DCI Solutions

Data Center Interconnect

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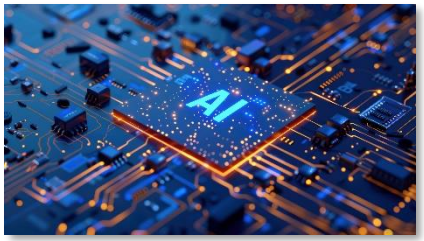
April 2025

Critical network challenges in the AI era

Bandwidth



100%

AI-Related Bandwidth CAGR [1]

AI accelerating bandwidth growth

Data Centers

27%

Data Center Capacity CAGR [2]

Power constraint fueling rapid growth in new DC builds

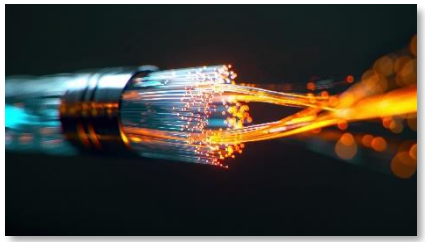
Power

2.6x

Data Center Power Requirements [3]

AI increasing power demands creating constraints

Line Systems



2x

OLS Requirements by 2027 [4]

Fiber capacity exhaust fueling new deployments

1. Meta at ECOC 2024; 2. Goldman Sachs; 3. McKinsey and Company; 4. Omdia and Nokia

Data Center Interconnect (DCI)

Data centers need high speed optical connectivity to other data centers

DCI Traffic

Predominantly point-to-point connections

Transport Services

N x 400G Transparent (today)

N x 800G Transparent (future)

Transport Network Delivery Options

A — CSP Managed Service

B — Indirect via. MOFN (with CSP)

C — ICP Private Build

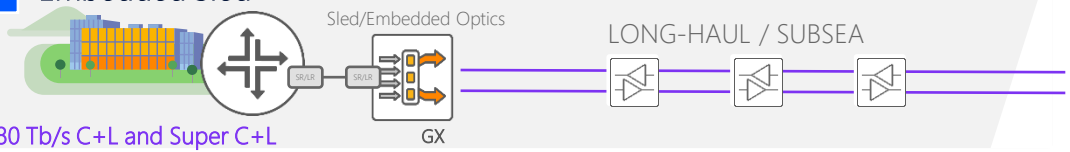
DCI solutions delivered

1 Embedded Sled

600G / 800G / 1.2T+

Sled/Embedded Optics

LONG-HAUL / SUBSEA



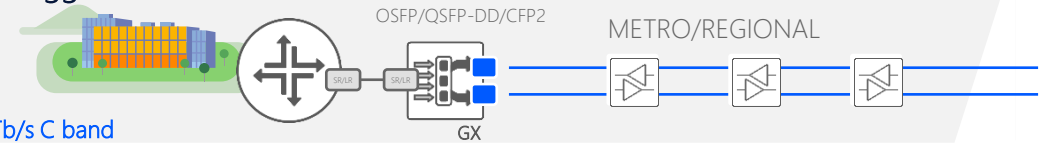
>80 Tb/s C+L and Super C+L

2 Pluggables Sled

ICE-X 400G / 800G ZR+

OSFP/QSFP-DD/CFP2

METRO/REGIONAL



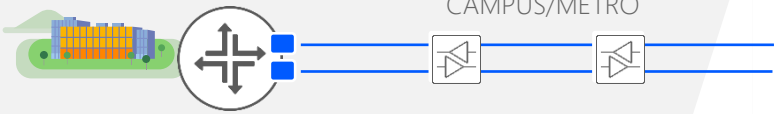
25.6 Tb/s C band

3 IPoDWDM

ICE-X 400G / 800G ZR/ZR+

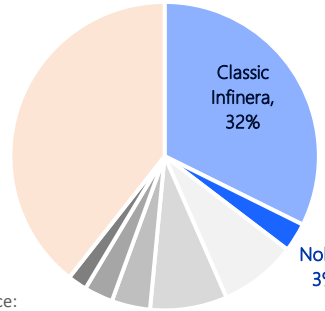
OSFP/QSFP-DD

CAMPUS/METRO



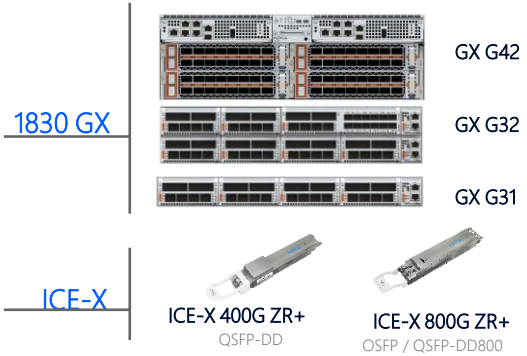
25.6 Tb/s C band

DCI Purpose Built



#2 Market Share

Source: 3Q24, OMDIA (Global)



