Consideration of Auto Negotiation in 5G wireless transport networks

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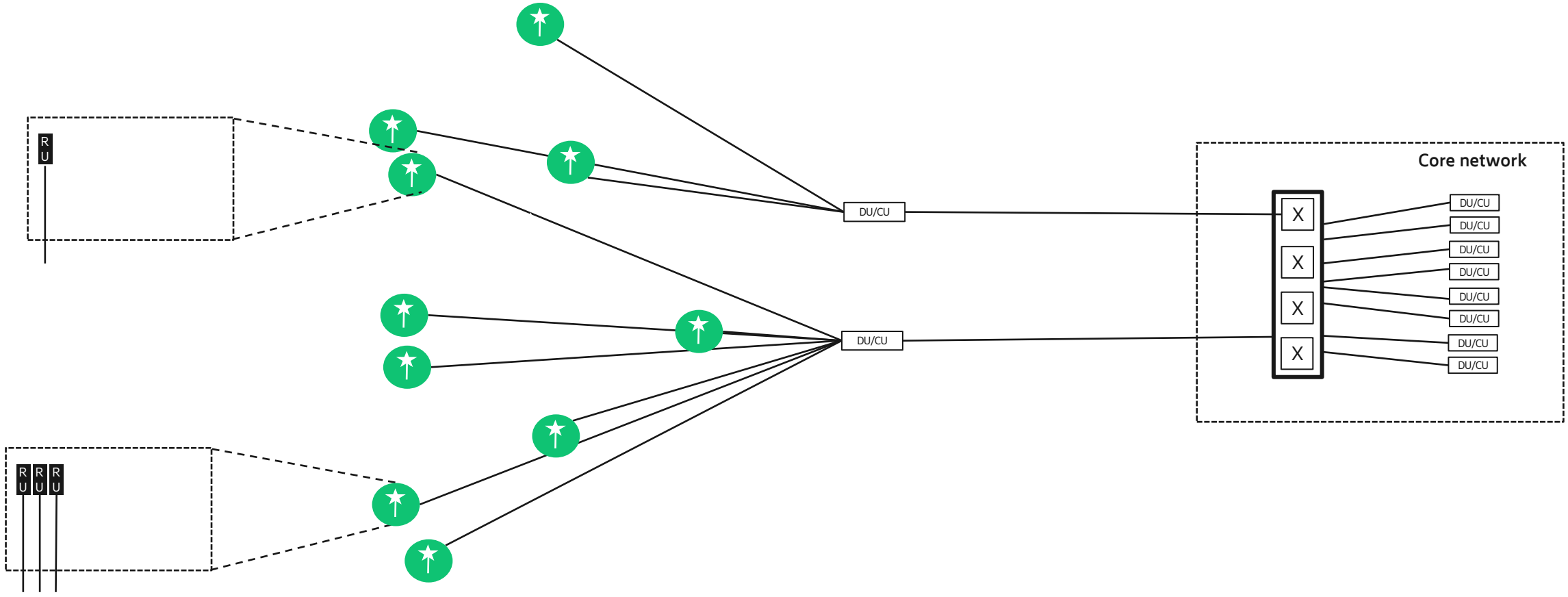
Overview

