Sinus-Networks

Telekommunikációs disztribútor és technológiai partner

Nagy Sándor - IT igazgató
snagy@sinusnet.net

Cégprofil

- 100 % Magyar tulajdon
- 2011 –ben alapítva
- Value added disztribútor és technológiai partner
  - Gyártói képviselet
  - Disztribúció technikai támogatással
- Termékek és megoldások: wired and wireless networking
- Működési terület: a teljes telekommunikációs szektor. A kis és közepes Internet és kábeltévé szolgáltatóktól a Tier 1 szolgáltatókig

Képviselt technológiák

Gyártóink

Aktív optikai transzport backbone/access

PacketLight Networks

ciena

RAISECOM

KAON BROADBAND

Passzív optika

GigaLight

CELLCO

LinkEasy

Ethernet és multiprotokoll rendszerek

RAISECOM

CTC union

ciena

CATV

RAISECOM

wseeCaser

Partnereink

DIGI

Switchek

Passzív optika

Optikai modulok

vodafone

Optikai modulok

Magyar Telekom

DWDM

TDM

Optikai modulok

GPON

invitech

Optikai modulok

TDM short list

antenna HUNGÁRIA

DWDM

Carrier Ethernet

Optikai modulok

KIFÜ

Optikai modulok

DataTrans internet

ZNET TELEKOM

INTERNET • TELEFON • TELEVÍZIÓ

Vidanet

aXian

OPCNET

DRÁVANET

CATARR

>50 szolgáltató

SIP és NTG projekt

Switchek

Carrier Ethernet

GPON

DWDM

Optikai modulok

SINUS NETWORKS

Optical transport solutions

Agenda

- Optical transport solutions - Raisecom and Packetlight
- Ciena new developments – Lightspeed development
- Other interesting features


RAISECOM


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Raisecom in Brief

Services Oriented Telecom Solution Provider

- Founded in 1999 and public listed 2017 in Shanghai Stock Exchange (603803).
- Specialized in tailored solutions for Access Network, Optical Network, Cloud Service and IoT Network.
- Business with over 140 sales partners in more than 60 countries.

Transmission Products Overview

intelligent Transmission Network Platform

100/200/400G DWDM/OTN

iTN8600-I
iTN8200-II

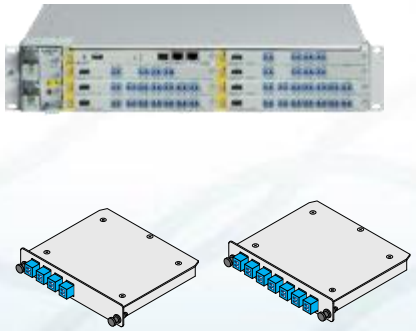
Multi-Services Chassis

iTN8600-E
iTN8600-A

OTN/WDM Box

iTN8607
iTN8601

Semi-Passive/Passive



OPCOM100

FE/GE 10GE 40/100GE

STMn OTUk

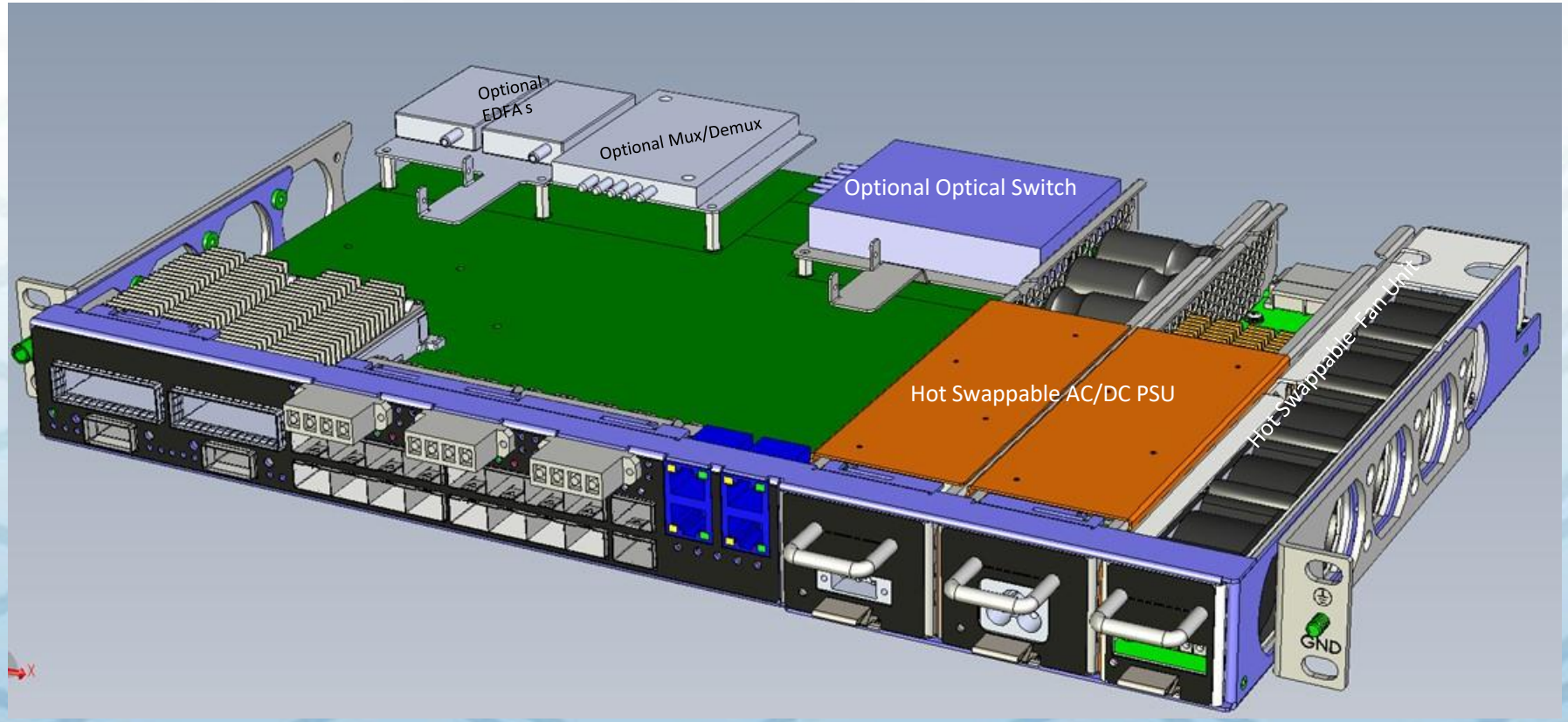
FC CPRI/eCPRI


PacketLight™
NETWORKS


SINUS NETWORKS

Integrated 1U Solution

- Integrated solution all in 1U
  - Optional – mux/demux, EDFAs, optical switch
  - Full ETSI



