Boosting Fiber to Enable Italy Digital Transformation

Contents

About Open Fiber

Open Fiber brings the Ultra Broadband fiber optic across Italy to give new speed and open access to more advanced digital services and opportunities offered by an increasingly interconnected world.

We do not sell fiber optic services directly to the end customer, but we are exclusively active in the wholesale market, offering access to all the relevant market players interested.

OF Optical NTW vision

VULA

BS/P2P

Firewall
SBC
B-RAS
CPE
Packet
OTN
WDM

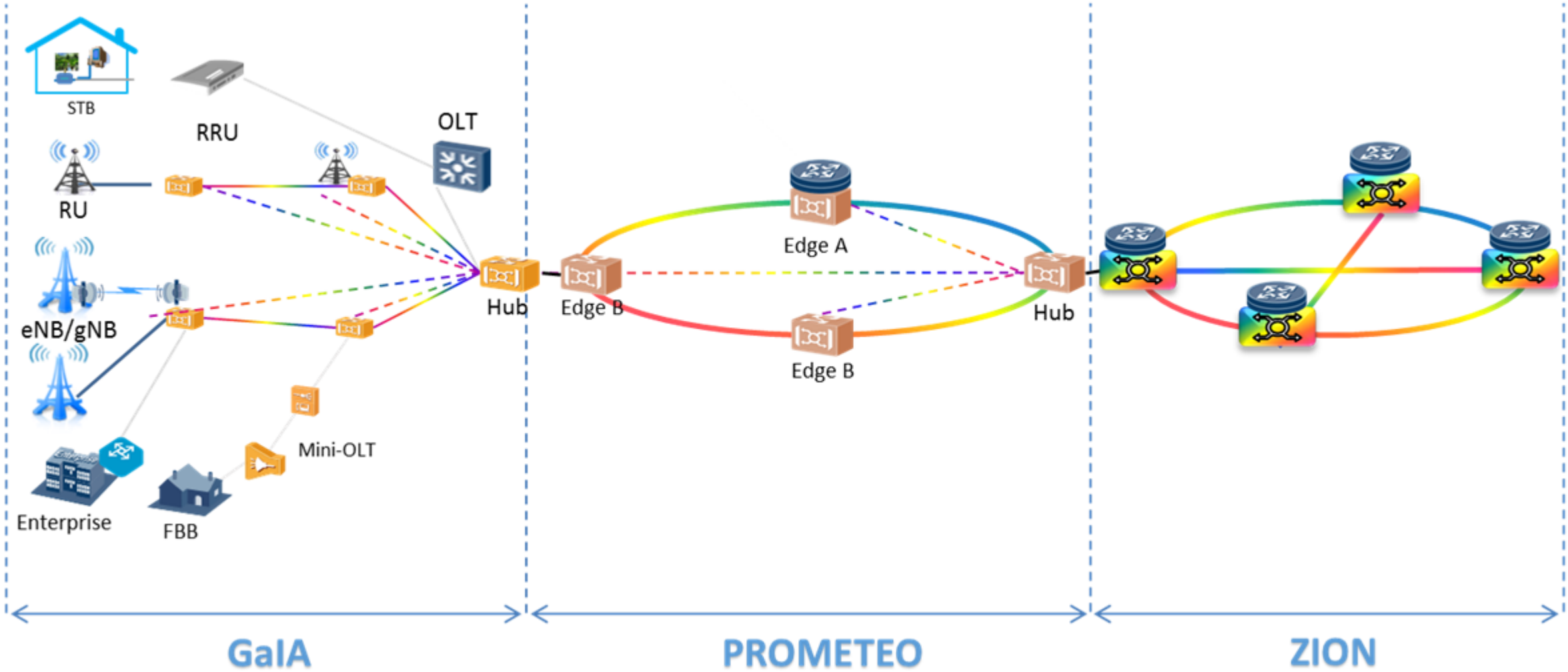
Cloud Services
Apps
NFV
SDN Control

C-Layer

T-Layer

Open Stream // P2P (Eth Service – DOT1Q) over WDM (G.709)

OF Optical NTW vision - Architecture

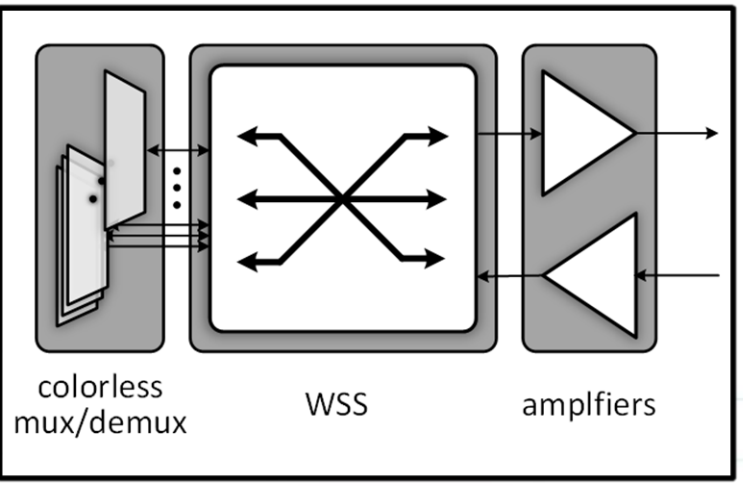


FULL ROADM + Remote reading OSNR/Fiber Quality

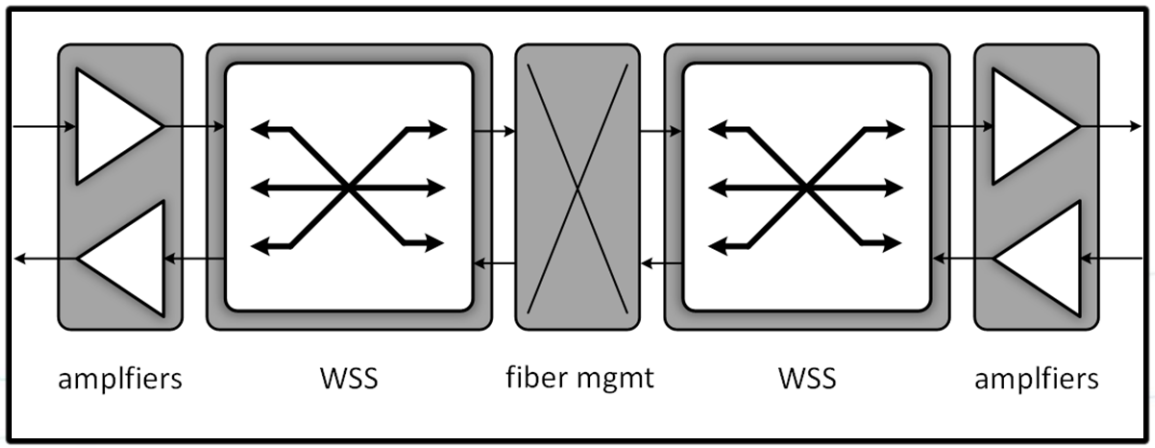
ZION : High Capacity – CDF- node type

- Flex Grid /Colourless/Directionless
- Three node type :
  - Rodam/terminal/ Pass-through(13)
  - ILA/OLA : EDFA/RAMAN (55)

