



DCI Solutions

Data Center Interconnect

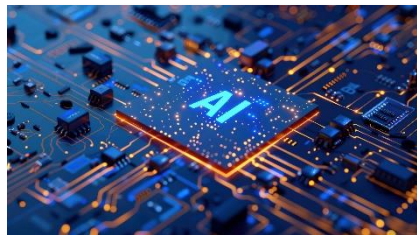
Robert.Bondarenko@NOKIA.COM

April 2025



Critical network challenges in the AI era

Bandwidth

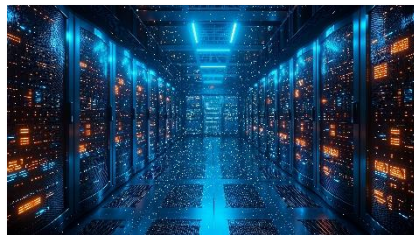


100%

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

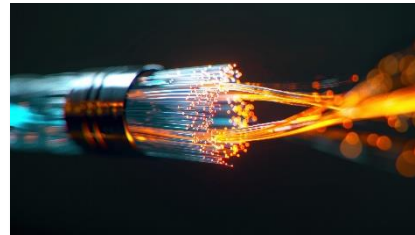


2.6x

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

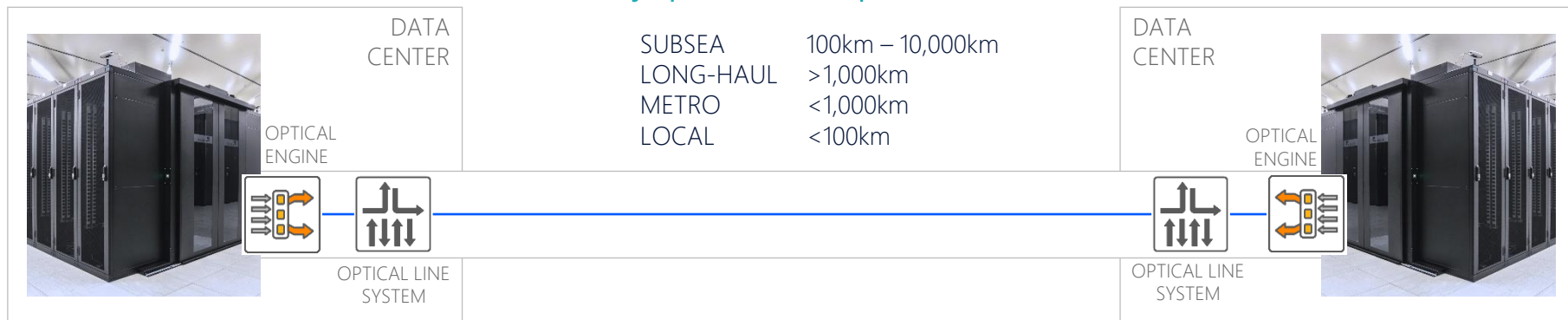
1. Meta at ECOC 2024; 2. Goldman Sachs; 3. McKinsey and Company; 4. Omdia and Nokia

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)

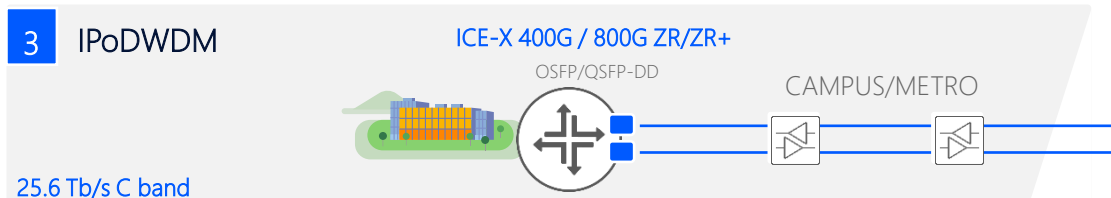
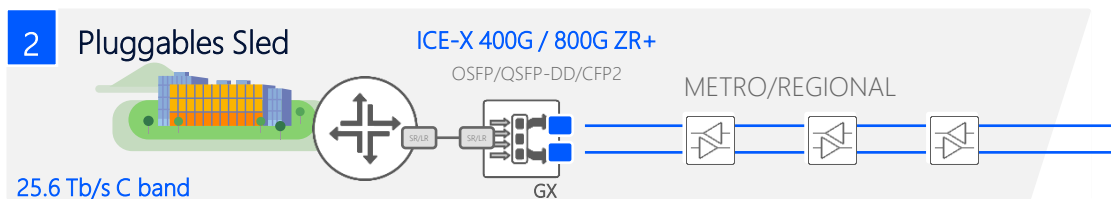
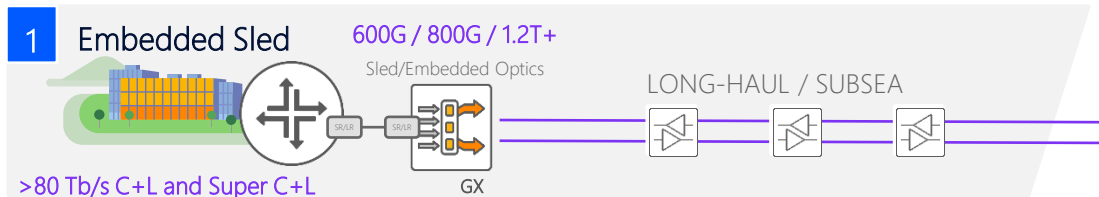
Transport Network Delivery Options