Product Portfolio

Transponders

PL-4000T: 4 x 400G Transponder/Muxponder

PL-2000DC: 4 x 400G Transponder

PL-2000T: 800G Transponder

PL-1000TN: 6 x 8G/10G OTN Services

PL-1000TE: 8 x 1G-16G services

Muxponders

PL-4000M: 400G Muxponder

PL-2000ADS: 200G ADM Short Haul

PL-2000AD: 200G ADM Long Haul

PL-2000M: 200G Muxponder/Transponder

PL-2000: 20G ADM

Infrastructure

PL-1000D: Diagnostics

PL-1000RO: WSS ROADM

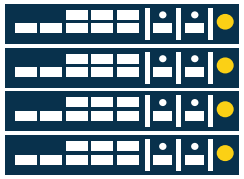
PL-1000IL: Optical Amplifiers

PL-1000R: Raman Amplifier

PL-300: Passive Solutions

Comprehensive Feature Set

PacketLight™ NETWORKS



Disaggregated Stackable Chassis

OTN Layer

Up to 96 WL Mux/Demux

400G per λ

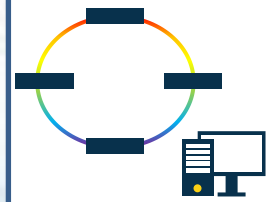
Muxponders Family

Optical Amplifier

NMS SNMP

Performance Monitoring

Network Diagnostics

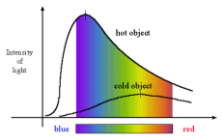


Remote Management

Optical Protection

Firewall

Layer-1 Encryption

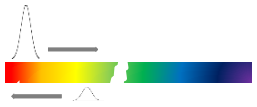


Full WDM Spectrum

ROADM

Network Protocols

OSA



OTDR

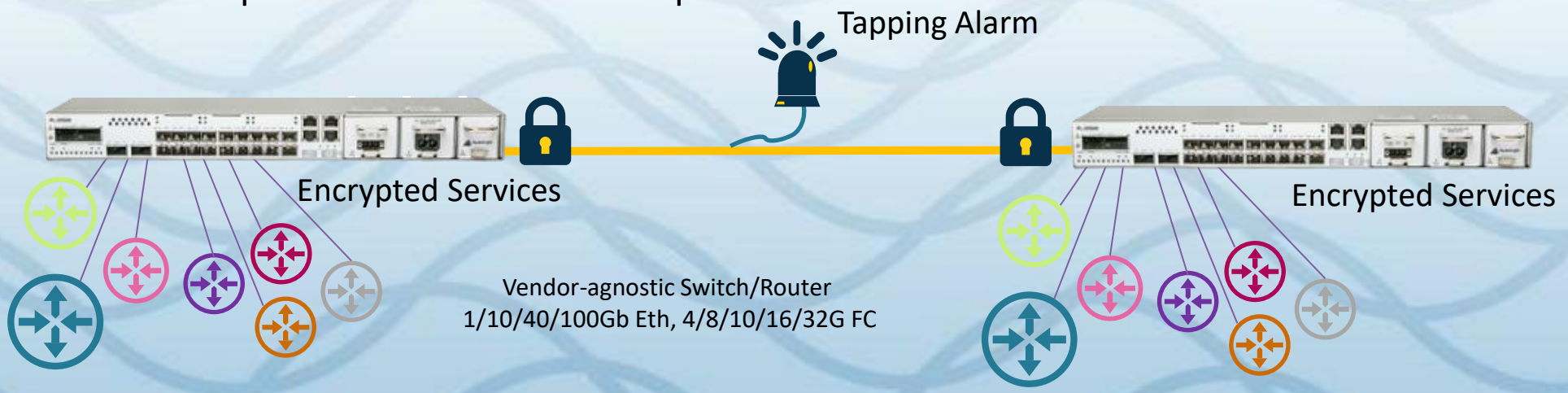
PacketLight Layer-1 Encryption Solution

- Software-based activated by license
- No additional license cost after initial investment
- No additional hardware or software required
- Configured per uplink or individual service ports
- Easy set up and configuration
- Complete control in the hand of the user
- Automatic fiber tapping detection and alarm
- FIPS 140-2 Level 2 certified
- Common Criteria EAL2 certified
- CNSA Top Secret Suite B 2015 compliant

COMMON CRITERIA CERTIFIED EAL2+

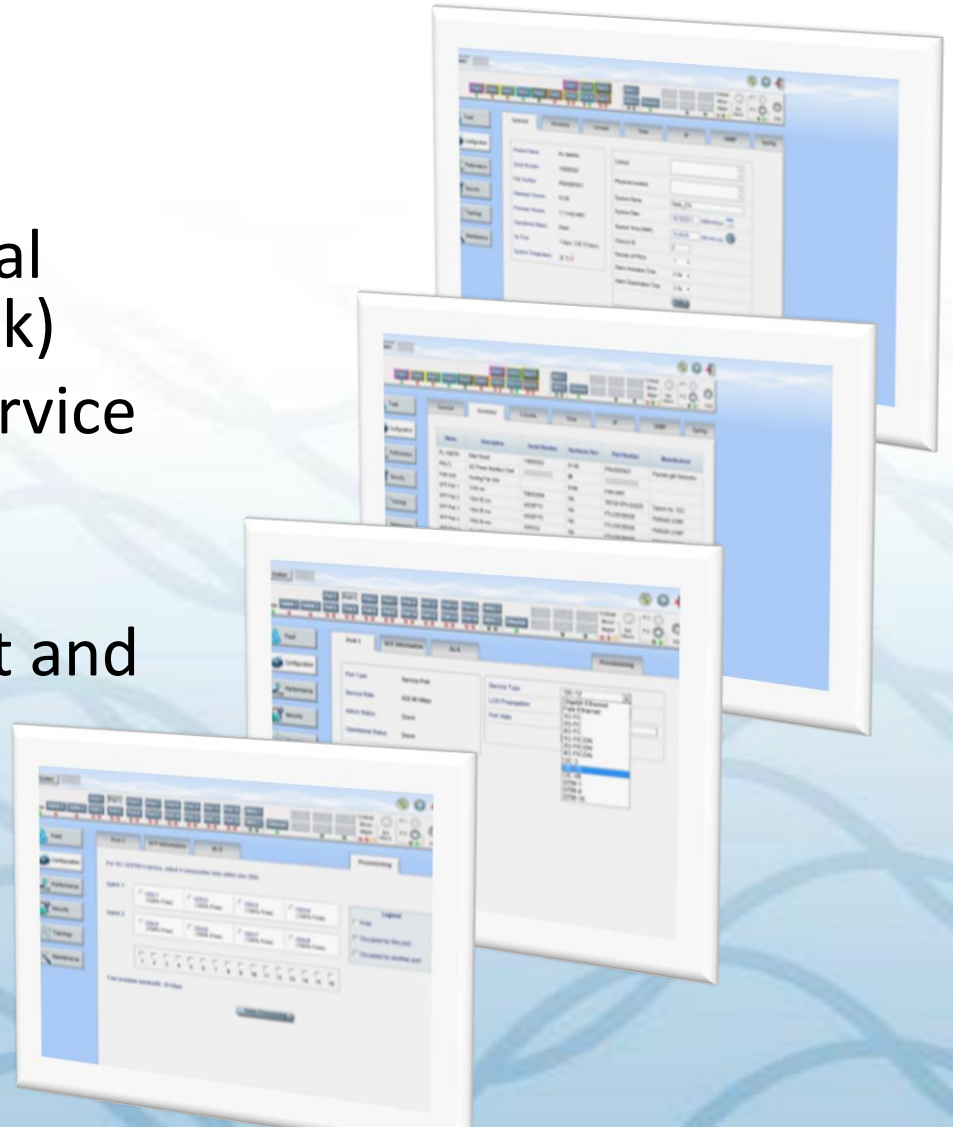
FIPS VALIDATED 140-2

Certificate #3529



Web-based Management System

- Web-based management system
- Simple common configuration process for all product families
- Provides performance monitoring for all optical modules, Client (service) types and Line (uplink)
- Built-in troubleshooting tools both link and service sides
- Network topology view
- Maintenance services with, SW download, hot and cold restart
- Full alarm and event history, and activities log
- No extra licensing or server cost

