

Multicasting in EPON

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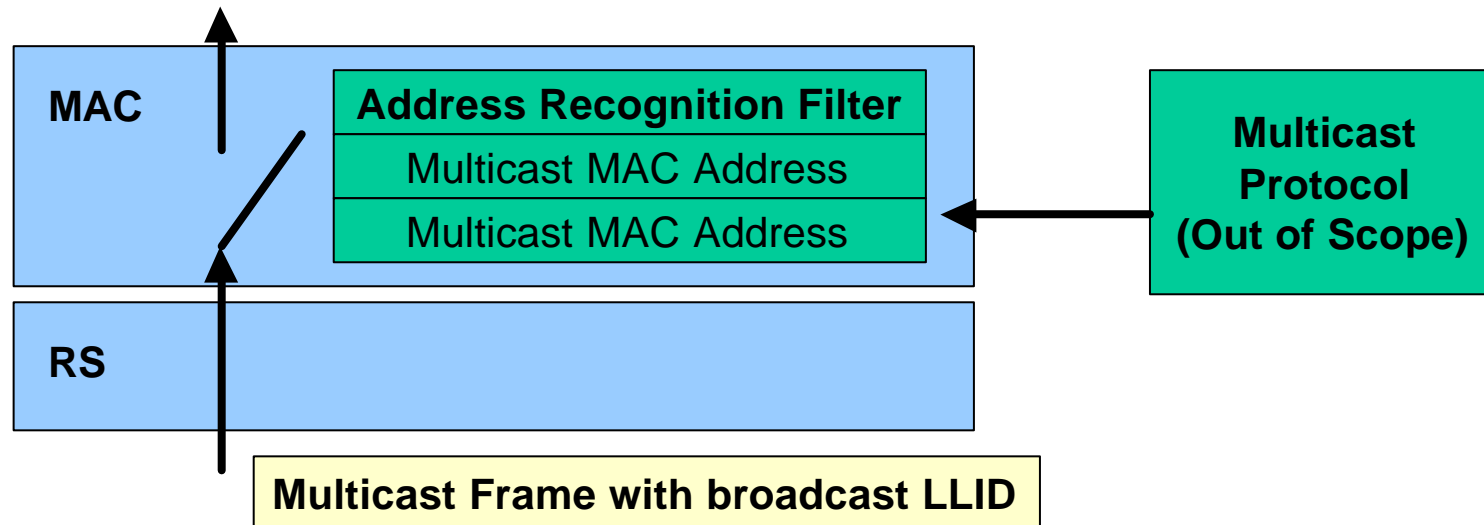
Multicast in EPON

- **Background :**
 - A multicast transmission enables the delivery of a single frame to multiple stations simultaneously and efficiently.
 - The multicast transmission is needed to provide an efficient packet transmission for the application like video, teleconferencing, news distribution, and distance learning. And, they are important applications in EPON.
 - Since EPON is the shared network in downstream, it can provide a very efficient multicast transmission if EPON network is properly configured.
 - The current draft doesn't consider how to support a multicast transmission.

Multicast in EPON

- **Multicast LLID allocation?**
 - It should be free to participate/release multicast group membership whenever it wants
 - It is reasonable to use the high layer protocol for multicast membership registration, not auto discovery process.
 - If we use the auto discovery process to multicast LLID registration, it would be a functionality duplication
- **What we need are :**
 - EPON does not have to create a new multicast protocol, instead it has to provide a way of supporting the existing multicast protocol.
 - EFM needs to define the location and basic hooks for the multicast filtering.

