Nokia 7750 SR-s Service Router

Media Dependent Adapters

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

Powered by Nokia FP4 routing silicon, the Nokia MDA-s supports up to 1.5 Tb/s full duplex (FD) in capacity, which scales to 2.0 Tb/s with intelligent aggregation (IA). The half slot adapter supports 400G QSFP-DD, 100G QSFP28, 100G SFP-DD and CFP2 Digital Coherent Optics (CFP2-DCO) pluggable optics with flexible 100G and 400G breakout options.

The innovative Nokia MDA-s design and packet processing intelligence enables quantum-safe MACsec line-rate network cryptography, precise IP payload filters to mitigate Distributed Denial of Service (DDoS) attacks, superior Quality of Service (QoS) performance, resilient control plane protection and intelligent aggregation.

The Nokia MDA-s provides modular interface flexibility with universal 400G QSFP-DD, 100G SFP-DD and 100G QSFP28 connectors that support a variety of compatible optics, maximizing Nokia 7750 SR-s configuration versatility and optimizing network designs.

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

4-connector 400G QSFP-DD + 4-connector 100G QSFP28 MDA-s

18-connector 100G QSFP28 MDA-s

24-connector 100G SFP-DD MDA-s

16-connector 100G SFP-DD (MACsec) + 4-connector 100G QSFP28 MDA-s

6-connector CFP2-DCO MDA-s

Features and benefits

- Enables a new generation of energy-efficient 400G QSFP-DD and 100G SFP-DD optics, as routing systems densify, making the energy savings behind these optics increasingly compelling.
- Quantum-safe 802.1AE MACsec line-rate network cryptography for Ethernet networks is enabled by the Nokia MDA-s without compromising performance.
- Advanced DDoS mitigation capabilities enabled by the Nokia MDA-s 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-s, the Nokia MDA-s 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 MDA-s to drop unwanted traffic before it reaches the control processor.
- Intelligent aggregation allows the Nokia MDA-s 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-s IOM-s and MDA-s 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 MDA-s variants and the IOM-s provide exceptional system versatility, offering a mix-and-match approach to system configuration and connector expansion that meets diverse networking requirements, while reducing TCO and ensuring investment protection.
- Flexible licensing offered by the Nokia MDA-s and IOM-s provides bandwidth options along with the scaling of egress hardware queues and policers for core, edge, and high-scale edge functionality.
- Nokia MDA-s 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 MDA-s supports ITU-T Synchronous Ethernet (SyncE) and IEEE 1588v2 distribute precision network timing and synchronization over Ethernet.
- Field upgrades are simplified with hot-swappable Nokia MDA-s variants that can be exchanged in-service to change media type and physical interfaces as needed

