palais des congrès de paris

Evolving Network Architectures: From Hardware to Sustainable NaaS

Bart Janssens
Principal Network Architect
Colt Technology Services

26TH EDITION

MPLS&SRV6AINETWORLD 25/27MAR25

Drivers Network Architecture Evolution - NaaS

Market

"Customers define Intent"
Latency, disjoint, custom path, lowest emission, capacity, …
Sustainable packet services 1G-400G

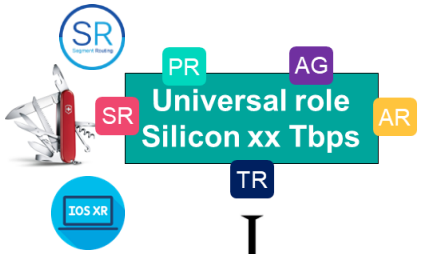
"Ethernet underlay growth"
Coverage with stable scalable connectivity,
AI Data Underlay

- AI Data Underlay
- Intent Based Networking
- Access Aggregator
- Global On Net Connectivity
- Multi Cloud Connectivity
- Overlay Solutions
- 3rd Party Digital Solutions
- SME Solutions

Cloud Like Packet Fabric

API driven interface
Subscription or usage based
Network path programmability

Visualization preview intent
Realtime visibility and control
Closed loop automation steps towards AN



I

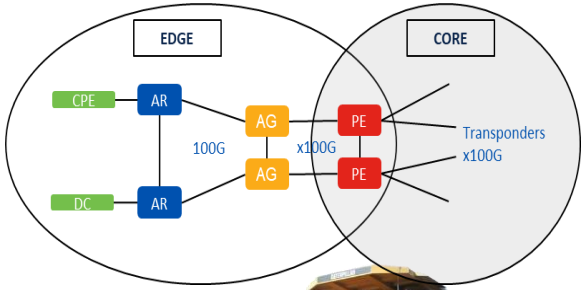
II

III

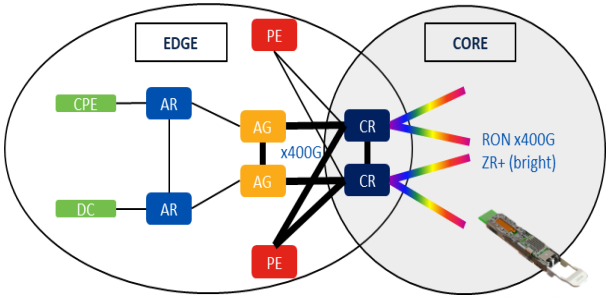
IV

V

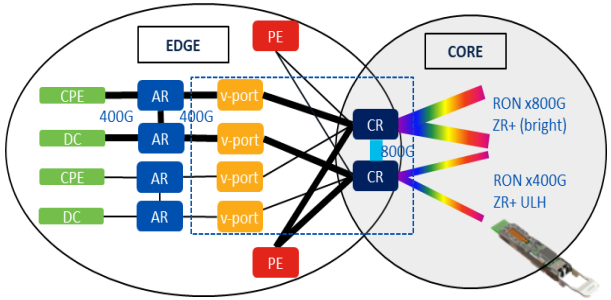
I + II Continuous Network Architecture Evolution



2017-2021



2021-Today



2025-2027

PE 21U

171W 100G eq.

AG 13U

26W 100G eq.

CR 1U 10.8Tbps

5W 100G eq.
(-97%)

AG 2U 10.8Tbps

7W 100G eq.
(-73%)

PE 3U 3.6Tbps

54W 100G eq.
(-68%)

- XL space reduction -82%
- XL BW increase / 1U (up to 35x)
- XL power reduction / 100G eq.

"Universal role silicon"

CR 2U 19.2 up to xx Tbps
TR AG

<5W 100G

1U L2 PHY v-ports 1-400G
v-port

PE AR TR 1U 5.6Tbps

<15W 100G
(-72%)

- Space reduction continues
- BW/ single ASIC further multiplies
- XL power reduction / 100G eq.