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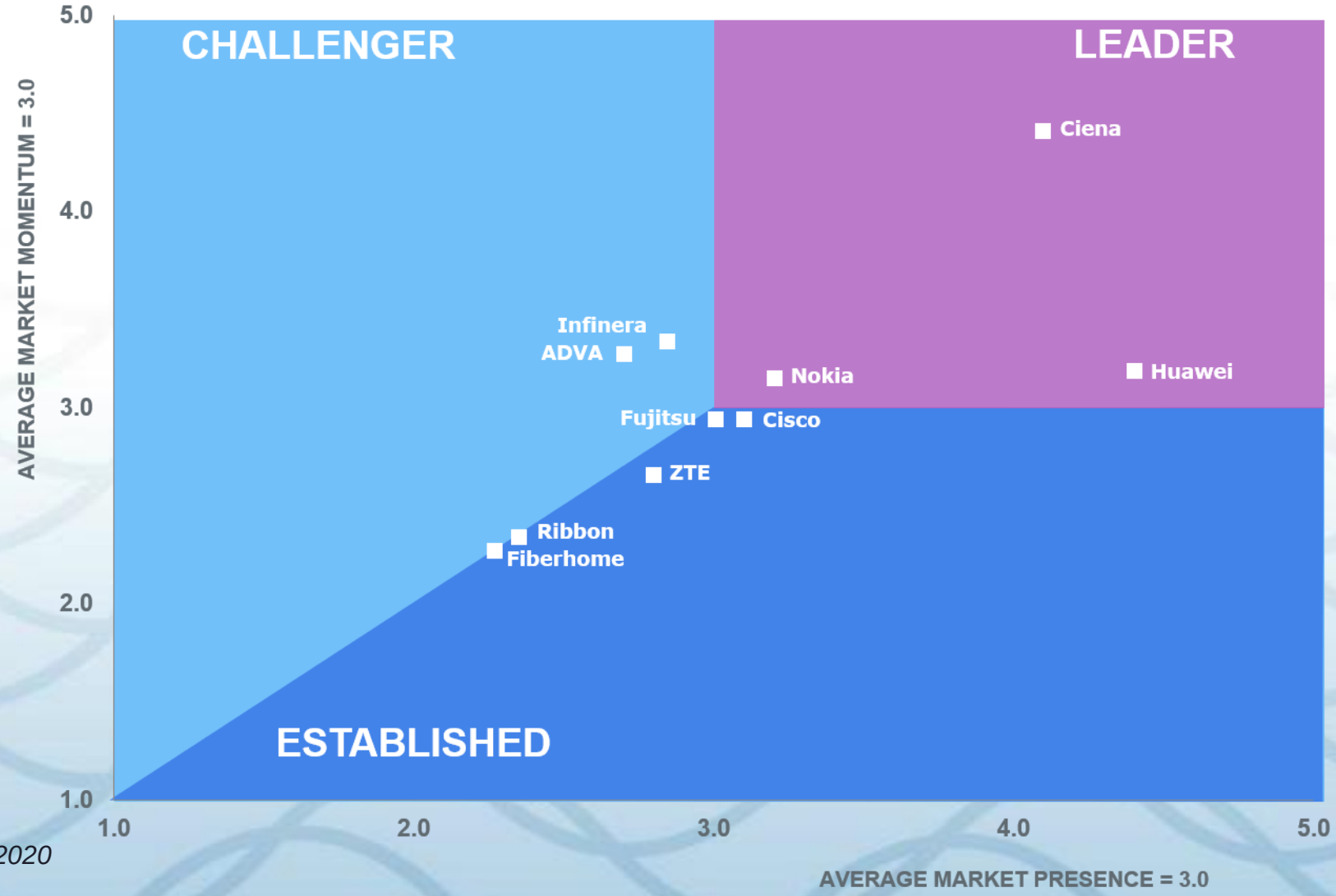
Optical Network Hardware Vendor Scorecard 2020



Published June 2020

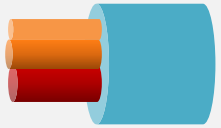
One converged platform that can be tailored to your specific application

6500 Packet-Optical Platform

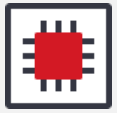
Packet Switching

10GEs  100GE

OTN Switching

Multi-service 

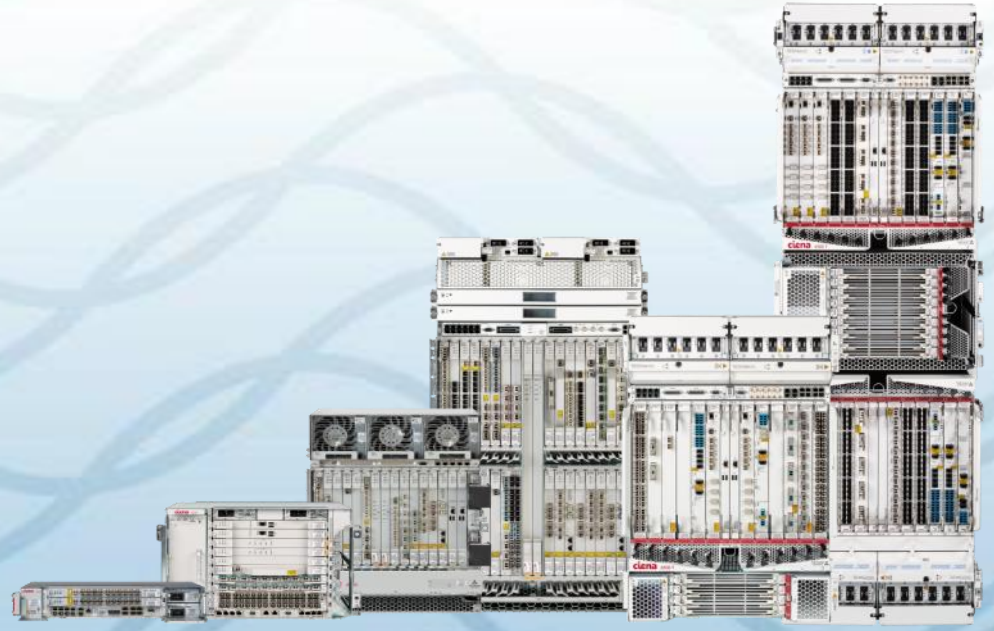
Coherent DWDM

Most capacity per fiber 

Optical Encryption

L0 & L1 Control Plane

Reconfigurable Photonics:  → From simple fixed, to fully flexible optical connectivity 



Future-Proof Investment

Leverages the latest technology innovation to address today's unpredictable bandwidth requirements