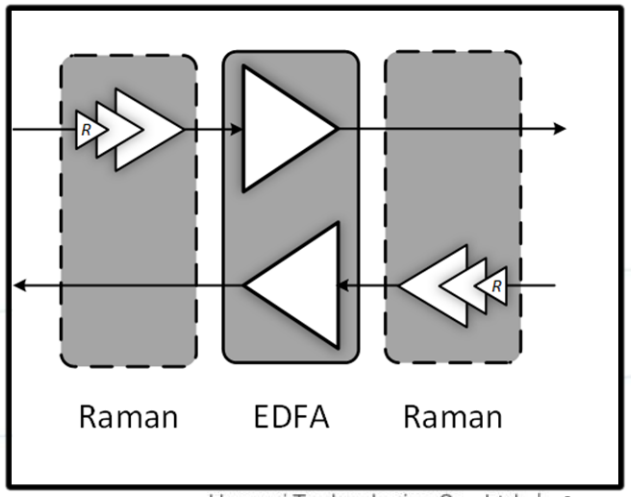
ROADM/Terminal



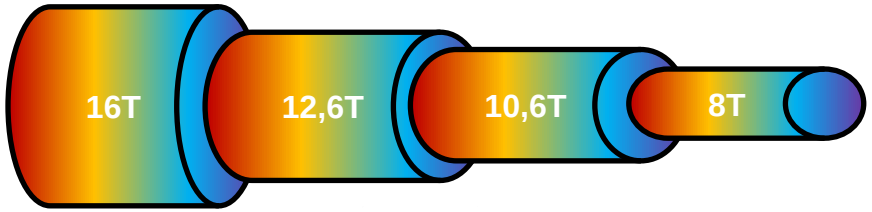
ROADM/Pass-through

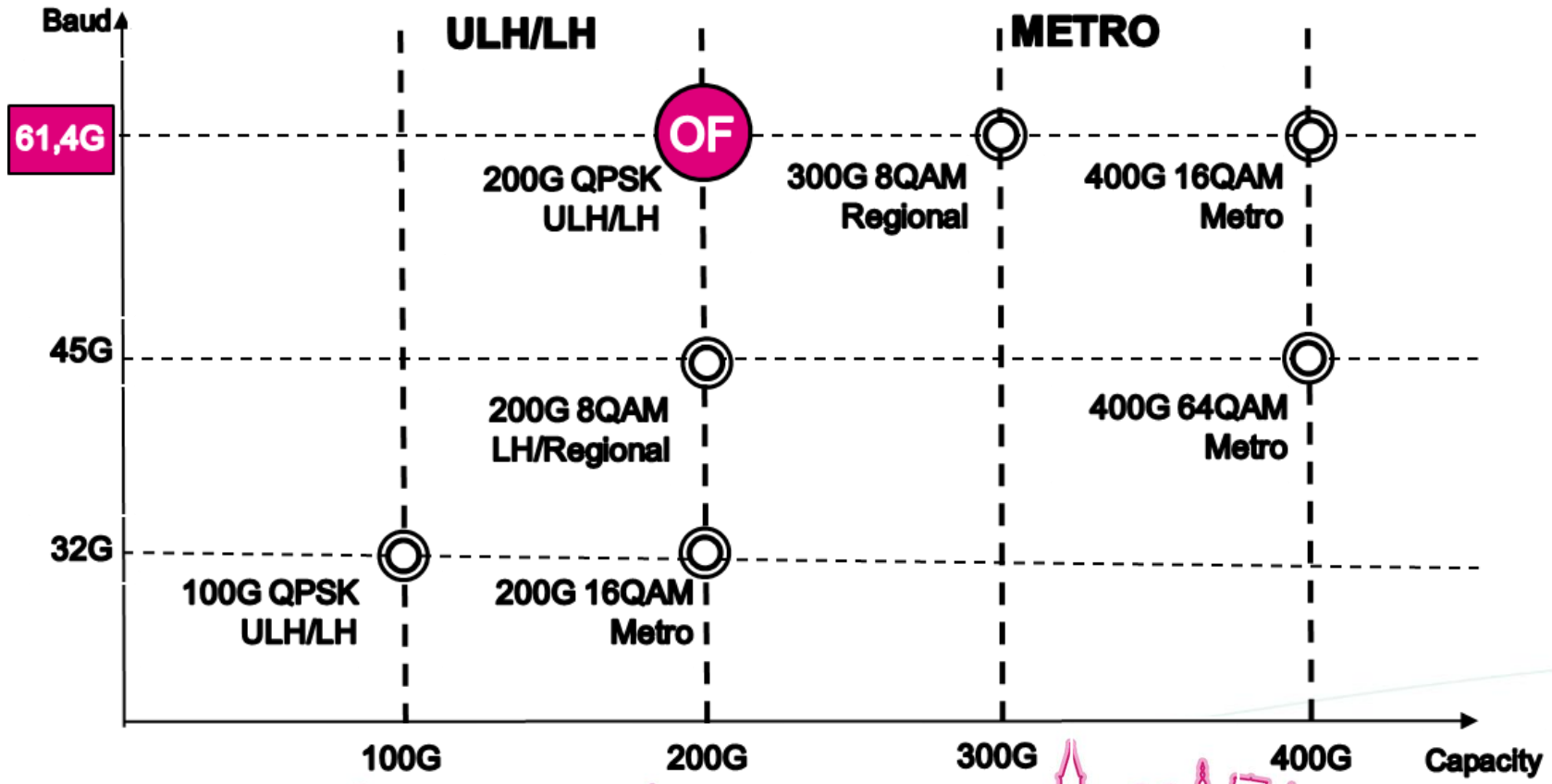


ILA/OLA



ZION : High Capacity – CDF - Feature





ZION : High Capacity – CDF - TRIAL

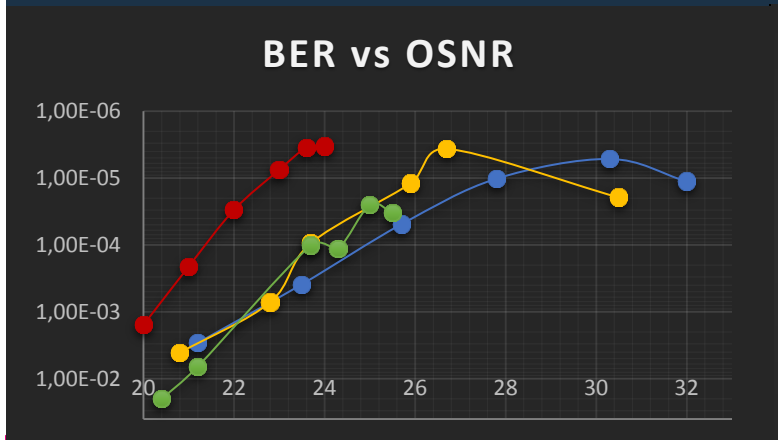
OSNR detector

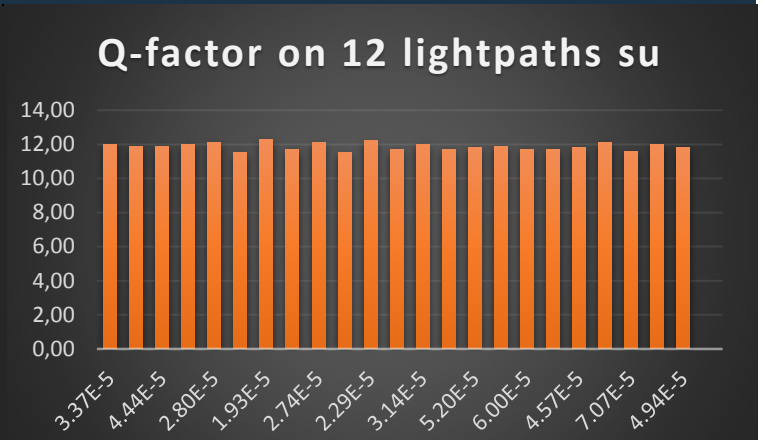
Visualized optical-layer performance

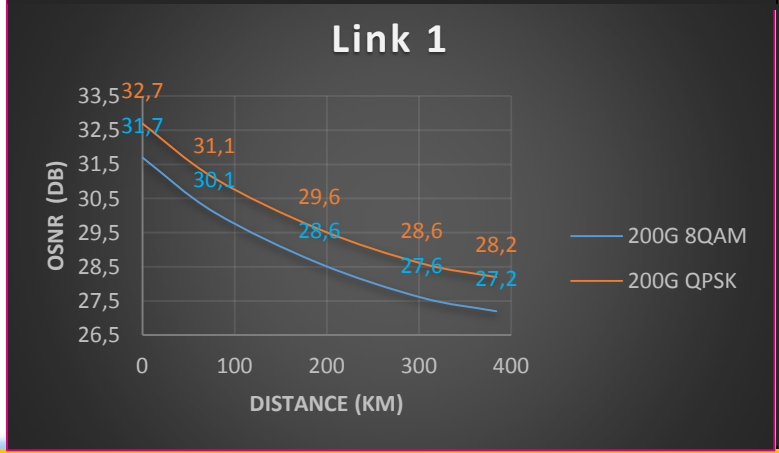
Optical-layer performance monitoring and analysis
OSNR detection
Cross-span loss monitoring
Flatness monitoring

