Ethernet OAM study in ITU-T SG13, Q.3/13

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Current status

- Last ITU-T SG13 meeting: Feb. 3-12, 2004
- Ethernet OAM requirements: Y.1730
  - Approved in Jan. 2004
  - Aligned with Ethernet architecture study in SG15 (G.8010/G.8011)
- Ethernet OAM mechanisms: Y.17ethoam
  - Under development
  - Discussed by people from IEEE 802.1 and MEF also
  - Progressed the area of maintenance entity and modeling
  - Worked on dual-bridge model
  - Clarified the relationships between IEEE 802.1 bridge model (baggy pants diagram) and ITU-T model (G.805/G.809 model)
  - Introduced a section on performance monitoring
  - Applicability where lower layer is not Ethernet phy (e.g., MPLS)
  - Need feedback from IEEE 802.1 and to be aligned with work here.
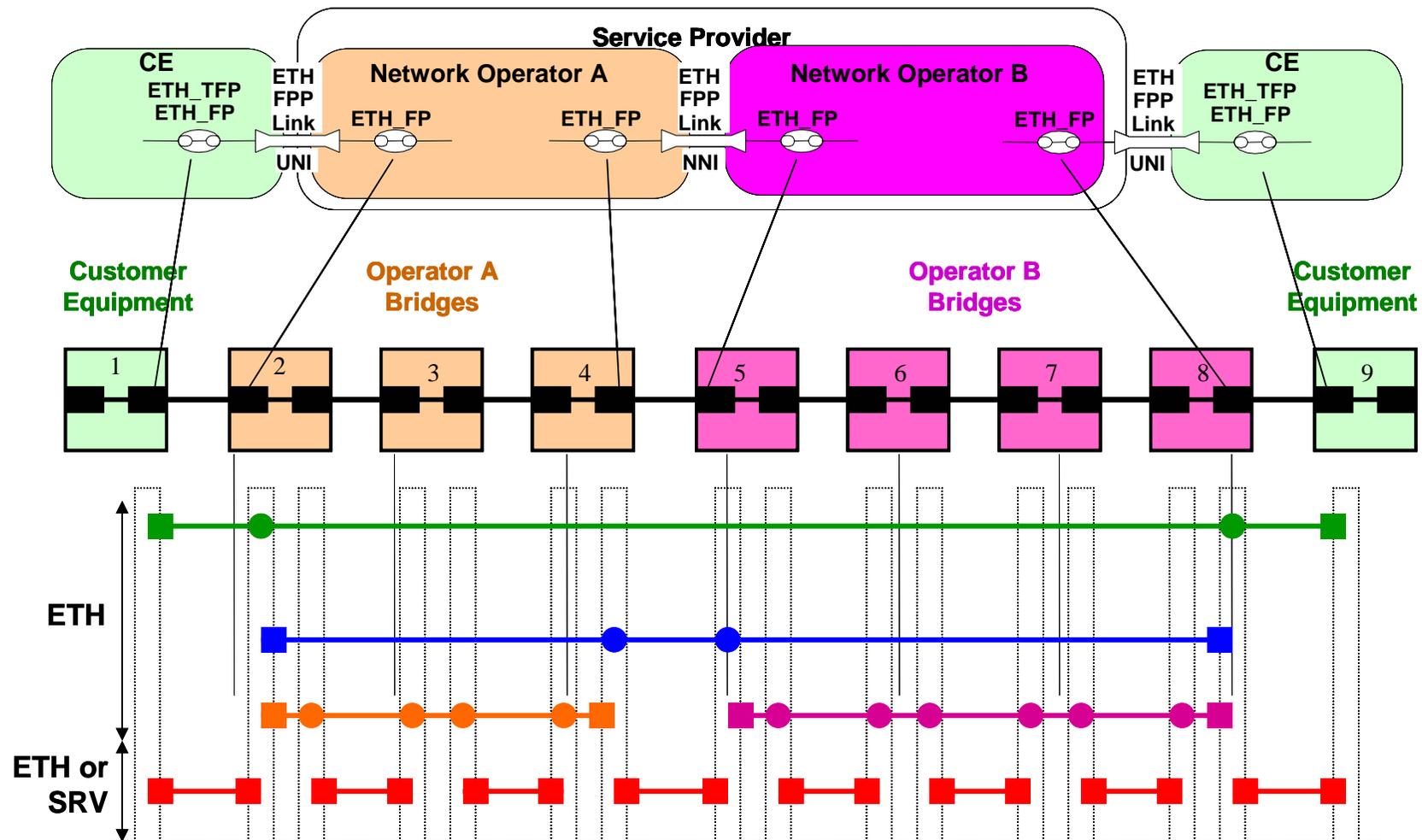
Maintenance entity (ME)

