

A hand is shown placing a small, smooth, light-colored stone onto a stack of several other smooth, dark-colored stones. The stack is balanced precariously on a sandy beach. In the background, a person is lying down, and the sun is setting, creating a warm, golden glow. The overall scene conveys a sense of balance, precision, and harmony.

Nokia 1830 Optical Network Extender portfolio
Multiservice platforms for metro access in the 5G era

NOKIA

Nokia 1830 ONE: Compact platforms for metro access modernization and buildout in the 5G era.

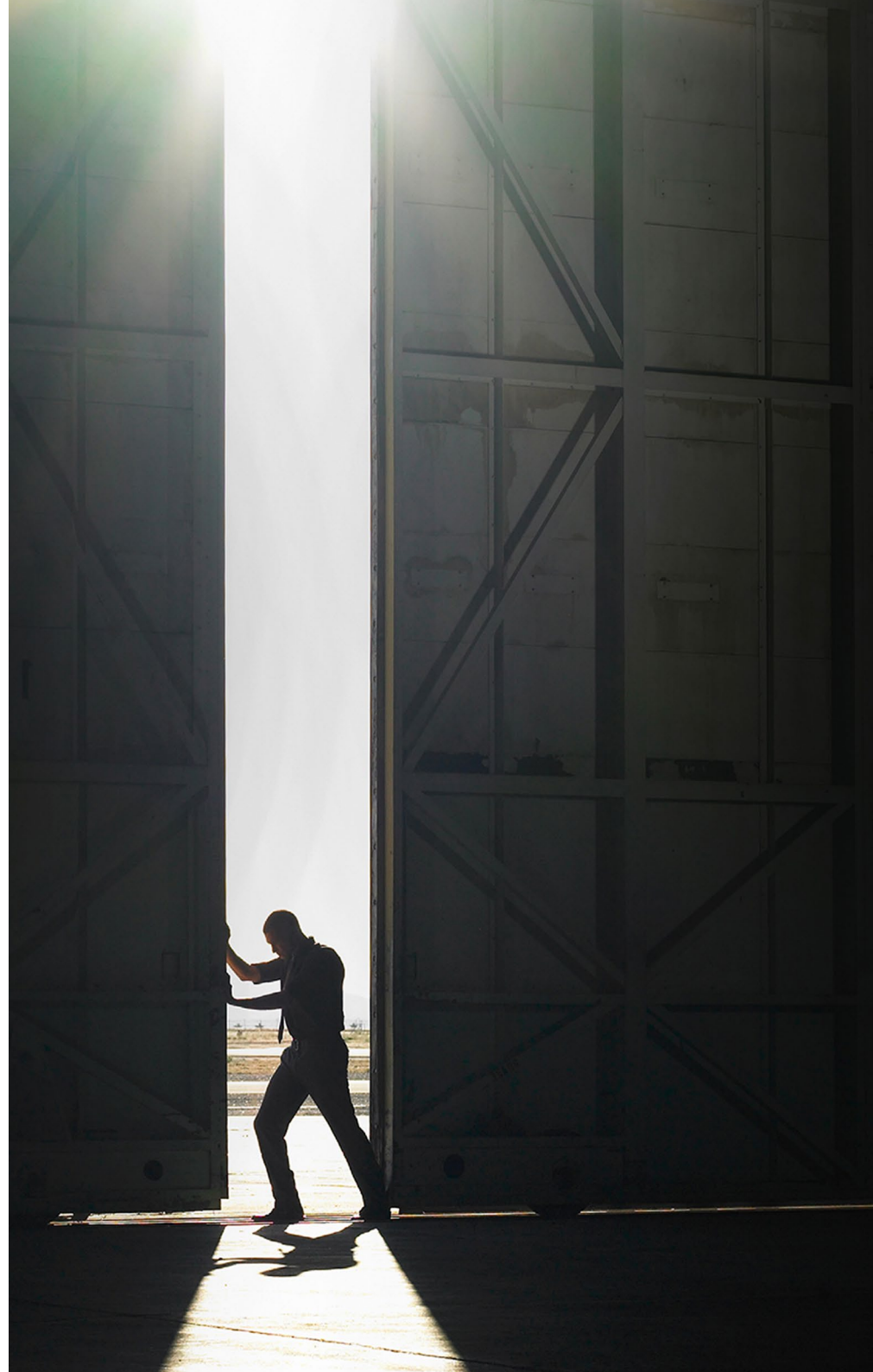
Metro access challenges in the 5G era

Metro access transport networks have been undergoing a major renovation to support new dynamic services while maintaining profitable legacy services. This modernization involves increasing capacity while improving network performance, agility and efficiency—but that's only the beginning.