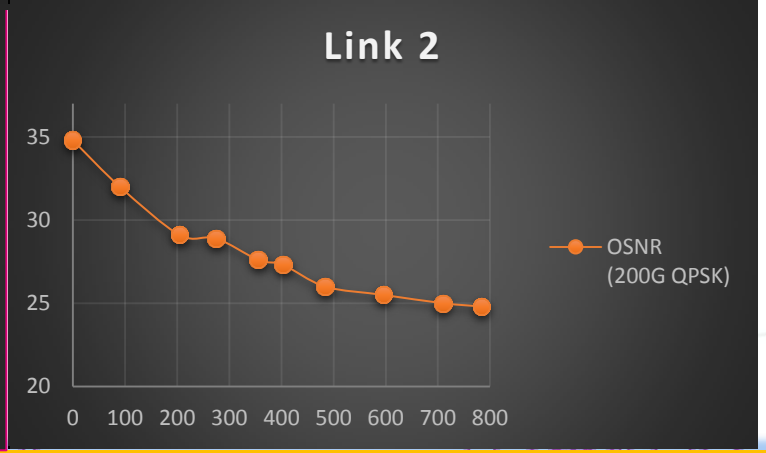
Fiber Detector

Fiber quality monitoring
Fiber break point
Abnormal connector insertion loss



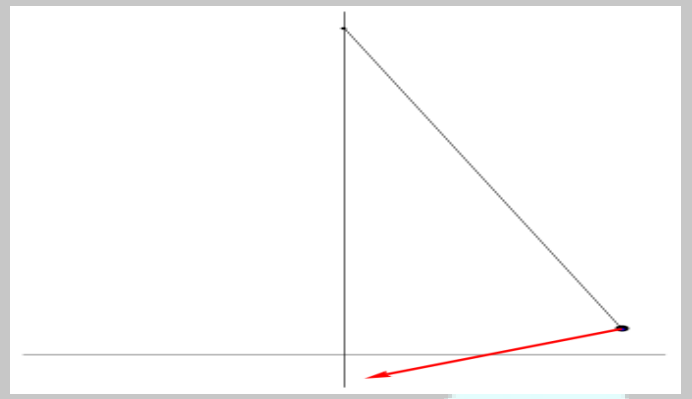


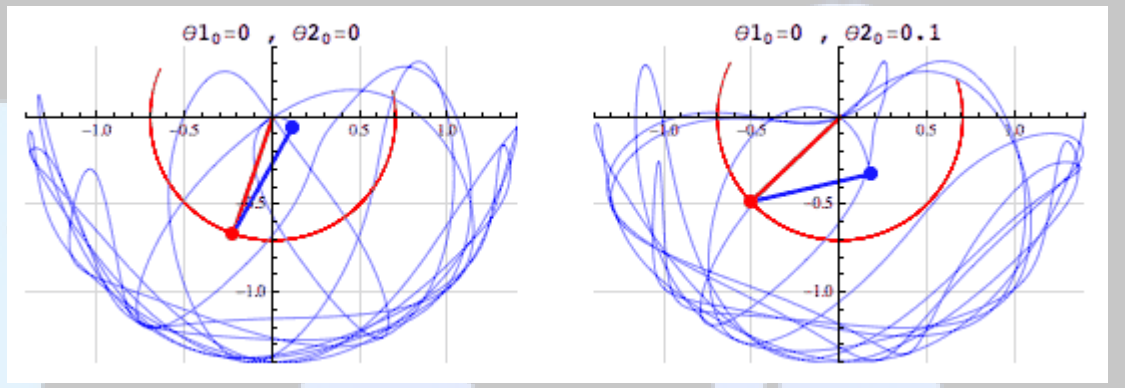




Full 200G single carrier : now ZION is on line

Operations Efficiency





«a good organization for a simple system»

«and for a complex one ? What we need?»

Why we need SDN and Inteligence?

Operations Efficiency

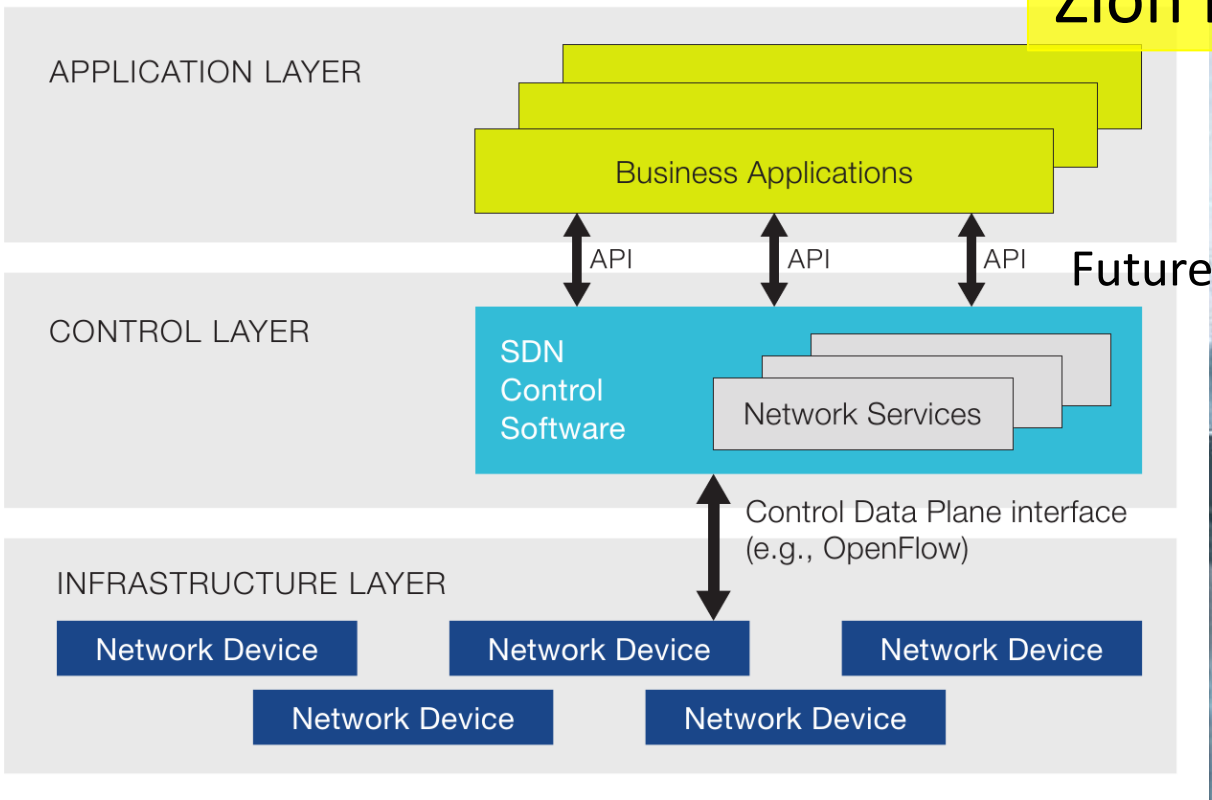
SDN = NG-OSS ?

SDN = White box ?

SDN = Automation ?

