Nokia 7220 IXR-H series Interconnect Router for SONiC

Nokia community SONiC Releases 202505 and 202405

As part of the Nokia Data Center portfolio, the Nokia 7220 Interconnect Routers (IXR)-H4-32D, 7220 IXR-H4, 7220 IXR-H5-32D, 7220 IXR-H5-64D and 7220 IXR-H5-64O are designed for leaf and spine layers of data center fabrics. These routers deliver high-scale interconnectivity for webscale, service provider, enterprise data center and cloud environments.

Overview

High-bandwidth servers are driving the need for greater port speeds and interface density in data center architectures. Likewise, the demand for more power-efficient routers and enhanced network operating system (NOS) design is driving the modernization of network aggregation and interconnect within data centers.

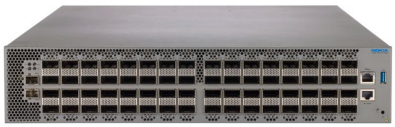
The Nokia 7220 IXR-H series of routers delivers high-performance in fixed-configuration platforms and offers high-density 800GE, 400GE, 200GE and 100GE interfaces with flexible optical breakouts for intra-fabric and server connectivity.

The 7220 IXR-H series of routers deliver a robust and comprehensive set of capabilities, including IP routing, Layer 2 Ethernet, Quality of Service (QoS), telemetry and model-driven management.

7220 IXR-H4-32D

7220 IXR-H4

7220 IXR-H5-32D



7220 IXR-H5-64D

7220 IXR-H5-64O

Nokia 7220 IXR-H4-32D 32QSFPDD 1SFP+

The Nokia 7220 IXR-H4-32D is 1RU in height with a system capacity of 12.8 Tb/s Full Duplex (FD). It is equipped with 32 400GE QSFP-DD ports and one 1/10GE SFP+ port.

All QSFP-DD ports include hardware support for native 400GE, 200GE and 100GE interfaces, as well as 2 x 200G and 4 x 100G optical breakout options. The SFP+ port includes hardware support for native 10GE speeds.

These port options allow for high-performance intra-fabric uplinks, storage and server connectivity.

The 7220 IXR-H4-32D supports two AC power supplies with 1+1 redundancy. The system supports front-to-back airflow with seven N+1 hot swappable fans.

Nokia 7220 IXR-H4 64QSFPDD 2SFP+

The Nokia 7220 IXR-H4 is 2RU in height with a system capacity of 25.6 Tb/s FD. It is equipped with 64 400G QSFP-DD ports and 2 SFP+ ports.

All QSFP-DD ports include hardware support for native 400GE, 200GE and 100GE interfaces, as well as 2 x 200G and 4 x 100G optical breakout options. The SFP+ ports includes hardware support for native 10GE speeds.

These port options provide exceptional flexibility in a variety of leaf or spine deployment configurations.

The 7220 IXR-H4 supports two AC power supplies with 1+1 redundancy. The system supports front-to-back airflow with four N+1 hot-swappable fans.

Nokia 7220 IXR-H5-32D

The Nokia 7220 IXR-H5-32D is 1RU in height with a system capacity of 25.6 Tb/s FD. It is equipped with 32 800GE QSFP-DD ports and two 10GE SFP+ ports.

All QSFP-DD ports include hardware support for native 800GE, 400GE, 200GE and 100GE interfaces, as well as 2 x 400G, 4 x 200G and 8 x 100G optical breakout options. The SFP+ ports include hardware support for native 10GE speeds.

These port options allow for high-performance intra-fabric uplinks, storage and server connectivity.

The 7220 IXR-H5-32D supports two AC power supplies with 1+1 redundancy. The system supports front-to-back airflow with seven N+1 hot swappable fans.

The 7220 IXR-H5-32D supports Linear Pluggable Optics (LPO), which lowers power consumption compared to traditional optical modules. This is vital for AI and HPC use cases where low power consumption is critical.

Nokia 7220 IXR-H5-64D and 7220 IXR-H5-64O

The Nokia 7220 IXR-H5-64D and Nokia 7220 IXR-H5-64O are 2RU in height with a system capacity of 51.2 Tb/s FD. It is equipped with 64 800GE QSFP-DD or OSFP112 ports and two 10GE SFP+ ports.