- Distributed Radio Access Network
- Centralized Radio Access Network

- Considerations for Optical Auto Negotiation in RAN scenarios

- Breakout's - For further consideration

Distributed Radio Access Network



*No additional O&M interface, all inline with mission mode data

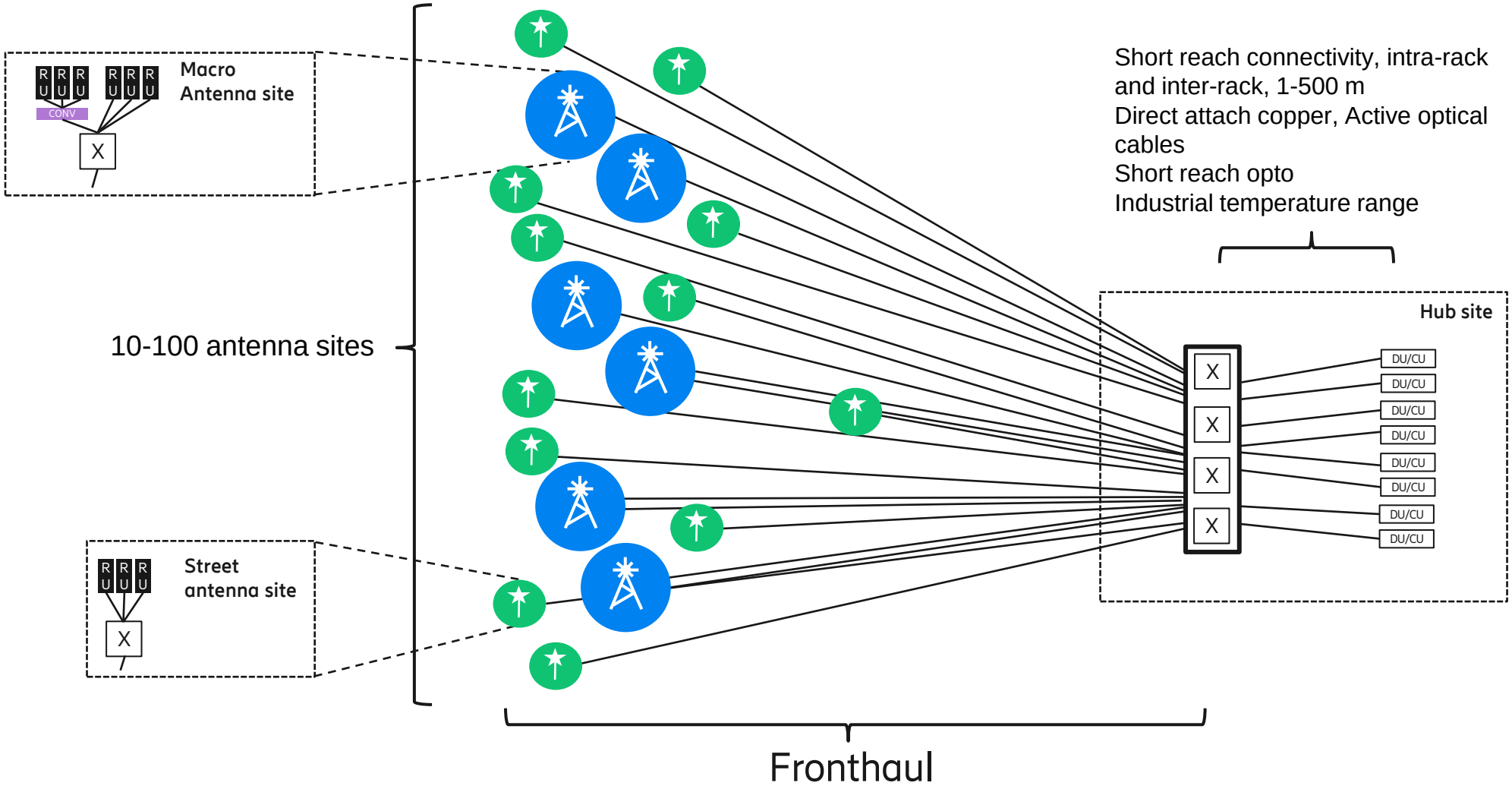
Fronthaul

<300m (corner cases 1-2km) fiber
25G – 100G optical modules, even higher bandwidths in the future (50G-R1,100G-R1, 100G-R2, 200G-R4, 400G-R8 etc.)
Industrial temperature range

Backhaul

1-15 km fiber (possibly up to 30 km in the future)
Fiber a scarce resource, use of BiDi likely
25G – 100G optical modules, even higher bandwidths in the future (50G-R1,100G-R1, 100G-R2, 200G-R4, 400G-R8 etc.)
Industrial temperature range

Centralized Radio Access Network



*No additional O&M interface, all inline with mission mode data

1-15 km fiber (possibly up to 30 km in the future)
Fiber a scarce resource, use of BiDi likely, or WDM (with colour 25G – 100G optical modules, even higher bandwidths in the future (50G-R1,100G-R1, 100G-R2, 200G-R4, 400G-R8, 400G-R2, 1.6T-R8 etc.)
Industrial temperature range