Packet Core LDN	4x 100G WL
BRU-LON 455km	1188W

Packet Core LDN	400G WL	400G RON
BRU-LON 455km	792W	113W
versus 4x100G WL	-33.3%	-90.5%
versus 400G WL		-85.7%

Capex
Up to -60%

colt First 800G ZR+ bright
666km FRA-MUC
< capex < opex

Production SDN - PCA Architecture

Provider Connectivity Assurance

Rest API

SDN PQS "path query service"

Fetch:
- Topo
- Latency
- Power
- CE

Rest API

Query paths

SDN API GWAY

Rest API

Intent request

Colt On Demand Portal

API Integration

Colt On Demand Platform

Rest API

Configure or update service

SDN Service Manager

IT stack
- SOM
- Inventory
- FM/PM
- …

gRPC

- Power
- Service KPI's

- Topo
- Latency

gRPC

Compile path(s) (intent constraints)

Rest API

Get path

PCA Collectors

Power Services

Routing Analytics

RA

Traffic Engineering Agent

TEA

Federation Layer

Network Abstraction Layer

XRD

gNMI (gRPC)

BGP-LS (Topology, SR-PM)
Discover deployed "explicit path services"

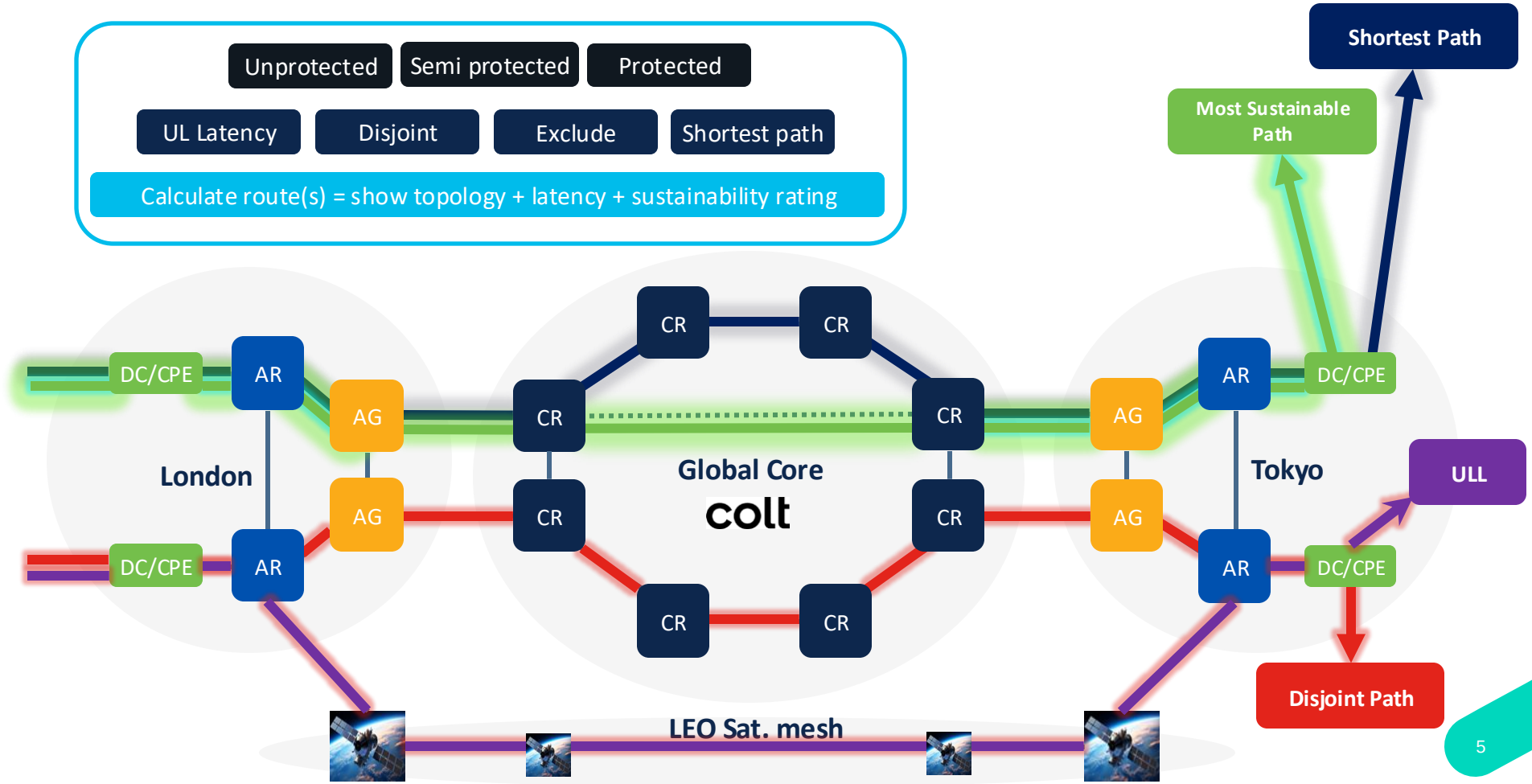
COLT AS8220 SR "Packet Fabric"