- OAM target includes multipoint-to-multipoint connectivities
- ME is defined for point-to-point connectivities
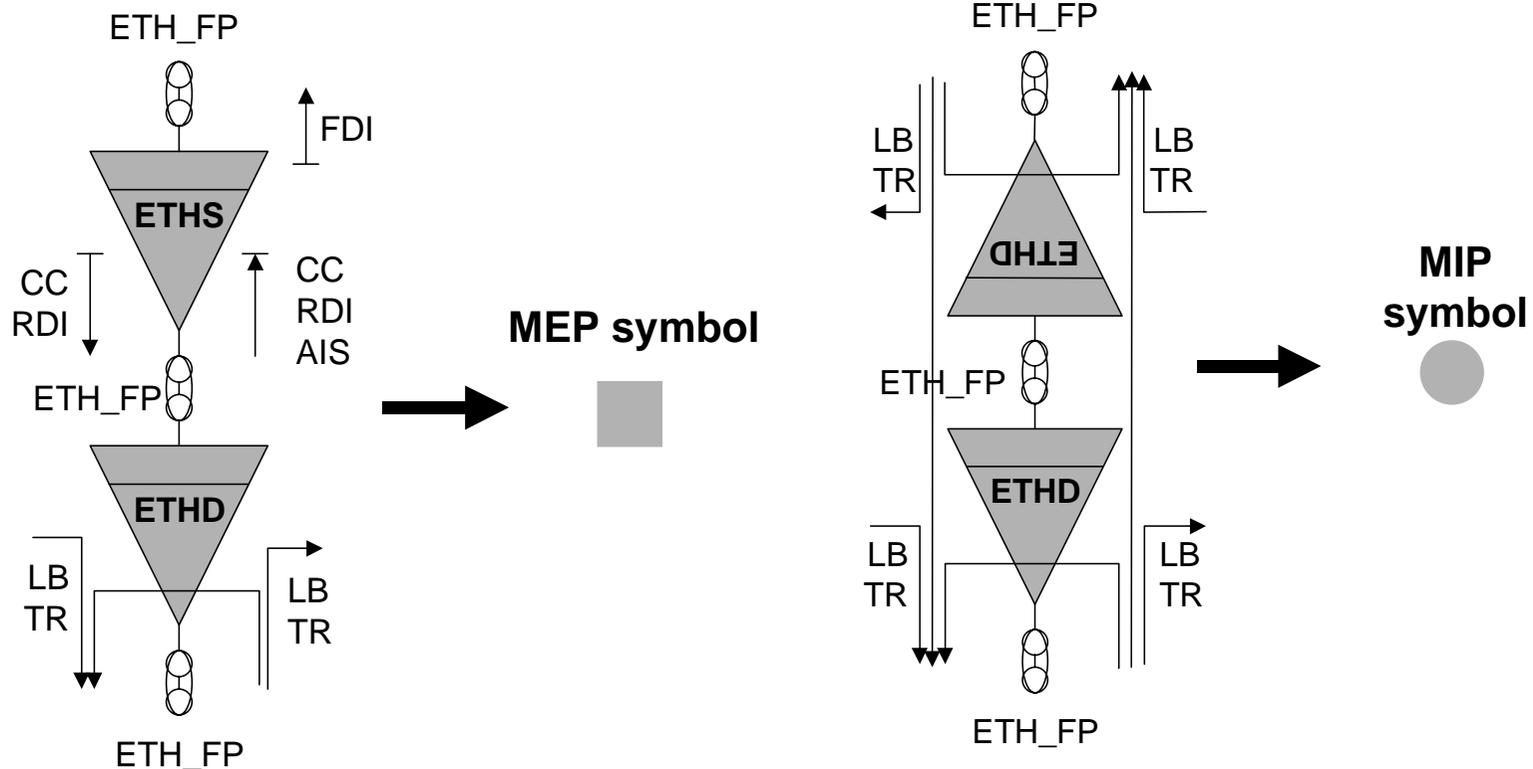- A