ITU-T SG13 Q.3/13 Ethernet OAM standardization - current status

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Meeting summary

- Meeting: ITU-T SG13 Q.3/13 interim meeting
- Dates: Sept. 20-24, 2004
- Venue: Sophia Antipolis, France
- Objectives:
  - Ethernet OAM (Y.17ethoam)
  - Ethernet protection (Y.17ethps)
  - MPLS ring protection (Y.17mrps)

  - Updated draft will be available within 2 weeks

Meeting result summary (1)

- Q.3/13 set target dates for Ethernet OAM standardization
  - Stabilize the contents by mid 2005
  - Finalize official procedures by 1st quarter of 2006
  - Q.3/13 would like to propose that IEEE P802.1ag set the same target dates

Meeting results summary (2) – Ethernet OAM updates

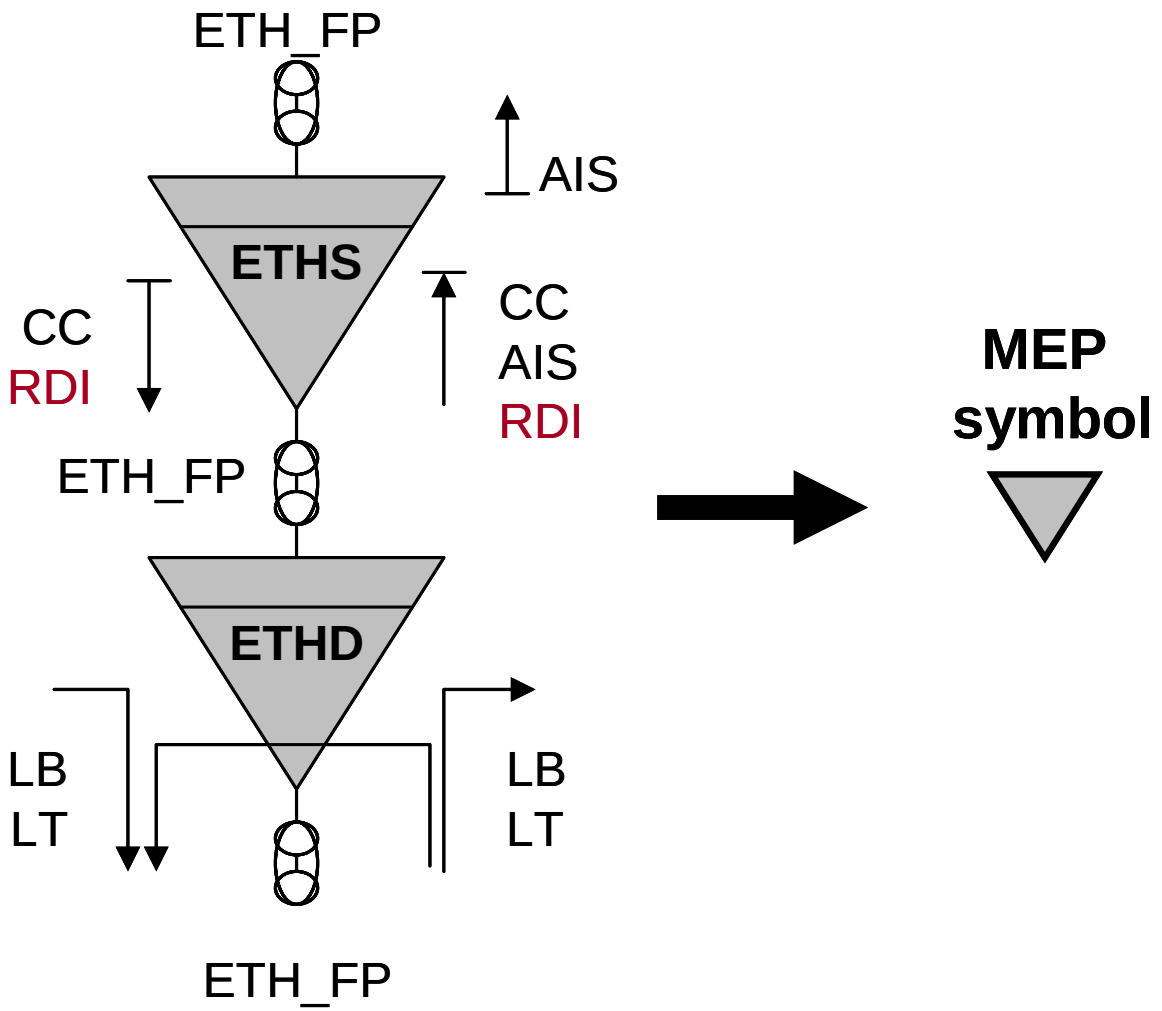
- Update of the conventions: use triangle for MEP to indicate direction of signal transfer
- Added UNI-N to UNI-N MAC layer ME
- Decided to use absolute ME level
- Decided to have 8 ME levels
- Added filtering function at ingress and egress of MEs
- Added Port/MEP/MIP status
- Indicated CC as a mandatory function in the current draft with a note saying “more study needed”
- Enhanced the draft for non-intrusive loopback which uses multicast destination address for loopback request
- Added wire speed (or service speed) Intrusive loopback
  - three options: loop all the frames, loop specific OAM frames or loop frames with the target MAC address – to be selected
- Kept RDI as a further study issue
- Enhanced description of test function
- Updated common OAM frame format

