



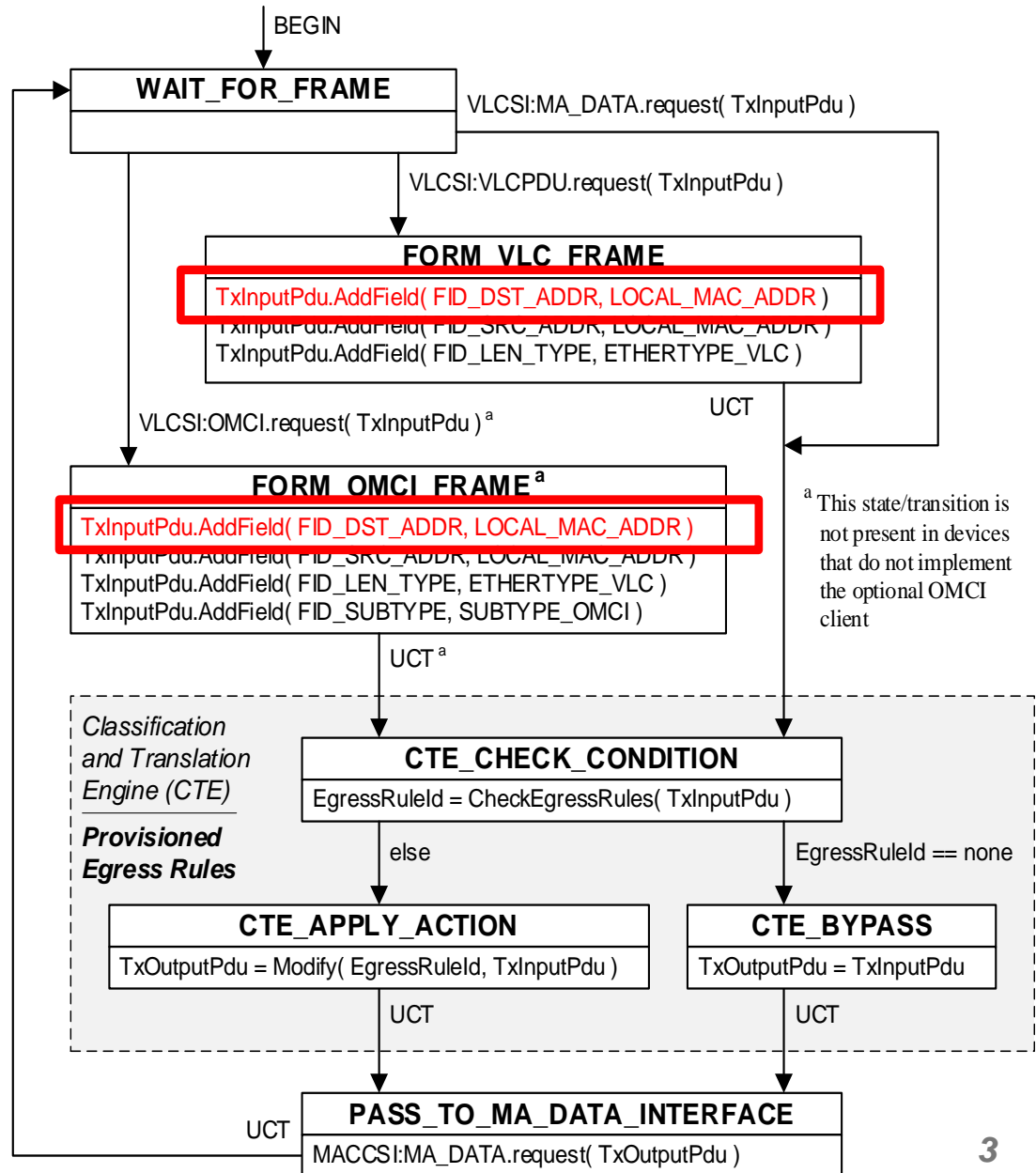
Issues with Destination Address placeholder and possible improvement

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- ❑ In our current VLC architecture, a VLC-aware device is able to receive and process VPCPDUs carrying OAM, OMCI, or VLC_CONFIG without any rules. However, to transmit a VLCPDU carrying any of these payloads, a rule to provision the destination address is mandatory. This leads to the following dependency:
 - In order to provision a destination address for an OMCI tunnel, an egress rule is needed.
 - To provision this egress rule, the VLC_CONFIG request message is issued.
 - A VLC_CONFIG request requires a VLC_CONFIG response.
 - Before a station can issue a VLC_CONFIG response, an egress rule is required to provision VLC tunnel destination address
- ❑ Altogether, that implies that the very first rule should always be the egress rule that provisions the VLC destination address.

