Multicast Logical Link for 10G-EPON

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Overview

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- Not only PHY, but also RS and MPCP Reconciliation and Multi-point MAC Control sublayers should be discussed along with PHY layer for the reason of traffic usage, multicast, security and so on.

- Multicast Consideration
  Multicast is a representative application for the future services.
  Multicast Logical Link should be better way to provide the multicast service.

Why 10G-EPON?

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- IPTV will require much more bandwidth and the number of channels.
- Large high-rise apartment buildings.
- Access line for the business VPN service.

10G-EPON should be suitable for these, but at the same time, **more flexible and intelligent** for the next generation services.

Problems of Multicast on IEEE 802.3ah

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Multicast system is an indispensable prerequisite for the next generation broadband access system.

[Problems]

- IEEE 802.3ah cannot deliver frames to the multi-point destinations except broadcast.
- We need to take different measures to develop a multicast system on an E-PON system depending on a chip vendor.

Since the E-PON system has multiple logical links, it should have an ability to deliver Ethernet frames to the multi-point destinations.

Multicast on IEEE 802.3ah

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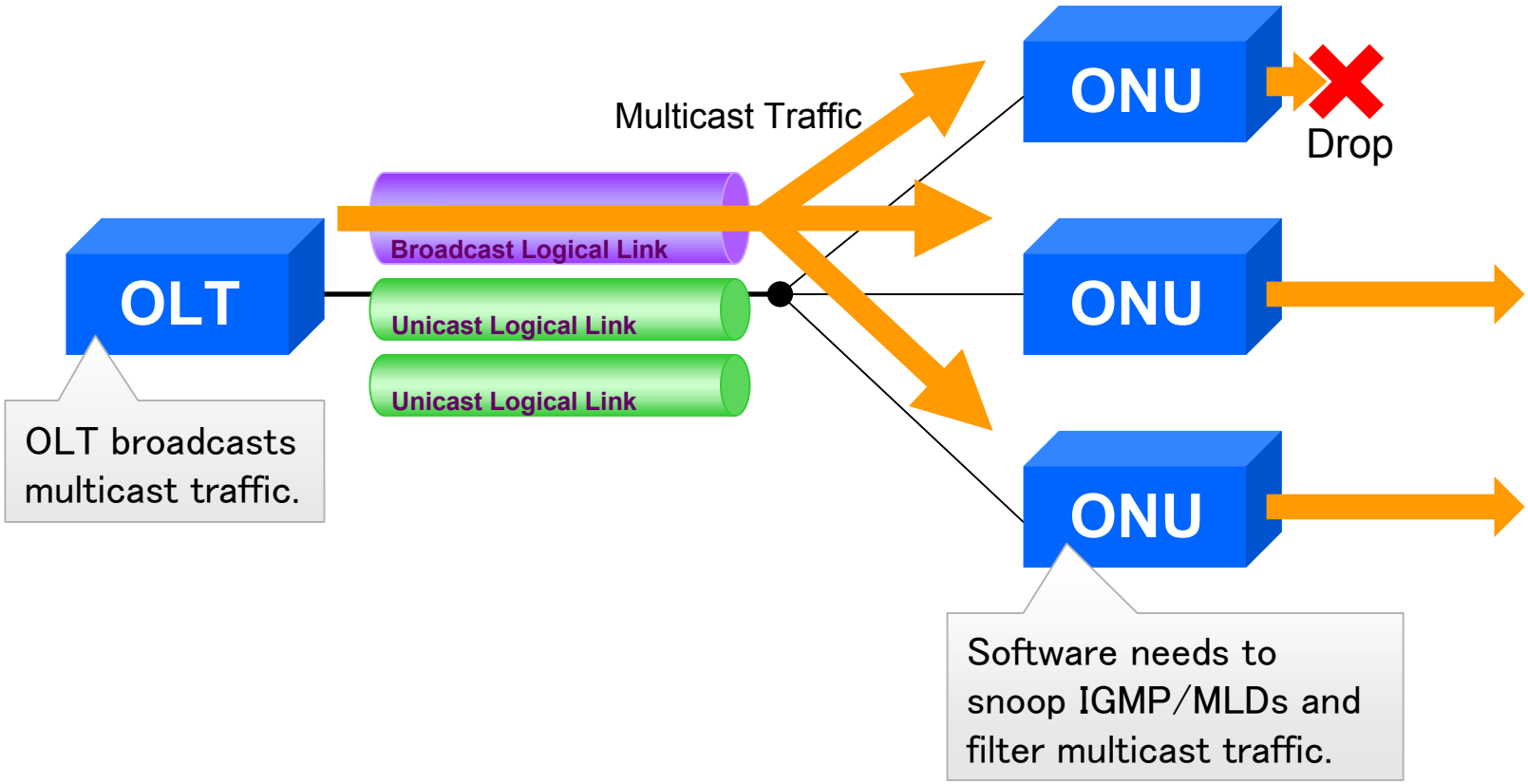
Approach 1: IGMP/MLD snooping at ONU side



Need a processor in ONU to perform IGMP/MLD snooping.

