

Network architectures based on passive WDM systems

Three connectivity concepts

Option 1

- one 8-channel POP
- up to 8 add/drop nodes – each one with a unique wavelength

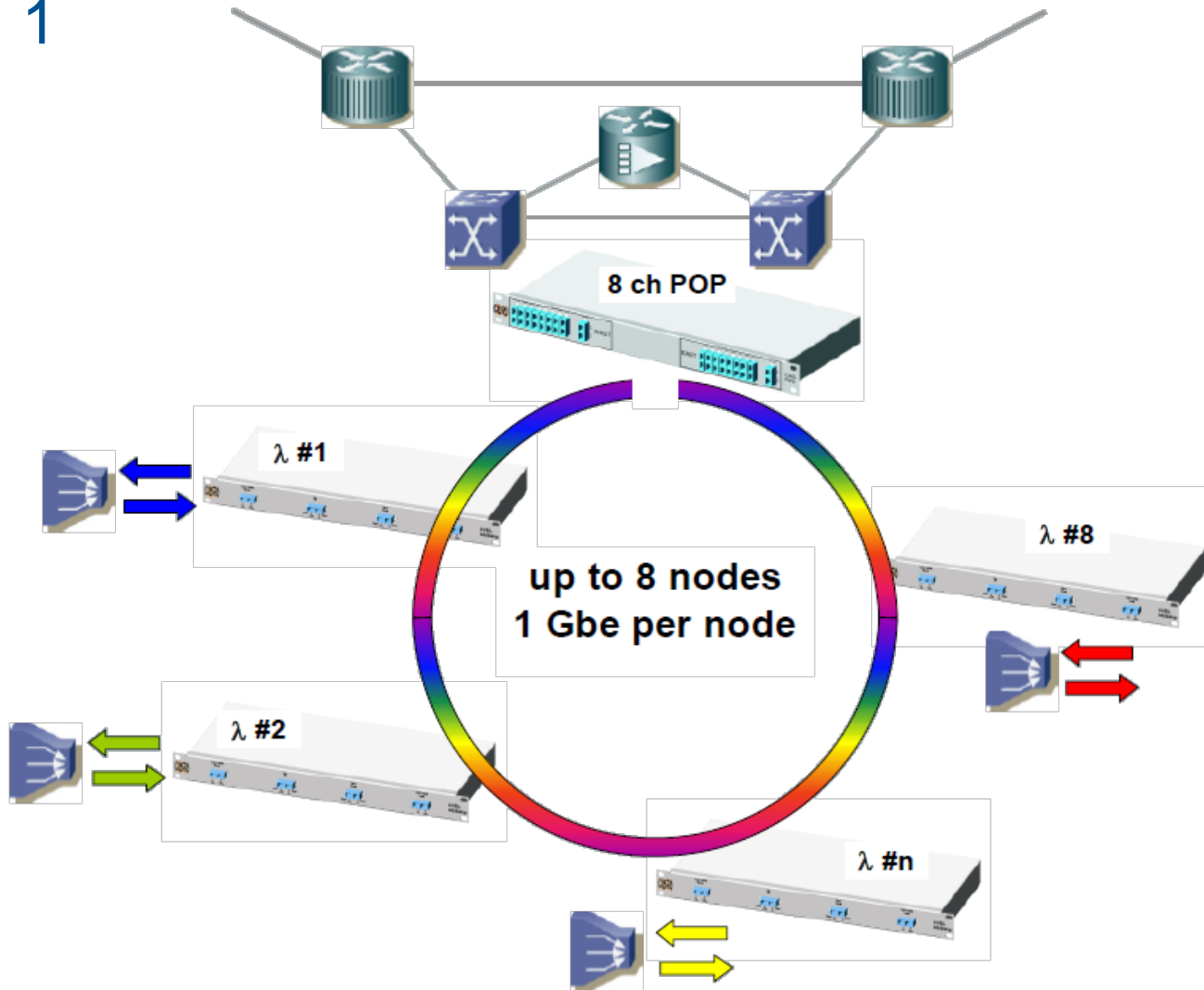
Option 2

- one 8-channel POP
- two types of add/drop nodes to manage a subset of 4 wavelength