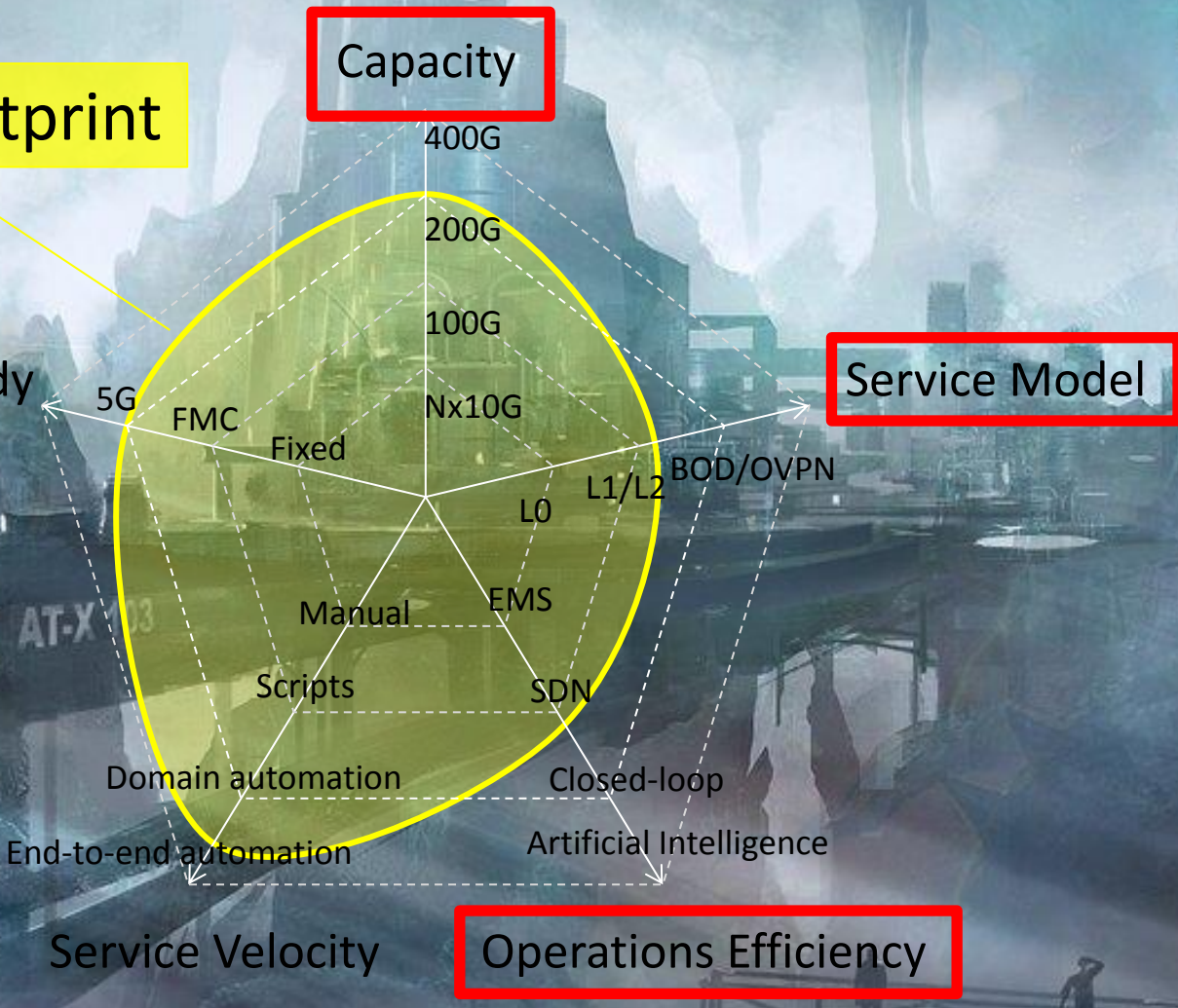
What Is SDN ? SDN is just an Enabling Technology ?