➔ Expensive!

Need an 802.1D entity in ONU.

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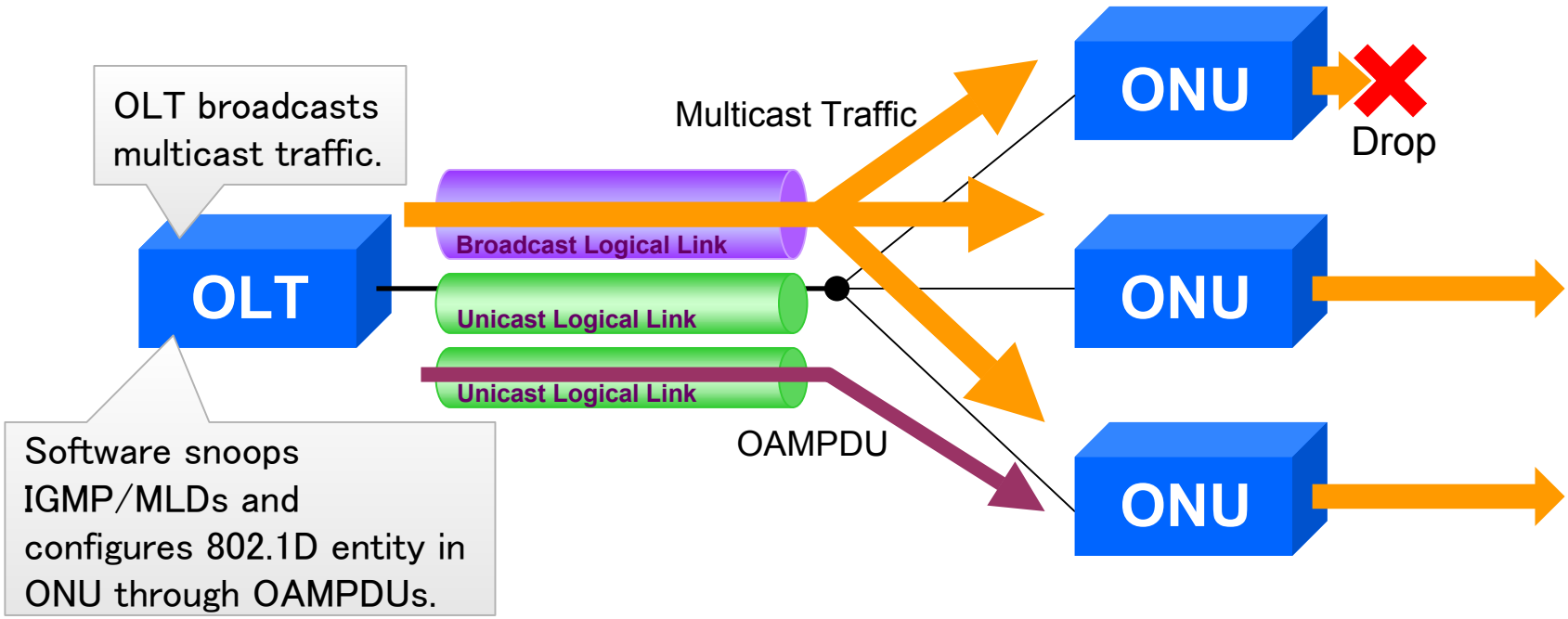
Approach 2: IGMP/MLD snooping at OLT side



Need an 802.1D entity in ONU.
Need to specify proprietary OAMPDU messages.
Affect multicast performance due to OAMPDU delay time.

