Nokia 1830 Global Express (GX) G30 Series – Compact Modular Transport

Compact modular platforms have seen fast and consistent market adoption by all types of network operators, including internet content providers (ICPs), communication service providers (CSPs), cable/multiple-systems operators (MSOs), research and education network operators, and many others in a wide variety of applications. Nokia's 1830 GX G30 Series of compact modular platforms leverages a sled-based architecture and add-as-you-grow operational model to accelerate the deployment of compact modular platforms and unleash their full potential in a wide scope of applications. It offers high capacity and low power consumption in a compact footprint, as well as support for Xponder and open line system (OLS) sleds in a single chassis. The G30 Series enables the latest high-speed coherent DWDM line rates from 100G to 800G and client interfaces from 1 Gb/s to 400 Gb/s, and is perfectly suited for CSPs, ICPs, and many other network operators that require high-capacity networking. Nokia's 1830 GX G30 Series products comprise the 1830 GX G31 and 1830 GX G32 chassis variants with a 600-mm-deep form factor and the 1830 GX G34c and 1830 GX G34Xc chassis variants with a 300-mm-deep form factor. All 1830 GX G30 Series products support field-replaceable system controllers, while the 1830 GX G32, 1830 GX G34c, and 1830 GX G34Xc chassis also support redundant field-replaceable system controllers. The 1830 GX G34Xc chassis is functionally equivalent to the 1830 GX G34c chassis with the addition of a high-speed backplane for slot pairing of OTN switching sleds.

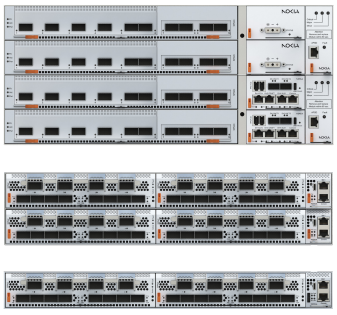
The Benefits of Nokia's 1830 GX G30 Series Compact Modular Platforms

The significant business and operational benefits of Nokia's 1830 GX G30 Series can be summarized as follows:

- **Multi-generational pay-as-you-grow mode of operation**: The sled-based design allows network operators to eliminate up-front costs and leverage new technologies as they become available. Network operators can add capacity and change configuration through sleds when and how they want to, while scaling horizontally by adding new sleds and vertically through the addition of new chassis in a pay-as-you-grow and power-as-you-grow operational model.
- **Carrier-grade features**: The 1830 GX G30 Series is designed to be carrier grade. Key features such as hot-swappable controllers; redundant controllers on 1830 GX G32, 1830 GX G34c, and 1830 GX G34Xc chassis variants; redundant AC/DC power supplies; redundant fans and I/O panels; and standard open APIs allow seamless deployment and integration into ICP and CSP networks.
- **Support for open line system and Xponders**: The 1830 GX G30 Series supports both open line system and Xponder (transponder, muxponder, and switchponder) configurations, and operators have the flexibility to utilize both functions. Support for open line system includes fixed OADM and ROADM configurations, including four-, nine-, 12-, and 20-degree ROADMs and colorless,

Benefits of the Nokia 1830 GX G30 Series

- Decrease total cost of ownership with more capacity at longer reaches, a compact footprint, and low power consumption
- Maximize ROI with a sled-based architecture for a multi-generational optical engine
- Add as you grow by smoothly adding capacity when and how you want and eliminating the up-front cost of buying all the hardware on day one and the associated CapEx
- Power as you grow by seamlessly adding sleds into the system as demand arises
- Simplify turn-up and lifecycle management with easy installation, quick service turn-up, and intuitive management
- Seamlessly integrate compact modular into your CSP network with numerous carrier-grade features
- Combine or disaggregate Xponder and line system functionalities
- Open your network with native support for standard open APIs (YANG, OpenConfig, Open ROADM MSA, etc.)
- Automate and streamline operations with streaming telemetry and declarative configuration



The Nokia 1830 GX G30 Series Compact Modular Platforms 1830 GX G34c/G34Xc, 1830 GX G32, and 1830 GX G31

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directionless, and contentionless add/drop structures. Xponder sleds support the latest coherent pluggables, including 400G QSFP-DD DCO optics and embedded optical engines. Xponders and line systems can be deployed in the same chassis, providing market-leading network configuration density.

- **Open and disaggregated principles**: The 1830 GX G30 Series is built around the principles of hardware disaggregation, open standards such as Open ROADM MSA, and open APIs with standard YANG OpenConfig data models, which further facilitates multi-vendor interoperability and prevents vendor lock-in.
- **Significantly reduced transport costs**: Nokia builds upon the success of the sled-based architecture by offering a complete portfolio of compact modular platforms that addresses all networking areas, from access, metro, and core to long-haul and submarine networks.
- **Built for automation**: The 1830 GX G30 Series supports numerous features and capabilities to automate tasks, streamline operations, and eliminate sources of human error. Such features include declarative configuration management, streaming telemetry (gRPC, gNMI), open APIs, and standards-based YANG models. Support for extensible NOS application agents enhances analytics while enabling better network-wide performance monitoring.