Reduce Cost/Bit/Km with Embedded and Reduce Power, Space with Pluggables

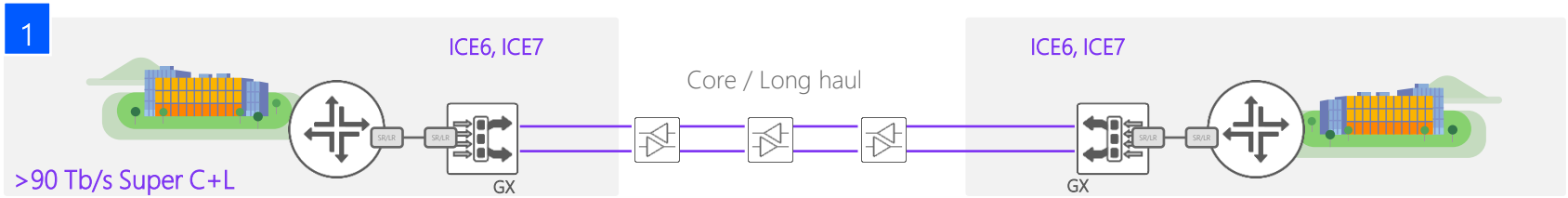
Nokia ICE-X coherent pluggables for GX Xponder or IPoDWDM

Reduced space and power, rich functionality

ICE-X 400G	ICE-X 800G	ICE-X 1.6T
Today	2025	Future
Unique Capabilities	Interoperability, Intelligence, Economics, Performance	
 100G to 400G CFP2/QSFP-DD	 400G to 800G OSFP/QSFP-DD	 400G to 1.6T OSFP/QSFP-DD/OSFP-XD
FOCUS APPLICATIONS	FOCUS APPLICATIONS	FOCUS APPLICATIONS
4 x 100G Coherent Breakout Single-Fiber BiDi High Speed Biz Svcs (PON Overlay) 400G Point-to-Point >1,000 km	400G/800G Point-to-Point 1,300km with **Interoperable** PCS 400ZR and 800ZR **OIF Compliant** Multiple Tier 1 Design Wins	1600ZR for 120 km OIF ZR 1600ZR+ for Metro/LH/ULH 800G Upgrade

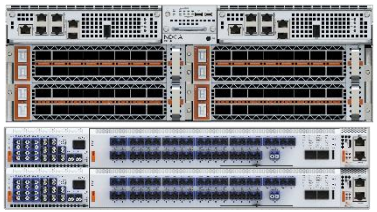
DCI with embedded engine to maximize fiber capacity

Leverage high performance embedded optics like CHM7 with 2 x 1.2T (64QAM)



Router

100GE / 400G /800 GbE



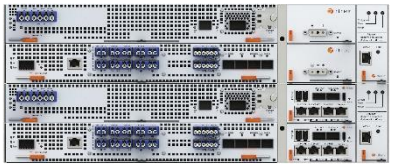
GX G42 and GX G32 – 600mm front to back airflow

9.6Tb/s line capacity per chassis (4x CHM7 in G42)

2x 32D ROADM with CDC add/drop (2RD32 + 2x CDC8D6)

Super C + L

11.6 THz spectrum



GX G34 – 300mm front to side airflow

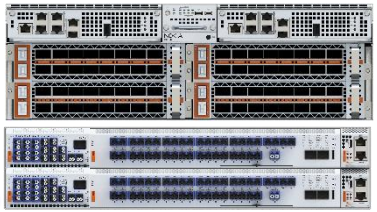
East and West EDFA Super C-Band (1x BiDi EDFA)C)

East and West EDFA Super L-Band (1x BiDi EDFA L)

Optional: 2x RAMAN Super C+L (2x RPBM)

