

CABLE-TEC EXPO® 2017

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THE NEXT BIG...

DEAL
CONNECTION
INNOVATION
TECHNOLOGY
LEADER
NETWORK



DENVER, CO
OCTOBER 17-20



How Integrated Photonics Enhances Capacity and Scalability for Fiber Deep Networks

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1

Addressing surging demand growth with an increasingly constrained capacity

2

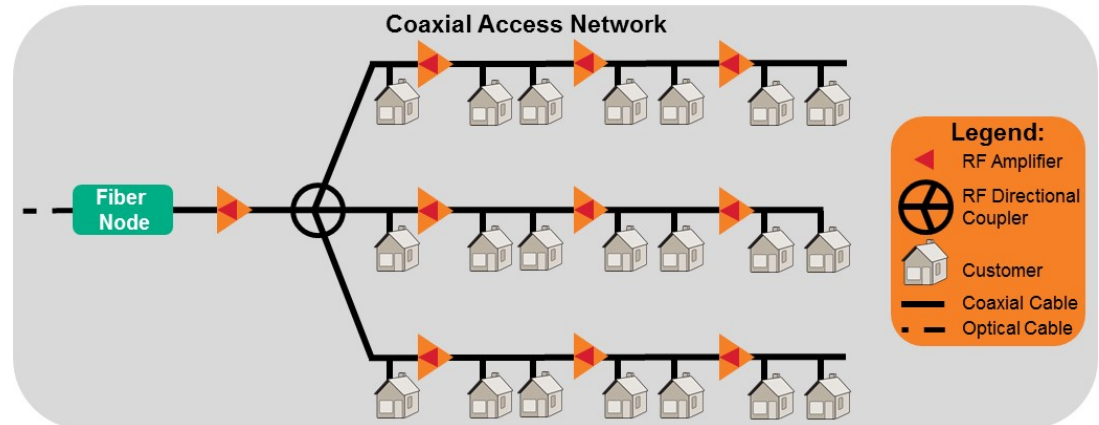
Aging, fragmented infrastructure increasing expensive to maintain and support

3

Constantly changing consumption models and service requirements over rigid network designs

HFC

- Most common method of broadband delivery
- Existing for 20 years
- Headend to Hub <100 miles
- Hub to fiber node 12-30 miles
- Coaxial amps every 1000-2000'



So what if you could enable new possibilities



... eliminate out-of-date and expensive equipment, drive the data center and hosted content closer to end-users, and not have to worry about capacity constraints?