Operations Efficiency -Full SDN Ecosystem



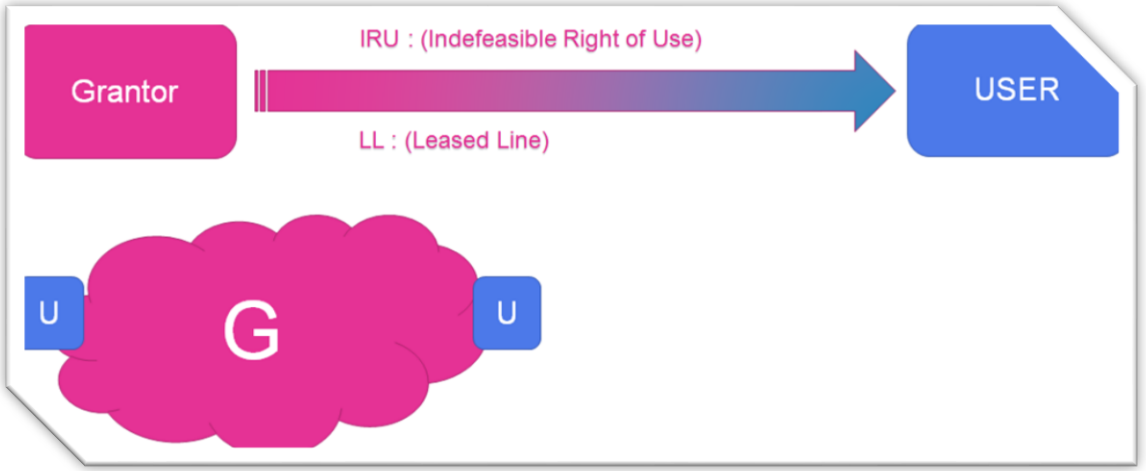
Zion Footprint

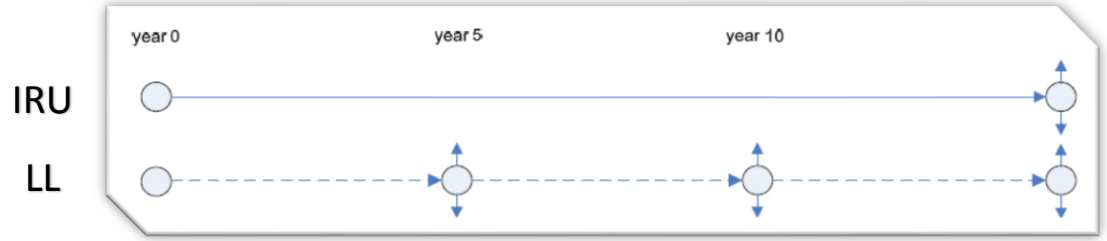
Future-ready

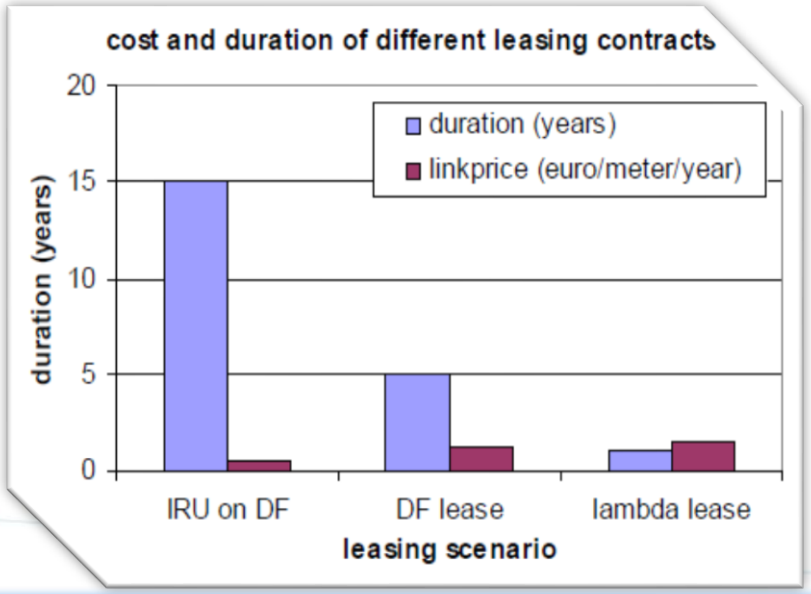


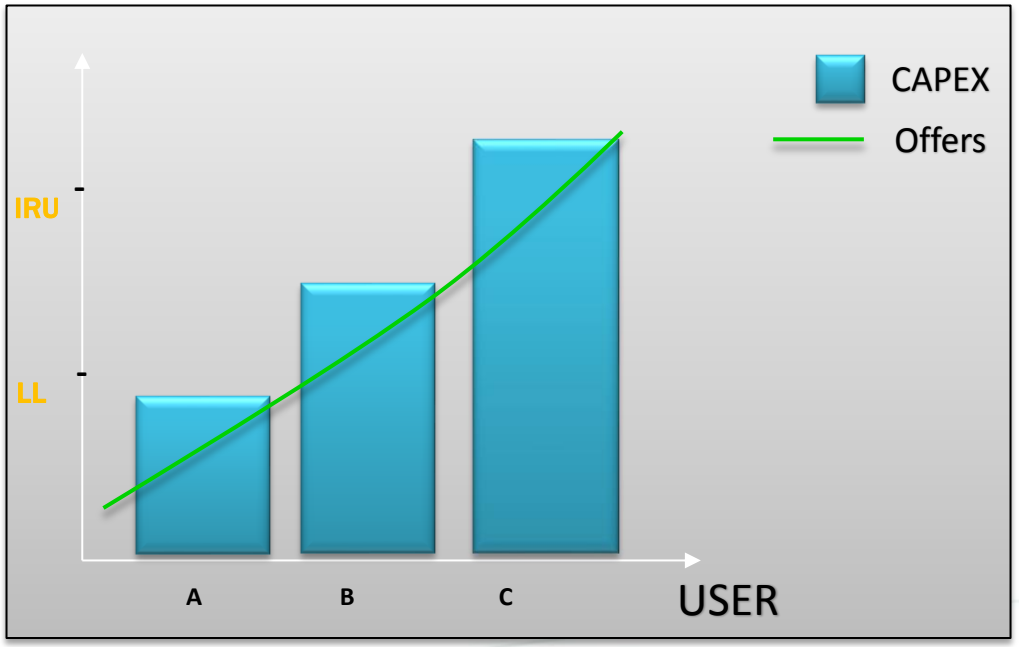
Support of new applications and business models

New Service Model – Lease Scenario









$$0.6 * cost_{traffic\ growth}(a) + 0.4 * cost_{consta\ nt\ traffic}(a) = E_{uncertain\ traffic\ evolutions}[cost(a)]$$