A CSP Managed Service

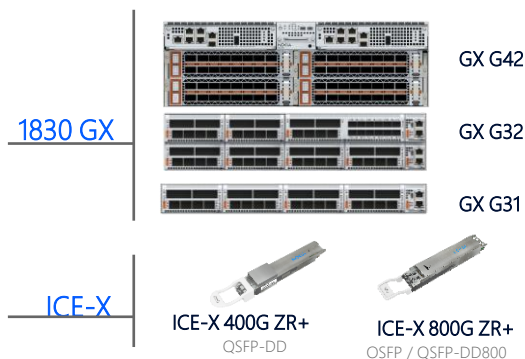
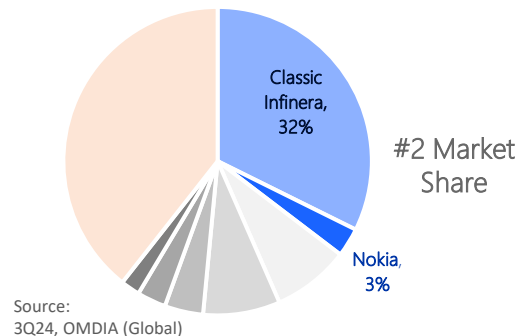
B Indirect via. MOFN (with CSP)

C ICP Private Build

DCI solutions delivered



DCI Purpose Built



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

Today

Unique Capabilities



100G to 400G
CFP2/QSFP-DD

FOCUS APPLICATIONS

4 x 100G Coherent Breakout
Single-Fiber BiDi
High Speed Biz Svcs (PON Overlay)
400G Point-to-Point >1,000 km

ICE-X 800G

2025

Interoperability, Intelligence, Economics, Performance



400G to 800G
OSFP/QSFP-DD

FOCUS APPLICATIONS

400G/800G Point-to-Point
1,300km with **Interoperable** PCS
400ZR and 800ZR **OIF Compliant**
Multiple Tier 1 Design Wins

