# Nokia 7750 Service Router

## Media Dependent Adapters

The Nokia 7750 Service Router (SR) Media Dependent Adapter2-XP (MDA2-e-XP) delivers high-density 10 Gigabit Ethernet (GE), 25GE, 40GE, 50GE, 100G, 400GE and 800GE interfaces, enabling enhanced quantum-safe IP network cryptography and advanced packet processing to support demanding IP applications.

Powered by Nokia's cutting-edge FP5-based E5 MAC silicon, the Nokia MDA2-e-XP delivers a major leap forward in performance and security for Nokia's FP4-based 7750 SR systems. It brings native support for 800GE interfaces and unlocks the full potential of next-generation, energy-efficient 800G QSFP-DD, QSFP112, and SFP112 optics. Designed for the most demanding IP edge, metro, and core environments, the MDA2-e-XP also enables enhanced IEEE 802.1AE quantum-safe MACsec (ANYsec), providing future-ready, line-rate cryptography that protects networks against emerging cyber threats—without compromising performance or scalability.

Built on Nokia's proven FP4 routing silicon, the Nokia MDA2-e-XP supports up to 800 Gb/s full duplex (FD) in capacity, which scales to 1.0 Tb/s with intelligent aggregation (IA). The half-slot adapter supports 800G QSFP-DD, 400G QSFP-DD, 400G QSFP112, 100G QSFP28 and 100G SFP112 optics along with flexible 100G, 400G and 800G breakout options.

The innovative Nokia MDA2-e-XP combines advanced security with intelligent packet processing features to deliver unmatched performance and protection at scale. With quantum-safe MACsec and enhanced MACsec (ANYsec) supported at line rate across all connectors, it ensures future-proof cryptography without compromise. Built for today's most demanding IP networks, the MDA2-e-XP also enables granular IP payload filtering to defend against DDoS attacks, delivers best-in-class QoS, protects the control plane with built-in resiliency, and supports intelligent aggregation to efficiently scale services across the network edge, metro, and core.


2-connector 100G QSFP28 +
2-connector 800G QSFP-DD MDA2-e-XP


8-connector 100G SFP112 +
2-connector 800G QSFP-DD MDA2-e-XP


16-connector 100G SFP112 MDA2-e-XP


10-connector 100G QSFP28 MDA2-e-XP

The Nokia MDA2-e-XP redefines interface flexibility with its universal support for 800G QSFP-DD, 100G SFP112, and 100G QSFP28 connectors—empowering operators to tailor their networks with a wide range of compatible optics. Designed to maximize configuration versatility on Nokia 7750 SR-1 and SR-12e platforms, the MDA2-e-XP enables seamless adaptation to evolving bandwidth demands while optimizing space, power, and performance across IP edge, aggregation, and core networks. It's a powerful enabler for future-ready architectures, bringing unmatched modularity to high-performance routing.

Up to two Nokia MDA2-e-XP variants are inserted into a Nokia 7750 SR Input/Output Module5-e (IOM5-e). Enabled by Nokia's FP4 technology, this combination is always deterministic, for predictable performance under all operating conditions.

## Features and benefits

- Supports a new generation of energy-efficient 800G QSFP-DD, QSFP112, and SFP112 optics, as routing systems densify, making the energy savings behind these optics increasingly compelling.
- Building upon and enhancing our quantum-safe 802.1AE MACsec foundation for Ethernet networks, the Nokia MDA2-e-XP enables ANYsec, a low-latency, end-to-end, quantum-safe, multi-layer network cryptography solution for MPLS, Segment Routing, and IP networks.
- Advanced DDoS mitigation capabilities enabled by the Nokia MDA2-e-XP uses signature-based ACLs to provide first-level payload inspection at line rate to filter out DDoS traffic, without compromising performance.
- Ensuring superior QoS performance on the Nokia 7750 SR, the Nokia MDA2-e-XP delivers full packet pre-classification and pre-buffering with priority tagging, to guarantee priority traffic for all critical flows regardless of network congestion.
- Resilient control plane protection and availability are enabled by configurable hardware-based ACL filters, which, combined with pre-classification and rate-limiting functions enable the Nokia MDA2-e-XP to discard unwanted traffic before it reaches the control processor.
- Intelligent aggregation allows the Nokia MDA2-e-XP to aggregate port capacity beyond its forwarding capacity in a deterministic way with full respect for QoS and packet priority, enabling the elimination of pre-aggregation layers, driving CAPEX and OPEX savings.
- Together, the performance of the Nokia 7750 SR IOM5-e and MDA2-e-XP is always deterministic. Even at full scale and with demanding processing-intensive applications, performance remains certain and throughput does not degrade, with no compromises.
- Modular, compact Nokia MDA2-e-XP variants enable exceptional versatility, offering a mix-and-match approach to system configuration and connector expansion, with support for both MDA2-e-XP and MDA-e-XP's in the same IOM5-e to meet diverse networking requirements, while reducing TCO and ensuring investment protection.
- Flexible licensing offered by the Nokia MDA2-e-XP and IOM5-e provides bandwidth options along with the scaling of egress hardware queues and policers for core, edge, and high-scale edge functionality.
- Nokia MDA2-e-XP variants house the forwarding plane and associated memory, performs all MAC-layer and physical-layer functions and provide faceplate connectors for pluggable optical transceivers and cables.
- The Nokia MDA2-e-XP supports ITU-T Synchronous Ethernet (SyncE) and IEEE 1588v2 distribute precision network timing and synchronization over Ethernet.
- Field upgrades are simplified because hot-swappable Nokia MDA2-e-XP variants can be exchanged in-service to change media type and physical interfaces as required.