Router

100GE / 400G /800 GbE



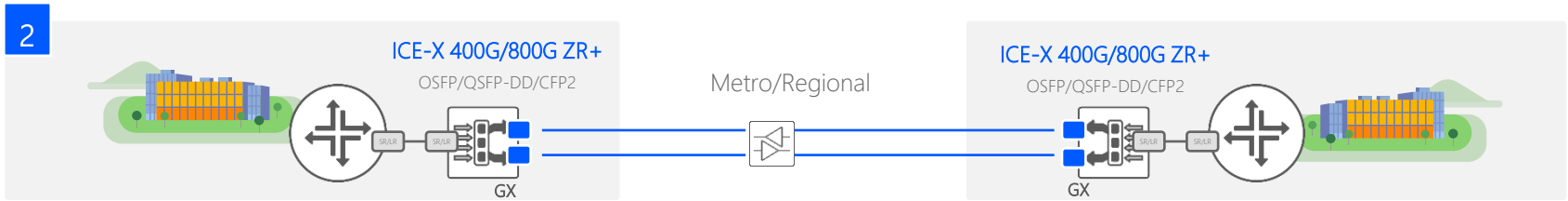
GX G42 and GX G32 – 600mm front to back airflow

9.6Tb/s line capacity per chassis (4x CHM7 in G42)

2x 32D ROADM with CDC add/drop (2RD32 + 2x CDC8D6)

DCI with pluggables in optical gear for lower power and space

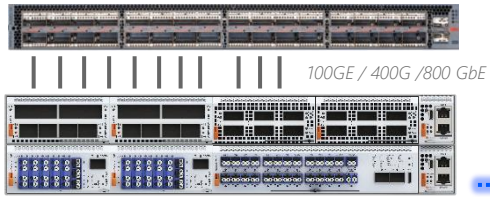
Leverage 400G ZR+ and 800G ZR+ pluggables in Xponders



C-Band / Super C-Band

4.8 THz / 6.1 THz spectrum

Router



GX G32 – 600mm front to back airflow

20D ROADM with 20 port colorless (RD20 + 2x CAD10)

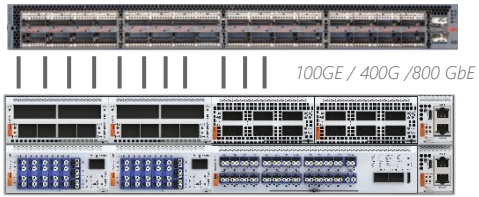
4x 400G ZR+ & 2x 800G ZR+ (2x CHM1R + 2x CHMQ6)

GX G34 – 300mm front to side airflow

East and West EDFA (1x BiDi EDFA)

Optional: 2x RAMAN (2x RPBM)