D2.1 VLC Transmit process

- When a VLC_CONFIG or OMCI payload is generated, it first gets a default destination address **LOCAL_MAC_ADDR** as a placeholder.
- This is not a valid destination address and it is expected to be overwritten in the egress CTE table by a rule that matches this frame.

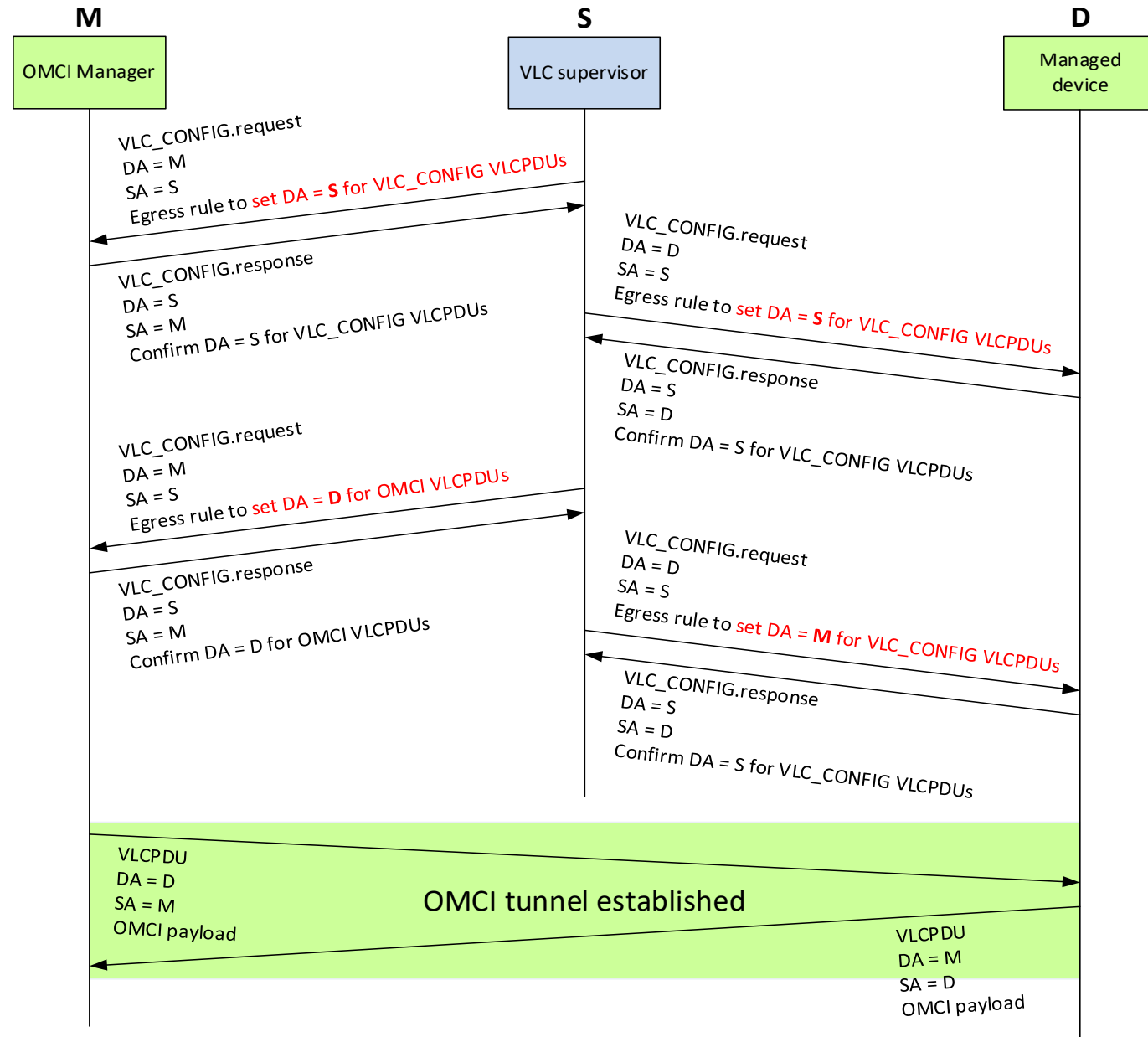


- ❑ When the VLC Transmit Process uses LOCAL_MAC_ADDR as a placeholder for the DA field, that value shall be replaced in 100% of cases.
- ❑ However, instead of LOCAL_MAC_ADDR we can use the peer MAC address learned from the SA of the previously received VLCPDU.
- ❑ In most cases, this would be the correct destination for the VLCPDU. But if necessary, we still may have a rule to overwrite it.