ICE-X 1.6T

Future



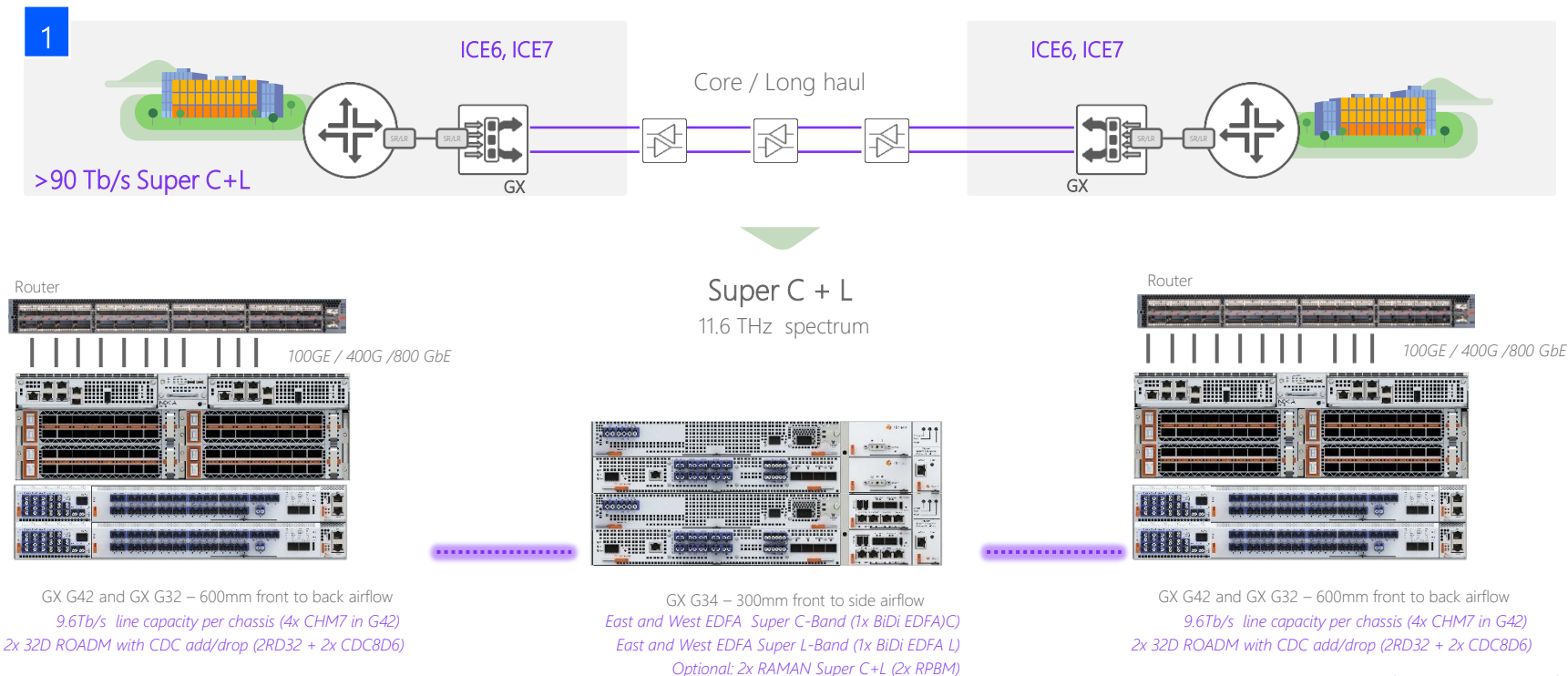
400G to 1.6T
OSFP/QSFP-DD/OSFP-XD

FOCUS APPLICATIONS

1600ZR for 120 km OIF ZR
1600ZR+ for Metro/LH/ULH
800G Upgrade

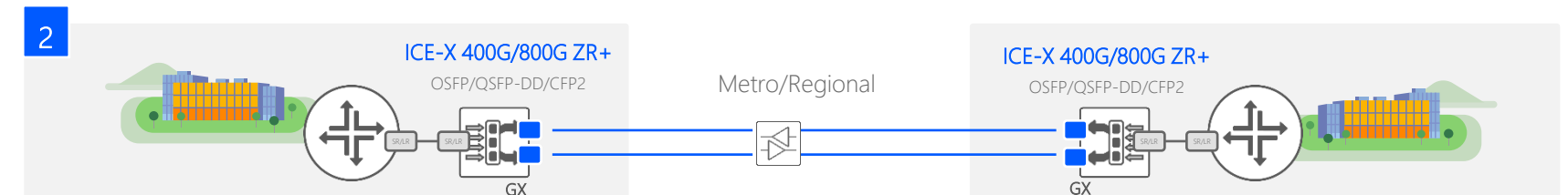
DCI with embedded engine to maximize fiber capacity

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

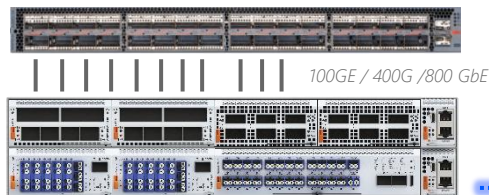


DCI with pluggables in optical gear for lower power and space

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



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)