To meet the requirements of 5G, metro access networks require even more capacity, higher performance and assured availability. They also need to provide open programmability to enable automated operations and services. And they need to push and distribute these capabilities to the network edge, closer to end users.

5G-ready metro access packet/optical transport solutions must support an array of new and legacy services for business, residential, mobile and data center applications. They must scale for growth, offer space and power efficiency, and operate seamlessly in an open edge-to-core network environment.

It's a tall order.



Nokia 1830 ONE for multiservice metro access transport

The Nokia 1830 Optical Network Extender (ONE) portfolio of disaggregated OTN, packet and photonic metro access products equips your optical network with more capacity, to support more connections and capabilities. This compact, multiservice portfolio addresses fixed broadband backhaul, mobile backhaul, multiservice access, business/enterprise access, and legacy TDM renewal applications.

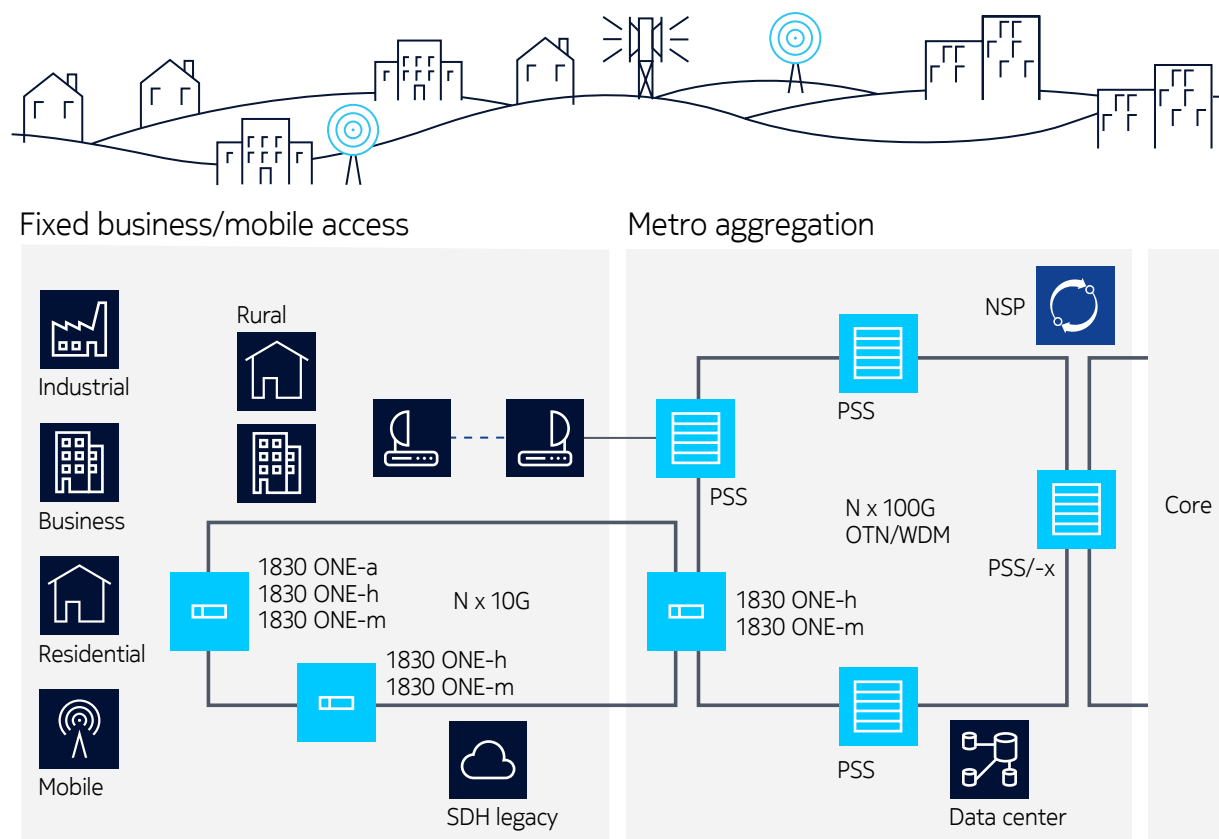
As part of the Nokia WaveFabric optical network solution, the 1830 ONE portfolio complements the 1830 PSS product family in an open, seamlessly managed, edge-to-core architecture.

