



400G ZR Pluggable Optics Overview

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400G ZR vs ZRP

- OIF 400G ZR
- OpenZR+
- CMIS
- Output Power -10dBm vs 0dBm vs +4dBm
 - Greenfield vs Brownfield
 - Configurable range
 - Amplified/non-amplified systems
- Needs support in host platform
- Form Factors
 - QSFP-DD, OSFP or even CFP2
- Other Options
 - 100G ZR
 - Grey Optics

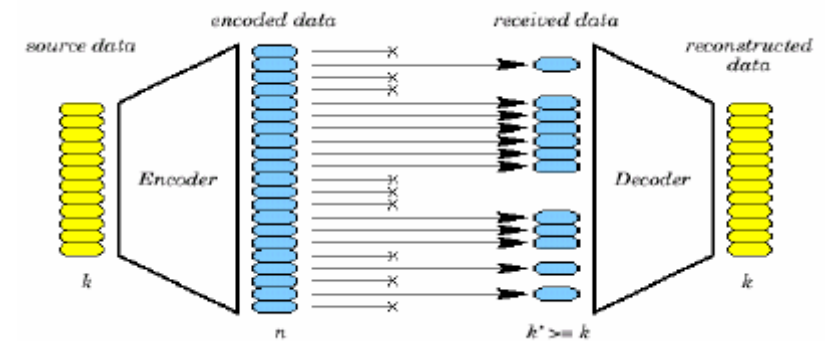
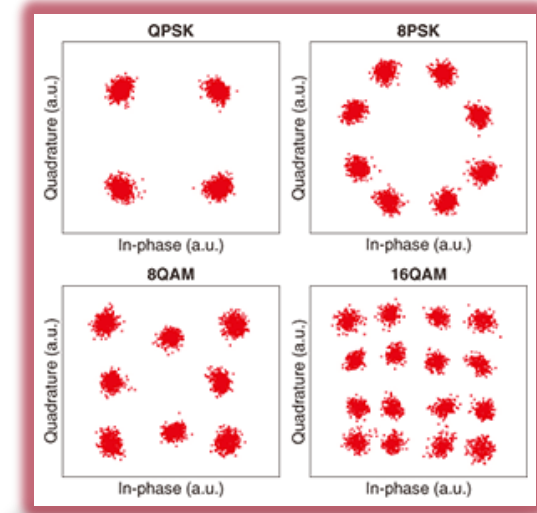


Vendors/Manufacturers/Chipsets

- Host Vendors (Network Equipment Manufacturers)
 - e.g. Cisco, Juniper, Nokia, Whitebox etc...
- Optic Manufacturers
 - e.g. Lumentum, Coherent, Cisco-Acacia et al.
- DSP
 - Marvell, Broadcom, Acacia, Ciena, etc..
- OLS Vendors
 - Ciena, ADVA, Nokia etc..

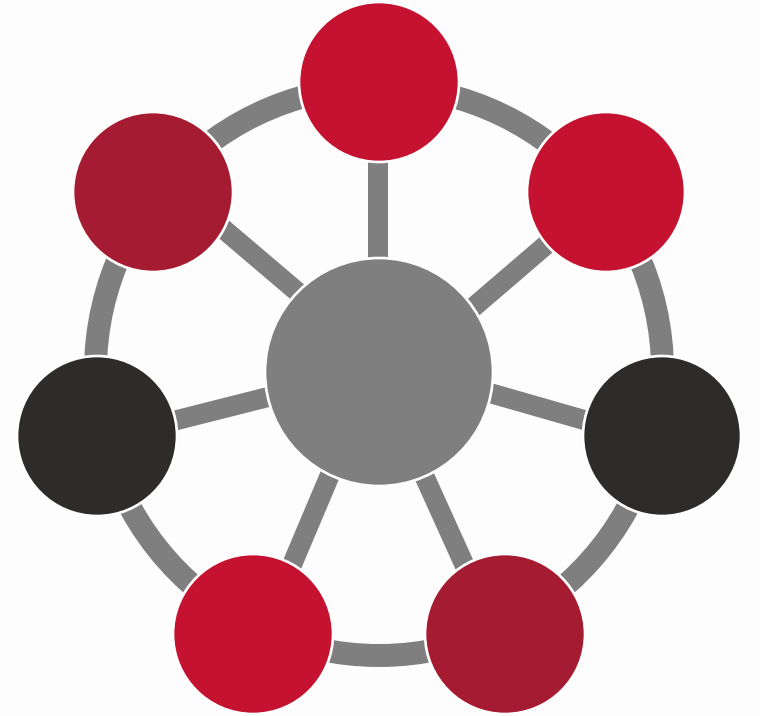
Modes & FEC

- AppSel (Line rate)
 - 1x400
 - 4x100
 - 3x100
 - 2x100
 - 1x100
- Line Modulation
 - 16QAM vs 8QAM vs QPSK
- FEC
 - OFEC vs CFEC vs Proprietary FEC
- OSNR



Interoperability?

- Hosts
 - Software Versions
- A-end to B-end
 - DSP
 - FEC
 - Modes
- OLS
 - P-Link
 - ROADM
- OIF Plugfests



“I’ve already got a transport network”

- Can use alongside (Alien Wavelengths)
- Remote locations
- Cheap(er)
- Simplified Network?

“I don’t need a transport network”

- Fibre shortages
- Short interconnects
- DCI
- Bandwidth Demands
- Unamplified “grey” links





Conclusions

- Hardware Options
- Configuration Settings
- Interoperability Challenges

Remember this is a transport network without any transport equipment



Questions?