All ports include hardware support for native 800GE, 400GE, 200GE and 100GE interfaces, as well as 2 x 400G, 4 x 200G and 8 x 100G optical breakout options. The SFP+ ports include hardware support for native 10GE speeds.

These port options allow for high-performance intra-fabric uplinks, storage and server connectivity.

The 7220 IXR-H5-64D and 7220 IXR-H5-64O supports two AC power supplies with 1+1 redundancy. The system supports front-to-back airflow with four N+1 hot swappable fans.

The 7220 IXR-H5-64D and 7220 IXR-H5-64O support LPO, which enables lower power consumption compared to traditional optical modules. This is vital for AI and HPC use cases where low power consumption is critical.

SONiC

Software for Open Networking in the Cloud (SONiC) is an open-source NOS based on Linux. It offers a full suite of network functionality, including Border Gateway Protocol (BGP) and Remote Directory Memory Access (RDMA), that has been production-hardened in the data centers of some of the largest cloud-service providers.

SONiC offers teams the flexibility to create the network solutions they need while leveraging the collective strength of a large ecosystem and community[1].

The Nokia 7220 IXR-H4-32D, 7220 IXR-H4, 7220 IXR-H5-32D, 7220 IXR-H5-64D and 7220 IXR-H5-64O platforms implement Nokia Community SONiC.

Software features

SONiC offers a comprehensive set of open-source features that are readily available and maintained via the SONiC community. For a complete list of capabilities and software support functions, please consult the SONiC website and Nokia Community SONiC release notes.

1 https://sonicfoundation.dev/

Technical specifications

Table 1. Nokia 7220 IXR-H series specifications (Part 1)

Feature	7220 IXR-H4-32D	7220 IXR-H4
System throughput: Full duplex (FD)	12.8 Tb/s	25.6 Tb/s
Ports	32 x 400G QSFP-DD 1 x 10G SFP+	64 x 400G QSFP-DD 2 x 10G SFP+
Management ports	1 x 1000BASE-T	1 x 1000BASE-T
Hardware support (maximum ports per chassis)		
400GE	32	64
200GE	64	128
100GE	128	256
10GE	1	2
USB ports	1 x USB2.0	1 x USB2.0
Console port	1 x RJ45	1 x RJ45
Processor	8-core x86	8-core x86
Memory	32G DDR4	32G DDR4
Memory buffer size	113.5 MB	113.5 MB
SSD	32G MLC	128G MLC
Power	1+1 redundant AC: 100V to 240V 1600 W AC	1+1 redundant AC: 200V to 240V 2400 W AC
Hot-swappable power supplies	Yes	Yes
Fan modules	7 Front-to-back airflow	4 Front-to-back airflow
Hot-swappable fan modules	Yes	Yes
Dimensions	Height: 4.35 cm (1.75 in); 1 RU Width: 43.85 cm (17.26 in) Depth: 55 cm (21.65 in) Fits in standard 19-in mounting rack	Height: 8.7 cm (3.43 in); 2 RU Width: 44 cm (17.32 in) Depth: 64.92 cm (25.56 in) Fits in standard 19-in mounting rack
Weight	9.3 kg (20.50 lb) (unpopulated) 12.5 kg (27.56 lb) (fully populated)	6.5 kg (36.37 lb) (unpopulated) 21.50 kg (47.39 lb) (fully populated)
Discrete Trusted Platform Module (TPM)	Yes	
Normal operating temperature range	0°C to +40°C (32°F to +104°F) sustained	
Shipping and storage temperature	-40°C to +70°C (-40°F to +158°F)	
Normal humidity	5% to 95%, non-condensing	

Table 2. Nokia 7220 IXR-H series specifications (part 2)

