

Nokia 1830 Photonic Service Switch – High Capacity (PSS-HC)

The carrier-grade Nokia 1830 PSS-HC provides a next generation addition to the 1830 PSS family that is designed to support both current and future coherent generations, pluggable and high-performance, with transponder/muxponder, distributed OTN switching, and ultra-high capacity centralized OTN switching options.

The 1830 PSS-HC provides a future-proof solution for high density, power-efficient coherent transport in metro, long-haul and DCI applications. The PSS-4hc provides a 6RU, 450mm deep shelf that supports four high-capacity service slots, while the PSS-10hc is a 15RU, 450mm deep shelf with ten high-capacity service slots. The PSS-HC supports high-performance coherent traffic cards leveraging both 1.2Tb/s PSE-6s and ICE-X 800ZR/ZR+ pluggables. With front-to-back airflow and >1RU slots it has also been architected to support future coherent generations beyond today's state-of-theart PSE-6s and ICE-X 800ZR/ZR+ pluggables. The 1830 PSS-HC is both carrier-grade, with redundant hardware and support for optical protection and GMPLS restoration, and multi-service with support for a wide range of Ethernet, OTN and fiber channel client types.



1830 PSS-10hc



1830 PSS-4hc



Features

- 1.2 Tb/s per wavelength 140 Gbaud high performance coherent leveraging PSE-6s, up to 4x1.2 Tb/s pluggable interfaces (4.8 Tb/s) per single slot card
- 800G per wavelength with 130+ Gbaud ICE-X 800ZR/ZR+ coherent pluggables, up to 15x 800ZR/ZR+ (12 Tb/s) per single slot card
- Ready for future coherent generations beyond today's state-of-the-art PSE-6s and ICE-X 800ZR/ZR+
- Multi-service with support for clients including 800GbE, 400GbE, OTUC4 (400G OTN interface), 100GbE, OTU4, 25GbE, 10GbE, OTU2/2e, 16G and above Fiber Channel
- Redundant hardware including controllers, fans and AC/DC power
- 450 mm deep with front-to-back airflow enabling support in 600mm racks (ETSI, 19", 21", 23")
- Feature-rich, multi-layer GMPLS control plane with fast restoration, and network protection options including O-SNCP and OCH-P

Benefits

- Scale coherent capacity with up to 48 Tb/s per 6RU PSS-4hc, up to 120 Tb/s per 15RU PSS-10hc
- Future-proof your network with a carrier-grade platform ready for future coherent generations, and distributed or centralized OTN switching
- Minimize network downtime with fully redundant hardware, optical protection and GMPLS restoration
- Reduce operational costs with minimized footprint (8 Tb/s per RU) and power consumption (<0.1W/G), and with operation features including streaming telemetry and multi-shelf management
- Pay as you grow with a fully pluggable solution including PSE-6s 1.2T, 800ZR/ZR+ and 400ZR/ZR+ line interfaces; AC/DC PSUs are also PAYG
- Extend the life of your 1830 PSS network with a next generation platform that leverages the same software and release cycle, supports cluster integration, and and will support multiple PSS-HC/ PSS/PSI-L shelves managed as single NE (future)

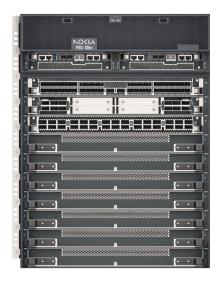
Product descriptions

1830 PSS-4hc shelf



With front-to-back airflow and a depth of 450mm, the 6RU 1830 PSS-4hc shelf can be supported in 600mm deep ETSI, 19", 21" and 23" racks. It supports both AC and DC power options. Hardware redundancy includes the controllers, fans, and power. It provides four service slots and can deliver up to 19.2 Tb/s of line capacity with 4x1.2T 4CP4T8 cards or up to 48 Tb/s of line capacity with the 15x800ZR+ 15CP12T cards.

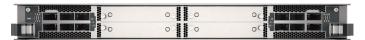
1830 PSS-10hc shelf



With front-to-back airflow and a depth of 450mm, the 15RU 1830 PSS-10hc shelf can be supported in 600mm deep ETSI, 19", 21"and 23" racks. It support both AC and DC power options. Hardware redundancy includes the controllers, fans and power. It provides ten service slots and can deliver up to 48 Tb/s of line capacity with the 4x1.2T 4CP4T8s card or up to 120 Tb/s of line capacity with the 15x800ZR+ 15CP12Ts.