Multicast for 10G-EPON

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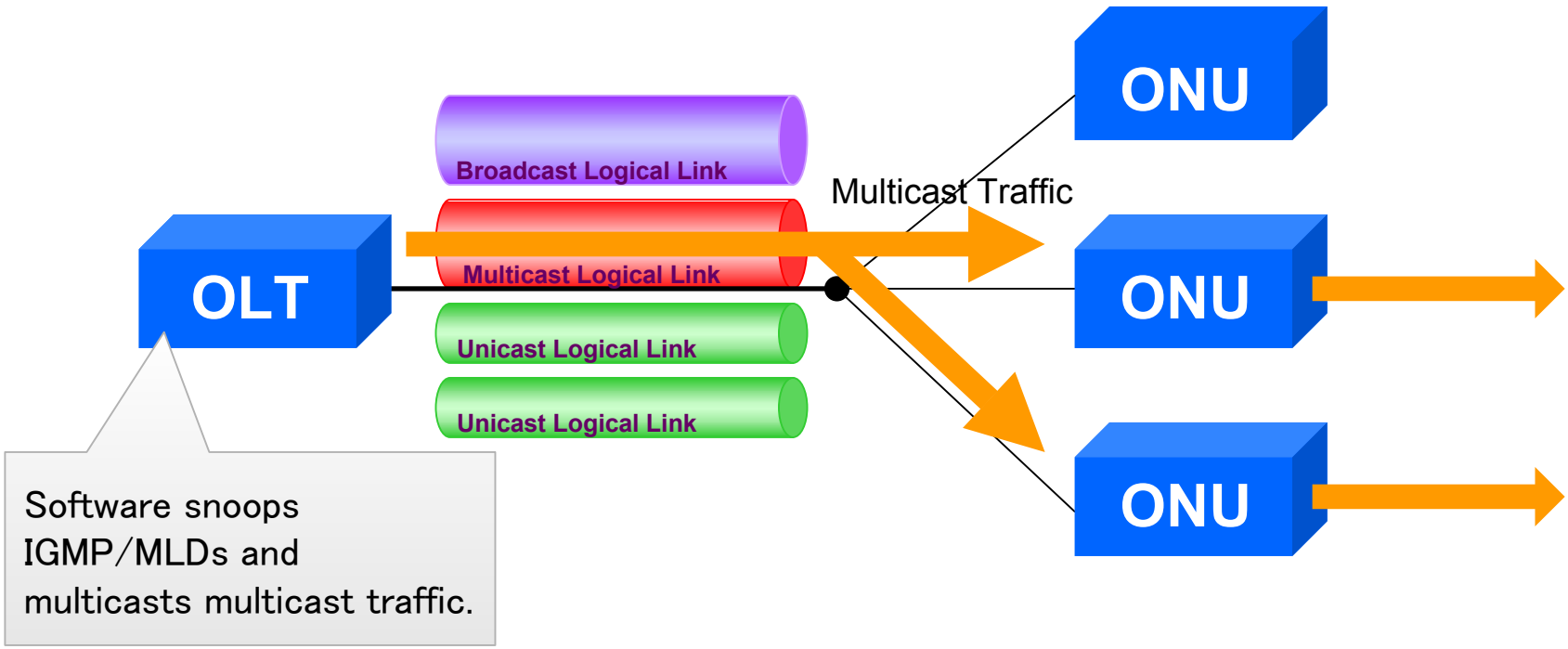
Proposed approach: Multicast Logical Link



Only OLT is responsible for handling IGMP/MLD and delivering multicast traffic.
ONU can be a repeater without a processor.