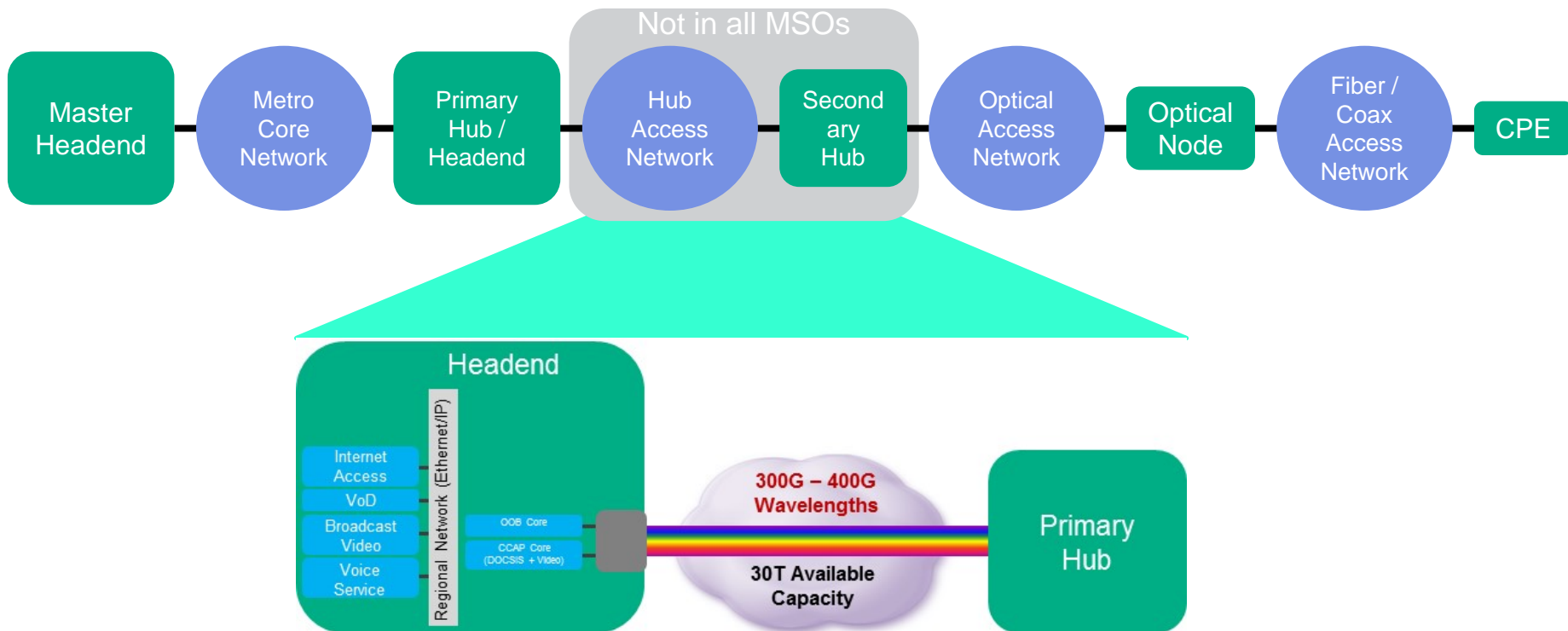


... seamlessly integrate services, platforms, and management tools to drive greater efficiencies and an improved engagement model for greater customer retention?

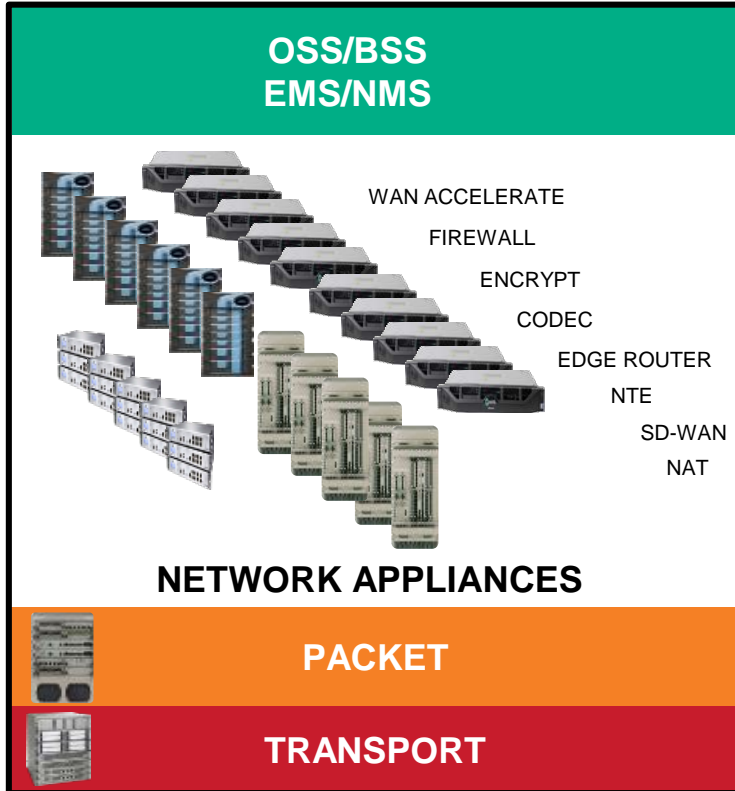


... use less energy and resources to reduce your environmental impact and operational cost?