Option 3

- one 4-channel POP
- one type of add/drop node to manage all 4 wavelength

Option 1



Option 1: pro's & con's

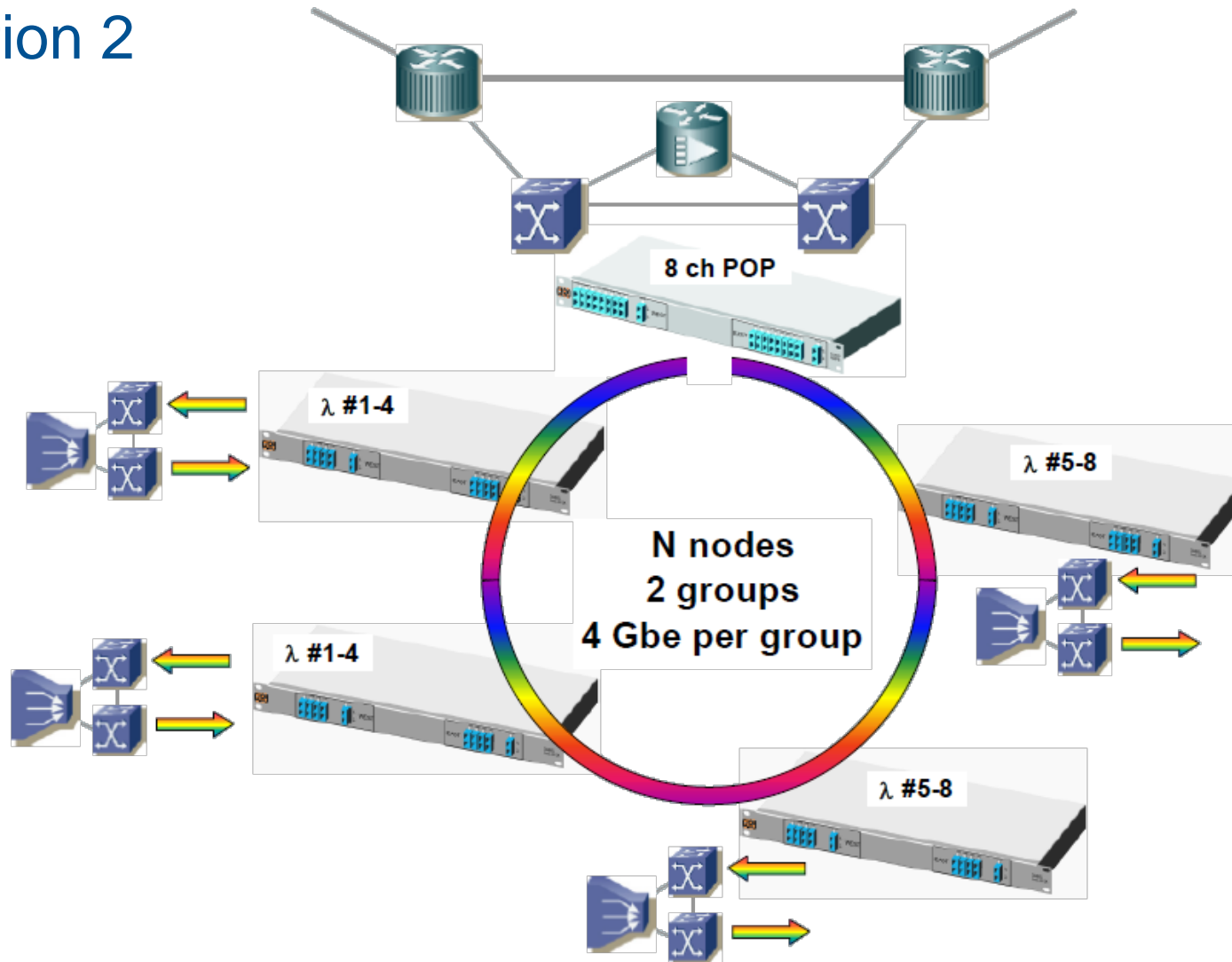
Pro's

- simple and low-cost add/drop nodes
- one wavelength (λ) is dedicated to each add/drop node
- O/E/O conversion only where necessary
- Layer 2 hubs & spokes architecture reduces risk of electronics failure
- each add/drop node is redundantly connected to the POP

Con's

- POP GBIC power budget determines ring circumference
- suitable for small ring diameters
- 1 Gbe available per add/drop node
- each add/drop node is different (λ) leading to complex maintenance and many spare parts