multipoint connectivity is handled using a group of MEs.
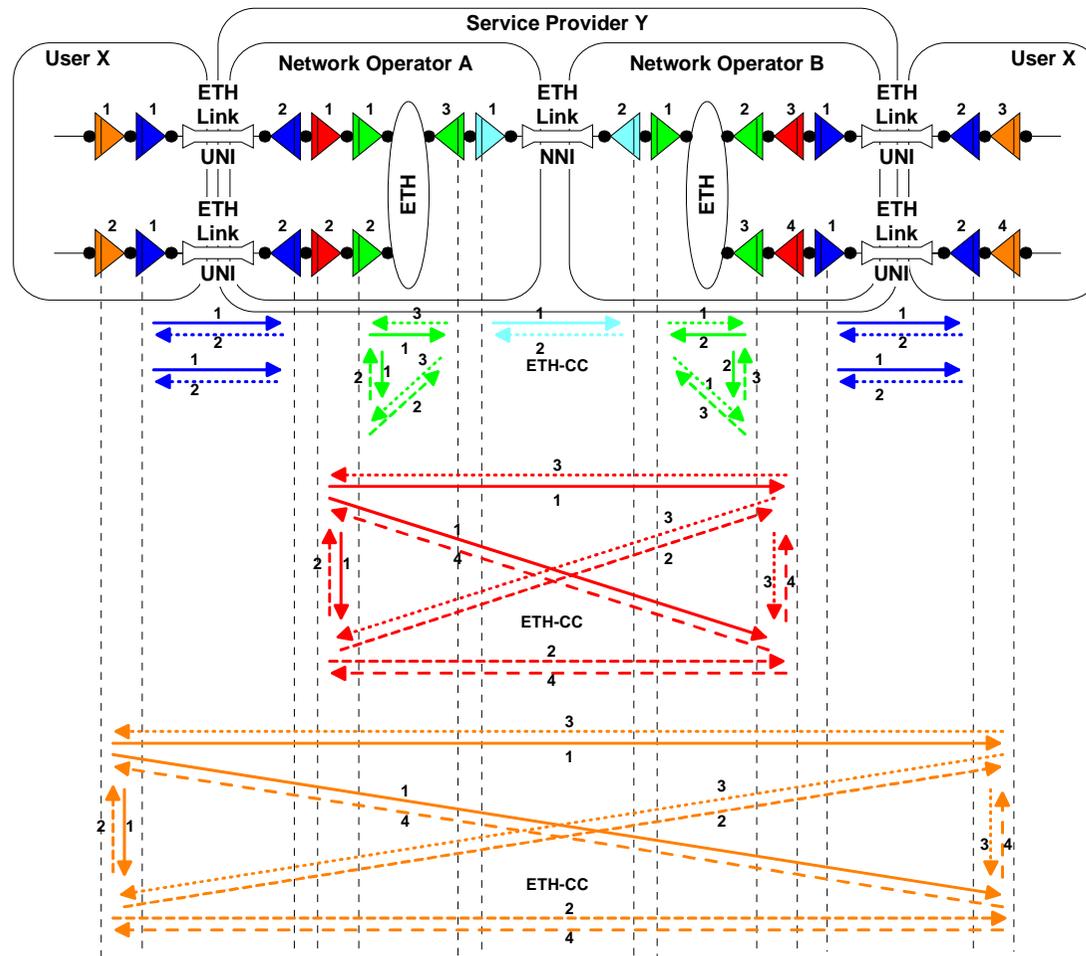
Multi-level Ethernet maintenance entities