Uncertian traffic evolution force the chiose!

New Service Model - NAAS

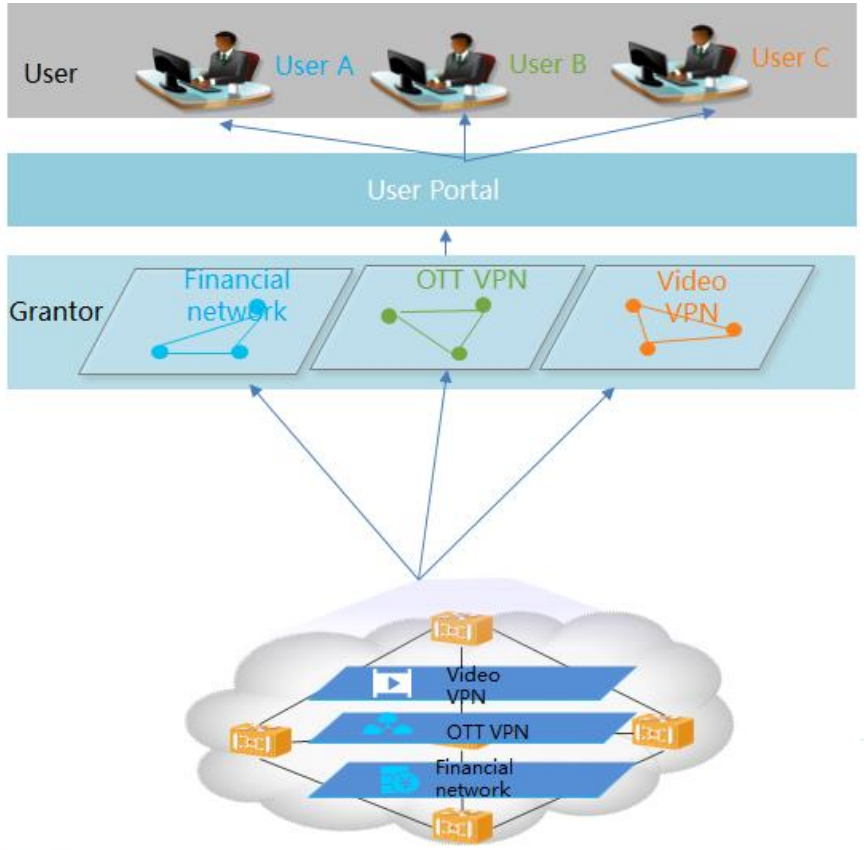
OVPN

Extends a private network and the resources contained in the network across networks like the public Internet.

BOD

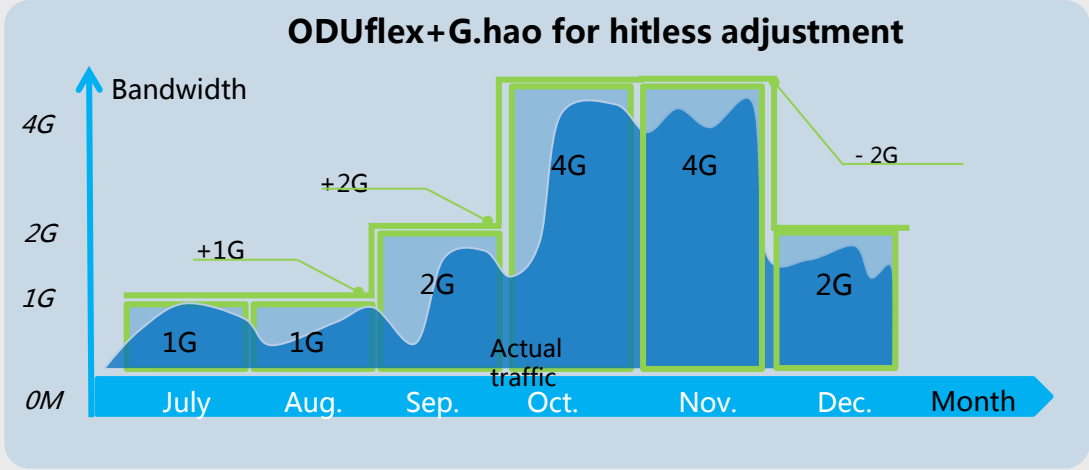
Technique by which network capacity is assigned based on requirements between different nodes or users