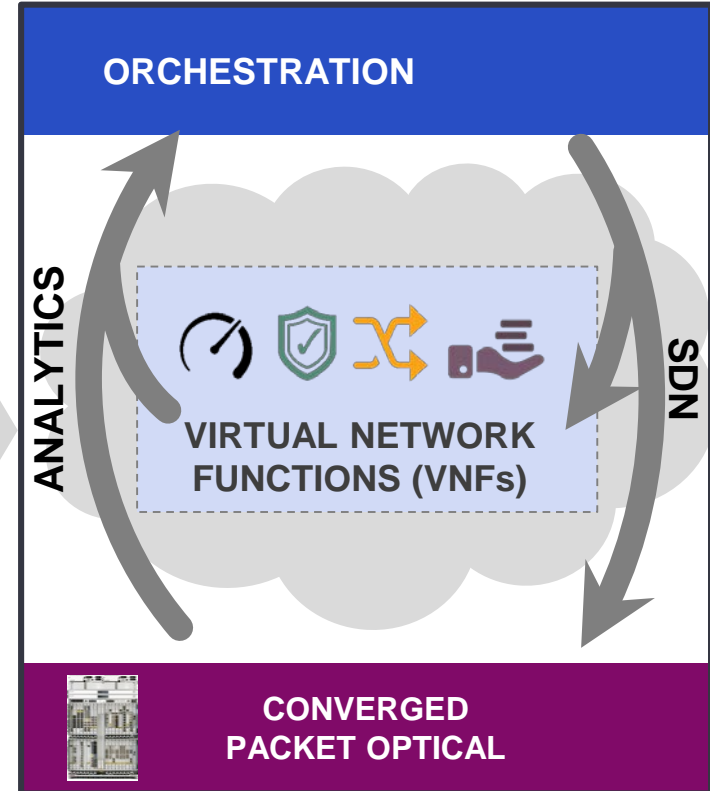
Integrated Fiber Deep Architecture

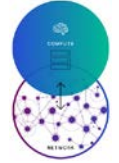


OLD WORLD



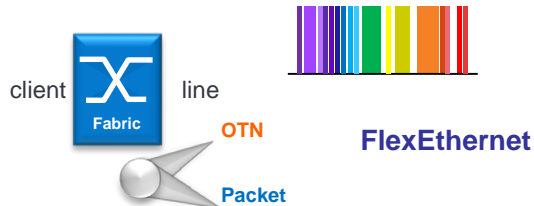
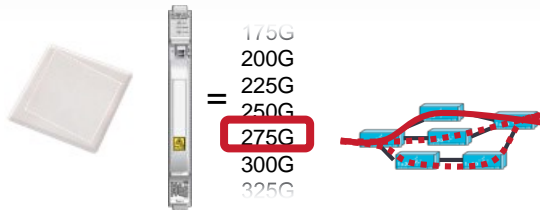
NEW WORLD





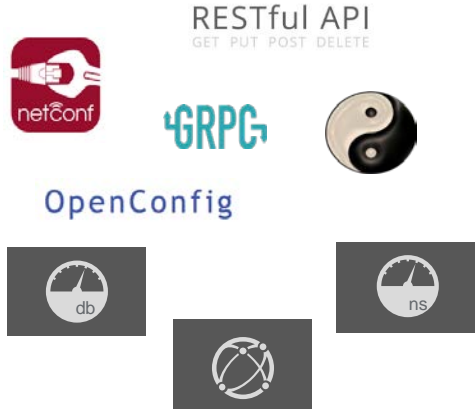
AGILE PACKET-OPTICAL ENGINE Flexible & Instrumented Technology

- Adjusts to new application layer requirements
- Key factor in driving lowest cost / bit



ADVANCED TELEMETRY Open Interfaces

- Access to all data from network
- Multiple data models, multiple protocols



SOFTWARE APPLICATIONS Analytics & Control

- Leverage instrumentation to connect business policy to transport bandwidth
- Automate by rule and manage by exception



Capacity mining



DWDM Visualizer

Automation and Intelligence required for building the dynamic, on-demand network

New benchmark in performance and economics

- Further serial integration, up to 400G/λ
- Twice the capacity, three times the distance, 4 times the service density



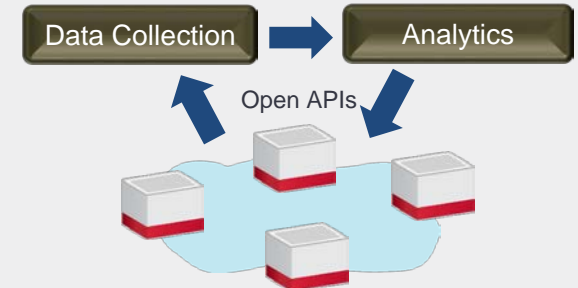
Unmatched Programmability for Optimal Capacity

- Offers ability to tune capacity from single carrier 100G to 400G in 50G increments