Proven Reliability

700+ customers
50+ countries
18 of top 25 service providers

ciena

Coherent optics innovation to continue delivering industry leading solutions

400Gb/s
since Q3 2017

800Gb/s
since Q2 2020

400Gb/s
Coherent pluggable
since Q2 2021

Next gen solutions
in development

Up to 1.6Tb/s

- Max spectral efficiency
- High BW flows
- Longer reach

Up to 800Gb/s

- Lowest power
- Smallest footprint

QSFP-DD w/
integrated EDFA+
Tunable Optical Filter

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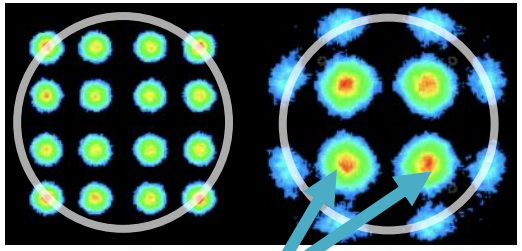
WaveLogic 5 Nano Innovations

ciena WaveLogic 5 NANO

Probabilistic Constellation Shaping (PCS)



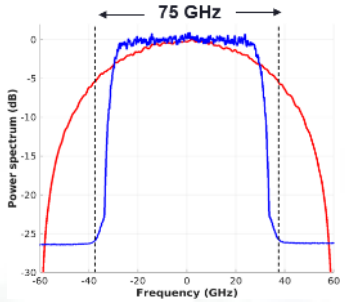
More weighting applied to central points for better noise tolerance

Ciena proprietary algorithm
Significant performance enhancement for signal propagation in fiber

PCS + high-coding gain FEC + Tx shaping

Industry-leading reach-capacity

TX Shaping/Matched RX



ciena **Shaped TX spectrum**

Optimizes spectral occupancy
Better fit in optical filter passband
No reach penalty
Reclaimed Margin
Greater overall fiber capacity

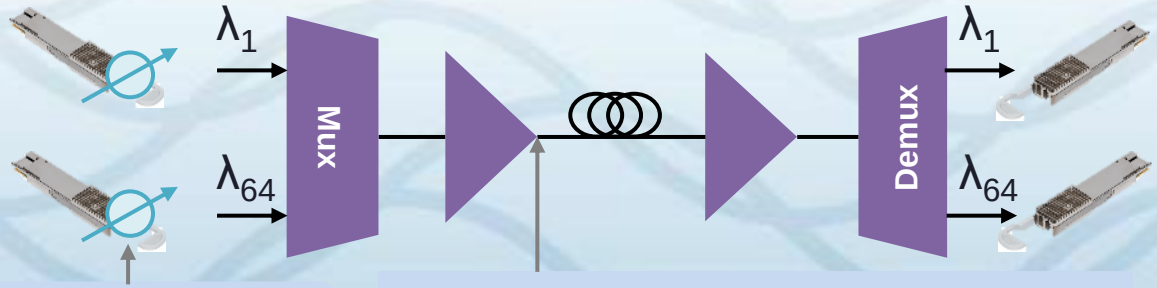
Non-shaped TX spectrum

Higher inter-channel interference
Cross Talk & Filter Penalty
Lower overall fiber Reach-capacity

ciena
Matched (or adaptive) RX

- Filter matches to incoming spectrum
- Monitors passband and distortion of signal to reject noise
- **Supports both shaped and non-shaped TX spectra**

TX Power Control



Integrated Tx output power control

Minimize channel to channel power variation
Improved and stable performance

WaveLogic 5 Nano innovations support interop and best-in-class performance

ciena

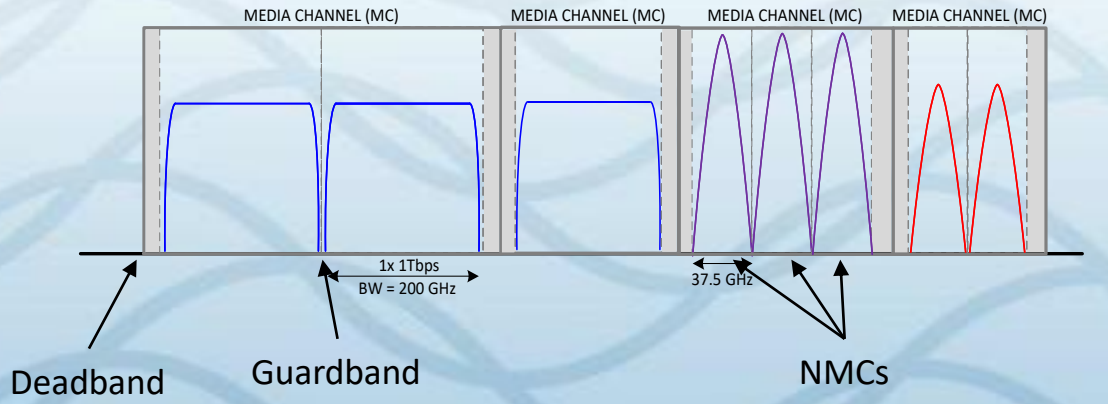
Flexible grid support

All RLS colorless ROADM configurations support flexgrid

This enables:

- Tuning the spectrum allocated to each Media Channel with a granularity of 6.25GHz

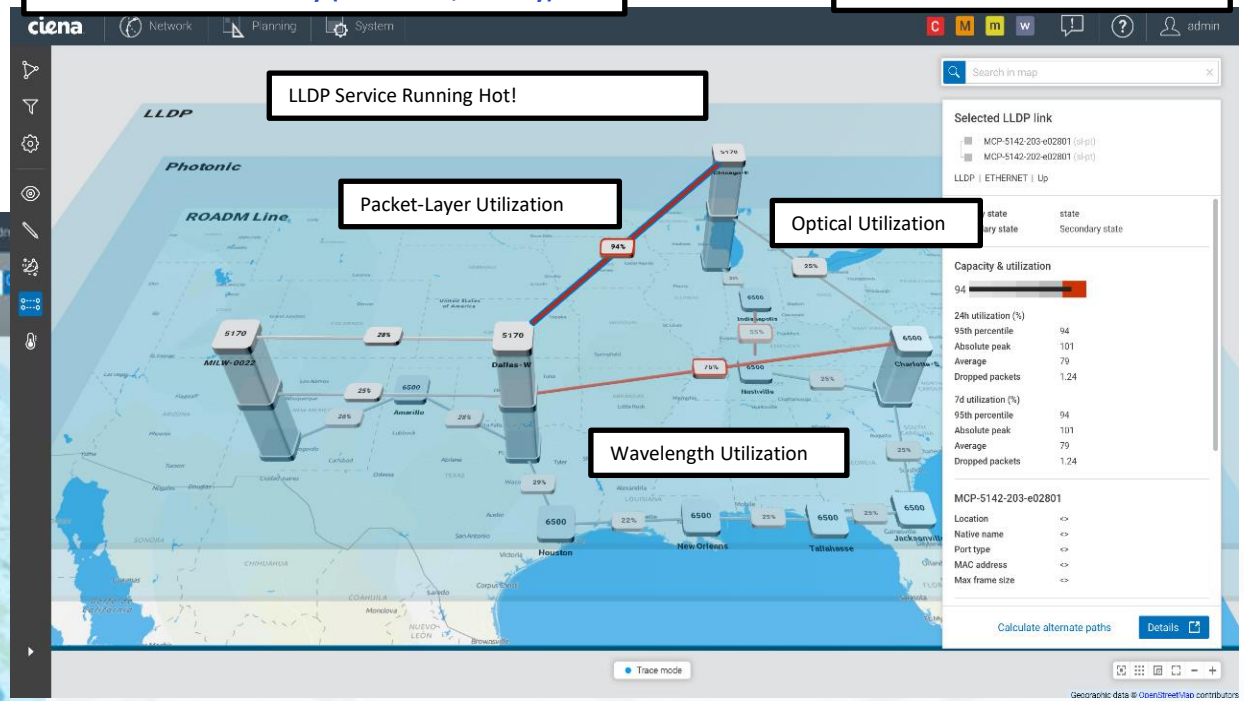
- Grouping several NMCs per MC
  - The spectrum allocated to each NMC is in step of 3.125GHz
  - All NMCs need to be grouped on the same filter
  - There is no limit to the maximum size of the MC
  - Guardband between adjacent NMCs and Deadband at the MC edge can be required.