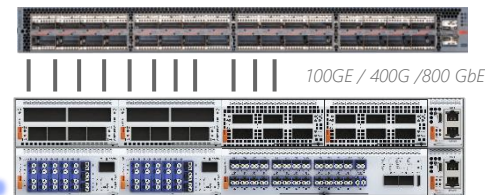
C-Band / Super C-Band

4.8 THz / 6.1 THz spectrum



GX G34 – 300mm front to side airflow
East and West EDFA (1x BiDi EDFA)
Optional: 2x RAMAN (2x RPBW)

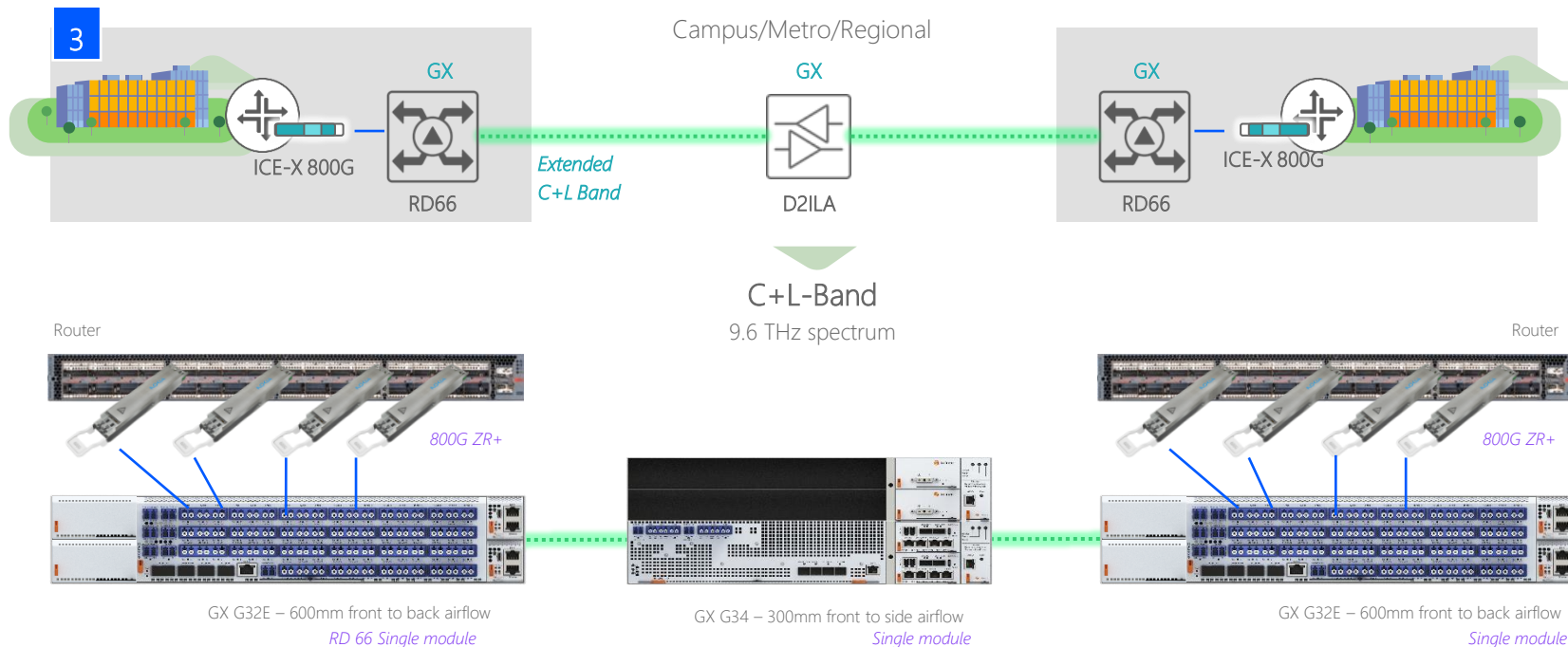
Router



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



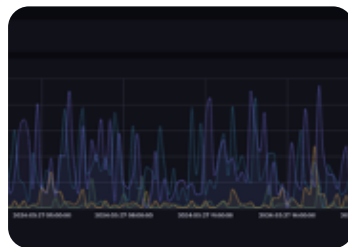
Preventative network health from real-time, high-res data

