

# Multi Domain – Space - Ground - SubSea Optical Networking

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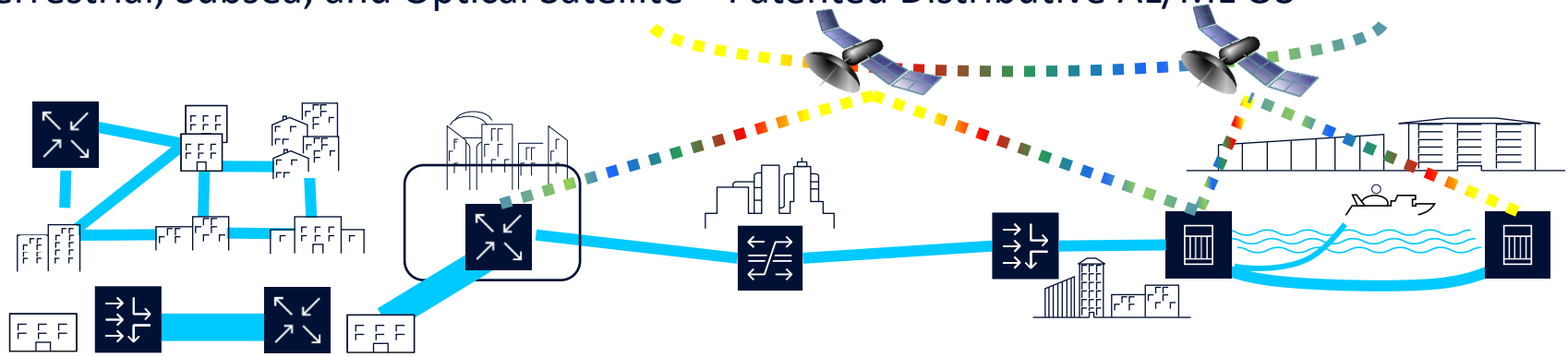
**NOKIA**

EPIC

17<sup>th</sup> SEPT 2024

# The Network of the Future – Global, Multi-Domain, Self-Aware

## Terrestrial, Subsea, and Optical Satellite – Patented Distributive AL/ML OS



Elastic Networking - Low Latency - Direct Connect - On-Demand - End-End Spectrum Slicing

1830 PSI-M  
Data Centre  
Metro, Micro, Far Edge  
subsea



1830 PSS  
Central Office

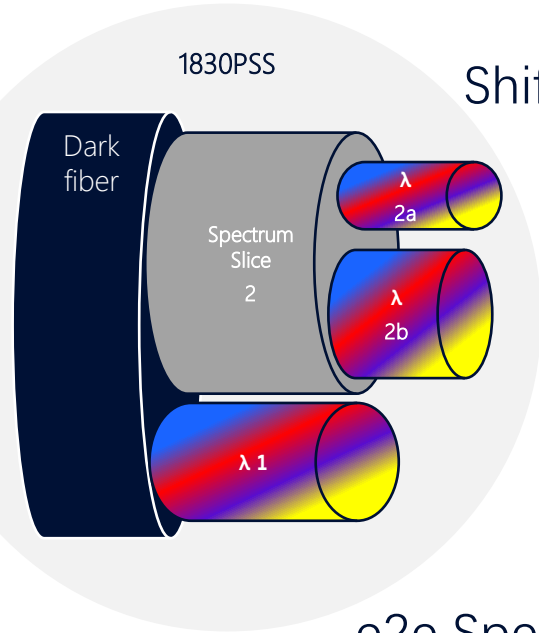


1830 PSS-x  
P-OTN Switching

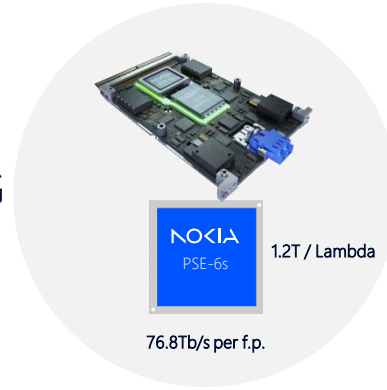
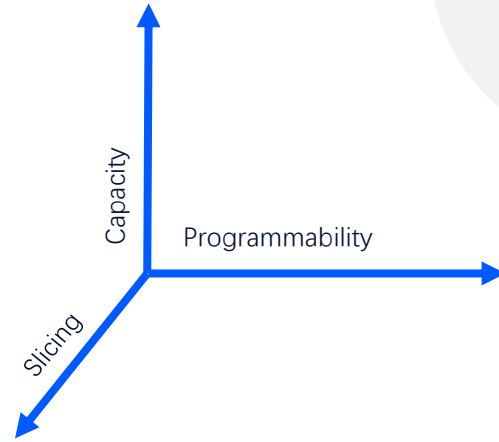