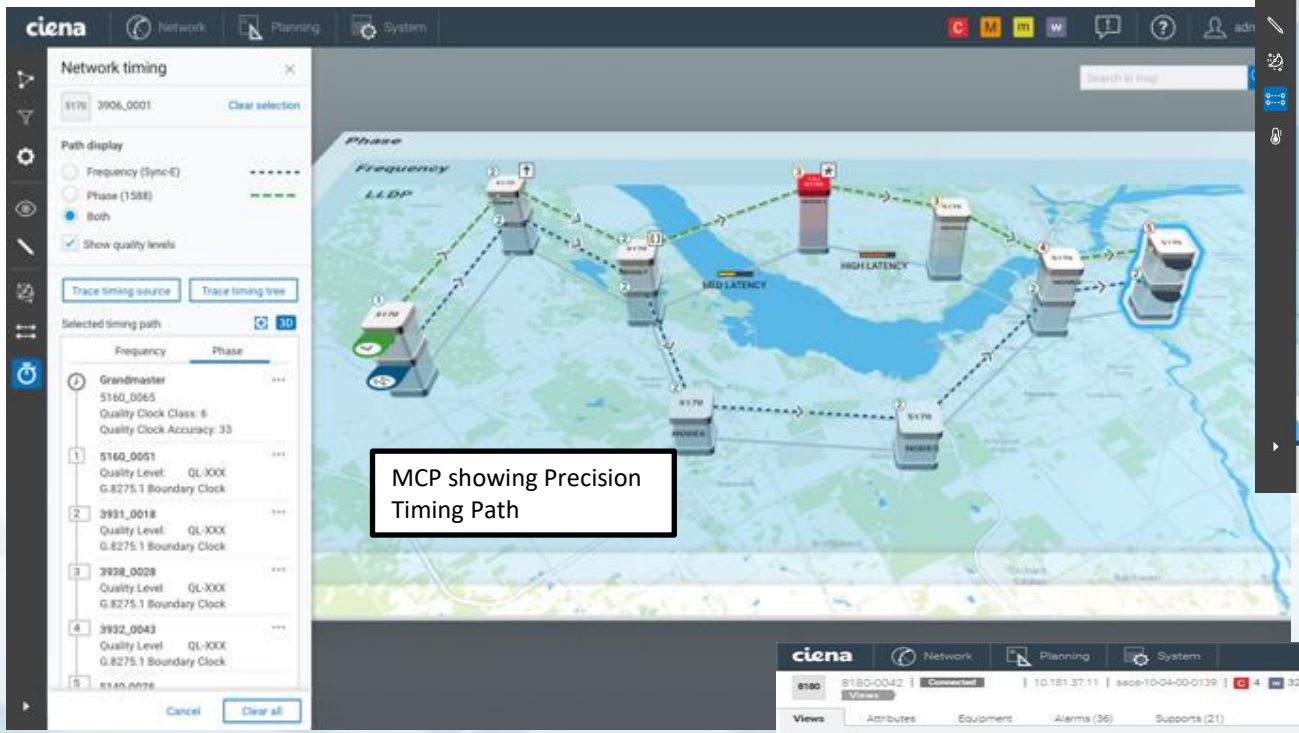


MCP – Multilayer Controller

Service level data overlay (Utilization, latency)