Intent Based Networking

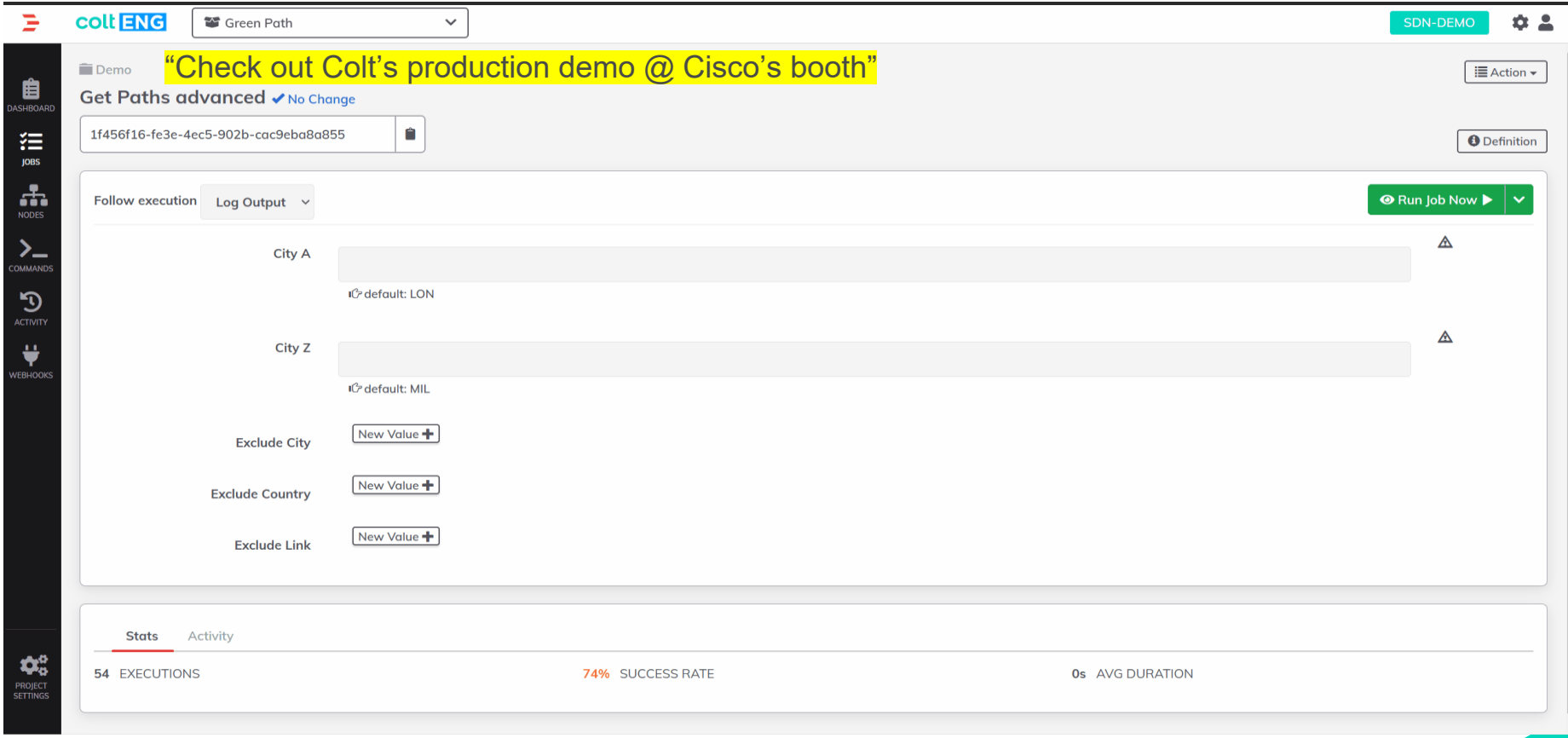
Unprotected | Semi protected | Protected