Wide Application Scope

With its sled-based architecture, carrier-grade features, and variety of chassis types, Nokia's 1830 GX G30 Series compact modular platforms can be deployed in a wide variety of applications. These include:

- Installation in ETSI-compliant 600-mm and 800-mm racks for 1830 GX G30, 1830 GX G31, and 1830 GX G32
- Installation in ETSI-compliant 300-mm racks for 1830 GX G34C and 1830 GX G34Xc
- Reducing the cost of optical transport in metro, regional, and long-haul networks
- Expanding network coverage and capacity of existing optical line systems
- Maximizing spectral efficiency in metro, regional, long-haul, and submarine networks for more capacity at longer distances
- Addressing data center interconnect applications regardless of distance
- Utilizing multi-service low-speed service aggregation and switching with OTN ADM and OTN switching sleds
- Introducing cost-effective high-speed 100 GbE/400 GbE client services
- Upgrading metro/regional networks for 5G and DAA
- Enhancing 5G networks with timing transport for SyncE and IEEE 1588 PTP
- Delivering advanced photonic capabilities over open line systems
- Providing next-generation open line system functionality with the smallest footprint and minimal power consumption
  - Fixed OADM applications
  - ROADM C, CD, CDC applications
  - Flexible grid for ultra-high baud rates
  - Super C- + Super L-band
  - Raman amplification

1830 GX G31 Technical Specifications

Number of Slots
- 4 single-slot sleds, 2 double-slot sleds, or mixed

Physical Dimensions
- 1RU: 44 mm (H) x 440 mm (W) x 500 mm (D)
- 1RU: 1.732 in (H) x 17.32 in (W) x 19.68 in (D)

Weight
- Common equipment: 8.6 kg/18.9 lbs
- Fully filled with double-width module: 15.2 kg/33.5 lbs

Environmental Characteristics
- Normal operating temperature: -5° C to 45°/55° C; 23° F to 122° F
- Operating humidity: 93% maximum

Power
- 1 kW output capacity
  - DC: -36 V – -75 V DC, max 30A
  - AC: 100 V – 127 V AC, max 12A
  - AC: 200 V – 240 V AC, max 9A

1830 GX G32 Technical Specifications

Number of Slots
- 8 single-slot sleds, 4 double-slot sleds, or mixed

Physical Dimensions
- 2RU: 88 mm (H) x 441 mm (W) x 500 mm (D)
- 2RU: 3.465 in (H) x 17.36 in (W) x 19.68 in (D)

Weight
- Common equipment: 17.3 kg /38.14 lbs
- Fully filled with double-width module: 44.3 kg/97.66 lbs

Environmental Characteristics
- Normal operating temperature: 0/-5° C to 40°/55° C; 23° F to 131° F
- Operating humidity: 93% maximum

Power
- 2.4 kW output capacity
  - DC: -40 V – -72 V DC
  - AC: 100 V – 127 V AC
  - AC: 200 V – 240 V AC

1830 GX G34c Technical Specifications

Number of Slots
- 8 single-slot sleds, 4 double-slot sleds or mixed

Physical Dimensions
- 4RU: 176 mm (H) x 468 mm (W) x 260 mm (D)
- 4RU: 6.929 in (H) x 18.42 in (W) x 10.24 in (D)

Weight
- Common equipment: 7.2 kg/15.8 lbs

Environmental Characteristics
- Normal operating temperature: 0/-5° C to 40°/55° C; 23° F to 131° F
- Operating humidity: 93% maximum

Power
- 1.3 kW output capacity
  - DC: -40.5 V to -72 V DC
  - AC: low line: 90 V – 132 V AC
  - AC: high line: 180 V – 264 V AC

1830 GX G34Xc Technical Specifications

Number of Slots
- 8 single-slot sleds, 4 double-slot sleds or mixed
- Support for a high-speed backplane for slot pairing of OTN switching sleds

Physical Dimensions
- 4RU: 176 mm (H) x 468 mm (W) x 260 mm (D)
- 4RU: 6.929 in (H) x 18.42 in (W) x 10.24 in (D)

Weight
- Common equipment: 7.5 kg/16.53 lbs

Environmental Characteristics
- Normal operating temperature: 0/-5° C to 40°/55° C; 23° F to 131° F
- Operating humidity: 93% maximum

Power
- 1.3 kW output capacity
  - DC: -40.5 V to -72 V DC
  - AC: low line: 90 V – 132 V AC
  - AC: high line: 180 V – 264 V AC

1830 GX G30 Series Technical Specifications

Common Equipment
- Field-replaceable controller
- Redundant/field-replaceable controllers for 1830 GX G32 and 1830 GX G34C
- Redundant/field-replaceable power supply
- Redundant/field-replaceable fan unit
- Power options: AC or DC power

Management and Automation
- CLI, SNMP, Syslog, WebGUI
- Nokia Transcend Network Suite
- API: NETCONF, gRPC/gNMI, RESTCONF APIs based on OpenConfig/IETF and Open ROADM/IETF YANG models in addition to Nokia open API models; streaming telemetry; declarative configuration models; CLI scripting; Python scripts hosted using guest container and shell
- Automation: zero-touch provisioning (ZTP), LLDP, line system integration and automation

Security
- Secure boot, IEEE 802.1AR iDevID, secure key store, secure memory wipe
- L3 ACL, IPsec, NTP authentication
- SSHv2, HTTPS/TLS1.2, AAA, TACACS+, RADIUS, MFA for SSH, SFTP, SCP
- AES-256-GCM wire-speed L1 bulk encryption (line side), IKEv2 with PSK or X.509 certificate option

Regulatory and Compliance
- RoHS-6-compliant and lead-free per Directive 2002/95/EC
- GR-3160-Core Generic Requirements for Telecommunications Data Center Equipment and Spaces
- Telcordia GR-326-Core Generic Requirements for Single-Mode Optical Connectors and Jumper Assemblies
- Telcordia GR-1435-Core Generic Requirements for Multi-Fiber Optical Connectors
- Emissions: FCC Part 15 Class A, EN55022/CISPR Class A Compliant, CE Laser Safety: ANSI Class 1M, IEC Class 1M, EN 60825-1/2, 21 CFR 1040 US FDA CDR, Class 1
- Electrical safety: UL 60950, CSA22.2 60950 and IEC 60950

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.

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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