Provides OAM capabilities for network operators (link and edge-to-edge), service providers and users
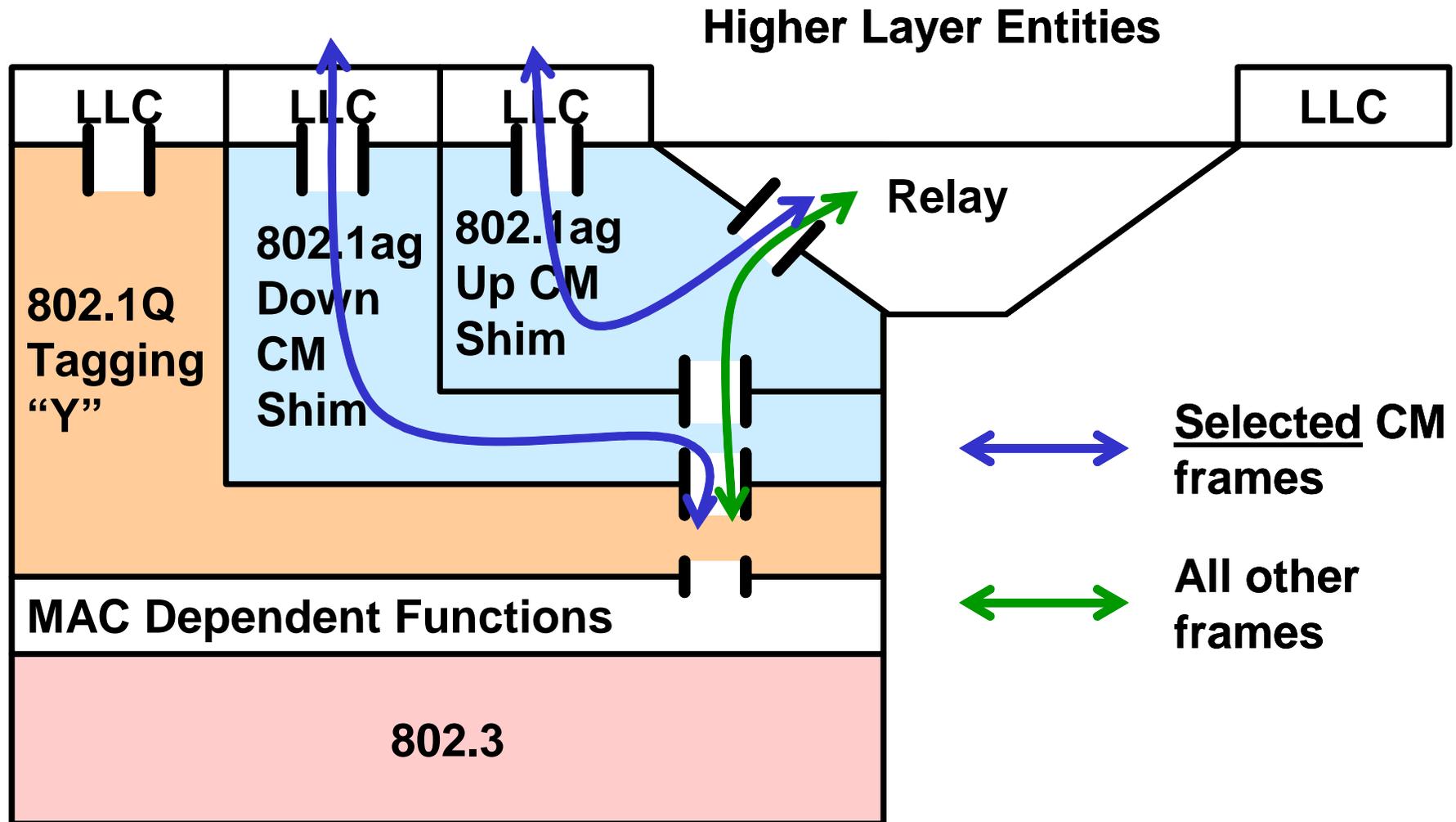
MEP and MIP models using G.805/G.809