Meeting results summary (3) – Other issues

- Ethernet protection updates – all issues need further study
  - Clarified protection switching time
  - Clarified trigger conditions
  - Showed possible VLAN ID assignment methods for working and protection entities
  - Added possible scenarios where STP and protection coexist
  - Added possible scenarios where link aggregation and protection coexist
- Liaison from DSL Forum: They are considering using Ethernet in DSL systems.
  - Considering applicability of Ethernet OAM functions to DSL systems
  - Q.3/13 participants indicated good interests for collaborate with DSL forum

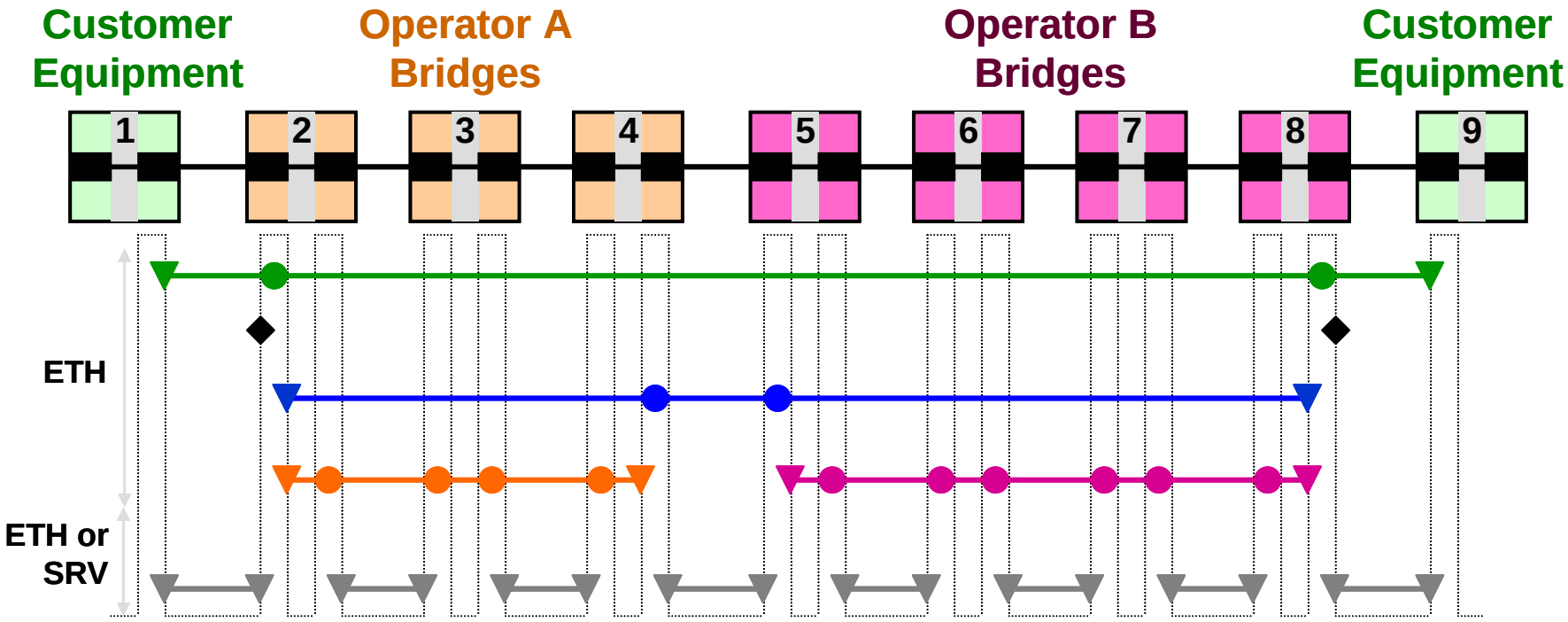
Change of convention (1)

