONET, Ethernet, FC, OTN networks and aggregating it over multiple OTU-2 (10 Gbps) metro rings.

The 1RU form-factor offers a fully redundant architecture including a 280G ODU-k/Flex matrix.

It can be software configured to provide L2 capabilities.

LM PKT/OTN 10G

The LM/OTN Packet 100G is designed to operate in access and metro networks, collecting Packet traffic and aggregating it over either 100GE (acting as a pure L2 switch) or multiple OTU-2s (acting as a L2 over OTN switch).

The 1RU form-factor offers a fully redundant architecture including a 520G Packet switching and 240G ODU-k/Flex matrix.

LM OTN PKT/OTN 100G

The LM OTN 100G is designed to close multiple access and metro OTU-2 (10 Gbps) rings, that together with local traffic (Ethernet, SDH/SONET Fiber Channel etc) are aggregated and transported over an OTU-4 (100 Gbps) metro core ring. Its 1RU form-factor offers a fully redundant architecture including a 400G ODU-k/Flex matrix.

Two options are available with various reaches and Grey or DWDM (Coherent) OTU-4 line ports. Both QSFP28 and CFP2 line ports are offered.

LM OTN 100G B&W

LM OTN 100G COHERENT

The LM OTN 200G is designed to operate as a 200G Muxponder (2x100GE/OTU-4) or 100G Transponder.

In a 1RU form-factor it hosts up to two I/O cards, for a total capacity of 400 Gbps.

LM OTN 200 G

TAKEAWAYS

Block Architecture
allows stacking of LM shelves to form a single Network Element, offering cost, power, and footprint optimization.

Integrated WDM
pluggable optics (10/100/200G) to create metro rings without the need for extra hardware, or to directly liaise over existing WDM infrastructure when available.

Flex-I/O
Ports can be software configured to operate as Clients or Line and support specific protocol and data rates, according to user needs.

Native SDN
removing the need for proprietary software integration, supporting RESTCONF/ YANG according to the ONF T-API specifications.

TECHNICAL SPECIFICATIONS

Parameter	LM OTN/PKT 10G	LM OTN 100G	LM PKT/OTN 100G	LM OTN 200G
Switch fabric	280 Gb/s ODU-k 50G L2	400 Gb/s ODU-k/Flex	240 Gb/s ODU-k/flex 520 Gb/s L2	-
Number of blades per shelf	2			
Client Interfaces (per blade)	up to 10x STM-n/OC-n, FC,1GE/10GE, OTU-1/2		1x100GE + up to 10x1GE/10GE	up to 2x100GE / OTU-4
Line interfaces (per blade)	up to 14xOTU-2	1xOTU-4	up to 6xOTU-2	1x200G/100G
Redundancy (1+1)	Power, FAN, Control, Switch fabric			Power, FAN, Control
OTN containers for clients	ODU-0/1/2 & ODUflex			ODU-4
Transmission	ODU-0/1/2 & ODUFlex unidir/bidir			2xODU-4
Services	Transparent P2P, EPL, EVPL, E-TREE, E-LAN	Transparent P2P	Transparent P2P, EPL, EVPL, E-Tree	Transparent P2P
Protection	ODU-0/1/2/flex SNC, O-SNCP		ODU-0/1/2/flex SNC	O-SNCP
Client protection	Single-/Multi-card LAG, Y-cable, SNC	Y-cable, SNC	Single-/Multi-card LAG	Y cable
Packet features	VLAN mngt., QoS, OAM, PM	-	VLAN mngt., QoS, OAM, PM	-
Synchronization	Sync Ethernet; 1588v2 (PTPoOTC) Telecom Boundary Clock (T-BC)		-	-
Synchronization Physical Interface	2MHz / 2Mb/s, 1PPS/TOD, GE			-
Management	Stackable, (up to 16/32 chassis), managed as single NE, RESTCONF protocol, YANG model			
Size (H x W x D)	44.2 x 482.6 x 282.0 mm /1.74 x 19.00 x 11.10 in			
Power supply	-48 VDC (-40.5 to -57 VDC) 1RU fully redundant AC/DC converter available as option			
Power consumption (Fully equipped chassis)	400 W (max)	500 W (max)	500 W (max)	200 W (max)
Operating temperature	-5°C to +45°C (23°F to 113°F)			
Relative humidity	5% to 95%			
Regulations & standards	ETS 300 019-1-3, Class 3.2 ETS 300 019-1-1, Class 1.2 ETS 300 019-1-2, Class 2.2 ETS 300 386 / EN 300 132-2 / EN 300 753 EN 60825-1/-2 / EN 60950-1			

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