With all of these capabilities, you can meet your bandwidth and service needs by scaling and modernizing your network infrastructure. At the same time, you can reduce OPEX and optimize CAPEX—and satisfy demanding customers.

The 1830 ONE portfolio –consists of the 1830 ONE-Hub (ONE-h), the 1830 ONE-Aggregator (ONE-a) and the 1830 ONE micro-ROADM (ONE-m). In a converged metro access optical network (see Figure 1), these platforms provide:

- Integrated packet-OTN transport
- OTN aggregation and switching
- Dense wave division multiplexing (DWDM) transponder and muxponder functionality
- Wavelength routing.

Figure 1. Converged metro access optical network with the 1830 ONE portfolio



1830 ONE: Flexible and scalable with SDN-native control

1830 ONE features and benefits

The innovative, modular architecture of the 1830 ONE, offered in compact, low-power platforms, enables you to optimize CAPEX and reduce OPEX.

Modular architecture

- Multiservice, pay-as-you-grow design
- Compact (1RU) design
- Simplified single network element (NE) management

Stackable platforms

- Multi-shelf configuration
- Maximum configuration flexibility

High-density, compact platforms

- Full switching fabric for any service type configuration
- Maximum port and functionality density level
- Small footprint and low power consumption

Scalability and resiliency

- Supports up to 200G access rates and up to 400G switch capacity
- Fully redundant system architecture
- Client and line protection

SDN-native control

- RESTCONF management interface
- Fully functional NE YANG model

Benefits

Deployment flexibility

OPEX savings through compact, low-power design

CAPEX savings through modular, pay-as-you-grow design

Simplified operations through single network element management

Use case: Metro aggregation

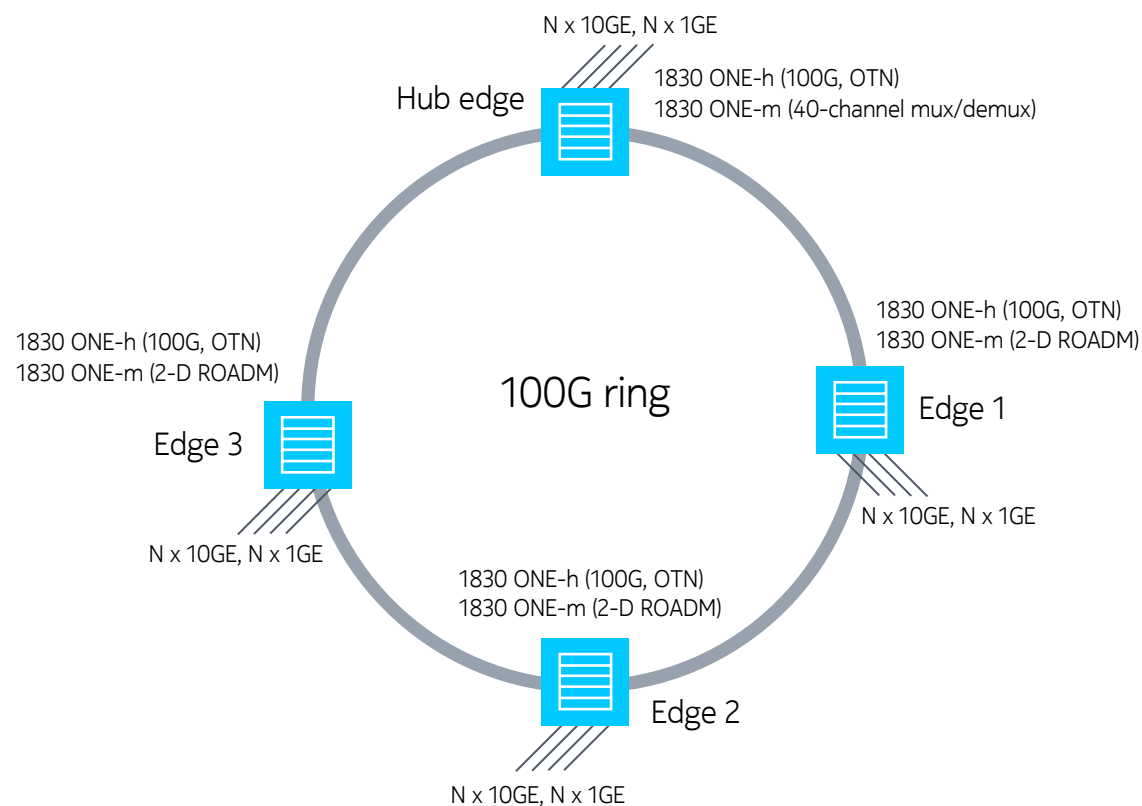
For metro aggregation, the 1830 ONE portfolio provides:

