Ethernet packet encapsulation

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### General

This proposal describes a structure of the Ethernet packet within any encapsulation frame.

- Preamble and SFD will be extracted at the transmitter PHY while encapsulated, and will be restored at the receiver PHY.

<table>
<thead>
<tr>
<th></th>
<th>7B</th>
<th>1B</th>
<th>6B</th>
<th>6B</th>
<th>2B</th>
<th>46-1500 B</th>
<th>4B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamble</td>
<td>SFD</td>
<td>Destination Add</td>
<td>Source Add.</td>
<td>Type</td>
<td>Data</td>
<td>FCS</td>
<td></td>
</tr>
</tbody>
</table>

Extracted transmitted
Example

The following is an example which depicts the proposed encapsulation within HDLC frame:

- **Preamble**: 7B
- **SFD**: 1B
- **Dest. Add**: 6B
- **Source Add.**: 6B
- **Type**: 2B
- **Data**: 46-1500 B
- **FCS**: 4B

**Ethernet packet**

**HDLC Frame**
Why to define this way?

- Reduces the overhead by 8 bytes
- Preamble & SFD are constant: easy to restore
- Not needed for the functionality of the VDSL-based PHY
- OAM-in-preamble is not used in EFM copper
- Does not harm reliability
- MAC remains unchanged
Proposal

- Ethernet packet will be encapsulated without the Preamble and without the SFD fields. Receiver will restore the packet before passing it to the MII/MAC layer.