Nokia 1830
Optical Network Extender – Aggregator

Release 25.6

The Nokia 1830 Optical Network Extender–Aggregator (1830 ONE-a) is a compact aggregator that transports OTN (OTU-1) and TDM traffic directly over OTN. This allows operators to efficiently migrate PDH/SDH traffic to a modern OTN/WDM network while preserving profitable legacy service revenue streams.

The Nokia 1830 ONE-a has integrated pluggable optical modules and can transport any TDM traffic, including low speed PDH (E1). SDN native by design, the 1830 ONE/a enables abstraction of the legacy traffic to the optical domain SDN controlled, SD-WAN controlled or service orchestrator, liaising over open APIs (YANG models with RESTCONF).

As part of the Nokia 1830 ONE portfolio of OTN/WDM metro access products, the 1830 ONE-a equips your 5G-era network with more capacity through support for more connections and capabilities. It also complements the Nokia 1830 Photonic Service Switch (1830 PSS) portfolio in an open, seamlessly managed edge-to-core architecture.

Features

- Modular architecture for independent technology lifecycle evolution
- Legacy services support and E1-to-OTN mapping for TDM renewal
- Support E1 Electrical (both 75 and 120 Ohm options) and E1 Optical/ C.37.94
- Stackable, 1 RU platform supports simplified, multi-shelf, single network element management
- Compact platform with small footprint and low power consumption
- Scalable, fully redundant architecture for maximum performance and resilience
- SDN-native control with RESTCONF management interface and a network element YANG model

Benefits

- Meets bandwidth and service needs by scaling and modernizing the network infrastructure
- Reduces OPEX by eliminating SDH equipment and fiber rental costs
- Optimizes CAPEX by supporting pay-as-you-grow strategy through modular design
- Simplifies operations with single network element management

Product description

The innovative mapping capability of the 1830 ONE-a extends the use of OTN containers to encapsulate PDH (E1)/VC12 traffic with 100 percent efficiency, making use of OSDUk containers (as defined in ITU-T G.Sup 70). This allows operators to ultimately decommission any PDH/SDH equipment from their transport network, maintaining the existing services and client user interfaces while boosting capacity up to four times in existing access networks. Transporting all services over OTN enables operation over existing modern WDM networks, thereby de-layering the transport infrastructures.

The result is a converged optical network that spans from core to access over a common OTN/WDM infrastructure that maximizes the capacity transported per fiber, offering the lowest latency by technology and optimal cost per bit.

Designed for access rings, the 1830 ONE-a collects low-speed traffic as local traffic and transports it over a protected OTU1 (2.5 Gb/s) access ring. It supports E1 electrical and optical traffic, with the stringent synchronization requirements of tele-protection applications as per IEE C37.94 standard. The 1RU form-factor offers a fully redundant architecture.

The application is enabled by the 10G OTN/SDH/PDH Switching Card and the Sub-E1 C37.94 card, with up to two cards per 1830 ONE-a chassis.

10G OTN/SDH/PDH Switching Card

Sub-E1 C37.94 Card

Technical specifications

- Switch fabric: 10 Gb/s at LO (ODUε, VC12)
- Blades per shelf: 2

Client interfaces (per blade)

- 63 x E1 electrical (3 x 21) – 75/120 Ohm options
- 8 x optical E1 + 21 x E1 electrical – 75 Ohm
- 1 x STM-1/4/16 or OTU1*

Line interfaces (per blade)

- Up to 2 x OTU1

* SFP ports

Redundancy (1+1)

- Power
- Control
- Fabric

Protection

- VC12 SNCP
- MSP 1+1
- ODUε/OSDU SNC
- ODU0 SNC
- EPS for E1 signals

Dimensions and weight

- Height: 44.2 mm (1.74 in)
- Width: 482.6 mm (19.00 in)
- Depth: 282.0 mm (11.10 in)
- Weight: 0.97 kg (2.13 lb)

Power

- Supply: -48 V DC (-40.5V DC to -57 V DC)
- Consumption: 100 W max. per subrack

Operating environment

- Temperature: -5°C to +45°C (23°F to 113°F)
- Relative humidity: 5% to 95%

Synchronization mode

- Transparent (default)
- Locked (synchronous) over OTN

Synchronization (Physical interface)

- 2MHz
- 2 Mb/s

Management

- Stackable; managed as one network element with RESTCONF/YANG interface

Regulations and standards

- Operating conditions: ETSI EN 300 019-1-3, Class 3.2/ BS EN 50125-3, Class T1 in Shelter (TC) “Outside the track”
- Storage conditions: ETSI EN 300 019-1-1, Class 1.2
- Transportation conditions: ETSI EN 300 019-1-2, Class 2.2
- Electrostatic discharge (ESD)/electromagnetic compatibility (EMC): ETSI EN 300 386 “Telecommunications Center”
- EMC immunity: Power Station and Substation Environments IEC 61000-6-5 and Railway Applications IEC 62236-4/EN 50121-4
- EN 300 132-2 “Power supply interface at 48V-DC”
- EN 300 753 “Acoustic”
- EN 60825-1/2 “Optical safety”
- EN 60950-1 “Safety”

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