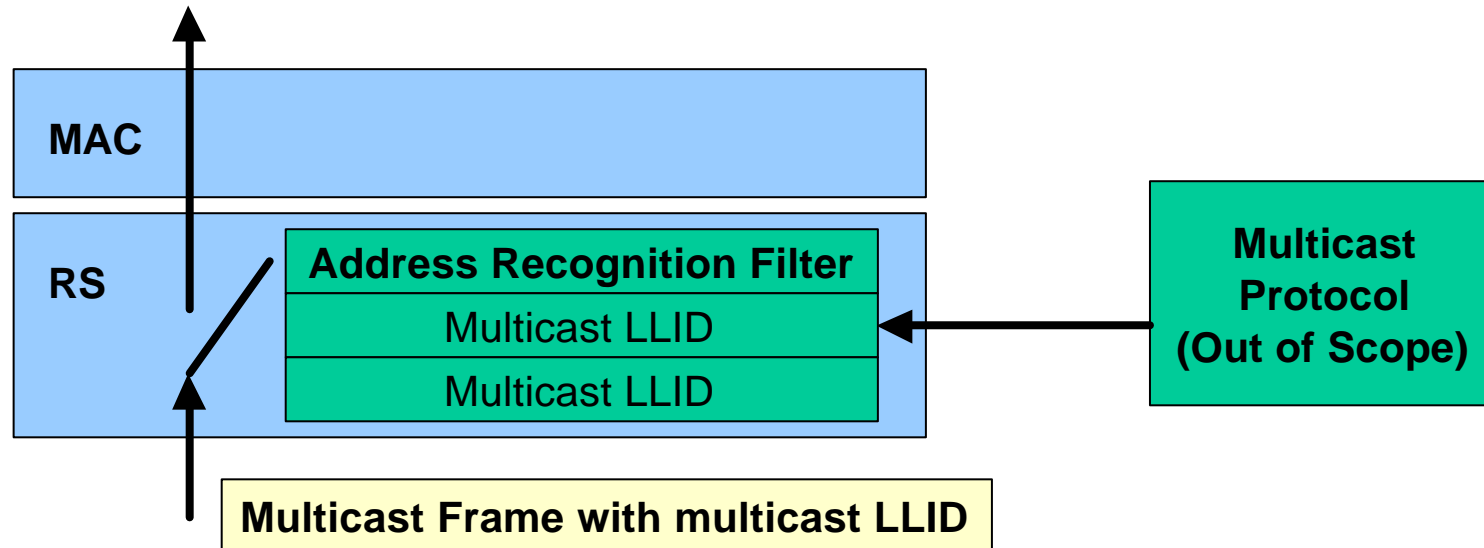
Option 1 : MAC Layer Filtering



MAC Layer Multicast Filtering

- Use Default LLID for all traffics with multicast MAC address
- RS Layer just bypass all multicast traffics.
- MAC Layer discard frames with unknown multicast MAC address.
- Simple solution.
- Unicast Filtering @ RS, but Multicast Filtering @ MAC

Option 2 : RS Layer Filtering (1)