Use triangle for MEP to indicate directivity

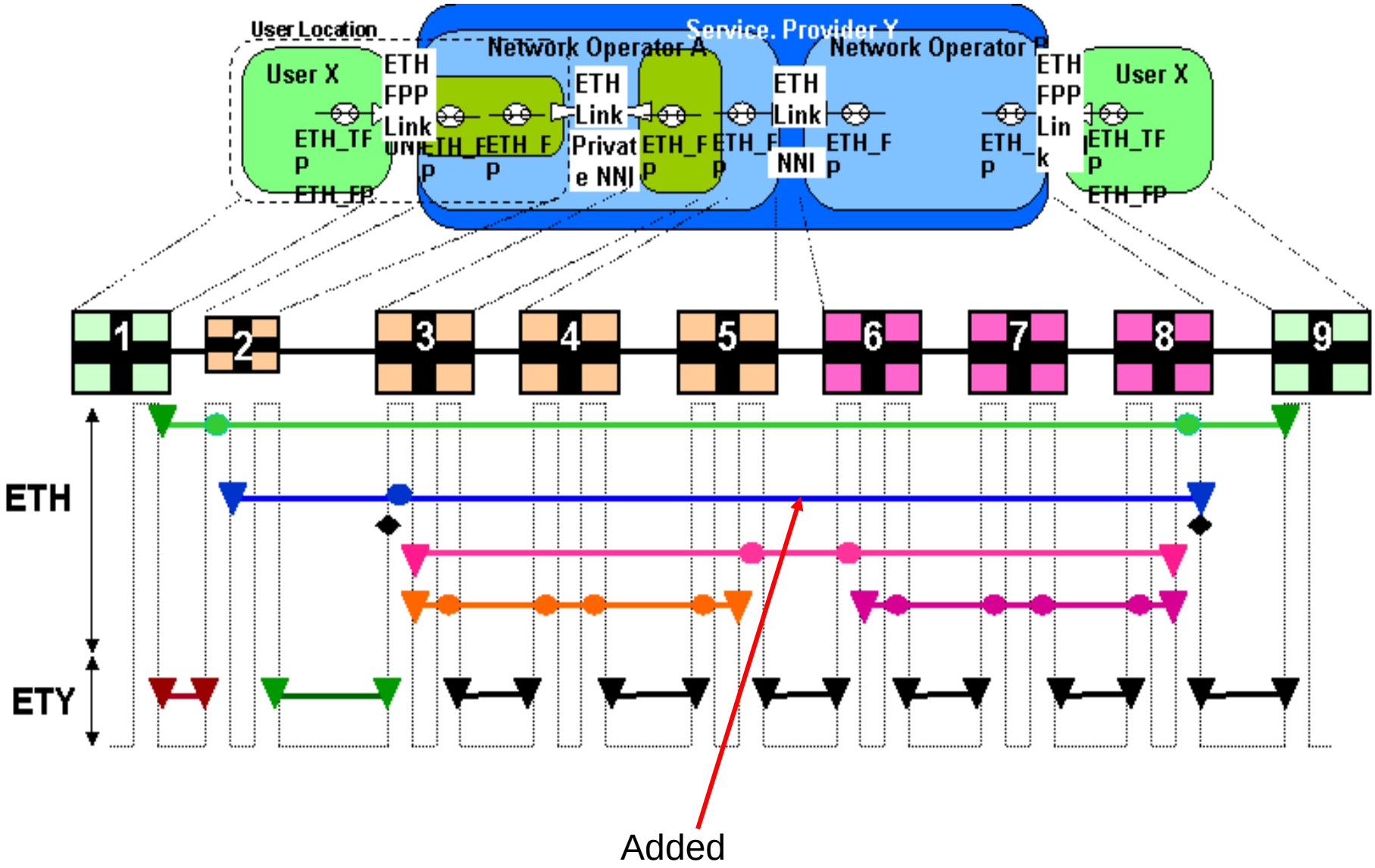


Change of convention (2)

Updated diagram using triangles for MEPs



UNI-N to UNI-N MAC layer ME



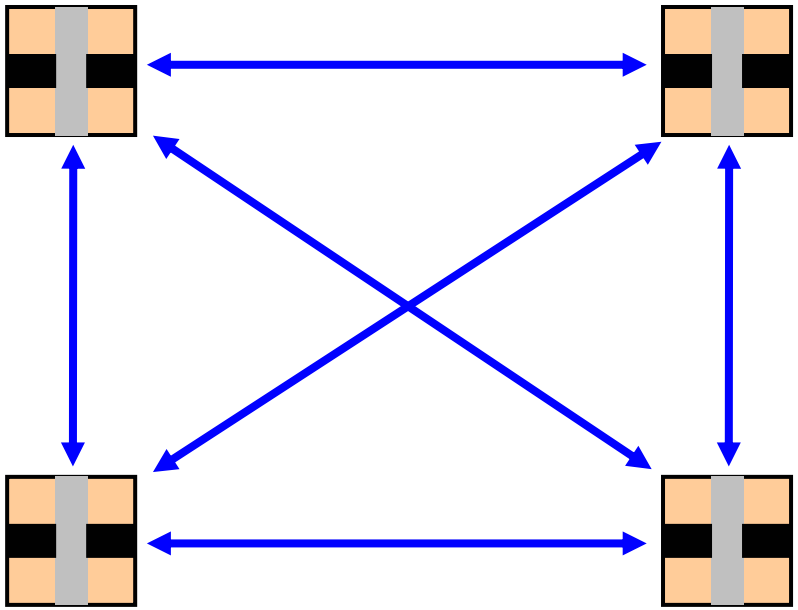
ME levels

- Decided to use absolute ME level assignment
- Decided to have up to 8 ME levels
- Could be allocated as below:
  - 3 levels for operators
  - 2 levels for providers
  - 3 levels for customers
- Allocation and usage need further study

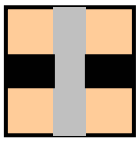
OAM filtering function at ingress/egress of MEs

- To prevent OAM frames from leaking beyond the OAM Domains for security reasons
  - OAM frames originating outside the ME Group must not be allowed to go inside the ME Group.
  - OAM frames belonging to the ME Group should not be allowed to go outside the ME Group
- ME: point-to-point entity
- ME Group: Group of MEs to cover multipoint-to-multipoint connectivity fault management

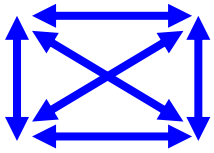
ME and ME Group



ME



Bridge



ME Group

Port/MEP/MIP status

- Added the notion of Port/MEP/MIP status. Status could be:
  - Operationally UP
  - Operationally Down
  - Operationally Blocked
  - Administratively Enabled
  - Administratively in Test/Diagnostics
- OAM functions run or do not run based on the status above.
- Good terminology is needed to describe the status above.

