

A Status Update on YANG Data Model for Passive Network Inventory

draft-ygb-ivy-passive-network-inventory-00

Contributors:

Chaode Yu (Huawei)
Sergio Belotti (Nokia)
Aihua Guo (Futurewei)
Mohammad Boroon (Highstreet)
Italo Busi (Huawei)
Swaminathon S. (Nokia)
Nigel Davis (Ciena)

Tom Van Caenegem (Nokia)
Mauro Tilocca (FiberCop)
Brad Peters (NBN)
Swamynathan B. (Nokia)
Bin Yeong Yoon (ETRI)
Yang Zhao (China Mobile)
Yucong Liu (China Mobile)

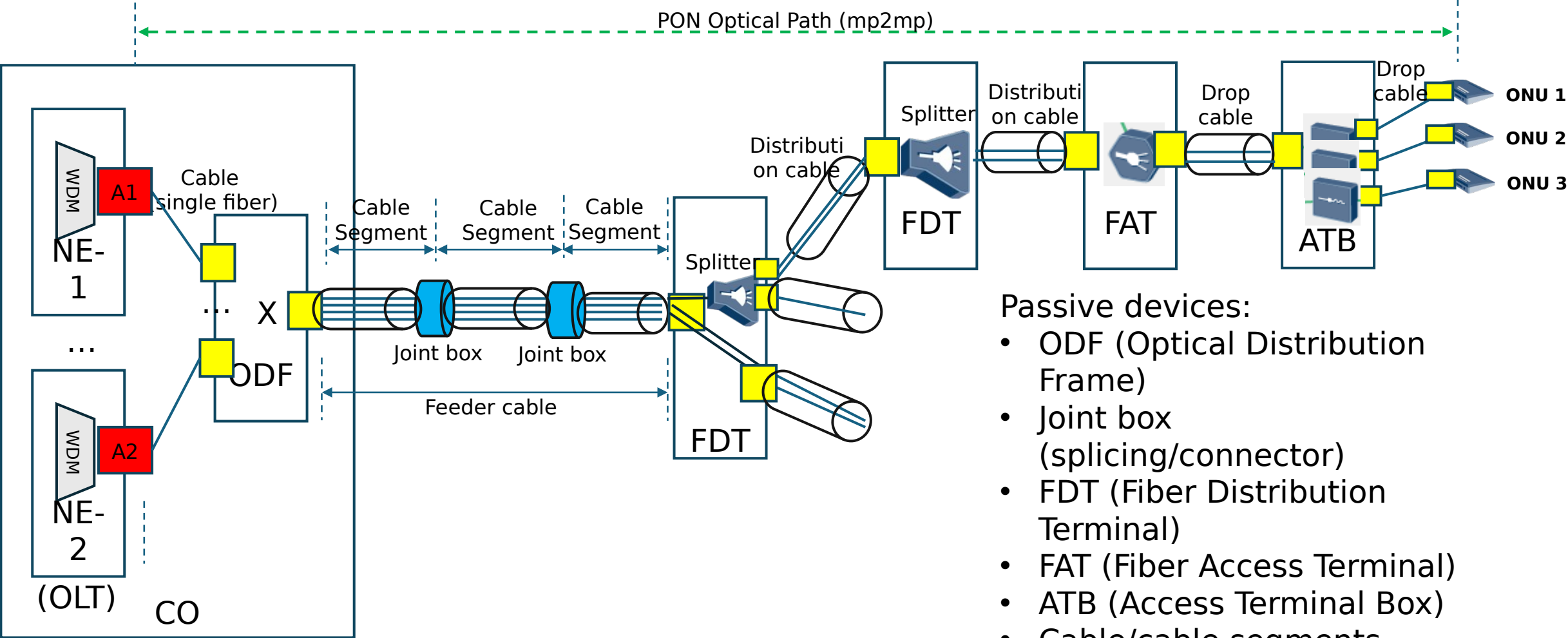
Summary of Updates Since IETF-121

- Inventory management for passive infrastructure is of good interest by operators and the OSS/BSS system. The objective of this draft is to develop a common model to support a variety of network scenarios
 - Used at the NBI of a domain controller for exposing and retrieving passive inventory
 - The method of discovering passive inventory is out of scope
- Held weekly discussions to align the objective and terminology for passive inventory
- Welcomed many contributors from diverse technology background
 - Received significant input from BBF on access network modeling, which has heavy management on the ODN (optical distribution network) passive infrastructure for FTTH/FTTR