New levels of intelligence

- Unprecedented, embedded real-time link monitoring available to operators



Fully flexible photonic layer

Instrumentation

Span loss

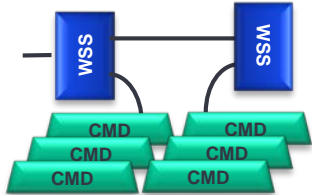
Span Latency

OTDR

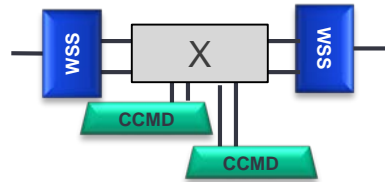
Connection Checking

From fixed to fully flexible and configurable

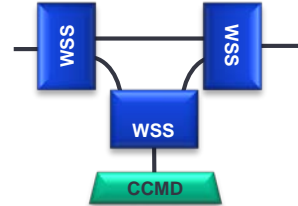
Snap to Grid
 50/75/100GHz



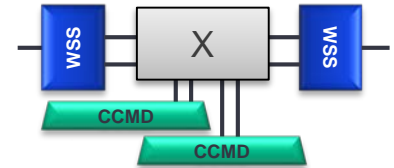
Colorless Direct Attach



Colorless Directionless



Colorless, Directionless, Contentionless

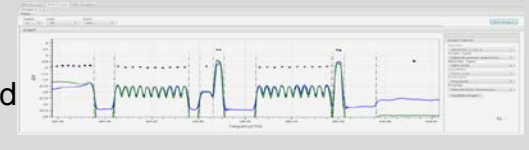


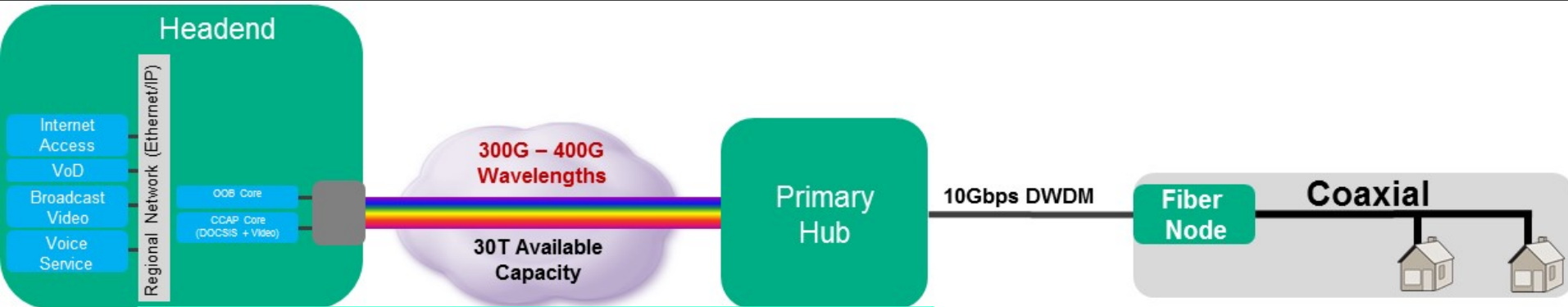
New terms: from wavelength to spectrum

New NE tools: spectral density plot

Optical Control: Supports mix of fixed/flex on carrier basis, based

L0 Control Plane for simple provisioning and restoration

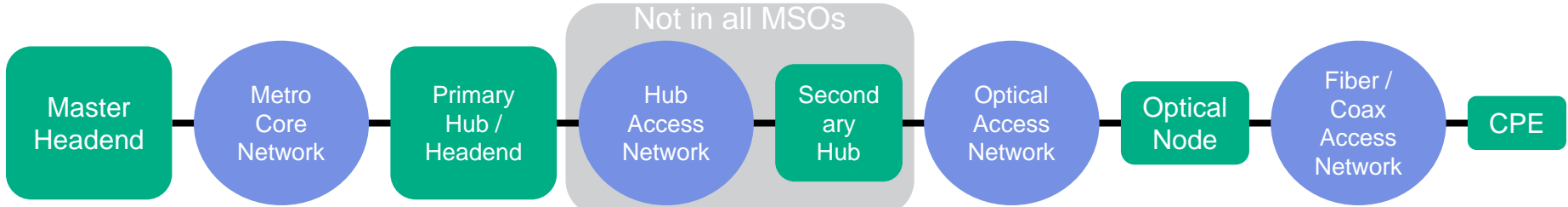




Integrated Aggregation & Optics

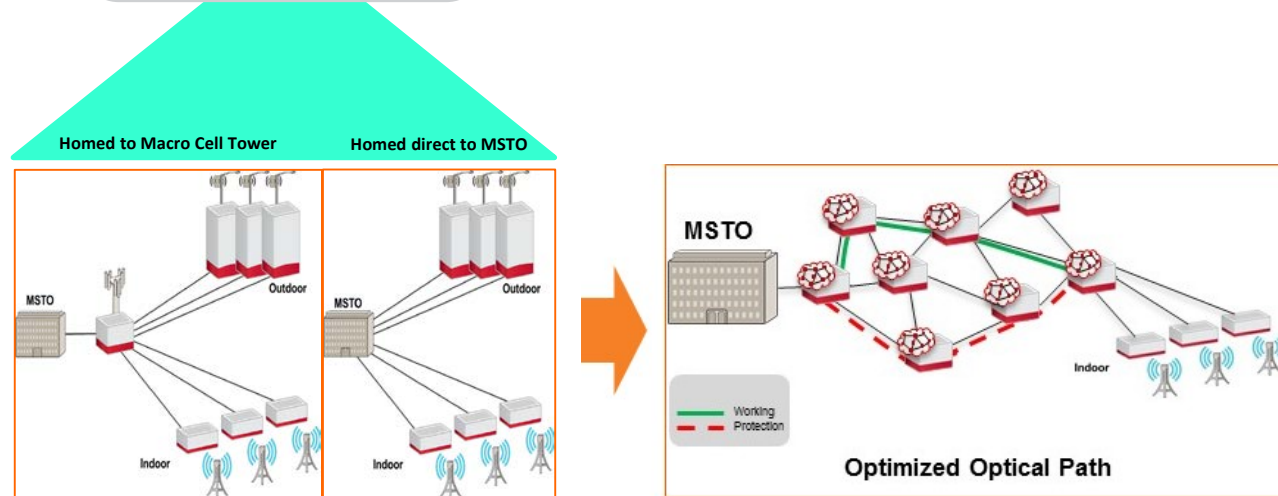
- Reduce Cabling