ETH_FP

FDI

ETHS

CC
RDI

CC
RDI
AIS

ETH_FP

ETHD

LB
TR

LB
TR

ETH_FP

MEP symbol

ETH_FP

LB
TR

LB
TR

ETHD

ETH_FP

ETHD

LB
TR

LB
TR

ETH_FP

MIP symbol

MEP: Maintenance End Point

MIP: Maintenance Intermediate model

OAM (Connectivity Monitering) shim in the baggy pants model

Higher Layer Entities

LLC   LLC   LLC   LLC

802.1ag Down CM Shim

802.1ag Up CM Shim

Relay

802.1Q Tagging "Y"

Selected CM frames

All other frames

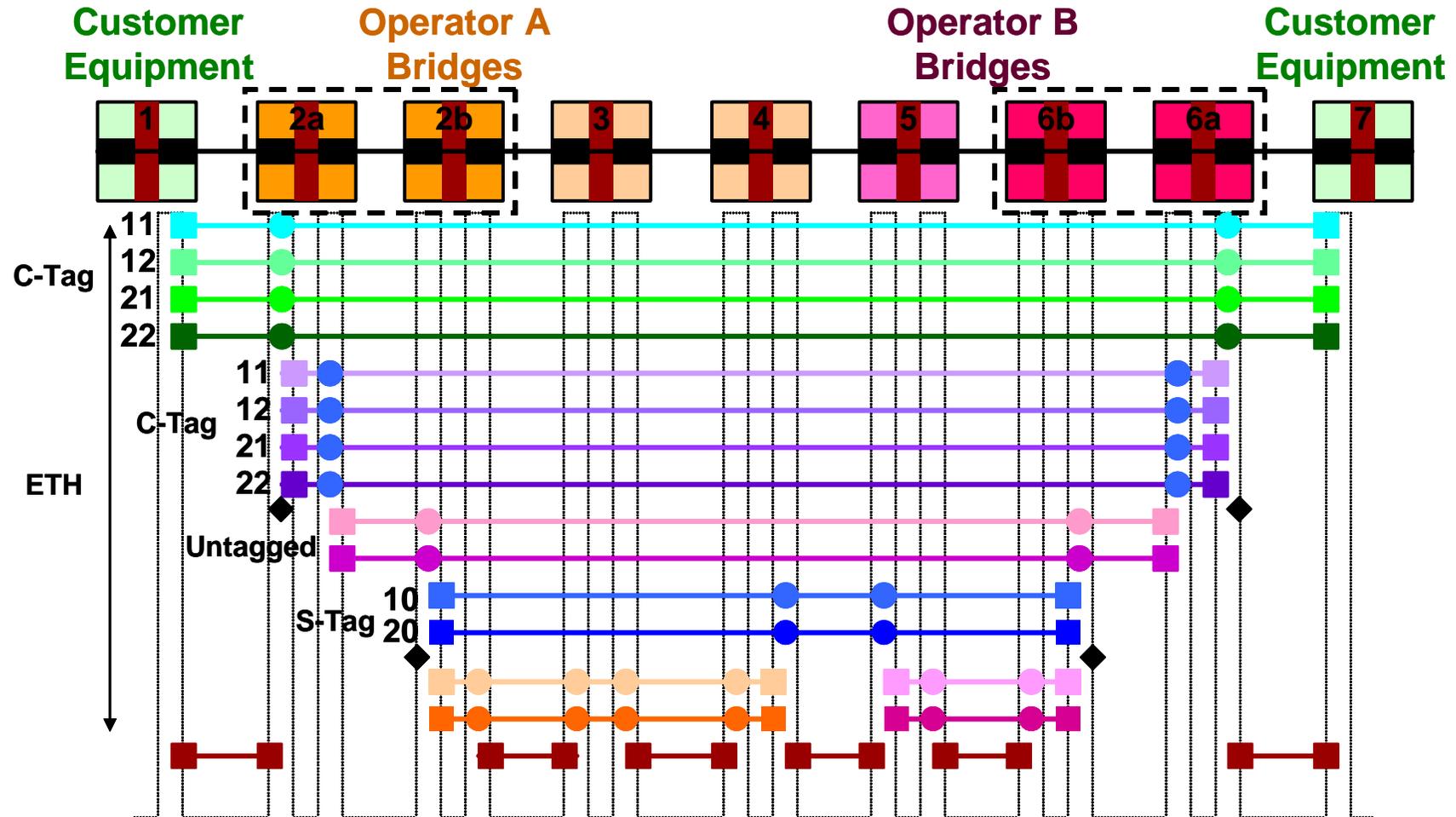**MAC Dependent Functions**

802.3