Type of Passive Infrastructure

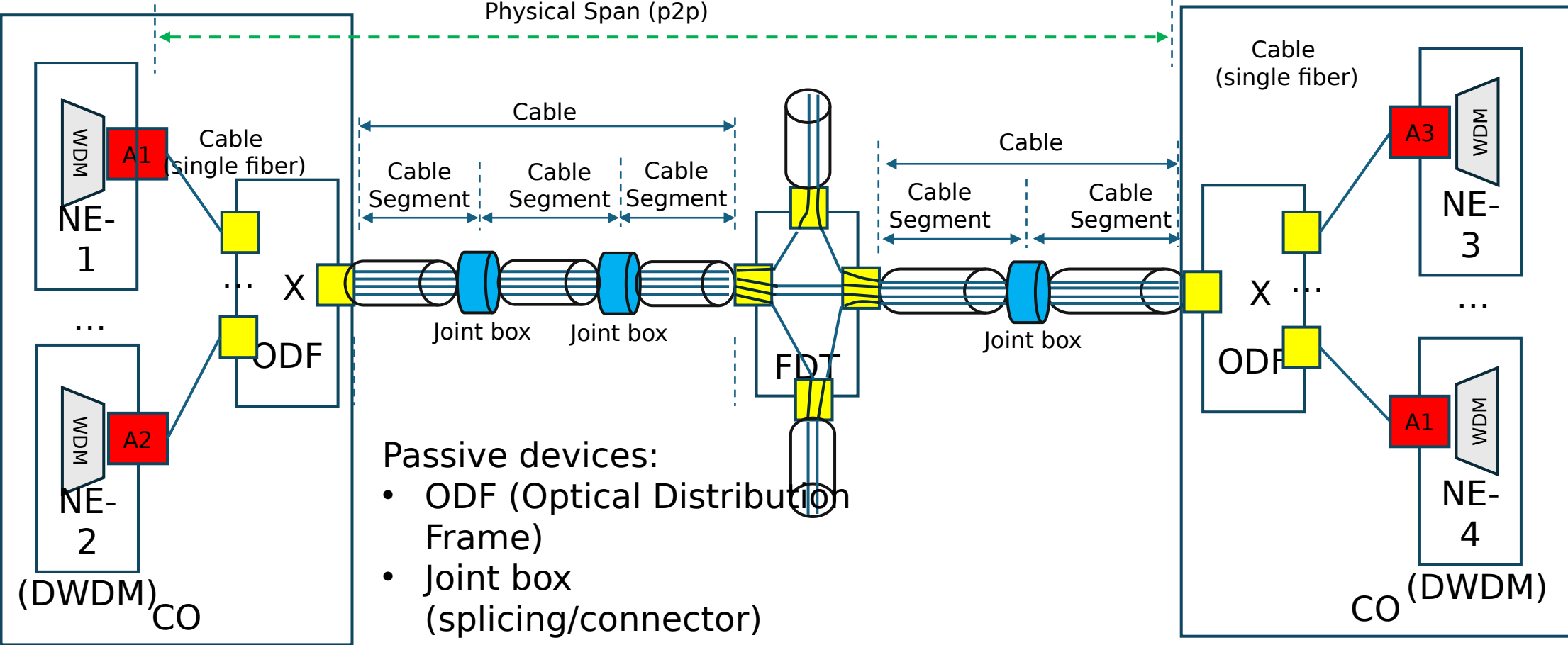
- Various types of passive network infrastructure were reviewed for
 - Optical access
 - OTN/DWDM transport (IP/packet use cases TBD)
 - Microwave transport
- Agreed that the model should cover the above network scenarios