# Global Data Transport

Market and technology requirement



Shift gear to N x 800G



Network virtualization and multi-tenancy

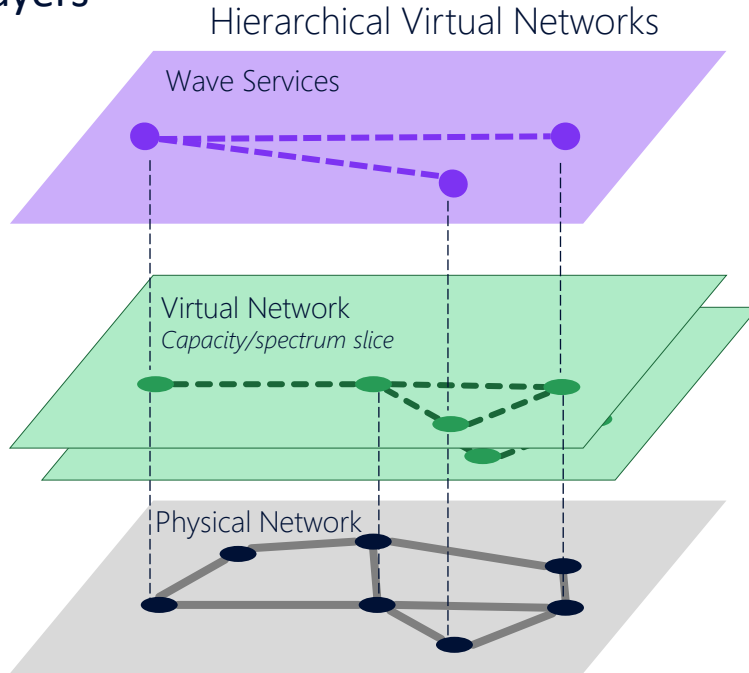


e2e Spectrum Sharing



# Multi-Domain Management Layers

Patented AI/ML-based Product, Transport, Management Layers



## WaveSuite StarBeam™



- Multi-Domain Orchestration
- End user
- OTT
- Premium reseller
- Internal department
- Carrier-to-carrier
- Data Centre provider
  
- Infrastructure owner



# Global Data Flows – TODAY

The northern hemisphere – data transit flows **out-of-balance with Demand** in the southern hemisphere