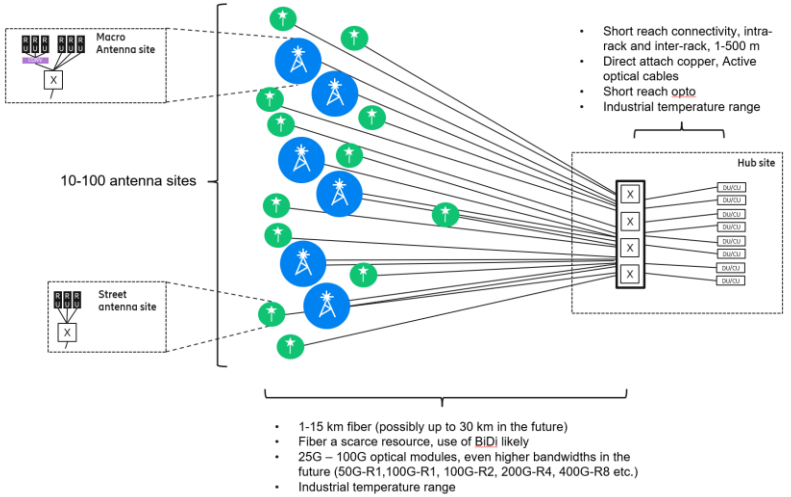
Considerations for Optical Auto Negotiation in RAN scenarios

Baseband, Radio and Transport equipment, generations loosely corresponding with advances in Serdes and Optical technology advances

Platform HW and ASIC technology capability support needs to be wide and flexible to cover both DRAN and CRAN scenarios, multi rate and technology supporting a universal port

Brown field installation is the norm, maintaining generation interoperability is key

Due to the many times difficult installation locations, e.g. mast tops, roadless country. Avoiding or at minimum minimizing time spent on a site visit is key



Optical Auto Negotiation-> Zero Touch

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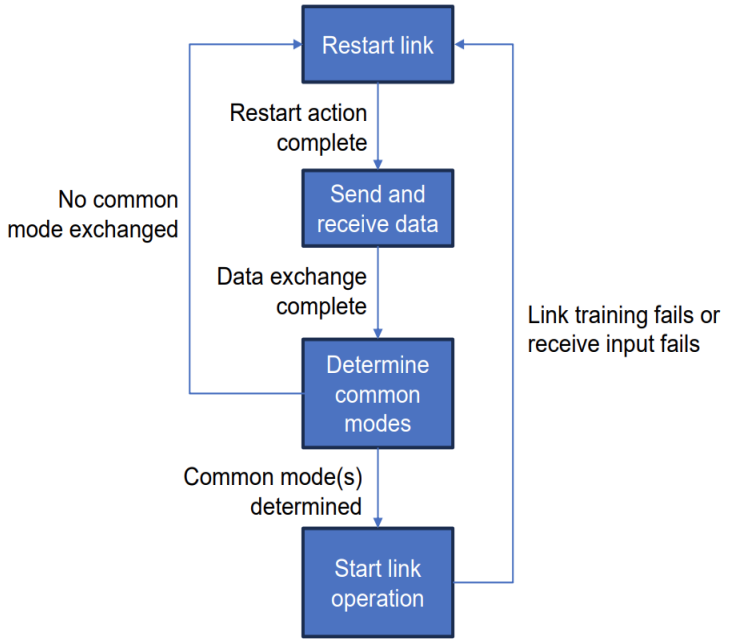
Simplifies installation in a none homogenous environment, where its not possible to duplicate same deployment scenario parameter every time

Reduces need for strict cabling regimes as PHY type and technology as well as PHY mode's is resolved by negotiation thus minimizes human error

Based on deployment of CR and KR PHY types in legacy speeds, linkup are faster and more reliable using AN and LT due to the common understanding of peer-end and commonly enter "Start link operation", would improve further with RTS as defined in, ran_3dj_elec_01_240229,