4x1.2T transponder/muxponder



The single slot 4CP4T8 leverages high performance Nokia PSE-6s coherent optical engines coherent optical engines to provide up to 4.8Tb/s coherent line capacity. The PSE-6s supports up to 140 Gbaud and 1.2Tb/s per wavelength and leverages a comprehensive coherent toolkit 3rd generation probabilistic constellation shaping (PCS-64QAM and PCS-16QAM), QPSK modulation, a continuously tuneable baud rate, C-band and L-band support, an overhead efficient Ethernet framing mode, high chromatic dispersion tolerance, and encryption. Each 4CP4T8 supports up to four PSE-6s pluggables (BMDCO12) enabling pay-as-you-grow scaling and the ability to mix C-band and L-band pluggables in the same card. The 4CP4T8 supports eight QSFP56-DD clients (400GbE/OTUC4, 4x100GbE/OTU4) and four QSFP56-DD/QSFP800 clients (800GbE, 400GbE/OTUC4, 4x100GbE/OTU4). Leveraging 2x100G LR4 QSFP-DDs, the 4CP4T8 can support a configuration with 2x1.2Tb/s coherent interfaces and the full 24x100G LR4 clients. The 4CP4T8 also support client bandwidth sharing (e.g. 5x400GbE over 2x1 Tb/s).

800ZR+ transponder/muxponder



The single slot 15CP12T provides a thin transponder layer solution for 800G coherent pluggables, with aggregate coherent line capacity of up to 12Tb/s. The 15CP12T has thirty QSFP-DD/QSFP-DD800 ports divided into five groups of six ports. Each group of six ports can be configured with two 800ZR/ZR+WDM line interfaces and four

client ports (800GbE, 400GbE, OTUC4, 4x100GbE/ OTU4) or alternatively with three 800ZR/ZR+WDM line interfaces and three 800GbE clients. The 15CP12T also supports client bandwidth sharing (e.g, 800GbE over 2x400G, 3x400GbE over 2x600G), The 800ZR/ZR+ DWDM ports leverage industryleading Nokia ICE-X 800ZR/ZR ICE-X 800ZR/ ZR+ QSFP-DD800 pluggables. With a 3nm CMOS DSP, ICE-X 800ZR/ZR+ pluggables deliver high performance in a low-power, pluggable form factor. They support 200Gb/s, 400Gb/s, 600Gb/s and 800Gb/s line rates with baud rates of 130+ Gbaud. They deliver multi-vendor interoperability, including open probabilistic constellation shaping (PCS), and a high-performance PCS mode that supports 800Gb/s to 1.700+ km.

Sub-100G aggregation card



The single slot 42P800 provides aggregation for up to forty SFP+/SFP28 clients onto two 400G QSFP-DD line interfaces. Supported clients include 10GbE (max 40), 25GbE (max 32), OTU2/2e (max 40), 16G fiber channel (max 40) and 32G fiber channel (max 24). Half the client ports (i.e., 20x10GbE) map to each 400G line port. The primary application for the 42P800 is to aggregate sub-100G clients onto a 4CP4T8 or a 15CP12T, leveraging 400G QSFP-DD-based DAC (direct attach copper), AEC (active electrical cable) or AOC (active optical cable) cables to connect the 42P800 to the 4CP4T8 or 15CP12T. In addition, the 42P800's 400G line ports can support coherent 400ZR/ZR+ pluggables for transponder/muxponder and add/drop multiplexer (ADM) applications.