CC (connectivity check) issues

- Is CC a mandatory function?
- Provisionally yes because other functions such as link trace and AIS may not work without CC

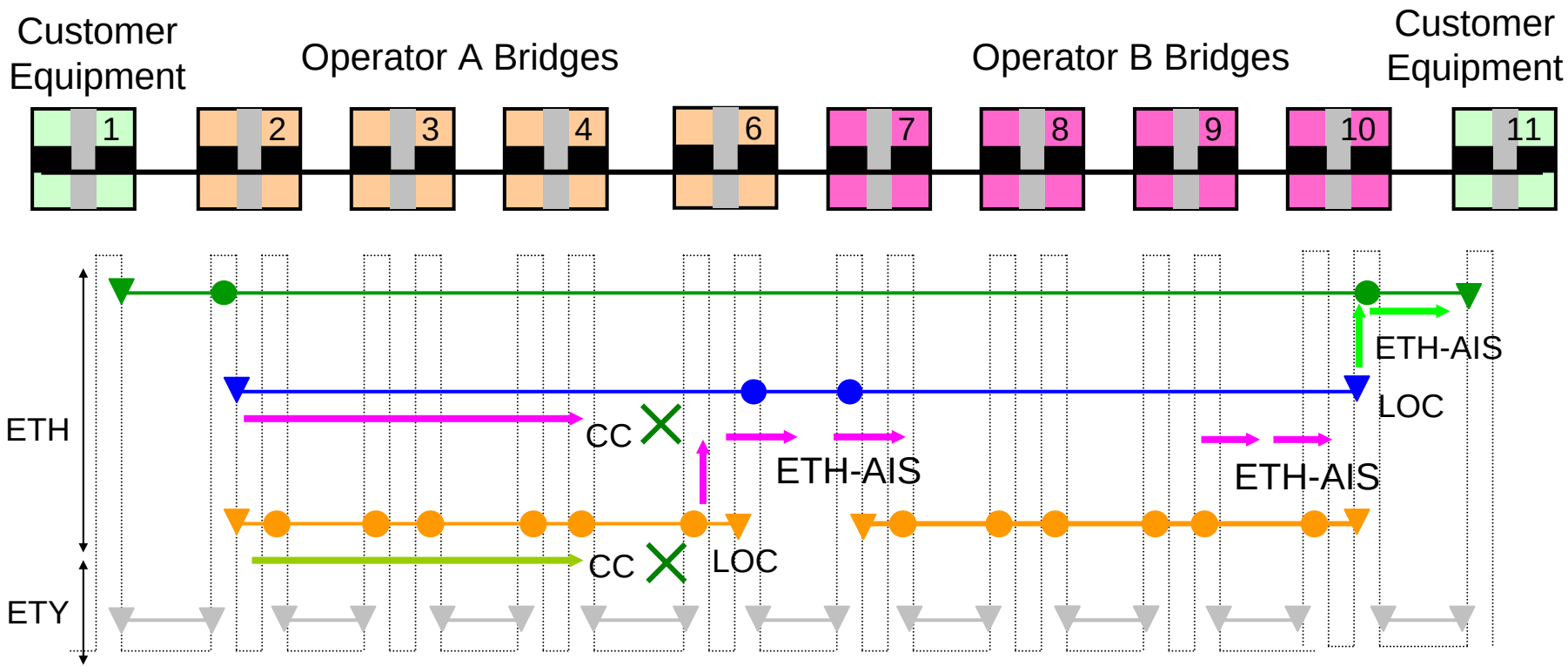
Loopback issues

- Multicast non-intrusive loopback
  - Uses multicast DA for loopback request
  - Can be useful to detect unintended connectivity
- Intrusive loopback
  - Can be useful to test connectivity, bandwidth and performance remotely.
  - Three candidate to realize wire speed (or service speed) loopback:
    - Loopback all frames except for OAM frames
    - Loopback ETH-LB OAM frames only
    - Loopback frames with the MAC address of the target point (MEP/MIP) only