UL Latency | Disjoint | Exclude | Shortest path

Calculate route(s) = show topology + latency + sustainability rating



Network as a Service – FRA-SEA SDN Back End Demo



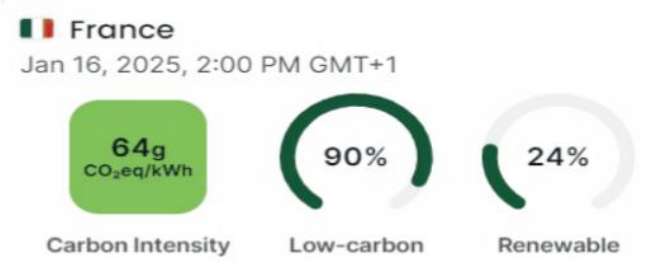
Network as a Service – Smarter & Sustainable

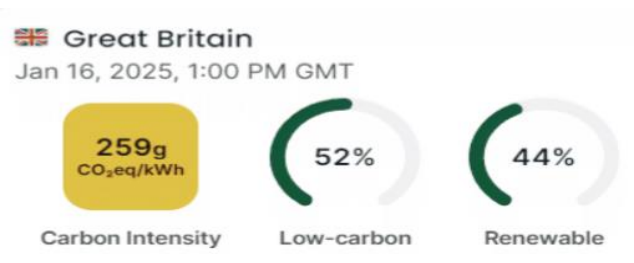
Sustainability rating – how "good" is a specific path compared to the other paths available for this route