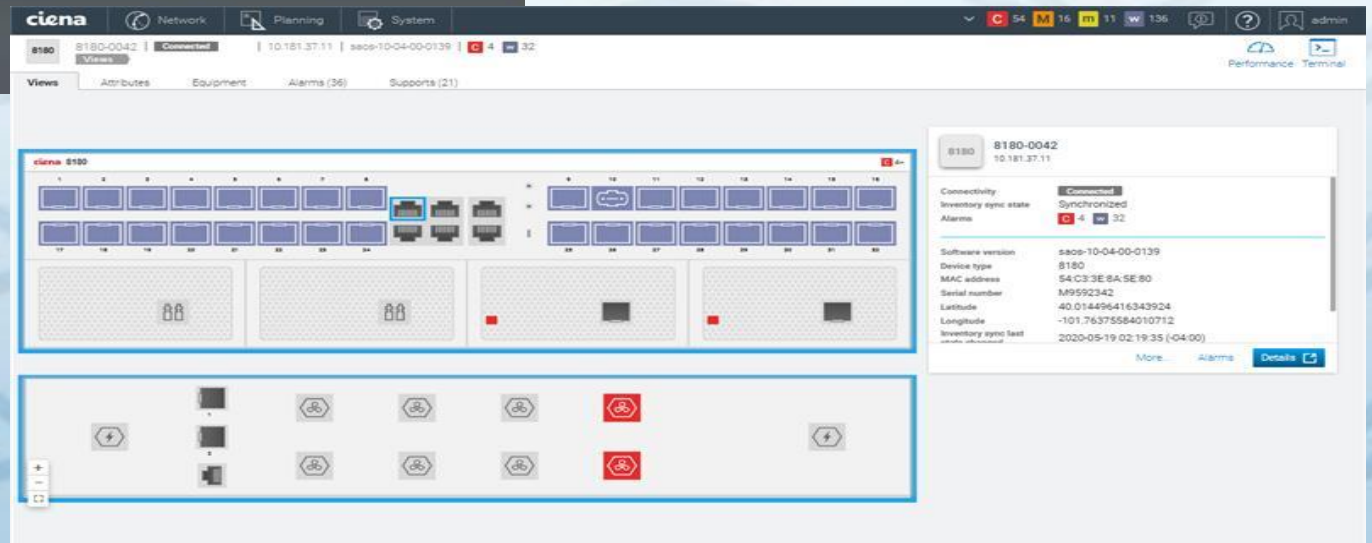
3D Service Trace





MCP showing Precision Timing Path

MCP showing an IPNetwork Device



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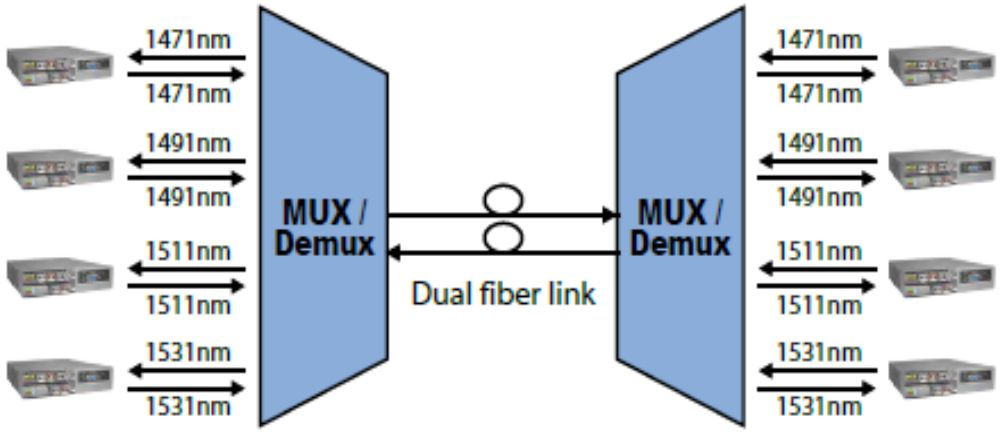
OTHER INTERESTING FEATURES

CWDM MUX/DEMUX

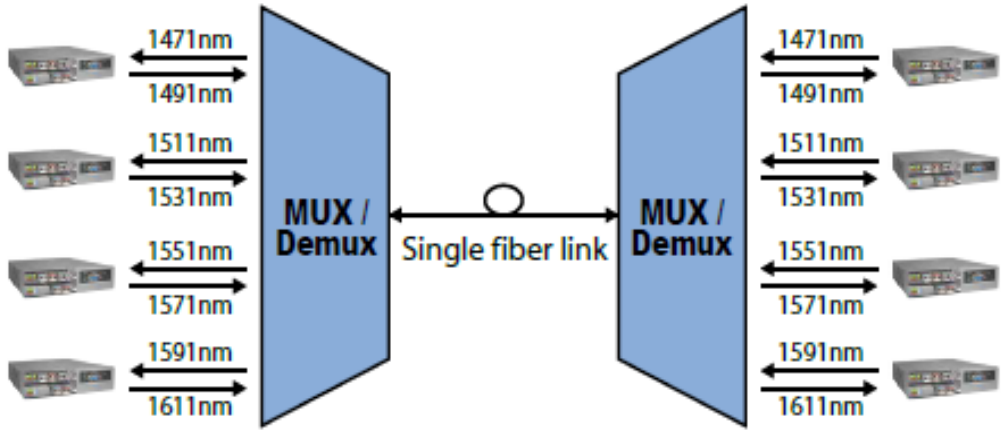
- Low IL and pair loss
- Protocol transparent
- ITU-T recommendation CWDM wavelengths
- Dual fiber or single fiber MUX/DEMUX

Figure 1 :



4 channels Duplex Transmission CWDM Mux & Demux

Figure 2 :



4 channels Bi-Directional Transmission CWDM Mux & Demux

Related Products:

- CMD180
  18ch dual fiber Mux/Demux
- CMD80
  8ch dual fiber Mux/Demux
- CMD40
  4ch single fiber Mux/Demux

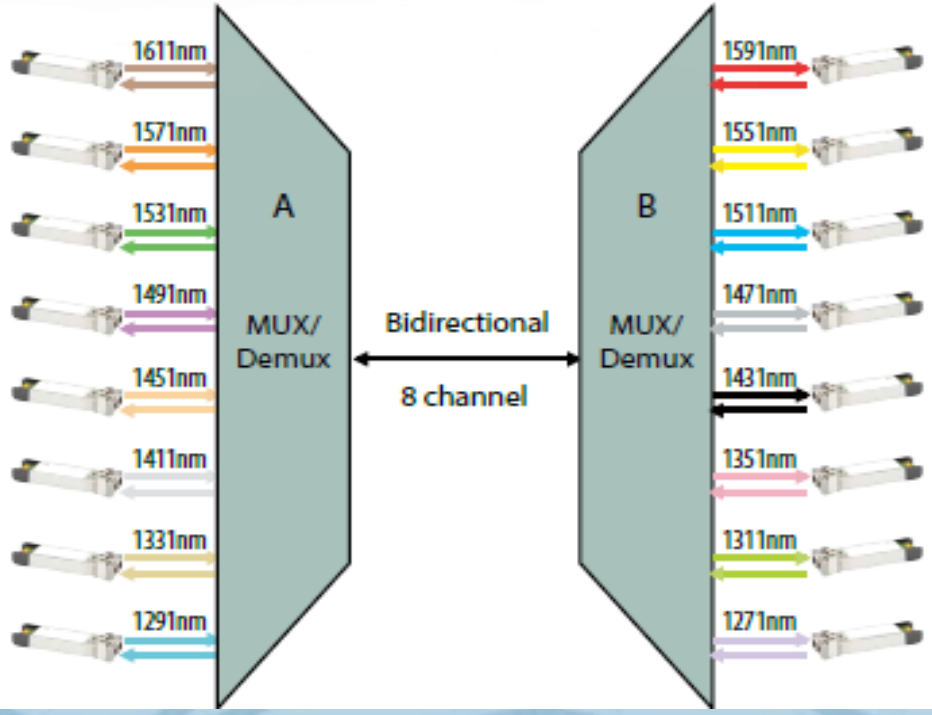
WDM Fiber Saver (WFS)

◆WFS -180/80/40

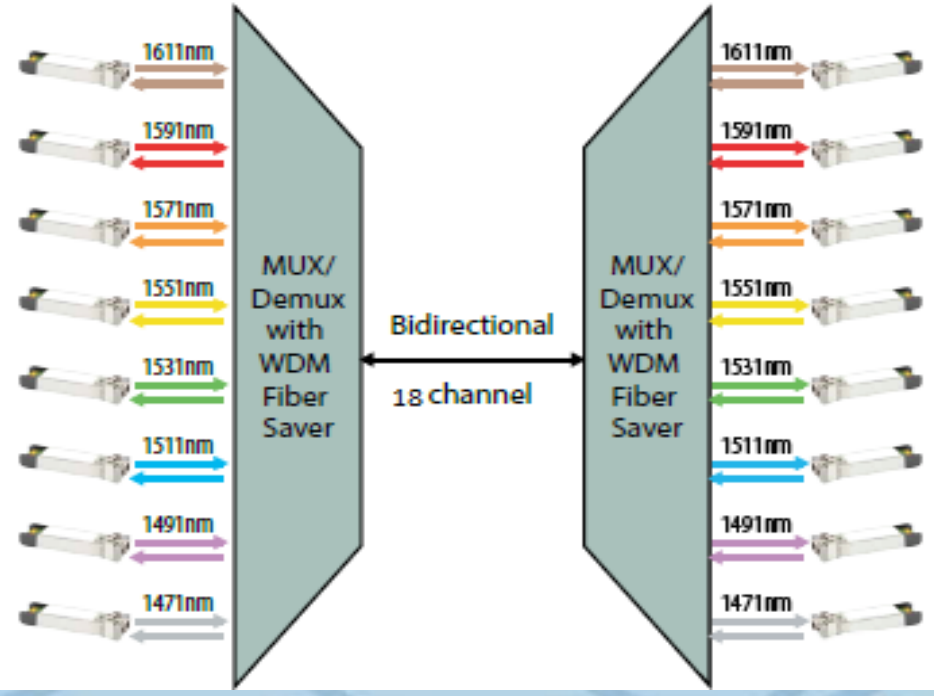
18/8/4ch single fiber Mux/Demux

- Low IL and pair loss
- Protocol transparent
- ITU-T recommendation CWDM wavelengths
- Single fiber on WAN port