- 10G CBR services/Layer 2 packet aggregation services over OTN (ODUflex)
- Optimization of ring bandwidth (100G omnibus)
- Traffic protection at the ODUk level (through SNC)
- High scalability for additional Layer 1 and Layer 2 services
- 40-channel DWDM mux/demux at 100G Hz; expands to 80-channels at 50 GHz grid
- Optical time-domain reflectometer (OTDR) support for fault investigation and link monitoring
- Span reach to 34 dB with Optical Supervisory Channel (OSC) pluggable.

As shown in Figure 2, the topology is a high-capacity 100G WDM metro ring with an edge-to-hub traffic matrix.

For OTN/WDM node configuration, OTN switches are used to aggregate packet traffic, and the use case features multi-shelf single network element management.

Figure 2. 1830 ONE in a metro aggregation network



Use case: Wholesale operator access network

In a wholesale operator access network, the 1830 ONE portfolio provides:

- Fiberization of rural areas
- Backhauling service for other local operators:
 - Bitstreaming
 - Virtual unbundled local access (VULA)
- Constant bit rate (CBR)/Layer 1 services for enterprises, the public sector and other operators

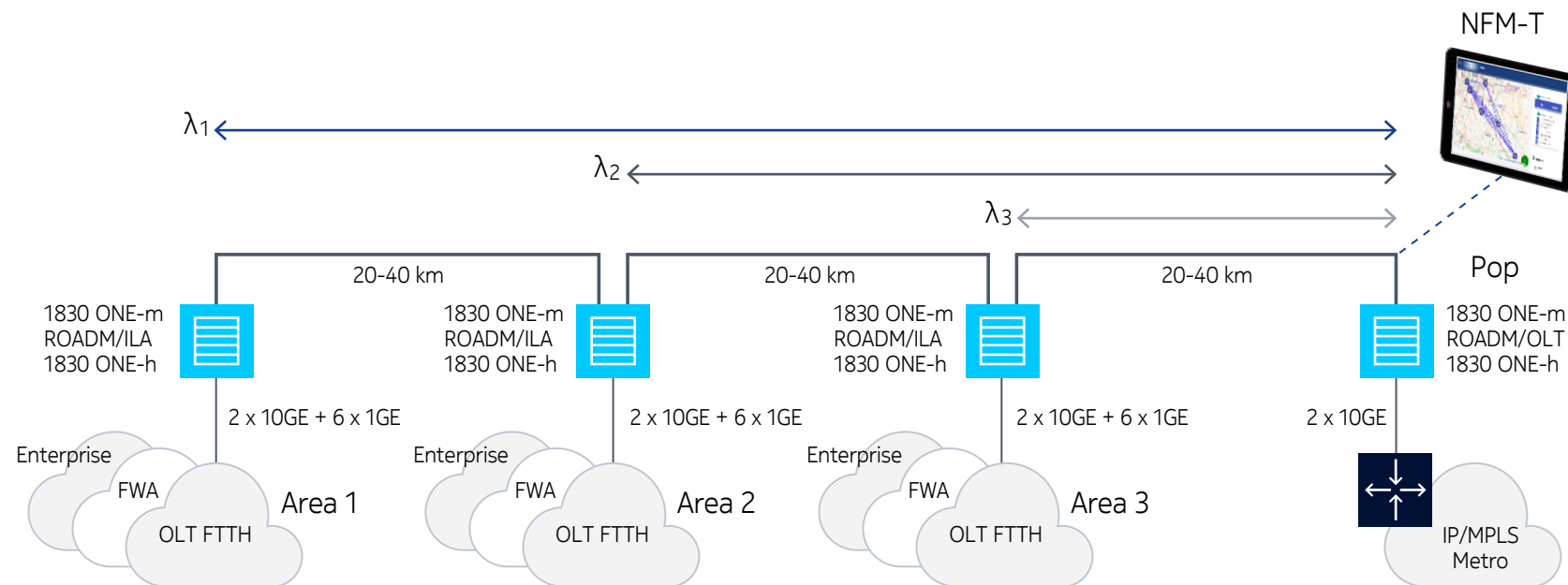
- Layer 2 over OTN (ODUflex) with packet aggregation and QoS
- 40-channel DWDM mux/demux at 100 GHz; expands to 80-channels at 50 GHz grid
- OTDR support for fault investigation and link monitoring
- Span reach to 34 dB with OSC pluggable.

