

Clarification Request

References: BTL Specified Tests 18.1 Final; Addendum 135-2016bj; BACnet Standard 135-2016 14.YY.1.2.2

Date of BTL-WG Response: 2022-01-27

Background:

14.YY.1.2.2 Malformed BVLC Test

Reference YY.3.1.5

Purpose: Verify that device NAKs malformed / unknown unicast BVLC and ignores malformed / unknown broadcast BVLC.

Test Concept: With the IUT connected to the BACnet/SC network, send a sequence of malformed unicast and broadcast BVLCs to the IUT. Verify that the IUT responds with an appropriate NAK to each unicast one and does not process nor route the messages.

Configuration Requirements: The IUT is connected to the BACnet/SC network as a node or hub.

Test Steps:

-- Invalid BVLC function

1. TRANSMIT

'BVLC Function' = (IV: an invalid 1-octet value),

Message ID' = (M1: any valid value),

~~'Originating Virtual Address' absent~~

-- 'Originating Virtual Address' D3 or absent if IUT is configured as a hub

~~'Destination Virtual Address' absent~~

-- 'Destination Virtual Address' absent or D3 if IUT is configured as a hub

-- 'Destination Options' absent

-- 'Data Options' absent

2. RECEIVE BVLC-Result,

'Message ID' = M1,

-- 'Originating Virtual Address' absent

-- 'Destination Virtual Address' absent

'Destination Options' = (absent or a valid list of options),

-- 'Data Options' absent

'Result for BVLC Function' = IV, -- the supplied invalid BVLC function from the request

'Result Code' = X'01', -- NAK

'Error Header Marker' = X'00', -- not a header option problem

'Error Class' = COMMUNICATION,

'Error Code' = BVLC_FUNCTION_UNKNOWN

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-- A truncated message

10. TRANSMIT Encapsulated-NPDU,

'Message ID' = (M4: any valid value),

'Originating Virtual Address' = (OVA: absent, or D3 if IUT is configured as a hub),

(OVA: D3, or absent if IUT is configured as a hub)

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'Destination Virtual Address' = (IUT's VMAC),
-- 'Destination Options' absent
-- 'Data Options' absent
-- no NPDU included in the message
11. RECEIVE BVLC-Result,
'Message ID' = M4,
-- 'Originating Virtual Address' absent
'Destination Virtual Address' = OVA,
'Destination Options' = (absent or a valid list of options),
-- 'Data Options' absent
'Result for BVLC Function' = X'01', -- Encapsulated-NPDU
'Result Code' = X'01', -- NAK
'Error Header Marker' = X'00', -- not a header option problem
'Error Class' = COMMUNICATION,
'Error Code' = MESSAGE_INCOMPLETE
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Problem:**Step 1:**

If the TD or the IUT work as a hub, all function codes where both addresses may be omitted are actually defined (Dis-/Connect, Heartbeat, ...). Then all other messages must have a source or destination address. Should the address check for unknown function codes be omitted? Otherwise an address error would already occur here, since it is not one of the special function codes.

Step 10:

The Originating Virtual Address (OVA) should only be used here if the IUT is a hub. But in this case the message must have been sent by a direct peer, where the OVA would be omitted. If the IUT is only a node, the message would usually come from the hub. Now there should be an OVA (unless it is a direct connection). The Destination Virtual Address (DVA) should only be sent if the IUT is a hub, since the telegram is otherwise intended for the device directly and the DVA must also be omitted here.

Question:

Should the test be changed as outlined above?

Response:

No.

The proposed changes for step 1 are not required as the test is correct in ensuring that a B/SC implementation validates the BVLC function and returns the appropriate error code for all BVLC's that are targeted at the implementation.

The proposed change in step 10 for the Originating Virtual Address field in the Encapsulated-NPDU request is correct. In addition, the Originating Virtual Address field in the corresponding response needs to take into account whether the IUT is acting as a hub or a node.

Step 11 will be changed to:

11. RECEIVE BVLC-Result,

'Message ID' = M4,

~~'Originating Virtual Address' absent~~**'Originating Virtual Address' = (absent or the IUT's VMAc if the IUT is configured as a hub),**

'Destination Virtual Address' = OVA,

'Destination Options' = (absent or a valid list of options),

-- 'Data Options' absent

'Result for BVLC Function' = X'01', -- Encapsulated-NPDU

'Result Code' = X'01', -- NAK

'Error Header Marker' = X'00', -- not a header option problem

'Error Class' = COMMUNICATION,

'Error Code' = MESSAGE_INCOMPLETE