# Technical specifications

## Table 1. Nokia 7750 SR MDA2-e-XP overview

| MDA2-e-XP variants | Speed options | Optical transceiver support | Breakout options | Capacity (FD, max): Line rate/IA | IOM support |
|---|---|---|---|---|---|
| 2-connector 100G QSFP28 + 2-connector 800G QSFP-DD MDA2-e-XP | 800G, 400G, 100G, 40G, 25G, 10G | 800G QSFP112-DD, QSFP56-DD, QSFP28-DD, 400G QSFP112, QSFP28, QSFP+ | 2 x 400G, 8 x 100G, 4 x 100G, 3 x 100G, 2 x 100G, 4 x 25G, 8 x 10G, 4 x 10G | 800G / 1.0T | 7750 SR-12e: 1.5T IOM5-e with up to two MDA2-e-XP's<br>7750 SR-1: With up to two MDA2-e-XP's |
| 8-connector 100G SFP112 + 2-connector 800G QSFP-DD MDA2-e-XP | 800G, 400G, 100G, 50G, 40G, 25G, 10G | 800G QSFP112-DD, QSFP56-DD, QSFP28-DD, 400G QSFP112, QSFP28, QSFP+, SFP112, SFP56, SFP28, SFP+ | 2 x 400G, 8 x 100G, 4 x 100G, 3 x 100G, 2 x 100G, 4 x 25G, 8 x 10G, 4 x 10G | 800G / 1.0T | 7750 SR-12e: 1.5T IOM5-e with up to two MDA2-e-XP's<br>7750 SR-1: Up to two MDA2-e-XP's |
| 16-connector 100G SFP112 MDA2-e-XP* | 100G, 50G, 25G, 10G | SFP112, SFP56, SFP28, SFP+ | - | 800G / 1.0T | 7750 SR-12e: 1.5T IOM5-e with up to two MDA2-e-XP's<br>7750 SR-1: Up to two MDA2-e-XP's |
| 10-connector 100G QSFP28 MDA2-e-XP* | 100G, 40G, 25G, 10G | QSF28, QSFP+ | 10 x 10G, 4 x 10G, 4 x 25G | 800G / 1.0T | 7750 SR-12e: 1.5T IOM5-e with up to two MDA2-e-XP's<br>7750 SR-1: Up to two MDA2-e XP's |

* Available in a future release

## Table 2. Nokia 7750 SR MDA2-e-XP maximum density*

| MDA2-e-XP variants | Speed options | 7750 SR-1 | 7750 SR-12e |
|---|---|---|---|
| 2-connector 100G QSFP28 + 2-connector 800G QSFP-DD MDA2-e-XP | 800G/400G/100G | 2/4/20 | 18/36/180 |
| 8-connector 100G SFP112 + 2connector 800G QSFP-DD MDA2-e-XP | 800/400/100G/ 50G/25G/10G | 2/4/20/ 16/24/56 | 18/36/180/ 144/216/504 |
| 16-connector 100G SFP112 MDA2-e-XP** | 100G/50G/25G/10G | 20/20/32/32 | 180/180/288/288 |
| 10-connector 100G QSFP28 MDA2-e-XP** | 100G/40/25G/10G | 20/20/32/72 | 180/180/288/648 |

* With intelligent aggregation (IA) ** Available in a future release

Table 3. Nokia 7750 SR MDA2-e-XP dimensions

| MDA2-e-XP variants | Dimensions | | |
|---|---|---|---|
| | Height | Width | Depth |
| 2p 100G QSFP28 + 2p 800G QSFP-DD MDA2-e-XP | 3.6 cm (1.4 in) | 19.3 cm (7.6 in) | 19.3 cm (7.6 in) |
| 8p 100G SFP112 + 2p 800G QSFP-DD MDA2-e-XP | 3.6 cm (1.4 in) | 19.3 cm (7.6 in) | 19.3 cm (7.6 in) |
| 16p 100G SFP112 MDA2-e-XP* | 3.6 cm (1.4 in) | 19.3 cm (7.6 in) | 19.3 cm (7.6 in) |
| 10p 100G QSFP28 MDA2-e-XP* | 3.6 cm (1.4 in) | 19.3 cm (7.6 in) | 19.3 cm (7.6 in) |

* Available in a future release

Note: Refer to the 7750 SR MDA2-e-XP product and release documentation for system details on dimensions, weights, hardware, safety standards, compliance agency certifications and protocol support.

**About Nokia**

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs, which is celebrating 100 years of innovation.

With truly open architectures that seamlessly integrate into any ecosystem, our high-performance networks create new opportunities for monetization and scale. Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.



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