Application of Multicast Logical Link

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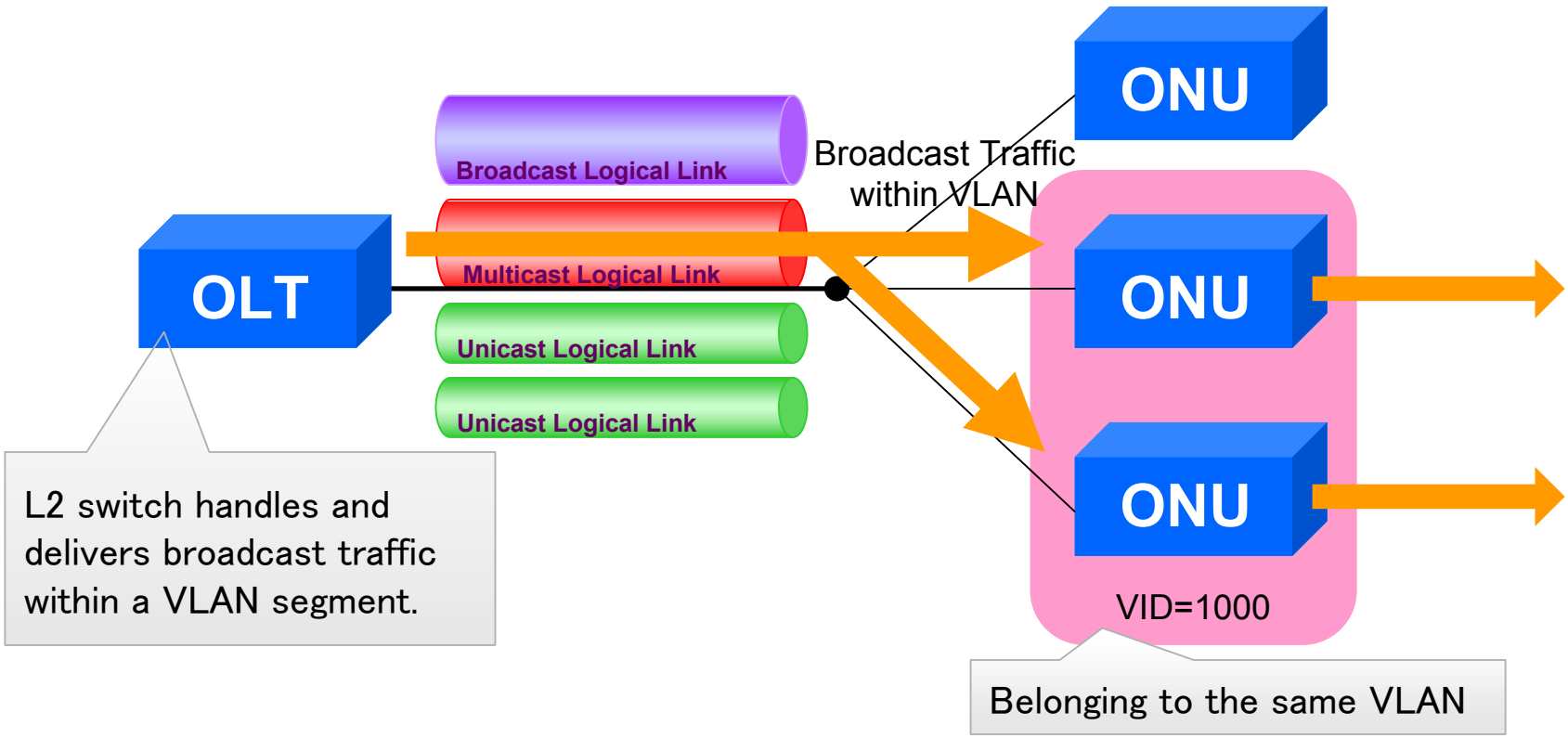
Broadcast within VLAN segment



Only OLT is responsible for handling VLAN switching.
ONU can be a repeater without a processor.

10G-EPON Objective

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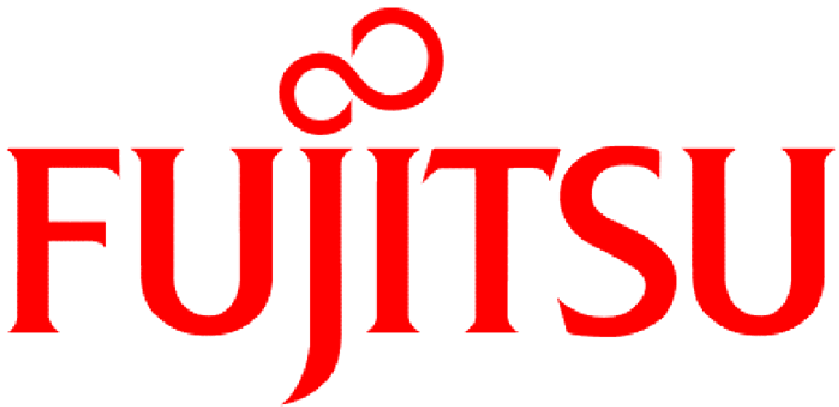
- 10G-EPON SG needs more discussion on Reconciliation and Multi-point MAC Control to standardize the method to provide applications such as multicast and ensure that the next generation services are really available and stable.

- Multicast Logical Link (proposal)
  Multicast Logical Link allows ONU to be just a repeater with processors or IEEE 802.1 entities out-of-scope like most of the xDSL products so that the system cost would significantly be reduced.



THE POSSIBILITIES ARE INFINITE