▪ Before (with CWDM Mux/Demux)



▪ After (with WDM Fiber Saver)



Optical Path Converter (OPC)

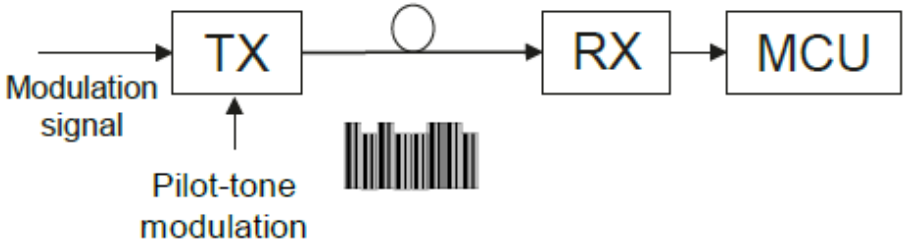
- Convert any light wavelength from dual-core fiber to single-core fiber
- Passive model requires no power
- Protocol transparent, no limitation
- Number of WDM ports can be increased and decreased any time.

OPC-1300 wavelength (1263 ~ 1378nm)
OPC-1400 wavelength (1383~ 1498nm)
OPC-1500 wavelength (1503~1618nm)

Auto tunable SFP28

- Patented auto-tuning functionality, plug and play without host system intervention

- Out-of-band signal

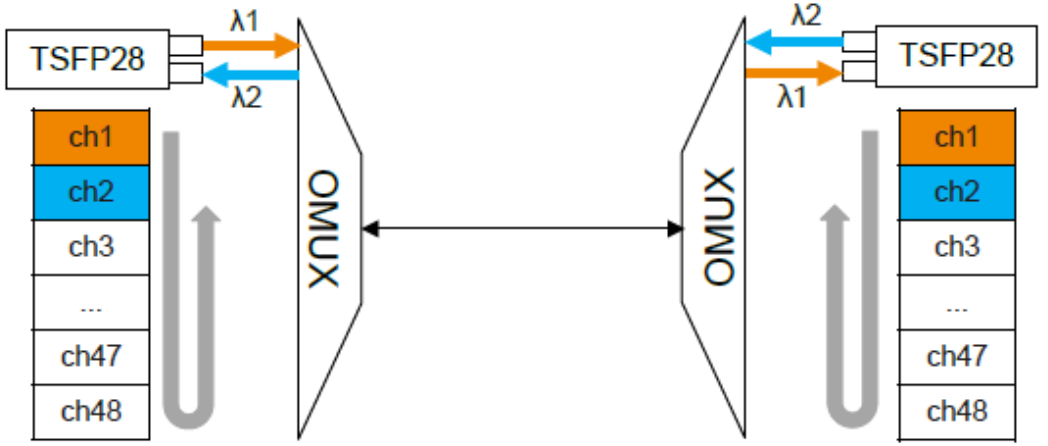


Message type	Message type checksum	Message content	Message content checksum

➢ **Frame content:**

- Wavelength information sent by near-end
- Received wavelength information from far-end
- Ack/Handshake

- Wavelength negotiation procedure



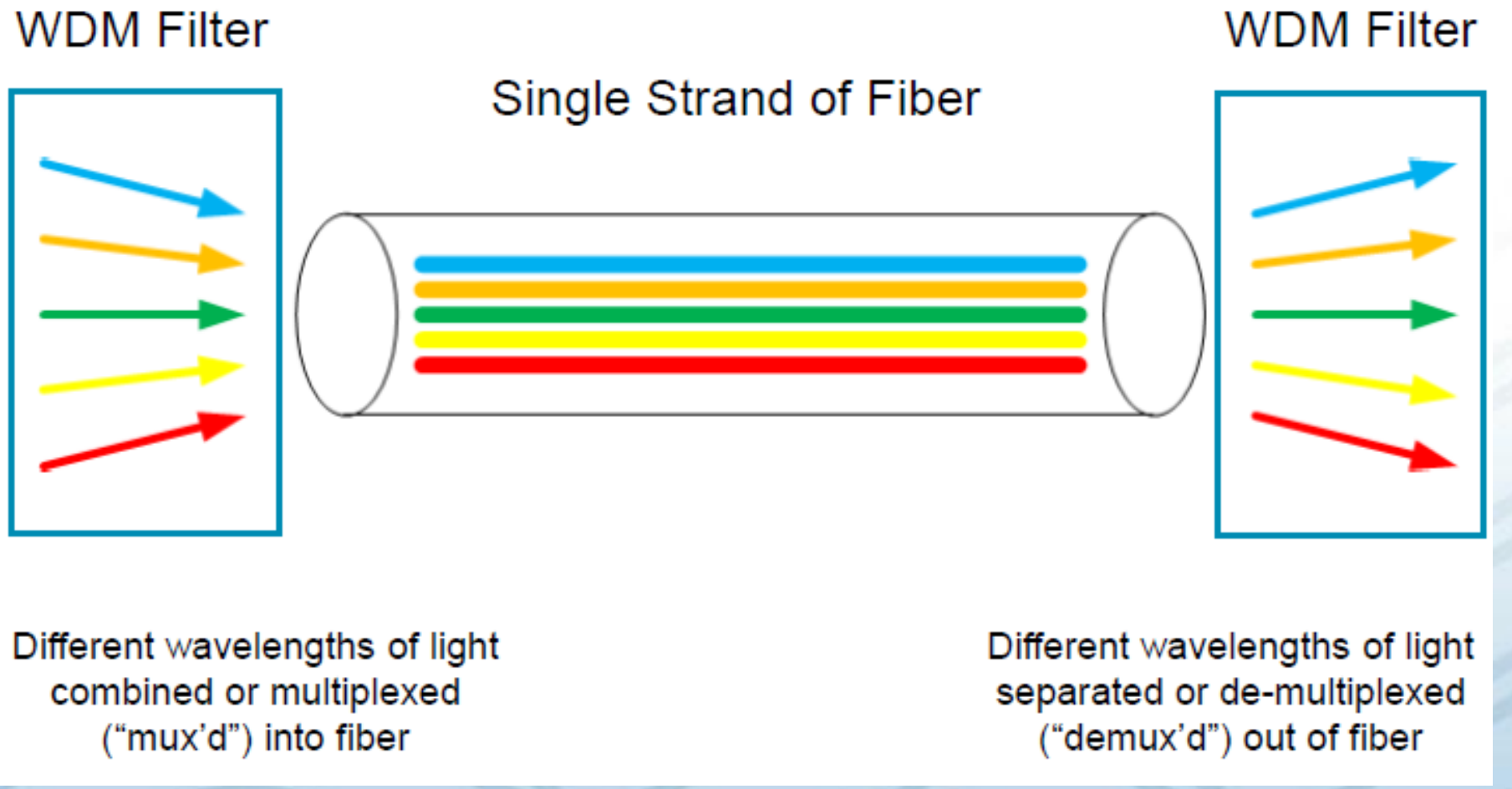
➢ **Negotiation mechanism: active-active mode**

- Near-end/far-end stars scan from ch1
- λ1/λ2 passed through Mux/Demux
- Ack/handshake by both sides based on out-of-band information

Köszönjük a figyelmet!