* Data shown is indicative

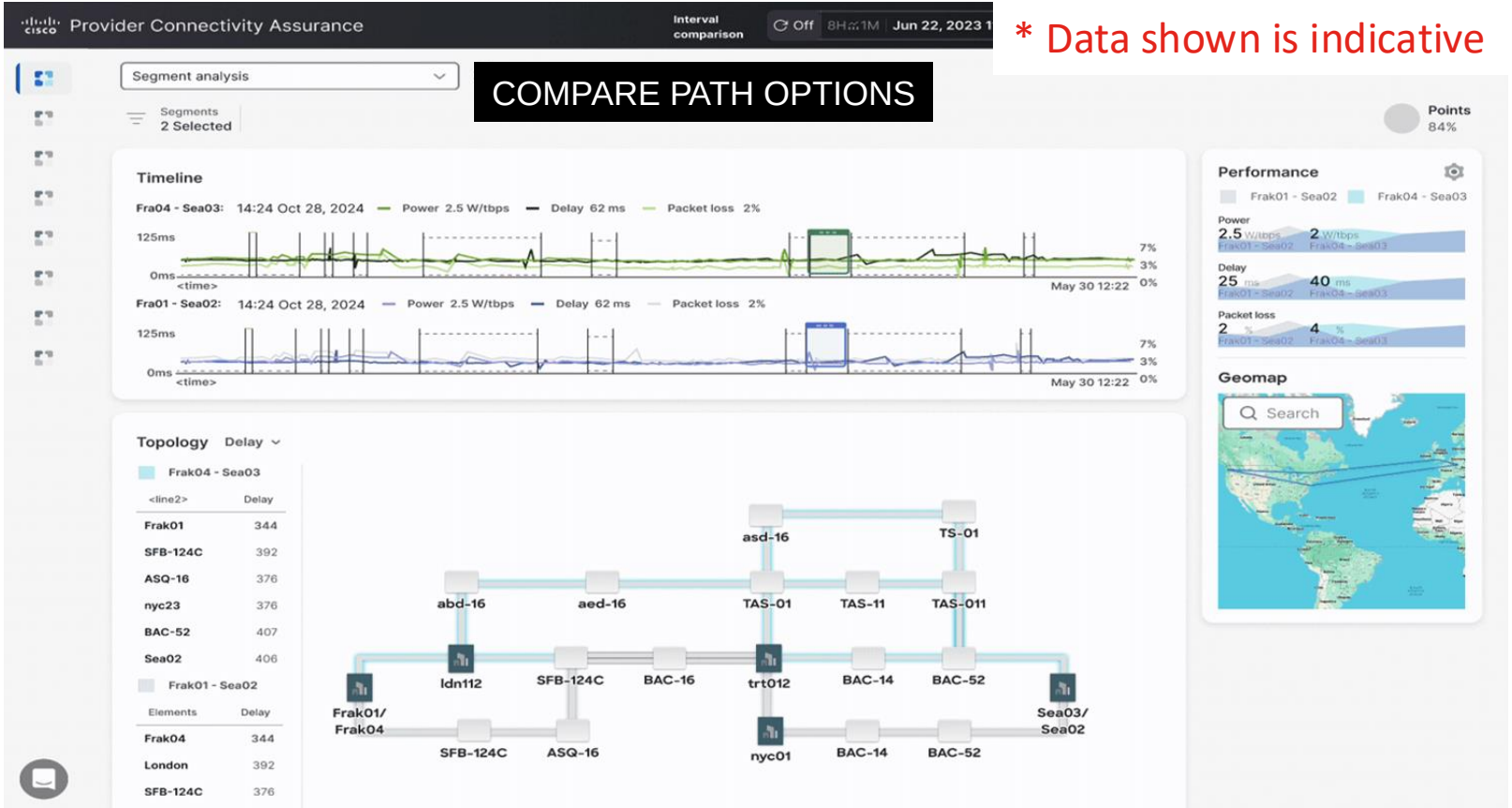
CO_2 emissions (g)=Power (W) × Time (hours) × Emission Factor (g CO_2/Wh)

A-End	Z-End	Route ID	Available Path	CO2e g/hour	Service Wattage	Latency ms	Sustainability Rating
Frankfurt	Seattle	route4	FRA-SXB-PAR-WAS-CHI-SEA (subsea Dunant)	6.540423	28.761	75.329	5
Frankfurt	Seattle	route5	FRA-SXB-PAR-WAS-LAX-SEA (subsea Dunant)	7.391943	31.422	84.925	4
Frankfurt	Seattle	route3	FRA-SXB-PAR-LON-NYC-CHI-SEA (subsea Eurotunnel & AEC1)	7.455279	33.885	71.582	4
Frankfurt	Seattle	route1	FRA-LUX-BRU-LON-NYC-CHI-SEA (subsea Tangerine & AEC1)	9.218271	33.732	69.597	3
Frankfurt	Seattle	route2	FRA-DUS-AMS-BRU-LON-NYC-CHI-SEA (subsea Tangerine & AEC1)	11.22173	38.868	70.717	2





IV Network as a Service – Next Level PCA Views



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Thank you

Bart: www.linkedin.com/in/bart-janssens-166b6b

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