Feature	7220 IXR-H5-32D	7220 IXR-H5-64D	7220 IXR-H5-64O
System throughput: Full duplex (FD)	25.6 Tb/s	51.2 Tb/s	51.2 Tb/s
Ports	• 32 x 800G QSFP-DD • 2 x 10G SFP+	• 64 x 800G QSFP-DD • 2 x 10G SFP+	• 64 x 800G OSFP • 2 x 10G SFP+
Hardware support (maximum ports per chassis)			
800GE	32	64	64
400GE	64	128	128
200GE	128	256	256
100GE	144	288	256
10GE	2	2	2
Management ports	1 x 1000BASE-T	1 x 1000BASE-T	1 x 1000BASE-T
USB ports	1 x USB3.0	1 x USB3.0	1 x USB3.0
Console port	1 x RJ45	1 x RJ45	1 x RJ45
Processor	8-core x86 with dual boot SPI	8-core x86 with dual boot SPI	8-core x86 with dual boot SPI
Memory	32G DDR5	32G DDR5	32G DDR5
Memory buffer size	165.2 MB	165.2 MB	165.2 MB
SSD	32G iSLC	32G iSLC	32G iSLC
Power	1+1 redundant AC: 200V to 240V 2400 W AC	1+1 redundant AC: 200V to 240V 3000 W AC	1+1 redundant AC: 200V to 240V 3000 W AC
Hot-swappable power supplies	Yes	Yes	Yes
Fan modules	7 Front-to-back	4 Front-to-back	4 Front-to-back
Hot-swappable fan modules	Yes	Yes	Yes
Dimensions	Height: 4.35 cm (1.75 in); 1 RU Width: 43.85 cm (17.26 in) Depth: 65 cm (25.5 in) Fits in standard 19-in mounting rack	Height: 8.7 cm (3.43 in); 2 RU Width: 43.85 cm (17.26 in) Depth: 63 cm (24.8 in) Fits in standard 19-in mounting rack	Height: 8.7 cm (3.43 in); 2 RU Width: 43.85 cm (17.26 in) Depth: 63 cm (24.8 in) Fits in standard 19-in mounting rack
Weight	12.45 kg (27.44 lb) (unpopulated) 16.37 kg (36.09 lb) (fully populated)	18.46 kg (40.7 lb) (unpopulated) 25 kg (55.11 lb) (fully populated)	19.84 kg (43.74 lb) (unpopulated) 25.2 kg (55.55 lb) (fully populated)
Discrete Trusted Platform Module (TPM)	Yes		
Normal operating temperature range	0°C to +40°C (32°F to +104°F) sustained		
Shipping and storage temperature	-40°C to +70°C (-40°F to +158°F)		
Normal humidity	5% to 95%, non-condensing		

Standards compliance[2]

Environmental and NEBS

- ETSI EN 300 019-2-1; Storage Tests, Class 1.2
- ETSI EN 300 019-2-2; Transportation Tests, Class 2.3
- ETSI EN 300 019-2-3; Operational Tests, Class 3.2
- ETSI EN 300 753; Acoustic Noise, Class 3.2[3]
- GR-3160-CORE

Safety

- AS/NZS 62638-1
- FDA CDRH 21-CFR 1040
- IEC/BS/EN 60825-1
- IEC/BS/EN 60825-2
- IEC/UL/CSA/BS/EN 62368-1

Electromagnetic compatibility

- AS/NZS CISPR 32 Class A
- BS EN 55035
- BS EN 61000-3-2
- BS EN 61000-3-3
- BS EN 55032 Class A
- BSMI CNS 15936 Class A
- BT GS-7
- CNS 13438 Class A
- EN 55035
- EN 55032 Class A
- ETSI EN 300 132-1 (AC)
- ETSI EN 300 132-2 (LVDC)
- ETSI EN 300 386
- ETSI ES 201 468
- FCC Part 15 Class A
- ICES-003 Class A
- IEC CISPR 32 Class A
- IEC CISPR 35
- IEC/EN 61000-3-2
- IEC/EN 61000-3-3
- IEC/EN 61000-6-2
- IEC/EN 61000-6-4
- KCC Korea - Immunity KS C 9835
- KCC Korea - Emissions KS C 9832
- VCCI Class A

Directives and regional approvals

- Directive 2011/65/EU RoHS (including Commission Delegated Directive EU 215/863)
- Directive 2012/19/EU WEEE
- Directive 2014/30/EU EMC
- Directive 2014/35/EU Low LVD
- CE Mark: Europe
- CRoHS: China RoHS
- KC Mark: South Korea
- RCM Mark: Australia
- UKCA Mark: United Kingdom
- VCCI Mark: Japan

2 System design intent is according to the listed standards. Refer to product documentation for detailed compliance status.

3 Certain airflow configurations will impact acoustics. Please contact Nokia for details.

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.

Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

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