Passive Infrastructure - Access



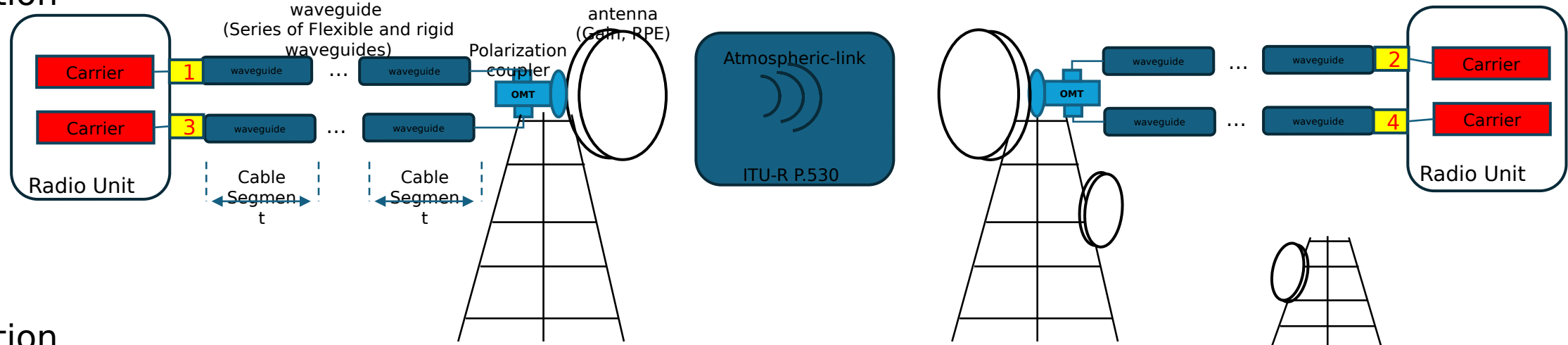
- Passive devices:
- ODF (Optical Distribution Frame)
 - Joint box (splicing/connector)
 - FDT (Fiber Distribution Terminal)
 - FAT (Fiber Access Terminal)
 - ATB (Access Terminal Box)
 - Cable/cable segments

Passive Infrastructure - OTN/DWDM

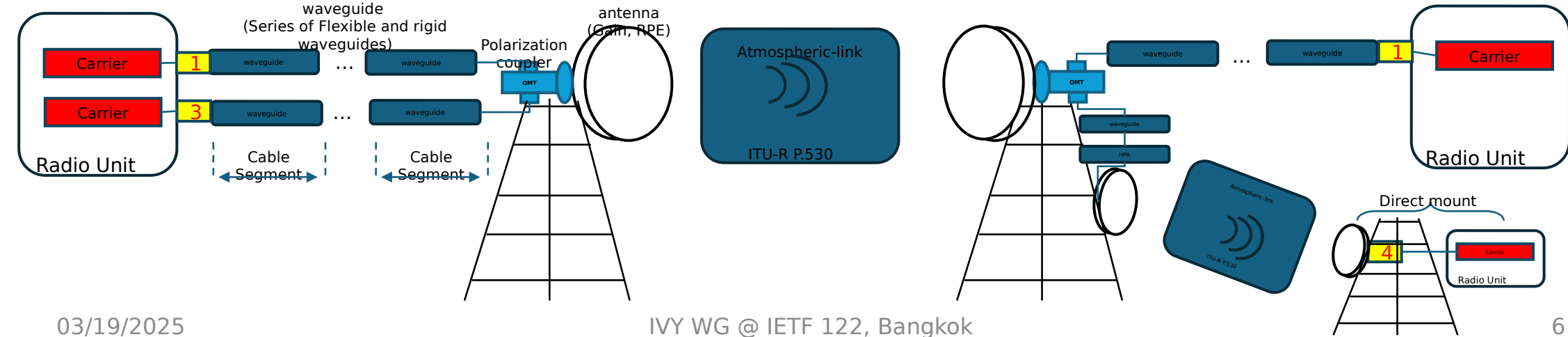


Passive Infrastructure - Microwave (To be further discussed)

Option 1



Option 2



Clarification on Terminologies

- Passive component
 - Physical component that is undetectable, inside & outside a box (NE)
- Cable
 - The definition currently covers only fiber optical cable. Need to be generalized to support other types of cables, e.g. Ethernet or electric cable, and waveguide
 - A cable can contain multiple cable segments connected/spliced through connectors
 - A fiber cable can contain multiple fiber cores
- Fiber core
 - A fiber core is an un-splittable physical line contained within a fiber optical cable that guides the light through (a.k.a. a “strand”)
- Physical Span (out of scope)
 - Clarified that a physical span represents end-to-end connectivity between connectors of inventory ports, and is a functional concept, so out of scope
 - Physical span can be p2p or mp2mp, which can be modeled as a (p2p or mp2mp) link using the Network Inventory Topology model in [draft-ietf-ivy-network-inventory-topology](#), which augments RFC8345.
 - For access a similar concept is PON optical path