Option 2



Option 2: pro's & con's

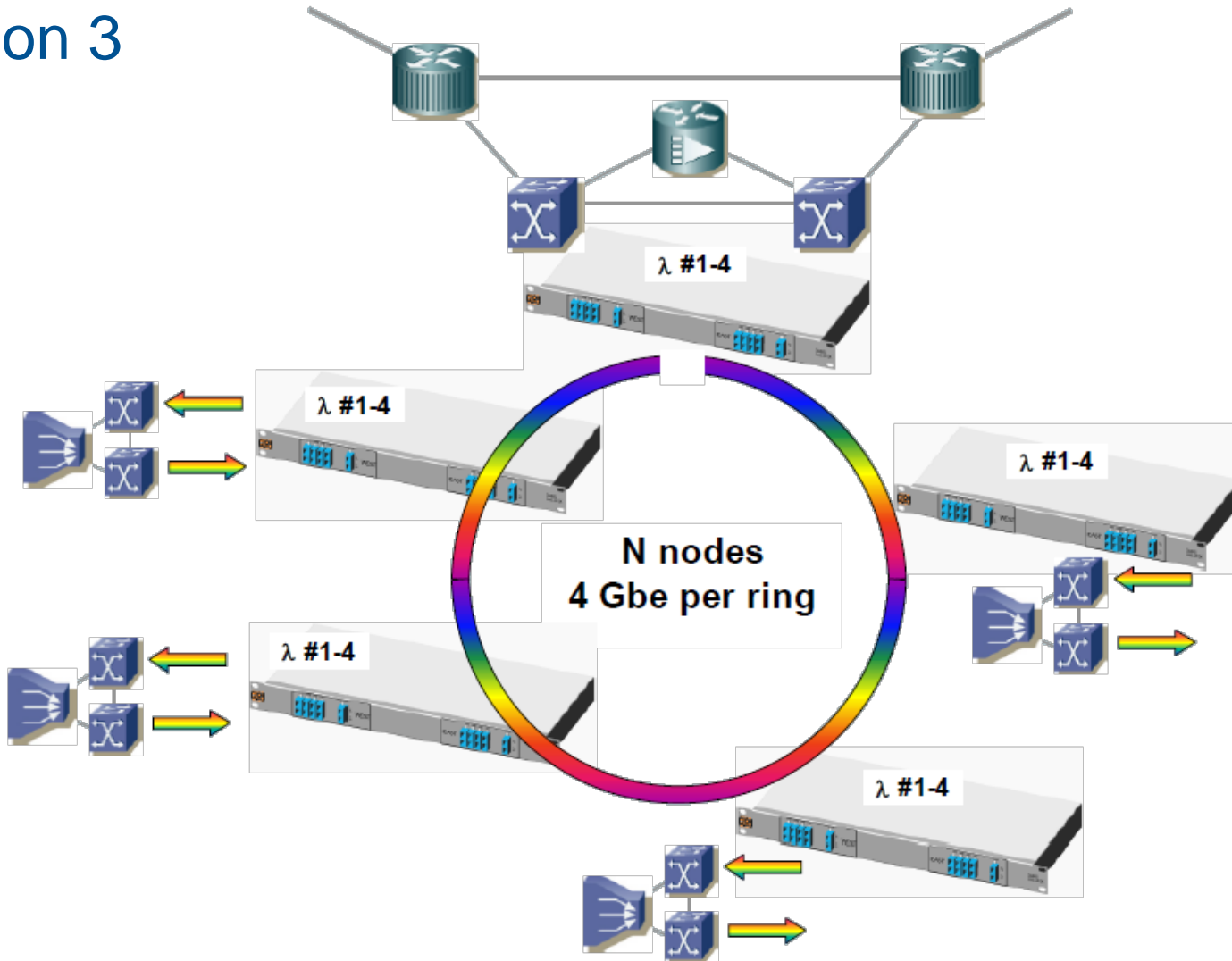
Pro's

- requires only two types of add/drop-nodes A #1-4 and A #5-8
- up to four wavelength (= 4 Gbe) can be dedicated to an add/drop node
- O/E/O conversion only where necessary
- flexibility to reduce O/E/O conversion with patch cords
- Layer 2 hubs & spokes architecture between the two types of add/drop nodes mediates the risk of electronics failure
- each add/drop node is either redundantly connected to the POP or to the next node

Con's

- ring diameter is a function of POP GBIC power budget
- suitable for medium ring diameters (needs power budget calculations)
- needs LAN switches with spanning tree protocol

Option 3



Option 3: pro's & con's

Pro's

- no limitation in the number of nodes
- requires only one types of add/drop node: #1-4
- up to four wavelength (= 4 Gbe) can be dedicated to each add/drop node
- each add/drop node is redundantly connected to the POP
- GBIC power budget determines the distance between two add/drop nodes (not ring circumference no issue)
- very modest network planning requirements
- has been deployed on a large scale

Con's

- O/E/O conversion at each node
- Layer 2 ring architecture, no hubs no spokes
- needs LAN switches with spanning tree protocol

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WAIVER

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