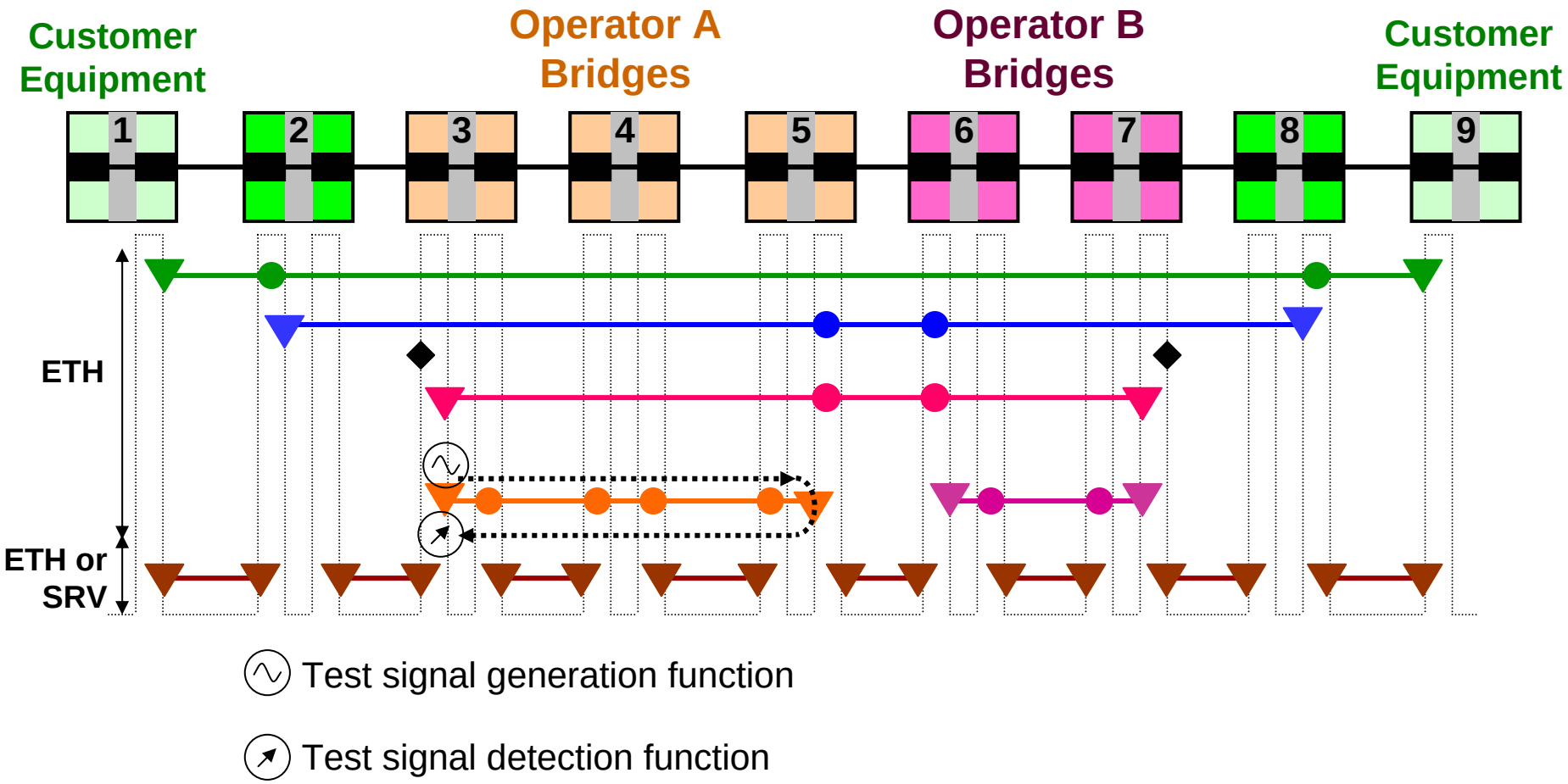
AIS/RDI issues

- Trigger conditions for AIS
  - Added an example where LOC (loss of connectivity) defect triggers AIS
  - Need further study to clarify trigger conditions
- Retained RDI as a further study issue
  - Unidirectional connectivity is possible by non-physical layer defect or in the case where auto-negotiation is disabled.