Technical specifications

Table 1. Nokia 7750 SR-s MDA-s variant overview

MDA-s variants	Speed options	Optical transceiver support	Breakout options	Capacity (FD, max): Line rate/IA	IOM support
4-connector 400G QSFP-DD + 4-connector 100G QSFP28 MDA-s	400G,100G, 40G, 10G	QSFP56-DD, QSFP28-DD, QSFP28, QSFP+	4 x 100G, 2 x 100G, 10 x 10G, 8 x 10G, 4 x 10G	1.5T IOM: 750G / 2.0T 3.0T IOM: 1.5T / 2.0T	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
2-connector 400G QSFP-DD + 2-connector 100G QSFP28 MDA-s	400G,100G, 40G, 10G	QSFP56-DD, QSFP28-DD, QSFP28, QSFP+	4 x 100G, 2 x 100G, 10 x 10G, 8 x 10G, 4 x 10G	1.5T IOM: 750G / 1.0T 3.0T IOM: 1.5T / -	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
18-connector 100G QSFP28 MDA-s	100G, 40G, 10G	QSFP28, QSFP+	10 x 10G, 4 x 10G	1.5T IOM: 750G / 1.8T 3.0T IOM: 1.5T / 1.8T	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
24-connector 100G SFP-DD MDA-s	100G, 10G	SFP28-DD, SFP28, SFP+	-	1.5T IOM: 750G / 2.0T 3.0T IOM: 1.5T / 2.0T	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
16-connector 100G SFP-DD (MACsec) + 4-connector 100G QSFP28 MDA-s	100G, 25G, 10G	SFP28-DD, SFP28, SFP+, QSFP28, QSFP+	10 x 10G, 4 x 10G	1.5T IOM: 750G / 2.0T 3.0T IOM: 1.5T / 2.0T	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
8-connector 100G SFP-DD (MACsec) + 2-connector 100G QSFP28 MDA-s	100G, 25G, 10G	SFP28-DD, SFP28, SFP+, QSFP28, QSFP+	10 x 10G, 4 x 10G	1.5T IOM: 750G / 1.0T 3.0T IOM: 1.5T / -	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
6-connector CFP2-DCO MDA-s	100G, 200G	CFP2-DCO, CFP2	2 x 100G	1.5T IOM: 750G / 1.2T 3.0T IOM: 1.5T / -	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's
3-connector CFP2-DCO MDA-s	100G, 200G	CFP2-DCO, CFP2	2 x 100G	1.5T IOM: 750G / - 3.0T IOM: 1.5T / -	1.5T / 3.0T IOM-s with two MDA-s's 7750 SR-1s (modular) with two MDA-s's

Table 2. Nokia 7750 SR-s MDA-s maximum density*

MDA-s variants	Speed options	7750 SR-1s (modular)	7750 SR-2s	7750 SR-7s	7750 SR-14s
4-connector 400G QSFP-DD + 4-connector 100G QSFP28 MDA-s	400G/100G/10G	8/40/160	16/80/320	48/240/960	96/480/1920
2-connector 40G QSFP-DD + 2-connector 100G QSFP28 MDA-s	400G/100G/10G	4/20/80	8/40/160	24/120/480	48/240/960
18-connector 100G QSFP28 MDA-s	100G/10G	36/360	72/720	216/2160	432/4320
24-connector 100G SFP-DD MDA-s	100G/10G	40/48	80/96	240/288	480/576
16-connector 100G SFP-DD (MACsec) + 4-connector 100G QSFP28 MDA-s	100G/25G/10G	40/32/112	80/64/224	240/192/672	480/384/1344
8-connector 100G SFP-DD (MACsec) + 2-connector 100G QSFP28 MDA-s	100G/25G/10G	20/16/56	40/32/112	120/96/336	240/192/672
6-connector CFP2-DCO MDA-s	100G	12	24	72	144
3-connector CFP2-DCO MDA-s	100G	6	12	36	72

* With intelligent aggregation (IA)

Table 3. MDA-s weights and dimensions

MDA-s variants	Weight	Dimensions		
		Height	Width	Depth
4-connector 400G QSFP-DD + 4-connector 100G QSFP28 MDA-s	1.45 kg (3.2 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
2-connector 40G QSFP-DD + 2-connector 100G QSFP28 MDA-s	1.3 kg (2.9 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
18-connector 100G QSFP28 MDA-s	1.68 kg (3.7 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
24-connector 100G SFP-DD MDA-s	1.54 kg (3.4 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
16-connector 100G SFP-DD (MACsec) + 4-connector 100G QSFP28 MDA-s	1.8 kg (4.0 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
8-connector 100G SFP-DD (MACsec) + 2-connector 100G QSFP28 MDA-s	1.6 kg (3.5 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
6-connector 400G CFP2-DCO MDA-s	1.77 kg (3.9 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)
3-connector 400G CFP2-DCO MDA-s	1.1 kg (2.5 lb)	6.01 cm (2.37 in)	20.35 cm (8.01 in)	24.26 cm (9.55 in)

Note: Refer to the 7750 SR-s platform data sheet and product documentation for full system details on 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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