Modeling Methodology: Topology or Inventory

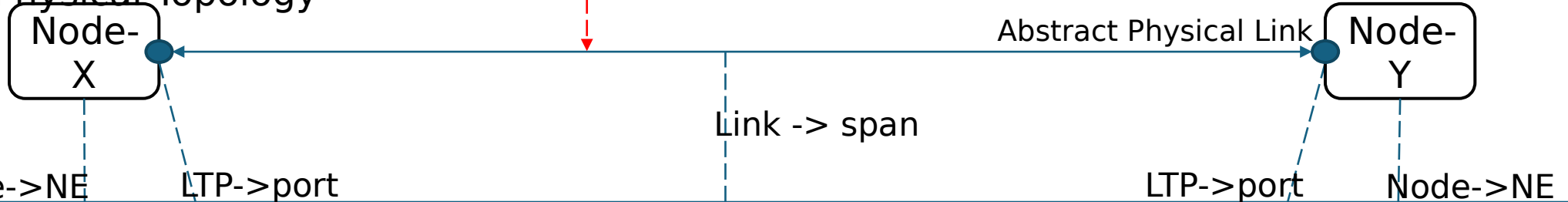
- There are comments about whether to separate the topology aspect of passive infrastructure from the inventory aspect
 - Topology aspect: how a cable/cable segment is connected to ports on NE or passive device, how fiber cores are routed within a passive device, e.g. an ODF
 - Inventory aspect: the passive device / component itself with attributes
- And how to connect inventory to topology
 - Do we need a layer of “physical topology” to describe the topology aspect of passive inventory, and use the model defined in [draft-ietf-ivy-network-inventory-topology](#) for the mapping between inventory and topology?
 - This is also under consideration in SIMAP
- More discussion is needed to conclude the modeling methodology

A Possible Approach

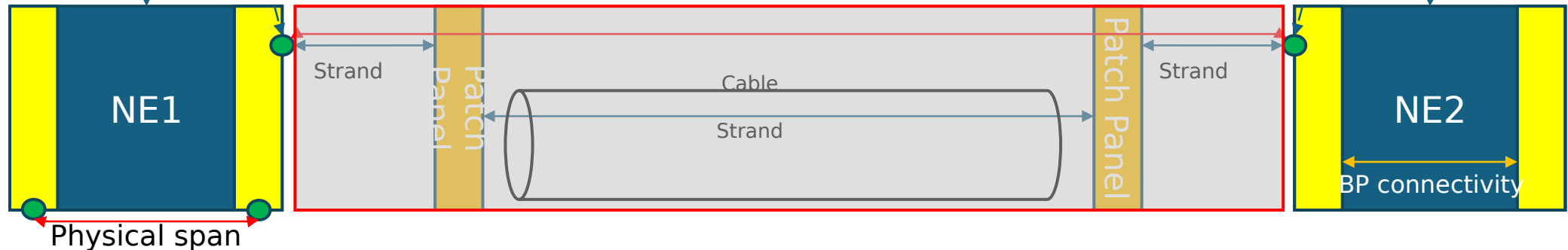
OTN/ETH Physical Topology



Abstract Physical Topology



Network Inventory



Passive Device vs. Network Element

- Comments about whether a passive device is considered as a new inventory object, or can be modeled as another type of network element
- Depends on the definition of “network element”?
 - **Physical Network Element:** An implementation or application specific group of components (e.g., hardware components).
 - **Network Element:** The generalization of the physical network element definition.
- Further discussion is needed to clarify it

Other Issues

- It would be helpful to develop some examples to describe the passive infrastructure and include them in the draft

Next Steps

- Develop a rev-01 to address
 - Modeling methodology re. topology vs. inventory
 - Clarification of terminologies
 - Adding examples of passive infrastructure
- Request for WG adoption after rev-01
- Solicit reviews and comments from the WG
- Welcome more contributors to join this work

GitHub:

<https://github.com/aguoiietf/draft-ygb-ivy-passive-network-inventory>

Thank You!

Backup Slides

Cable & Cable Segments

- Optical cable: consists of one or multiple optical cable segments connected by optical cable connectors.
 - The equipment at both ends of the cable can be a passive device or an active/managed NE device.
 - A fiber is a cable with only one fiber core
- An optical cable segment refers to a section of optical cable where the number of fiber cores between two optical junctions remains unchanged.
 - Spliced or fused through a joint box or connected through ODF or fiber jumpers.
 - Contains one or multiple fiber cores