Data sheet



Technical specifications

Shelves	1830 PSS-4hc	1830 PSS-10hc
Traffic card slots	• 4	• 10
Dimensions	• Height 266.7mm (6RU)	• Height: 666.75mm (15RU)
	• Width: <444 mm (17.49 in)	• Width: <444 mm (17.49 in)
	• Depth: <450mm (fits in 600mm rack)	• Depth: <450mm (fits in 600mm rack)
Controller cards	• 1+1 redundant	• 1+1 redundant
Fans	8 fans in 4 fan modules, rear	• 12 fans in 3 fan modules, rear
	• 6+2 redundancy (i.e., if any 2 fans fail)	• 10+2 redundancy (i.e. if any 2 fans fail)
Power supplies	• A/C or D/C	• A/C or D/C
	• 4 PSU, rear	• 12 PSU, rear
	• 1+1 redundancy	 1+1 (N working, N backup) or N+1 redundancy (N working, 1 backup)
Weight	• 20 kg	• 38 kg
Typical power	• 228 W	• 273 W
Operating	• Normal: 5 °C to +40 °C (41 °F to 104 °F)	
temperature	• Short-term: -5 °C to +45 °C (23 °F to +113 °F)	
Network	Feature-rich, multi-layer Nokia GMPLS control plane with fast res	storation
resiliency	• 1+1 client protection (O-SNCP, also Y-cable with 42P800)	
	• 1+1 line interface protection (OCH-P)	
	• 1+1 OMS and OTS with 1830 PSS/PSI-L optical line systems	
Management	WaveSuite, SNMP, WebUI, CLI, NETCONF, gRPC streaming teleme	ptrv
	 Up to 24 1830 PSS-HC shelves can be managed as a single NE 	, and y
	 Multiple 1830 PSS-HC/PSS/PSI-L shelves managed as a single NI 	E (Future)
Security	L1 encryption on 4CP4T8 PSE-6s-based transponder/muxponder	
	Part of Nokia quantum-safe networking (QSN) solution	
	• Radius, TACACS+, SSH, SFTP, TLS	
Applications	High Density 1.2T transponder/muxponder (4CP4T8)	
	High Density 800ZR/ZR+ transponder/muxponder (15CP12T)	
	Optional low speed aggregation (42P800)	
	• 2x400ZR/ZR+ low speed transponder/muxponder (42P800)	
	2x400ZR/ZR+ add/drop multiplexer (42P800)	
	Coherent transport over 1830 PSS/PSI-L optical line system (OL	.S)
	• Coherent transport over other Nokia OLS (1830 GX, 1830 FlexIL	S, 1830 XTM, 7300)
	Coherent transport over third-party optical line system	
	Distributed, card-based OTN switching (Future)	
	• Centralized, fabric-based OTN switching, 100+Tb/s (Future)	
Standards	• UL/CSA 60950-1	
	• GR-3160	
	• IEC/EN 60950-1	
	• IEC/EN 60825-1, 60825-2	
	• AS/NZS 60950.1	
	• ROHS6	
	CE Mark	



Traffic cards	4CP4T8	15CP12T	42P800
Slots required per card	• 1	• 1	• 1
Line interfaces	• Up to 4 per card	• Up to 15 per card	• 2x 400G QSFP-DD
	 PSE-6s 1.2T/140Gbaud 	• ICE-X 800ZR/ZR+	 Gray (DAC, AEC, AOC)
	 Pluggable form factor 	• QSFP-DD800	• 400ZR/ZR+
	 Total capacity: 4.8Tb/s 	 Total capacity: 12Tb/s 	 Total capacity: 800 Gb/s
DWDM bands	• C-band	• C-band	• C-band
	• L-band	• L-band	
Client interfaces	• 8xQSFP-DD	• Up to 15 QSFP-DD800	• 40xSFP+/SFP28
	 4XQSFP-DD/DD800 	 Up to 20 QSFP-DD 	
Client types	• 800GbE (max 4)	• 800GbE (max 15)	• 10GbE (max 40)
	 400GbE (max 12) 	 400GbE (max 20) 	 OTU2/2e (max 40)
	 OTUC4 (max 12) 	 OTUC4 (max20) 	• 25GbE (max 32)
	• 100GbE (max 36)	• 100GbE (max 80)	• 16G FC (max 40)
	• OTU4 (max 36)	• OTU4 (max 80)	• 32G FC (max 24)
Client bandwidth sharing	• Yes	• Yes	• No
Network resiliency	• GMPLS	• GMPLS	 GMPLS control plane
	• O-SNCP	• O-SNCP	• O-SNCP
	• OCH-P	• OCH-P	 ODUk-SNCP
	 OMS/OTS with OLS 	 OMS/OTS with OLS 	• Y-Cable
			• OCH-P
			• OLP/OMSP
Typical power	• 560 W	• 625 W	• 217 W
Applications	Transponder/muxponder	Transponder/muxponder	 Sub-100G aggregation onto 4CP4T8/15CP12T
			• 2x400ZR+ muxponder
			• 2x400ZR+ ADM

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.

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 operates a policy of ongoing development and has made all reasonable efforts to ensure that the content of this document is adequate and free of material errors and omissions. Nokia assumes no responsibility for any inaccuracies in this document and reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

© 2025 Nokia

Nokia OYJ Karakaari 7 02610 Espoo Finland

Tel. +358 (0) 10 44 88 000

Document code: 1643250 (October) CID215113