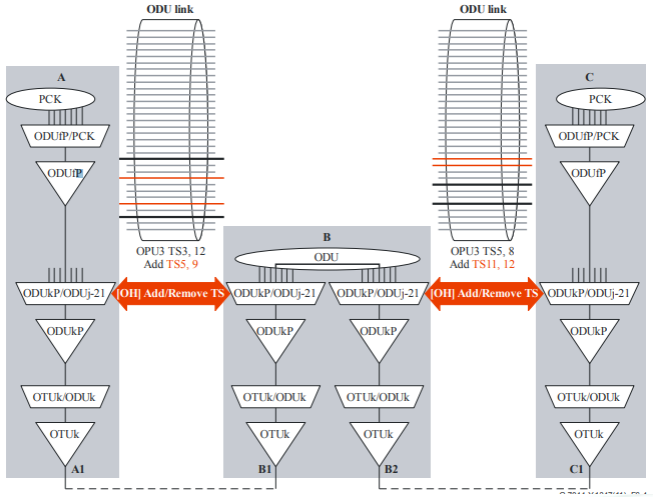
"NaaS includes the provision of a virtual network service by the owners of the network infrastructure to a third party" … (cit. Wiki)



The user will ba able to manage a portion of grantor's network…?

New Service Model- BOD





ITU-T G.7044/Y.1347

Purpose :

1.Online L2/L1 Bandwidth adjustment.

2.Service delivery/deletion on scheduled

Target Customer:

Enterprise/OLO , OTT, Media

Application scenario:

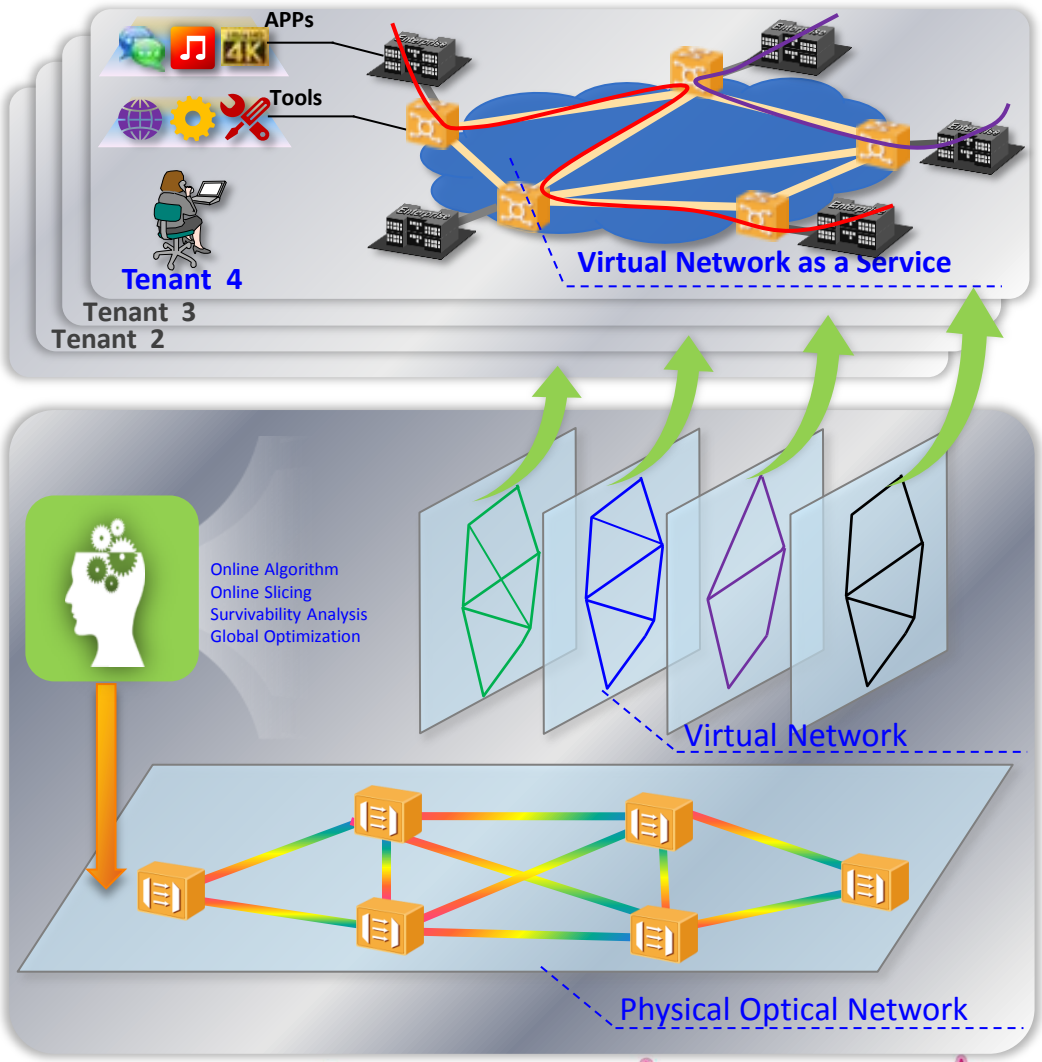
Temporary or permanent adjust bandwidth, Short time events support

Business value :

1.Increasing bandwidth for customer without interruption, high stability.