Example of establishing OMCI tunnel

Per D2.1:

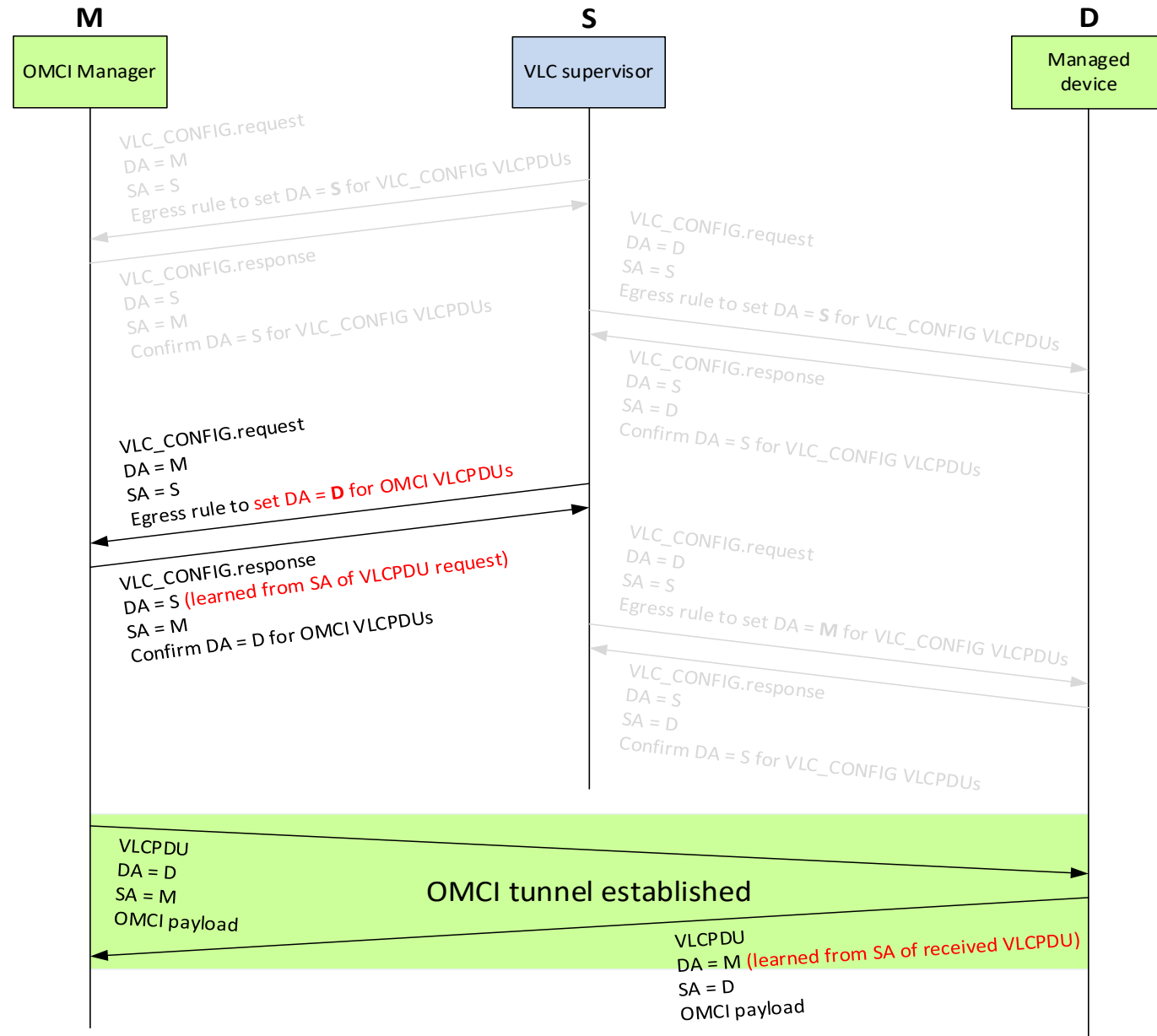
- Eight VLCPDU messages are required before an OMCI tunnel is established between OMCI Manager **M** and Managed Device **D**



Example of establishing OMCI tunnel

New proposal:

- ❑ Only two VLCPDU messages are required before an OMCI tunnel is established between OMCI Manager **M** and Managed Device **D**
- ❑ OMCI Manager **M** learns Supervisor's DA from incoming VLC_CONFIG VLCPDU
- ❑ Managed Device **D** learns peer DA from incoming OMCI VLCPDU.



LOCAL_MAC_ADDR as a placeholder

- ❑ Using LOCAL_MAC_ADDR as DA placeholder was a poor choice, because some frames legitimately have DA = LOCAL_MAC_ADDR.
 - For example, in OAM loopback mode, a return (looped) frame will have DA = LOCAL_MAC_ADDR.
 - Special behavior is defined for the OAM sublayer to support loopback operation and eliminate network disruption.
- ❑ When the LOCAL_MAC_ADDR value is used by the VLC transmit process as a temporary placeholder it is required to be replaced with the actual peer DA in 100% of cases.
- ❑ If the egress rule to replace the value of DA is missing or malformed, a frame with DA=**LOCAL_MAC_ADDR** will get transmitted, which can have undesired consequences (broadcast storm or learning incorrect MAC-Port associations)
- ❑ It is impossible for the VLC Transmit process to determine whether the DA = LOCAL_MAC_ADDR is legitimate or not.