The Value of Streaming Telemetry

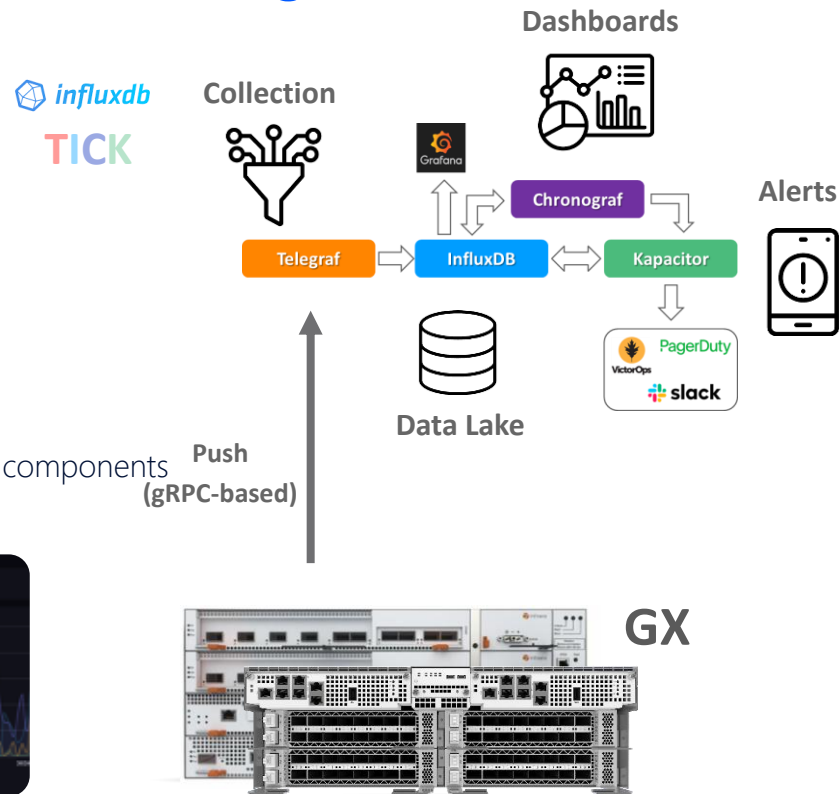
- Enables predictive maintenance
- Supports preventative trouble-shooting
- Sets the table for real-time network optimization, QoE remediation when paired with ML
- Reduced CPU load due to efficient push mechanism

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

[OFC24] OLS Dashboard

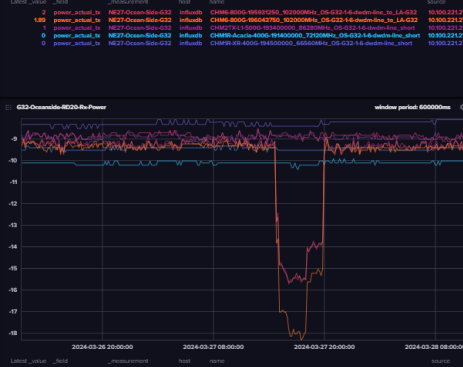
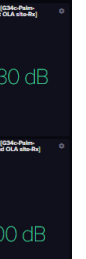
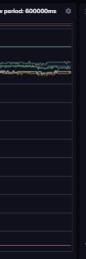
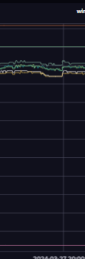
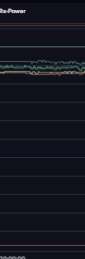
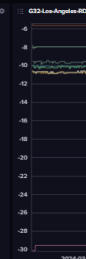
ADD CELL ADD NOTE Show Variables Enable Annotations

SET AUTO REFRESH Local 2024-03-26 11:15 to 2024-03-2...

This dashboard doesn't have any cells with defined variables. [Learn How](#)



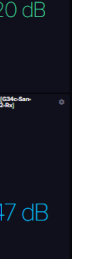
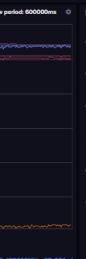
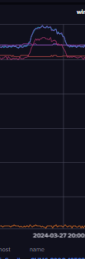
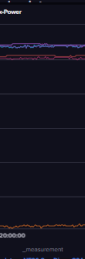
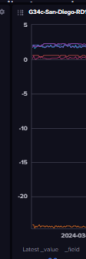
10.92 dB



11.16 dB



The cells in this dashboard have been arranged exactly like the logical setup diagram. This should make it easy for the viewer to visualize and



10.30 dB

11.00 dB

11.20 dB

9.47 dB

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

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