Baggy pants model and G.805/G.809 notation

Some MEPs or MIPs may not be activated depending on the location of the bridge.
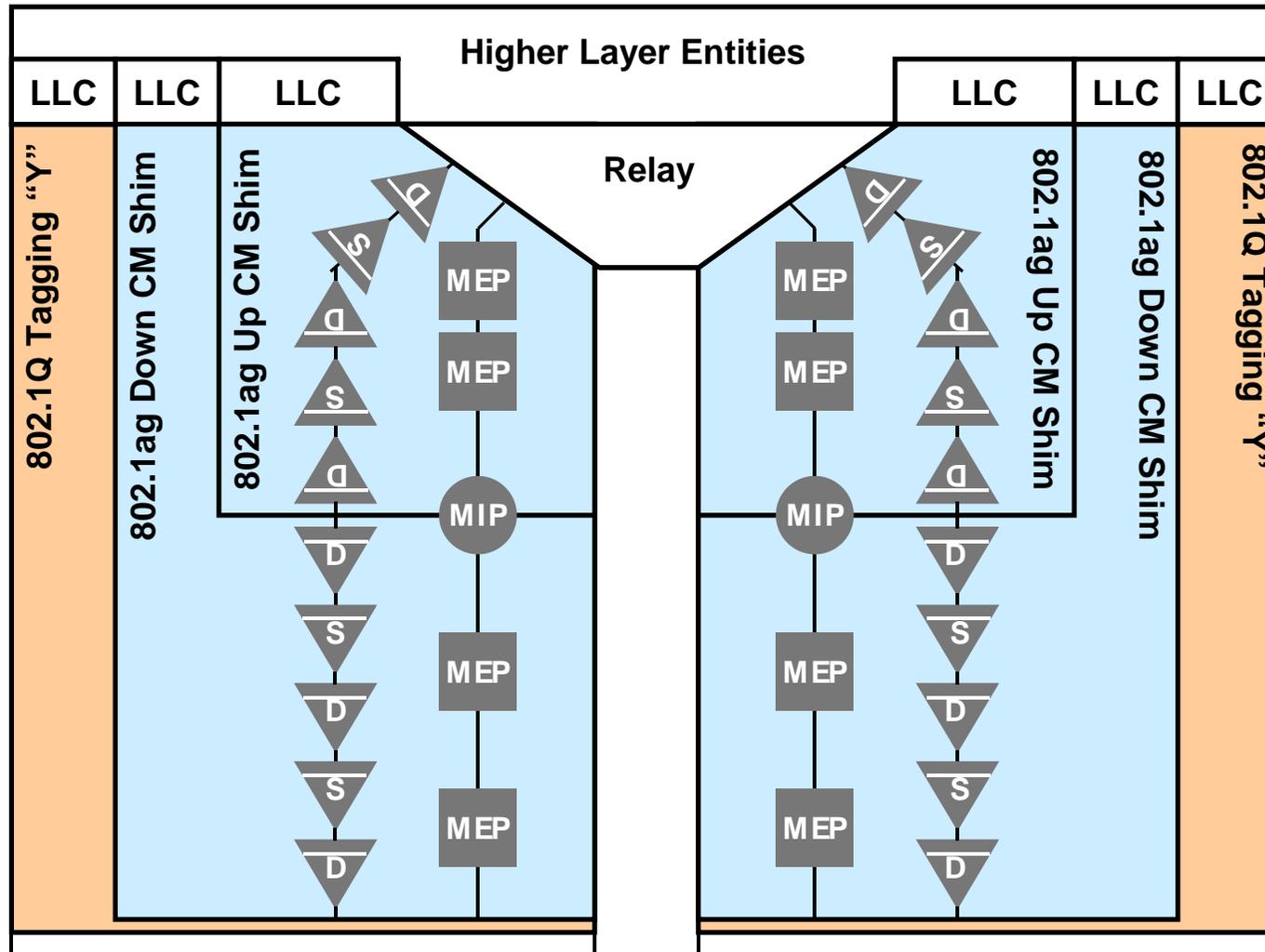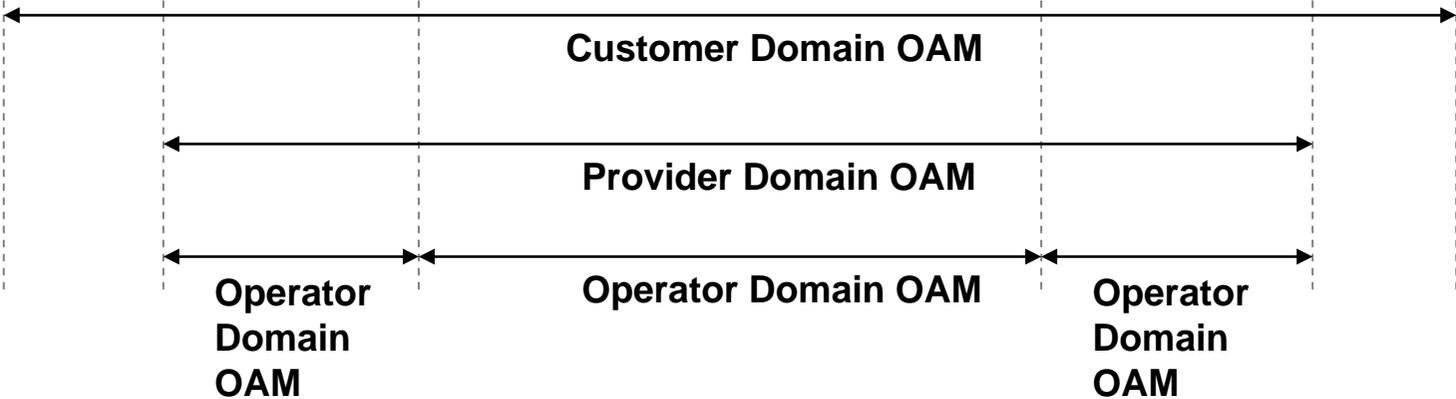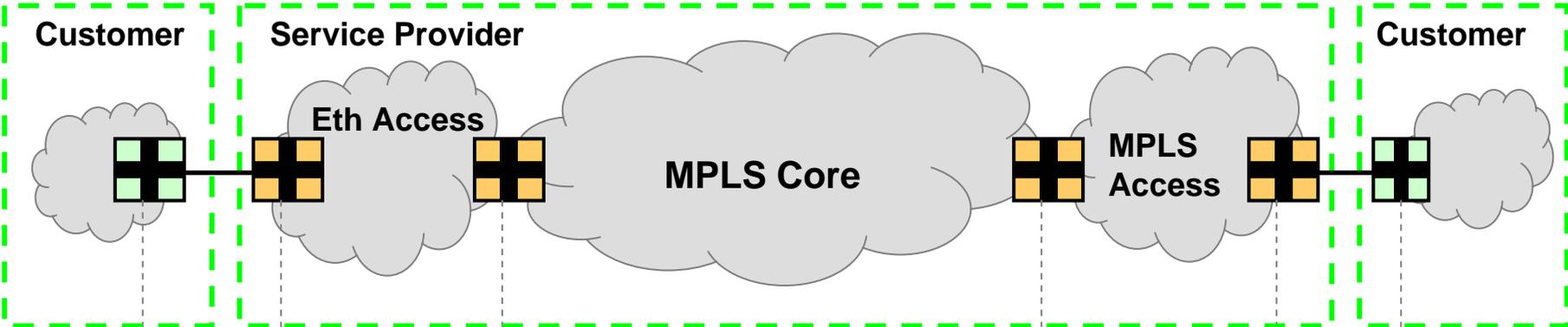
Dual-relay model with service bundling

