

Clarification Request

References: “e.g” Specified Tests 18.1, 20.0 14.Y.Y.1.1.16

Date of BTL-WG Response: May 19, 2022

Background: “e.g” Specified Tests 18.1, 20.0 14.Y.Y.1.1.16

14.YY.1.1.16 Heartbeat-Request Initiation Test

Reference: YY.2.14, YY.2.15, YY.6.3

Purpose: To verify that the device initiates heartbeats as per its config.

Test Concept: With the IUT connected to the BACnet/SC network, send a ReadProperty request to the IUT every heartbeat interval / 2 seconds. Verify that the IUT does not initiate a Heartbeat-Request. Stop sending messages to the IUT. Wait the IUT's configured heart-beat interval plus 10 seconds and verify that the IUT sent a Heartbeat-Request, ensuring that no BVLCs are sent to the IUT during that period.

Configuration Requirements: Place the IUT in a mode where it will not initiate requests for a period longer than the heartbeat interval (except for the heartbeat request). If the IUT does not support DM-DCC-B and cannot be otherwise configured to behave in this manner, this test shall be skipped.

Test Steps:

1. REPEAT N = (1..Z) {
 - TRANSMIT Encapsulated-NPDU,
 - 'Message ID' = (M: any valid value),
 - 'Originating Virtual Address' = (OVA: any valid value, including absent),
 - 'Destination Virtual Address' absent
 - 'Destination Options' (absent or any valid value),
 - 'Data Options' = ({ X'41' }), -- Secure Path
 - 'BACnet NPDU' =
 - ReadProperty-Request,
 - 'Object Identifier' = (the IUT's Device object),
 - 'Property Identifier' = Object_Name
 - RECEIVE Encapsulated-NPDU,
 - 'Message ID' = M,
 - 'Originating Virtual Address' absent
 - 'Destination Virtual Address' = OVA,
 - 'Destination Options' (absent or any valid value),
 - 'Data Options' = ({ X'41' or a list of valid header options including Secure Path}),
 - 'BACnet NPDU' =
 - ReadProperty-ACK,
 - 'Object Identifier' = (the IUT's Device object),
 - 'Property Identifier' = Object_Name,
 - 'Property Value' = (the IUT's device object name)
 - WAIT ½ of IUT's heartbeat interval
- }
2. CHECK(that the IUT did not send a HeartBeat during step 1)
 - Since we already waited ½ of an heartbeat interval, only ½ of that interval is now given for the IUT to
 - generate a Heartbeat-Request
3. BEFORE ½ of IUT's heartbeat interval + 10s
 - RECEIVE Heartbeat-Request,

- 'Message ID' = M2,
 -- 'Originating Virtual Address' absent
 -- 'Destination Virtual Address' absent
 'Destination Options' = (absent or any valid value),
 -- 'Data Options' absent
4. TRANSMIT Heartbeat-ACK,
 'Message ID' = M2,
 -- 'Originating Virtual Address' absent
 -- 'Destination Virtual Address' absent
 'Destination Options' = (absent or any valid value),
 -- 'Data Options' absent

The Heartbeat behavior is described in Clause AB.6.3

AB.6.3 Connection Keep-Alive

Initiating peers shall keep established BACnet/SC connections alive through periodic initiation of Heartbeat-Request messages to the accepting peer.

A Heartbeat-Request message shall be initiated to the accepting peer if no BVLC message was received over the connection within the heartbeat timeout.

On receipt of Heartbeat-Request, the accepting peer shall respond with a Heartbeat-ACK message to the initiating peer.

If the heartbeat timeout is configurable, it shall support a minimum range of 3..300 seconds. A fixed heartbeat timeout shall have a value in the range 30..300 seconds.

The connections may be kept alive for as long as the WebSocket connection maximum lifetime allows. Note that the determination of the maximum lifetime is a local matter. See Clause AB.7.5.4.

Problem:

- 1) While Clause AB.6.3 explicitly states the circumstances where a Heartbeat-Request "shall be initiated", it does not forbid sending the Heartbeat-Request at a fixed interval, regardless of the receipt of a BVLC message. The test seems to be overzealous in enforcing a 'timer reset' upon the receipt of a BVLC message but this is not mandated by the Standard.
- 2) It is unclear how many times to repeat step 1 – what is 'Z'?

Questions:

- 1) **Is it the intention of the test to enforce a timer reset on receipt of a BVLC message even though this is not mandated by the BACnet Standard?**

Response:

- 1) **Yes. The test is overly zealous. The test will be relaxed.**