A better placeholder

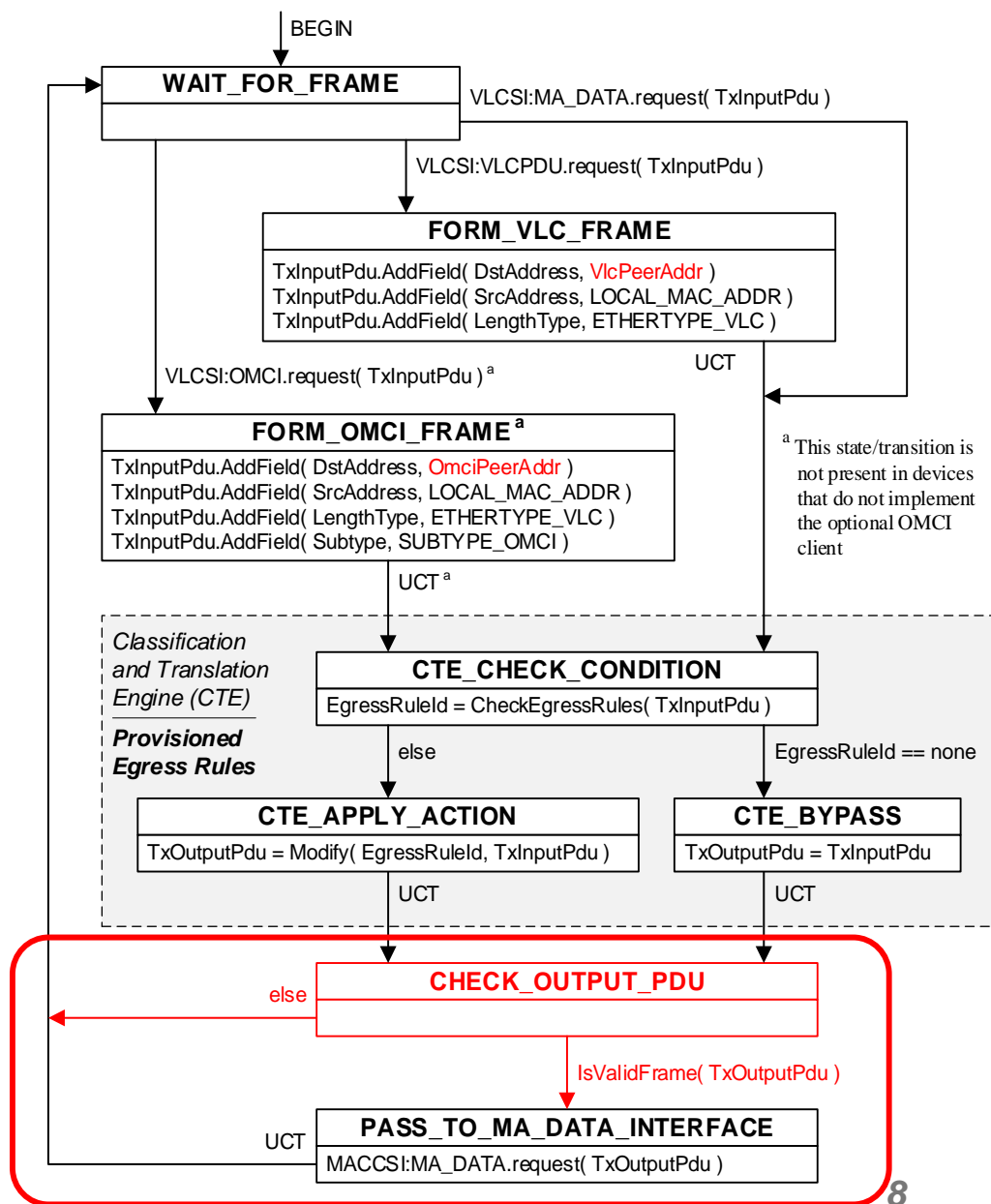


- A better placeholder value would be one that is always illegal in actual transmitted frames

- `NULL_MAC_ADDR = 0x00.`

- In case a rule to overwrite the placeholder is missing, the Transmit process can detect the invalid DA and discard the frame instead of passing it to MAC for transmission.

```
bool IsValidFrame(output_pdu)
{
    return (
        exists( output_pdu.DstAddr ) AND
        exists( output_pdu.SrdAddr ) AND
        exists( output_pdu.LengthType ) AND
        output_pdu.DstAddr != NULL_MAC_ADDR );
}
```





Thank You