Data Is Created  
Above the  
Equator

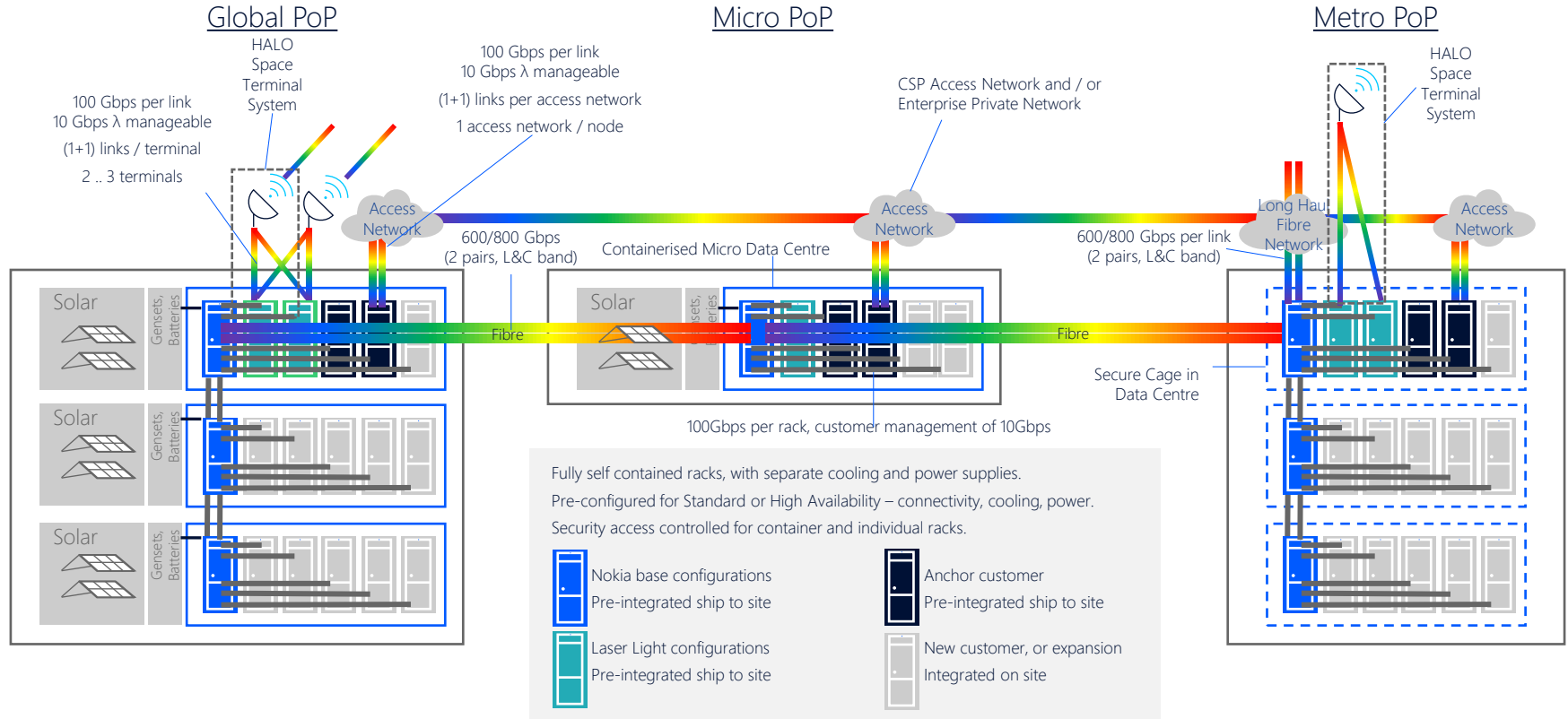
Higher Margin  
Demand Is  
Below The  
Equator

# Global Data Flows – LASER LIGHT ERA

Serving new markets in the southern hemisphere – an emerging global data powerhouse



# Global Rack™ Configuration – Distance Insensitive



# How the Global Rack Works – Real Time Data Analytics

## Data Ingestion and Aggregation

- **Data Sources:** The Global Rack will aggregate data from multiple sources, including satellite communications, terrestrial optical networks, subsea systems, ground stations, edge devices, IoT sensors, and customer applications.
- **Data Flow:** Data is ingested through high-bandwidth optical connections and routed to the nearest data PoP or cloud platform – Global, Metro, Micro. The patented SDN-controlled network ensures that data takes the most efficient route based on real-time *network conditions or customer preferences*.

## Data Processing and Edge Computing

- **Data “PoPs”:** Data processing occurs both at centralized cloud data POP’s – Global, Metro - and distributed micro data centers – also known as Points of Presence (“PoP’s”). Edge computing capabilities allow for real-time data analytics and processing at the point of data collection, and throughout the entire physical service layers of the converged network – satellite, terrestrial, subsea - minimizing latency for time-sensitive applications.
- **AI/ML Integration:** The platform applies patented AI/ML models to analyze data in real-time, make predictive adjustments to network performance, optimize bandwidth allocation, and enhance service delivery.
- **Data Traffic Analytics:** Collection of data and analytics associated with originating/terminating data traffic on partner networks, e.g. ISP, to quantify depth and breadth of data pools particularly price per bit of data flow, e.g., Deepfield, StarBeam
- **Changing Atmospheric Conditionalities Analytics:** Collection of data from spatial distributed localized data aggregators, e.g. the Weather Underground, and specialized tropospheric atmospheric sensors proximate to proprietary optical ground nodes, and correlation with historical weather data (from public/private weather bureaus), and forecasting data pathways – satellite, fiber, subsea - per customer preferences, open/closed optical ground nodes.



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