Backup

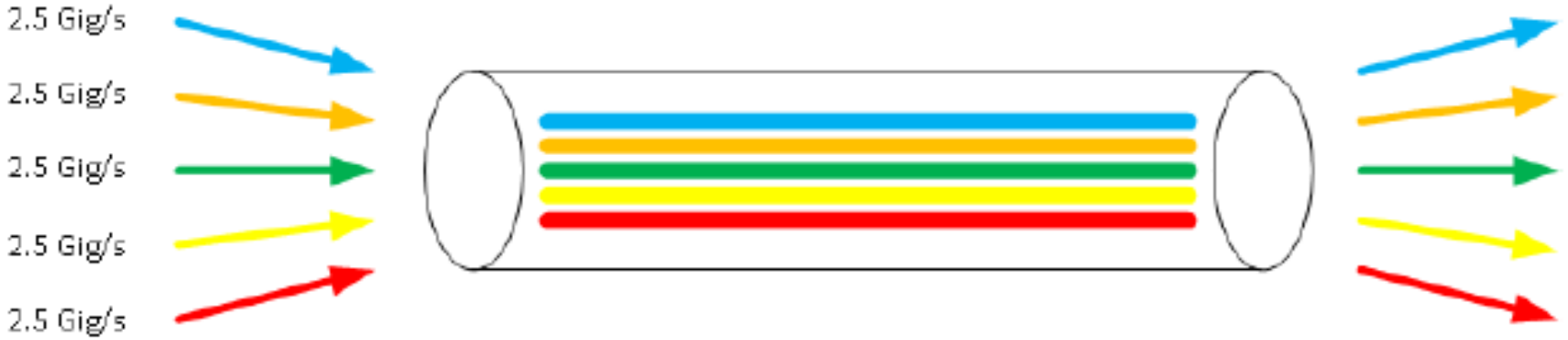
What is WDM?


WDM Filter
Single Strand of Fiber
WDM Filter
Different wavelengths of light combined or multiplexed ("mux'd") into fiber
Different wavelengths of light separated or de-multiplexed ("demux'd") out of fiber

What is WDM?

Data Transfer Rate with 1 Wavelength per Fiber = 2.5 Gig/s

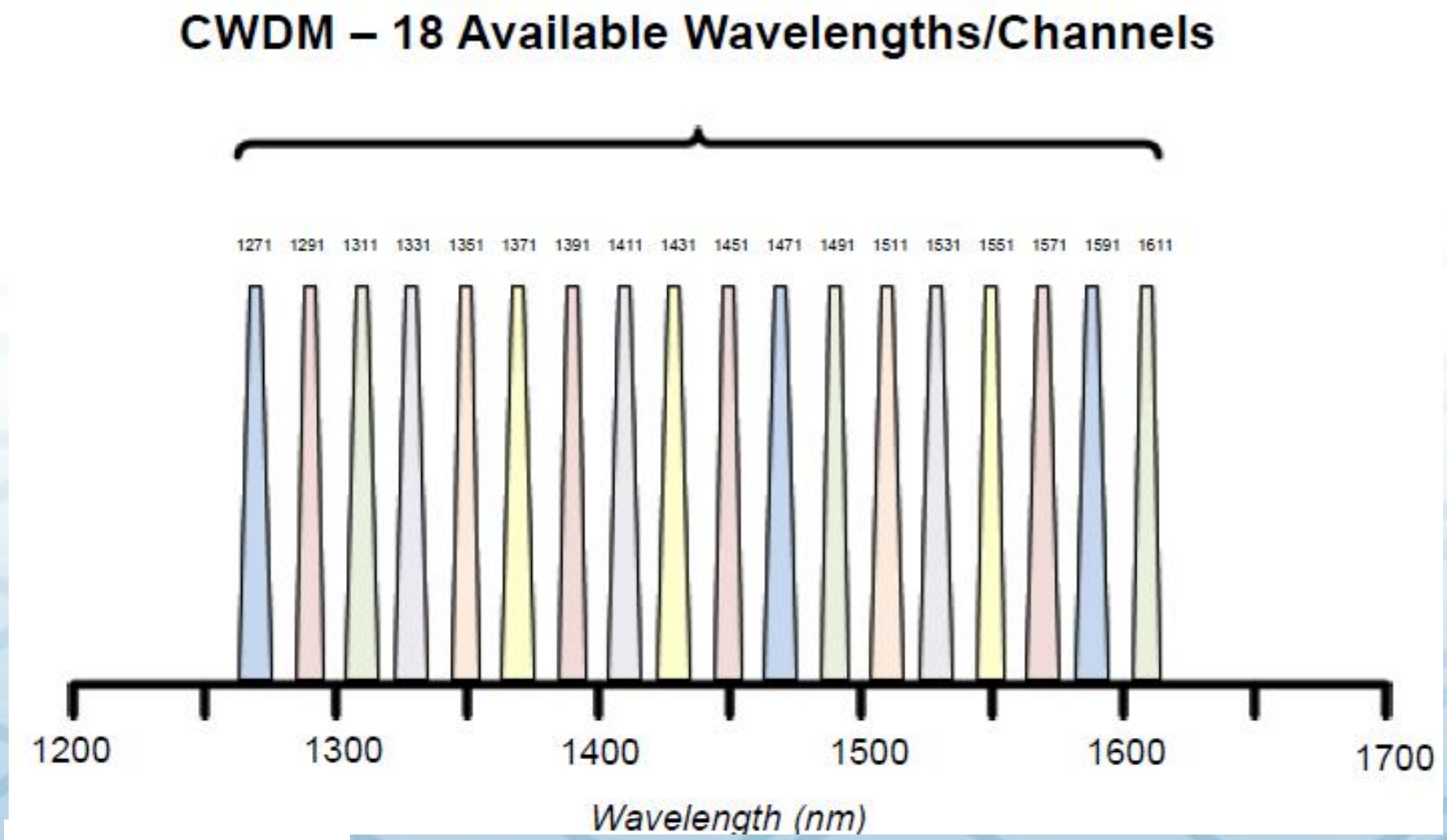
Data Transfer Rate with Multiple Wavelengths per Fiber = (2.5 Gig/s) x (# of Wavelengths) = Larger Capacity



What Technology - CWDM

- **CWDM** stands for “Coarse” Wavelength Division Multiplexer
- One of most distinguishing features of this type of WDM device is the spacing between the wavelengths
- Per ITU-T Standard G.694.2 the channel spacing between CWDM wavelengths is 20nm

CWDM -Wavelengths



CWDM – Spectrum Bands