Figure 3 shows a linear network topology but a ring topology is also supported. The topology depends on the existing fiber infrastructure.

This use case provides dedicated wavelengths per area.





The Nokia Network Functions Manager for Transport (NFM-T) provides optical management.

Figure 3. 1830 ONE in a wholesale operator access network



1830 ONE portfolio

The 1830 ONE portfolio offers compact, modular and disaggregated OTN, packet and photonic solutions for metro access.

Product	Functionality	Details
1830 ONE-m: micro-Reconfigurable Optical Add Drop Multiplexer/ In-Line Amplifier (ROADM/ILA) 	Photonic aggregation/transport	<ul style="list-style-type: none"> • Micro-ROADM (2-degree) card (half slot) with optional OSC plug-in; four cards per chassis • Multi-degree ROADM supporting seamless traffic handover to higher level of the network • Up to 16 add/drop ports for micro-ROADM 2 degrees configuration and up to 40 add/drop ports per direction for N-Degrees ROADM configuration • Integrated OTDR support • Amplified fixed OADM (FOADM) configuration • Optical Amplifier Main Board with optional OSC and VG Optical Amp plug-ins • Pluggable Modules Main Board with optional modules (filter, splitter/combiner)
1830 ONE-m: Optical Line Terminal (OLT) 	Photonic aggregation/transport	<ul style="list-style-type: none"> • 40-/80-channels active and passive DWDM multiplexer/demultiplexer
1830 ONE-h: Hub 	OTN and packet aggregation/transport	<ul style="list-style-type: none"> • 10G and 100G OTN and packet switching cards • 100/200G transponder/muxponder card • 100G B&W QSFP28-based 100G line and DWDM Coherent CFP2-DCO-based 100G/200G line
	TDM transformation	<ul style="list-style-type: none"> • 10G OTN/SDH switching card
1830 ONE-a: Aggregator 	TDM transformation option	<ul style="list-style-type: none"> • OTN/SDH/PDH switching card

Leveraging the Nokia difference

Only Nokia offers a comprehensive portfolio of network equipment, software, services and licensing opportunities across the globe. With our commitment to innovation, driven by the award-winning Nokia Bell Labs, we are a leader in the development and deployment of 5G networks.

Our optical network products and solutions let you build smarter, more automated networks that streamline service delivery and lower network TCO. They help you stay competitive and turn your optical networks into platforms that create value for your business and your customers.

Learn more

To learn more about the Nokia 1830 ONE portfolio, visit the [1830 ONE web page](#)

For details about the 1830 ONE products, see the following data sheets:

- [Nokia 1830 ONE-m](#)
- [Nokia 1830 ONE-a](#)
- [Nokia 1830 ONE-h](#)

To learn more about the Nokia WaveFabric optical network solution, visit the [Wave Fabric web page](#)





About Nokia

We create technology that helps the world act together.

As a trusted partner for critical networks, we are committed to innovation and technology leadership across mobile, fixed and cloud networks. We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Adhering to the highest standards of integrity and security, we help build the capabilities needed for a more productive, sustainable and inclusive world.

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