2a, 6a: peer customer L2CP protocols, multiplex user flow
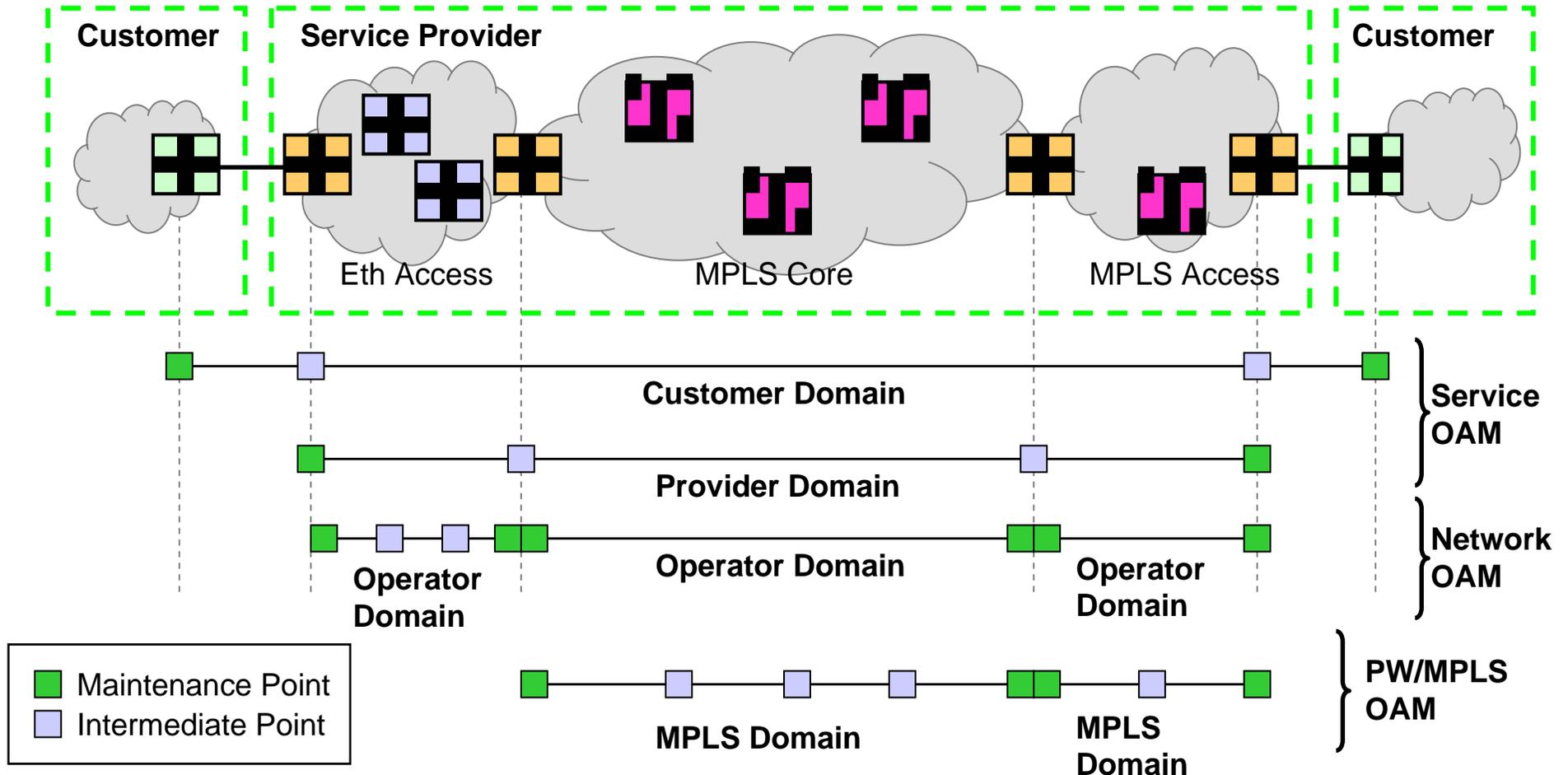2b, 6b: accommodate multiplexed user flow into a VLAN

Application example to Ethernet over MPLS

Customer

Service Provider

Eth Access

MPLS Core

MPLS Access

Customer

Customer Domain OAM

Provider Domain OAM

Operator Domain OAM

Operator Domain OAM

Operator Domain OAM

bridge/bridge equivalent … OAM MEP/MIP

Looking into more details …

Other topics

- ## Y.17ethps: Ethernet protection switching
  - Started developing a draft Recommendation
  - Requirements to fast protection switching was included
  - Mechanisms which should be used for fast protection is for further study (e.g., link aggregation or new one)

- ## Y.ethperf: Ethernet performance
  - Studied within Q.6/13 jointly with Q.3/13

Summary and Future ITU-T meetings

- SG13, Q.3/13 is working on Ethernet OAM
- Would like to have feedbacks from IEEE 802.1
- Need alignment and cooperation with IEEE 802.1 and MEF
- Future ITU-T meetings
  - Interim: June 7-11 in Geneva
  - Additional interim: September ?
  - SG13 plenary: Nov. 30 – Dec. 10 in Geneva