AIS triggered by LOC defect

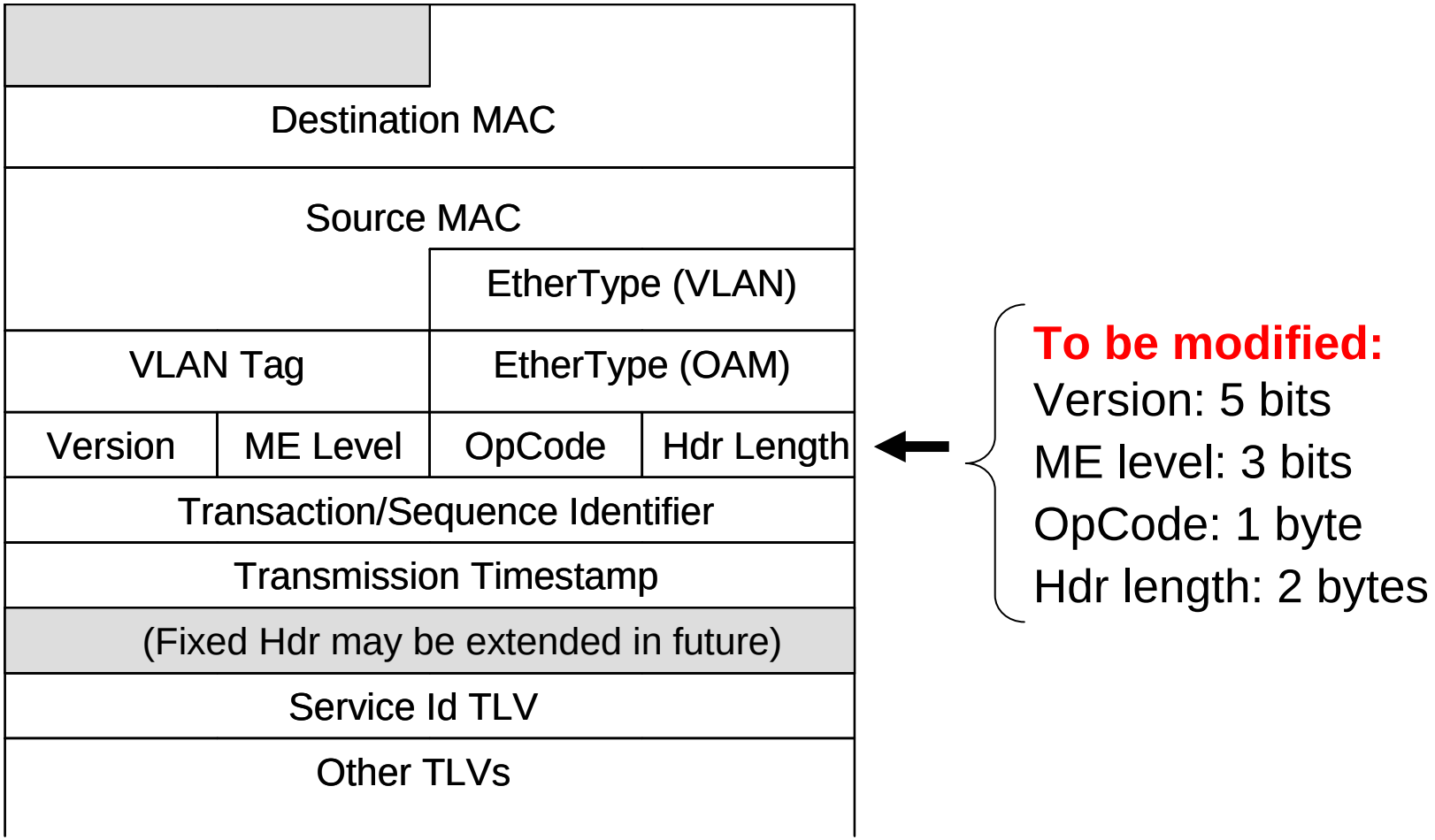


Enhancement of test function description



- Supports both in-service and out-of-service test
- An OAM frame format to be defined for this function
- OAM frames includes a sequence number and pseudo-random sequence

Common OAM frame format



Timestamp field needs further study: include in TLV or not, how to indicate this field is used or not (by OpCode, a flag in the field or reserved value?)

Future meetings

- WTSA (World Telecommunication Standardization Assembly): Oct. 5 – Oct. 14, Florianópolis, Brazil
  - Decides entire ITU-T structure for the next study period (2005-2008)
  - OAM issues may be studied by SG13, SG15 or by both
- SG15 plenary meeting: Nov. 29 – Dec. 3, Geneva
- SG13 plenary meeting: Dec. 7 – 17, Geneva

Proposal

- To set the target date as below:
  - Stabilize the contents by mid 2005
  - Finalize official procedures by 1st quarter of 2006