2. To sell short time service in lower cost

New Service Model- OVPN



Purpose :
Wholesale to sell Optical Virtual Network

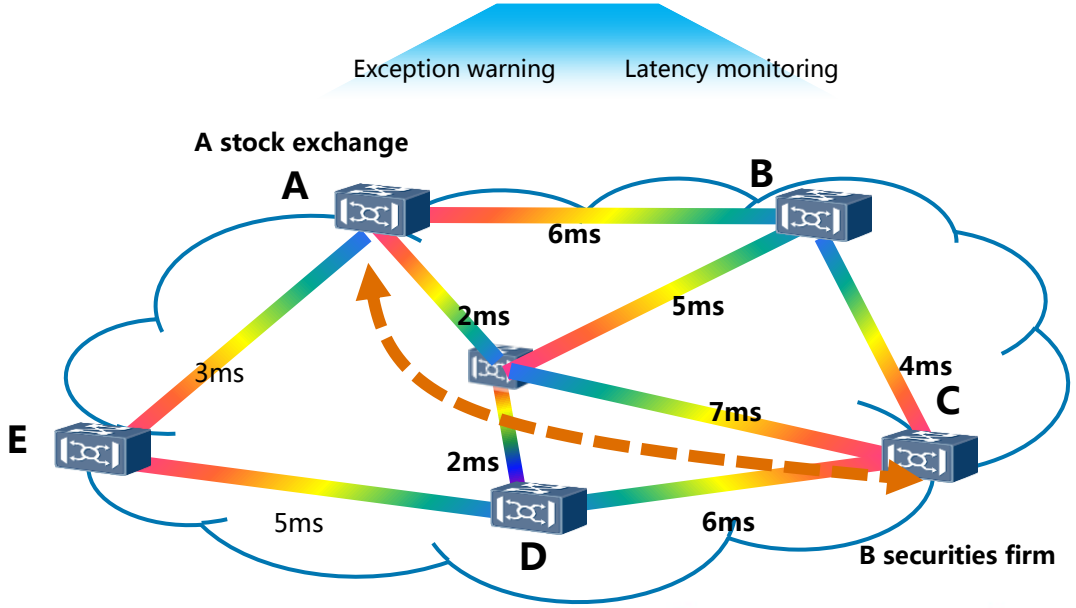
Target Customer:
OLO

Application scenario:
OLO don't have local backbone or metro

Business value :
High usage, high flexibility, user could adjust traffic direction/policy by self.

New Service Model- Latency Calculation

Source : Site A
Destination : Site C
Bandwidth : 100G
Policy: Optimal Latency



Purpose :
salable, guaranteed Latency

Target Customer:
Bank, Financial company

Application scenario:
Latency sensitive service

Business value :
Additional value from guaranteed Latency

Disaggregation - Multivendor

NAAS

Latency

Capacity

BOD

How to do for..

Vendor X

Vendor Y

Vendor Z

What Customer wants

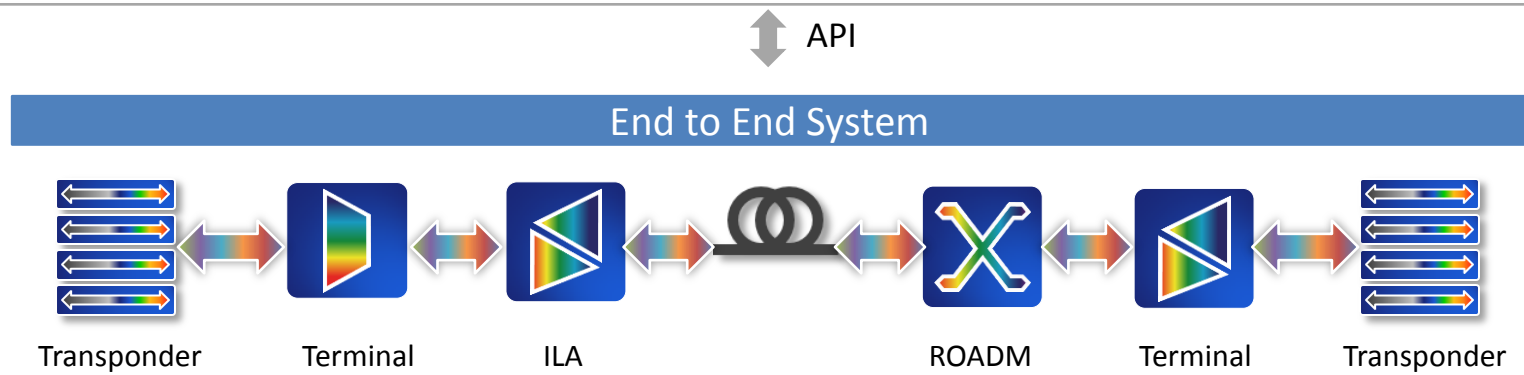
What customer can

open fiber

Disaggregation - Multivendor

Aggregated

IETF ONF



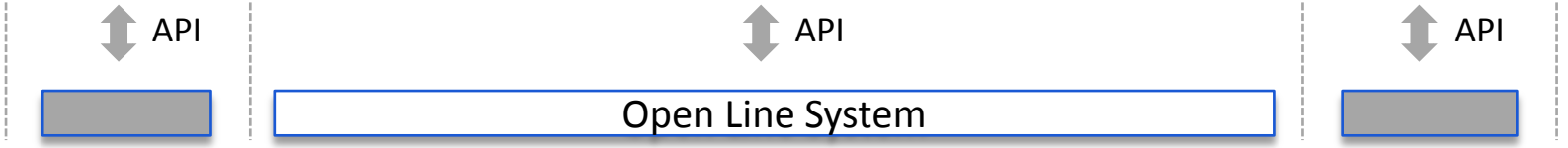
Fully Aggregated: Entire transport network acts as a single managed system

Disaggregated

Open ROADM

Fully Disaggregated: Everything is a separate network element

OPENCONFIG

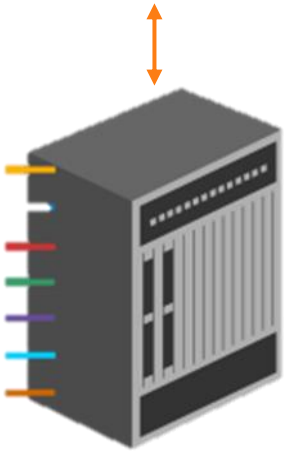


Partly Disaggregated: Transponder is one element, Open Line System (OLS) is second

Disaggregation - Multivendor

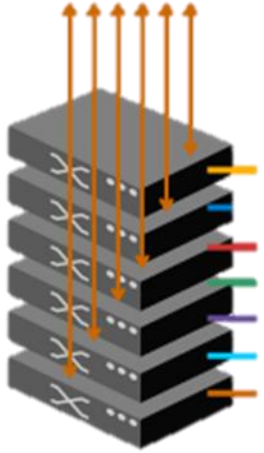
Modular solution → WSS-Free ROADM → Disaggregated Solution → Small footprint → Low power consumption

Vendor Proprietary Network Controller



- API Proprietarie
- Specifici data model per vendor
- Verticalmente integrato
- Single-Vendor

Open Source Network Controller



- API Open e Standard
- data model comuni
- Disaggregato
- Multi-Vendor

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Grazie