Router



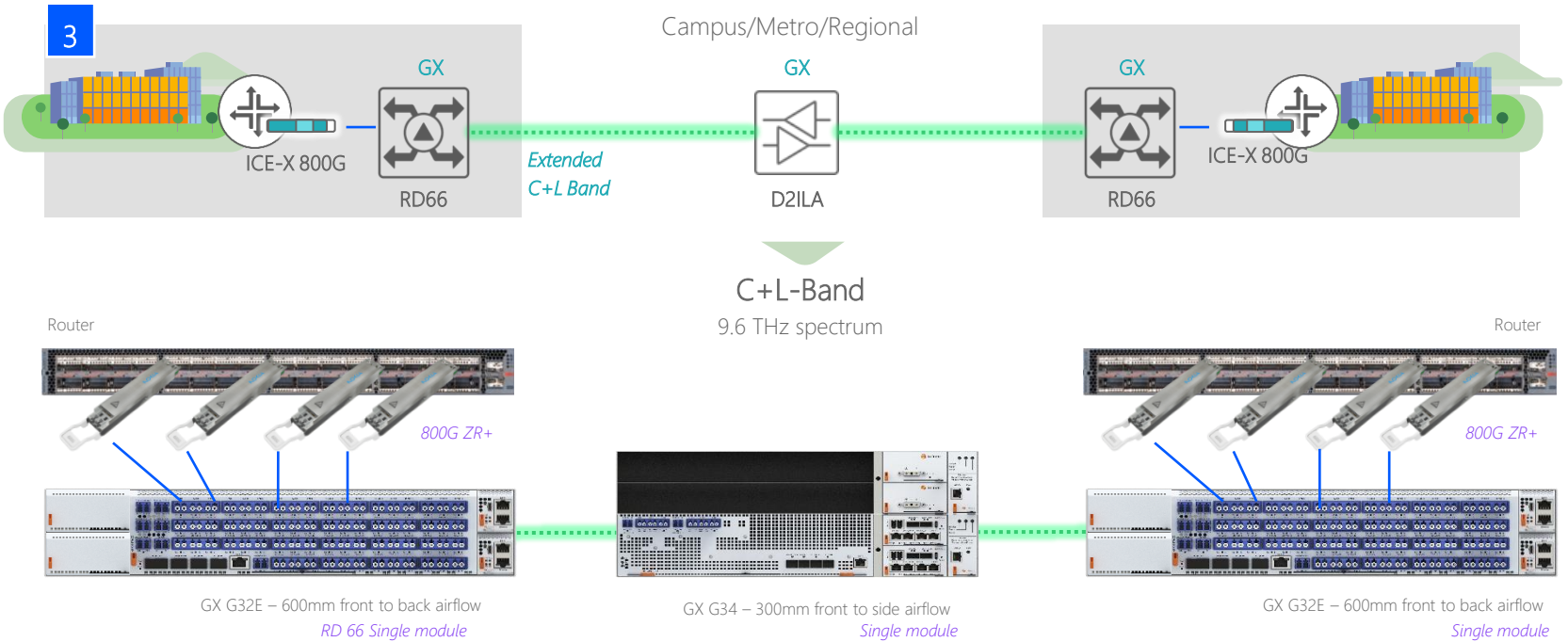
GX G32 – 600mm front to back airflow

20D ROADM with 20 port colorless (RD20 + 2x CAD10)

4x 400G ZR+ & 2x 800G ZR+ (2x CHM1R + 2x CHMQ6)

DCI with IPoDWDM and hyperscale OLS for full-fill fiber

Leverage RD66 and 800G ZR+ pluggables in router



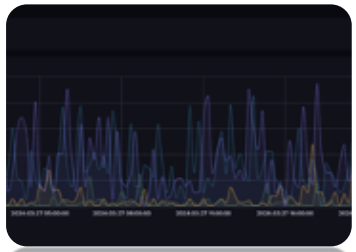
Preventative network health from real-time, high-res data

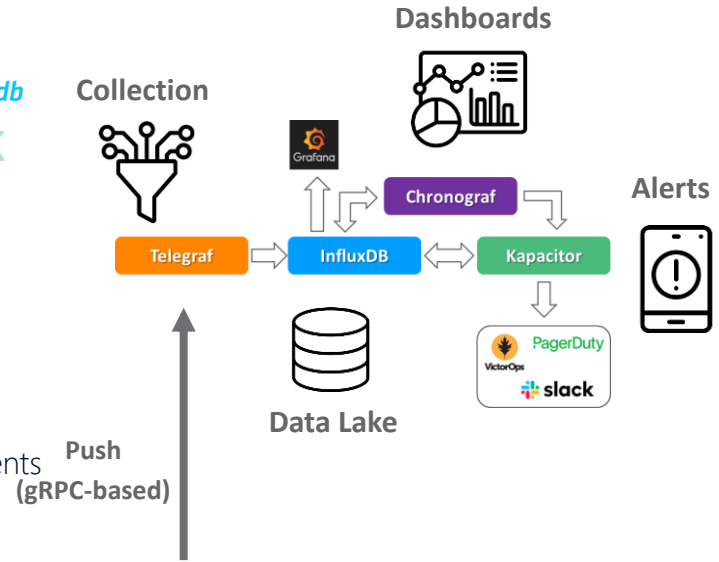
The Value of Streaming Telemetry

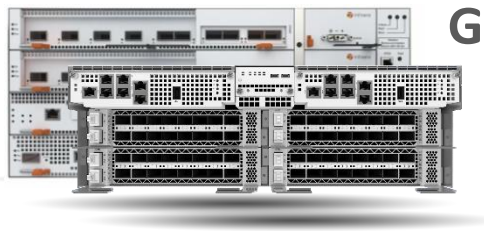
- Enables predictive maintenance
- Supports preventative trouble-shooting
- Sets the table for real-time network optimization, QoE remediation when paired with ML
- Reduced CPU load due to efficient push mechanism

Open-source application stack (TICK) from Influxdata

- Continuous data push (2-minute interval) from a variety of network components
- CPU, Memory, Temperature, Fans, Wavelength performance
- Saves this info to InfluxDB (time series database/data lake)
- Custom visualization and dashboard creation
- Kapacitor (alerting mechanism)







lower latency, higher scalability data reports

Streaming Telemetry – Embedded optics transponder (ICE6)

Streaming Telemetry – coherent pluggable 400G ZR+

Streaming Telemetry – OLS dashboard

Streaming Telemetry - CPU, Memory, Temperature

Summary

Data centers, DCI driving growth

Data Center Growth

AI is turbocharging data center construction with DCI the fastest growing segment

Flexible DCI Solution

DCI requires a flexible toolbox including compact modular platform and pluggables

Telemetry Streaming

Creating new options for preventive and reactive troubleshooting of DCI ecosystem


NOKIA

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