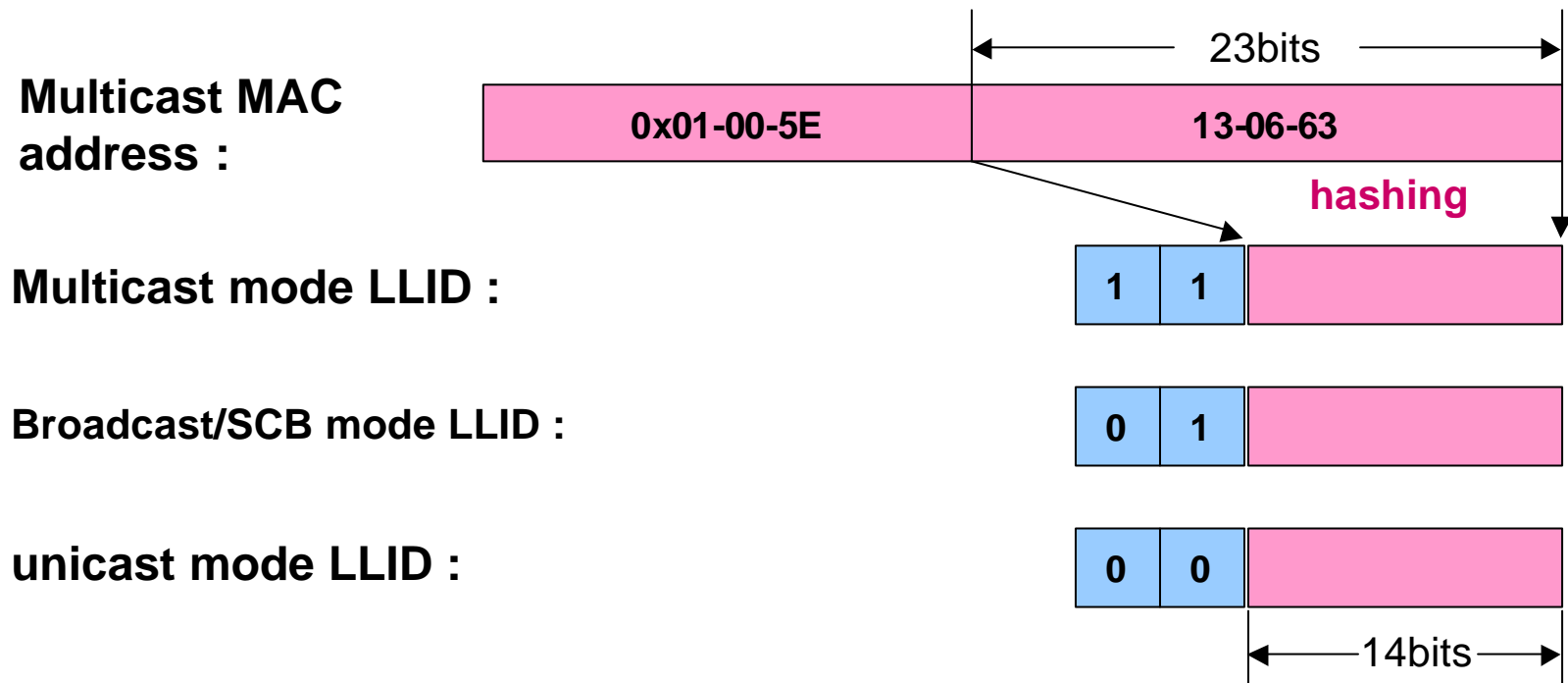


RS Layer Multicast Filtering

- A multicast LLID must be defined with another mode bit.
- RS Layer discard frames which has unknown multicast LLID.
- MAC Layer may not require another filtering for the multicast.
- Mapping the multicast MAC address to the multicast LLID has to be defined. ✍ Hash Function or Direct Mapping

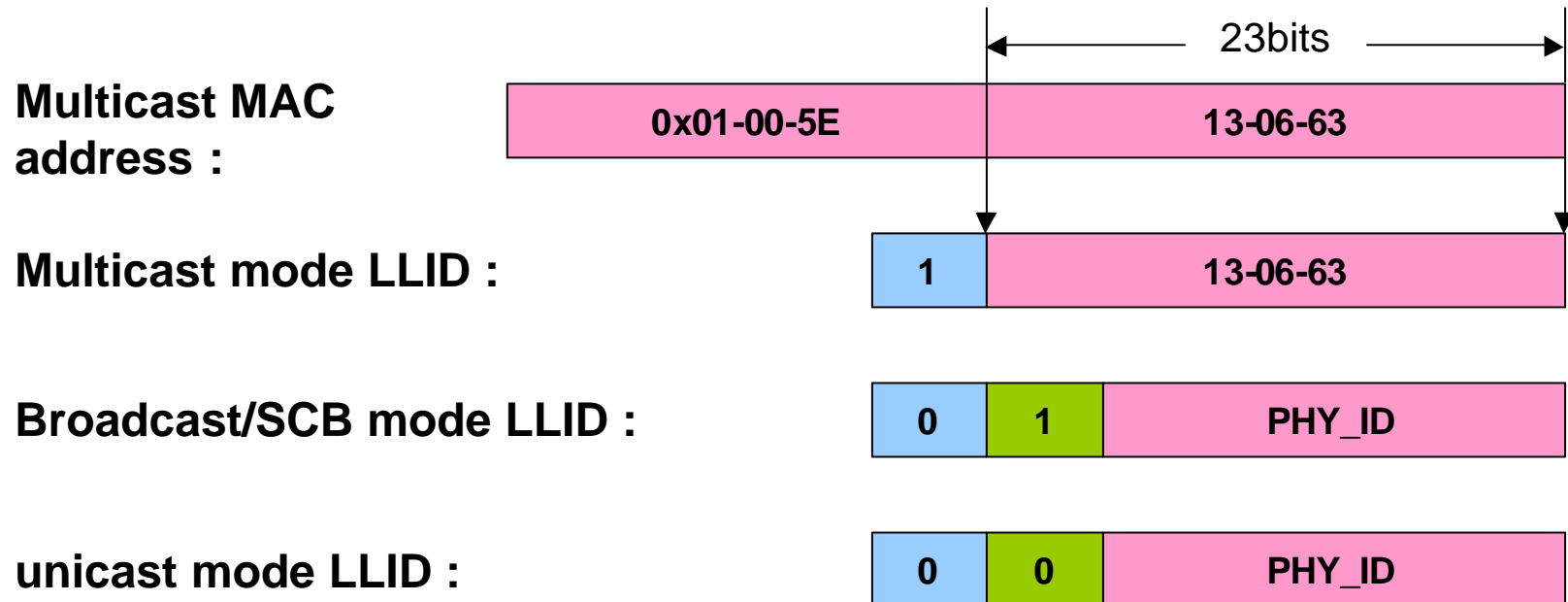
Option 2 : RS Layer Filtering (2)

- Option 2.1 : Using Hash Function
 - Overlapping issue
 - Total # of LLIDs decreased to 14 bit resolution
 - Mapping methods : FCS checker, XOR



Option 2 : RS Layer Filtering (3)

- Option 2.2 : Direct Mapping
 - Increase LLID size to 3 bytes.
 - No Hash function and No overlapping



Which one do you prefer?

Option 1 : MAC Layer Multicast Filtering

**Option 2 : RS layer Multicast Filtering
(using multicast LLID)**

Option 2.1 Hash Function

Option 2.2 Direct Mapping

Option 3 : No multicast support