

Clarification Request

References: BTL Revision 26.0 SPECIFIED TESTS 12.5.2.2.X / ic-135-2020-28-1

Date of BTL-WG Response: August 21, 2025

Background: 12.5.2.2.X Malformed BVLC Test for Nodes operating as a Hub

Purpose: Verify the device NAKs malformed / unknown unicast BVLCs and ignores malformed / unknown broadcast BVLCs when operating as a Node with an active hub function.

Test Concept: With the IUT connected to the BACnet/SC network and operating as the active hub, send a sequence of malformed unicast and broadcast BVLCs to the IUT. Verify that the IUT responds as required to each message and does not process nor route the messages.

Configuration Requirements: The IUT is connected to the BACnet/SC network and is operating as the active hub. The TD is connected to the BACnet/SC network as a node. Test Steps:

-- Unknown BVLC function

1. TRANSMIT

'BVLC Function' = (IV: an unknown 1-octet value),
 'Message ID' = (M1: any valid value),
 -- 'Originating Virtual Address' absent
 -- 'Destination Virtual Address' absent
 -- '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 unknown 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

3. CHECK (that the IUT did not process nor forward the request)

-- Inclusion of an Originating Virtual Address when it is required to be absent

4. TRANSMIT Disconnect-Request,

'Message ID' = (M2: any valid value),
 'Originating Virtual Address' = D3, -- error condition, required to be absent
 -- 'Destination Virtual Address' absent
 'Destination Options' = (absent or a valid list of options),
 -- 'Data Options' absent

5. IF (receive a message) THEN

RECEIVE BVLC-Result,

'Message ID' = M2,
 -- 'Originating Virtual Address' absent
 -- A valid message from a hub requires DVA to be absent
 -- 'Destination Virtual Address' absent

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'Destination Options' =      (absent or a valid list of options),
-- 'Data Options' absent
'Result for BVLC Function' =  X'08', -- Disconnect-Request
'Result Code' =              X'01', -- NAK
'Error Header Marker' =      X'00', -- not a header option problem
'Error Class' =              (COMMUNICATION),
                             (HEADER_ENCODING_ERROR,
                              INCONSISTENT_PARAMETERS,
                              PARAMETER_OUT_OF_RANGE or OTHER)

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6. CHECK (that the IUT did not process the request)

-- Inclusion of a 'Destination Virtual Address when it is required to be absent

7. TRANSMIT Disconnect-Request,

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'Message ID' =              (M3: any valid value),
-- 'Originating Virtual Address' absent,
'Destination Virtual Address' = (IUT's VMAC), -- error condition, required to be absent
'Destination Options' = (absent or a valid list of options),
-- 'Data Options' absent

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8. IF (receive a message) THEN

RECEIVE BVLC-Result,

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'Message ID' = M3, -- 'Originating Virtual Address' absent
-- 'Destination Virtual Address' absent
'Destination Options' = (absent or a valid list of options),
-- 'Data Options' absent 'Result for BVLC Function' = X'08',
-- Disconnect-Request 'Result Code' =      X'01',
-- NAK 'Error Header Marker' =              X'00',
-- not a header option problem 'Error Class' = (COMMUNICATION),
'Error Code' =                                (HEADER_ENCODING_ERROR,
                                                INCONSISTENT_PARAMETERS,
                                                PARAMETER_OUT_OF_RANGE or OTHER)

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9. CHECK(that the IUT did not process the request)

-- A truncated message

10. TRANSMIT Encapsulated-NPDU,

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'Message ID' = (M4: any valid value),
-- 'Originating Virtual Address' absent
-- 'Destination Virtual Address' absent,
-- 'Destination Options' absent
-- 'Data Options' absent
-- no NPDU included in the message

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11. RECEIVE BVLC-Result,

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'Message ID' = M4,
-- 'Originating Virtual Address' absent
-- 'Destination Virtual Address' absent
'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 | PAYLOAD_EXPECTED

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12. CHECK(that the IUT did not process the request)

-- A message with extra octets added on

13. TRANSMIT Disconnect-Request,

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'Message ID' = (M5: any valid value),
-- 'Originating Virtual Address' absent
-- 'Destination Virtual Address' absent
-- 'Destination Options' absent
-- 'Data Options' absent (extra octets) =      ({ X'C1', --a bunch of octets that look like valid data options.
                                                X'BF0003000012',

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X'3F0003000034'})
14. RECEIVE BVLC-Result,
    'Message ID' = M5,
    -- 'Originating Virtual Address' absent
    -- 'Destination Virtual Address' absent
    'Destination Options' = (absent or a valid list of options)
    -- 'Data Options' absent
    'Result for BVLC Function' = X'08', -- Disconnect-Request
    'Result Code' = X'01', -- NAK
    'Error Header Marker' = X'00', -- not a header option problem
    'Error Class' = COMMUNICATION,
    'Error Code' = UNEXPECTED_DATA
15. CHECK(that the IUT did not process the request)

-- A truncated broadcast message
16. TRANSMIT Encapsulated-NPDU,
    DESTINATION = GLOBAL_BROADCAST,
    'Message ID' = (M6: any valid value),
    -- 'Originating Virtual Address' absent,
    'Destination Virtual Address' = (local broadcast VMAC),
    -- 'Destination Options' absent
    'Data Options' = ({ X'E1' -- Secure Path,
                      more follows (but none are present)
                      })
17. CHECK(that the IUT does not send a BVLC-Result, did not process the message, nor route the message)

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Problem:

- (1) – First variant “Unknown BVLC function”
If a hub tries to identify an unambiguous and valid addressing of this package the result can only be ‘no valid addressing’ as the BVLC function is unknown. Respecting handling this package is a ‘local matter’.
- (2) – Second variant ‘Inclusion of an Originating Virtual Address when it is required to be absent’
Again, this is wrong addressing in a package sent to the IUT-Hub. Respecting ic-135-2020-28-1 handling this package is a ‘local matter’.
- (3) – Third variant ‘Inclusion of a ‘Destination Virtual Address when it is required to be absent’
Again, this is wrong addressing in a package sent to the IUT-Hub. Respecting ic-135-2020-28-1 handling this package is a ‘local matter’.
- (4) - variant ‘A truncated message’
The function of this package is an Encapsulated-NPDU. The intention of this test variant is unclear. As there is no DVA in Step 10, this package has no correct addressing and again: respecting ic-135-2020-28-1 handling this package is a ‘local matter’. It is possible that Step 10 is wrong and the DVA is missing unintentionally – in this case the test needs to be corrected.

Question:

Shall this test be skipped?

Response:

No. The test should be run. Make the following changes:

In Step 10, DVA should be IUT's VMAC.

In Step 11, OVA should be IUT's VMAC.