Breakout's - For further consideration

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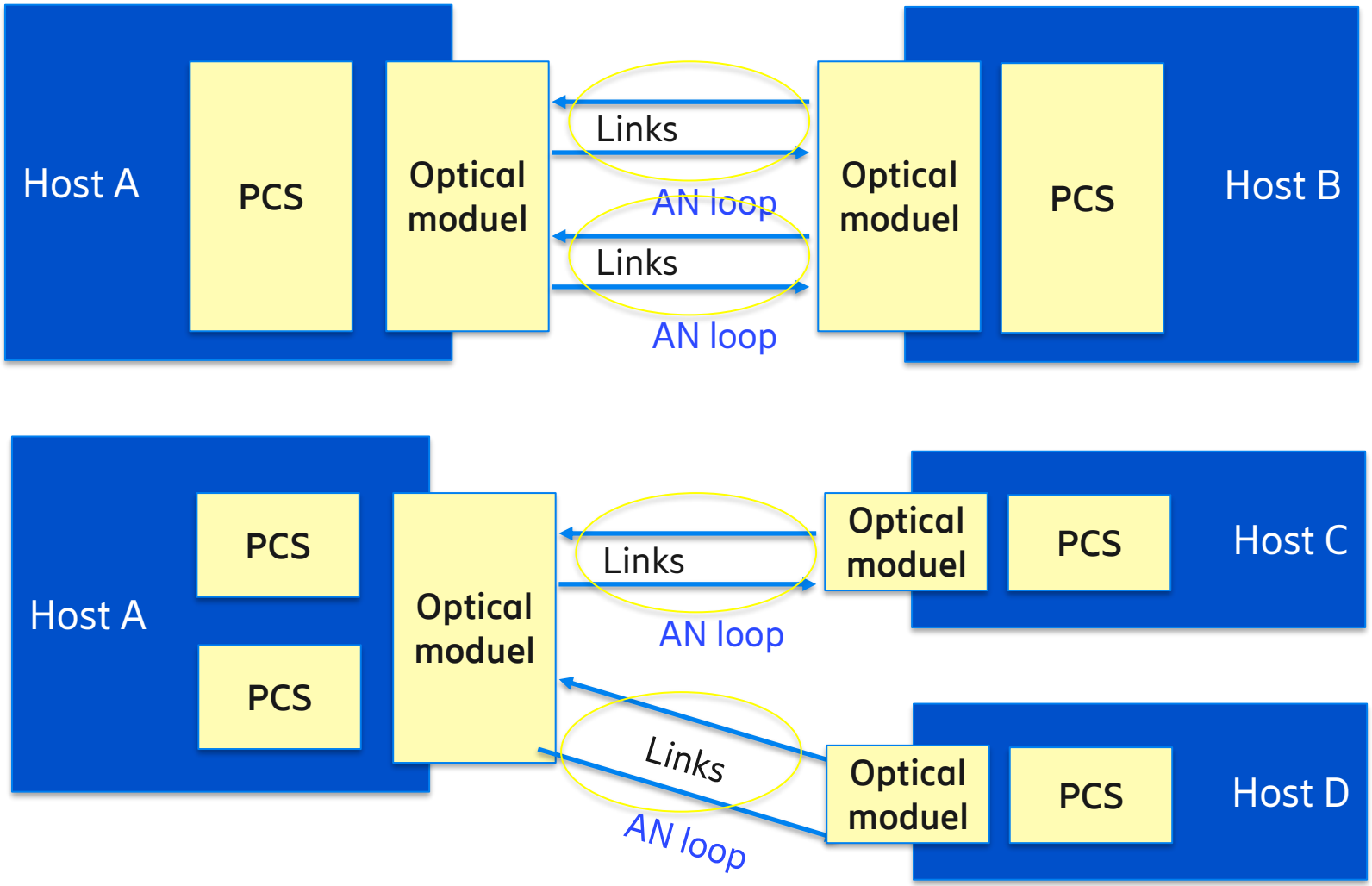
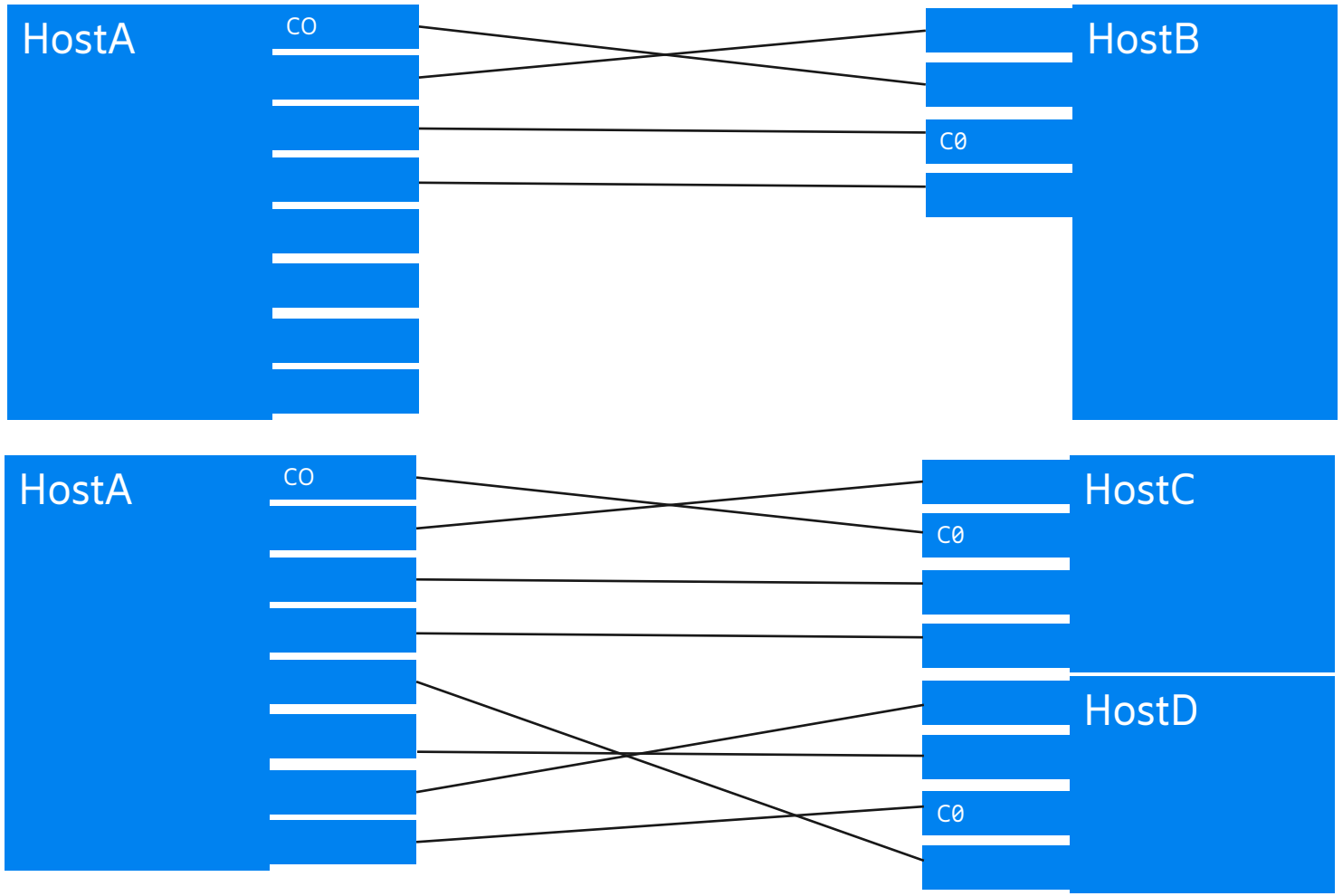
OAN would allow for simplified deployment of breakout cables scenarios, by negotiating on a per lane basis

Same deployment scenarios will need to provide both Multi lane high bit rate as well as fanout, from same universal port





Need to resolve different understanding of lane "0" on both ends where Auto Neg can be performed

THANKS