- PAYGO
- Extreme scaling



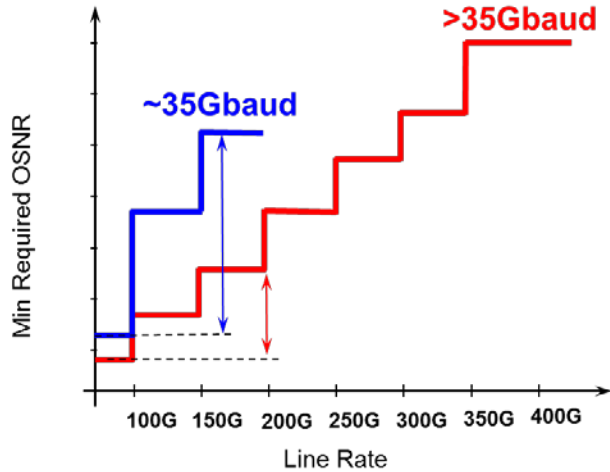


Small Cell

- Used to off load Macro Cell
- Two types:
 - Aggregation
 - Direct
- Optically optimized

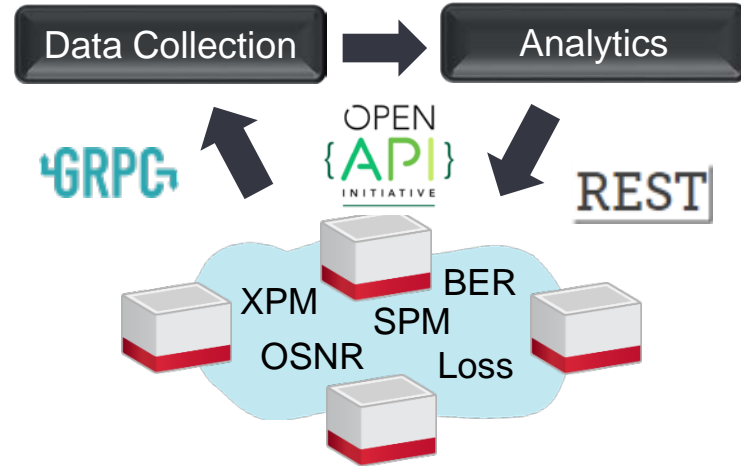


Programmable coherent modems



Finer granularity of line rate speeds leads to better utilization of the available margin in the network

Real-time access to network data



Network programmability and automation requires instrumented hardware and Open APIs

Liquid
Spectrum

Simplicity - Advanced software applications that abstract complexity

Choice with open and disaggregated software

Agility and Scale with programmable hardware

Software Application

			
Optical Service Management	Network Optimization	Network Planning	Predictive Analytics



RESTful API
GET PUT POST DELETE

OpenConfig



Monitoring:

- OSNR and SNR
- CD/PMD
- BER and Latency
- etc...

SCTE · ISBE

THANK YOU!

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