Clarification Request

Request from: Lori Tribble (btl-manager@bacnetinternational.org)

References: BTL Specified Tests-5.0.1.doc

Stage: ☒Request, ☒Listed, ☒Analysis, ☒Resolved

Background / Proposed Solution:

The non-router functionality tests specified in the BTL Specified Tests document incorrectly indicate the Hop Count should be present when only the SNET/SADR information is present in the packet. This affects tests 10.X.1, 10.X.2, 10.X.3, 10.X.4.

The following are proposed corrected versions of the tests. The changes are highlighted in yellow.

10.X.1 Static Router Binding

Reason for Change: No relevant test exists in 135.1. This change is in CN-092.

Dependencies: ReadProperty Service Initiation Tests, 8.15, ReadProperty Service Execution Tests, 9.15

BACnet Reference Clause: 6.5.3

Purpose: To verify that the IUT can initiate requests to a remote network and respond to requests from a remote network when the IUT has been statically configured with the MAC address of the router to that remote network.

Test Concept: The IUT transmits a request to a device on the remote network and responds to a request from the remote network without performing any form of dynamic router binding. If the IUT does not support static router binding or if the IUT cannot initiate a request then this test shall be omitted. If the IUT cannot initiate a ReadProperty request then another confirmed service can be substituted.

Test Steps:

1. MAKE (IUT transmit a ReadProperty request to the D2A device on the remote network)
2. RECEIVE
   DESTINATION = TD,
   SOURCE = IUT,
   DNET = DNET2,
   DADR= D2A,
   Hop Count = 255,
   BACnet-Confirmed-Request-PDU,
   'Service Choice' = ReadProperty-Request,
   'Object Identifier' = O1 (any BACnet standard object in D2A),
   'Property Identifier' = P1 (any required property of the specified object)
3. TRANSMIT
   DESTINATION = IUT,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   ~~Hop Count = 254,~~
   BACnet-Complex-Ack-PDU,

‘Service ACK Choice’ = ReadProperty-ACK,
'Object Identifier' = O1,
'Property Identifier' = P1,
'Property Value' = (any valid value)

4. TRANSMIT
DESTINATION = IUT,
SOURCE = TD,
SNET = DNET2,
SADR = D2A,
~~Hop Count = 254,~~
BACnet-Confirmed-Request-PDU,
'Service Choice' = ReadProperty-Request,
'Object Identifier' = O2 (any BACnet standard object in IUT),
'Property Identifier' = P2 (any required property of the specified object)

5. RECEIVE
DESTINATION = TD,
SOURCE = IUT,
DNET = DNET2,
DADR = D2A,
Hop Count = 255,
BACnet-Complex-Ack-PDU,
‘Service ACK Choice’ = ReadProperty-ACK,
'Object Identifier' = O2,
'Property Identifier' = P2,
'Property Value' = (any valid value)

10.X.2 Router Binding via Application Layer Services

Reason for Change: No relevant test exists in 135.1. This change is in CN-092.

Dependencies: ReadProperty Service Initiation Tests, 8.18, ReadProperty Service Execution Tests, 9.18, Who-Is Service Initiation Tests, 8.34

BACnet Reference Clause: 6.5.3

Purpose: To verify that the IUT can initiate requests to a remote network and respond to requests from a remote network after the IUT uses the Who-Is and I-Am Application Layer services to discover the MAC address of the router to that remote network.

Test Concept: The IUT broadcasts a Who-Is request to discover device D2A and notes the MAC address of the intervening router in the corresponding I-Am reply. The TD transmits a request to a device on the remote network and responds to a request from the remote network without performing any further form of dynamic router binding. If the IUT does not support application layer router binding or if the IUT cannot initiate a request other than Who-Is, then this test shall be omitted. If the IUT cannot initiate a ReadProperty request then another confirmed service can be substituted. The IUT may use the deviceInstanceRange form of Who-Is.

Note that Clause 6.5.3 specifically mentions router binding via Who-Is, and does not mention router binding by initiating other application layer services (such as Who-Has) or lurking and noting the router MAC addresses for incoming application layer requests.

Test Steps:

1. MAKE (IUT transmit Who-Is to discover the device on the remote network)
2. RECEIVE
   DESTINATION = BROADCAST,
   SOURCE = IUT,

DNET = GLOBAL BROADCAST,
Hop Count = 255,
BACnet-Unconfirmed-Request-PDU,
'Service Choice' = who-Is
| DESTINATION = BROADCAST,
SOURCE = IUT,
DNET = DNET2,
DADR= BROADCAST,
Hop Count = 255,
BACnet-Unconfirmed-Request-PDU,
'Service Choice' = who-Is

3. TRANSMIT
   DESTINATION = BROADCAST,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   ~~Hop Count = 254,~~
   BACnet-Unconfirmed-Request-PDU,
   'Service Choice' = I-Am,
   'I Am Device Identifier' = (device object, instance number of D2A),
   'Max APDU Length Accepted ' = (any valid value),
   'segmentationSupported' = (any value value),
   'Vendor ID ' = (any valid value)
4. MAKE (IUT transmit a ReadProperty request to the D2A device on the remote network)
5. RECEIVE
   DESTINATION = TD,
   SOURCE = IUT,
   DNET = DNET2,
   DADR= D2A,
   Hop Count = 255,
   BACnet-Confirmed-Request-PDU,
   'Service Choice' = ReadProperty-Request,
   'Object Identifier' = O1 (any BACnet standard object in D2A),
   'Property Identifier' = P1 (any required property of the specified object)
6. TRANSMIT
   DESTINATION = IUT,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   BACnet-Complex-Ack-PDU,
   ~~Hop Count = 254,~~
   'Service ACK Choice' = ReadProperty-ACK,
   'Object Identifier' = O1,
   'Property Identifier' = P1,
   'Property Value' = (any valid value)
7. TRANSMIT
   DESTINATION = IUT,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   ~~Hop Count = 254,~~
   BACnet-Confirmed-Request-PDU,
   'Service Choice' = ReadProperty-Request,
   'Object Identifier' = O2 (any BACnet standard object in IUT),
   'Property Identifier' = P2 (any required property of the specified object)
8. RECEIVE

DESTINATION = TD,
SOURCE = IUT,
DNET = DNET2,
DADR = D2A,
Hop Count = 255,
BACnet-Complex-Ack-PDU,
'Service ACK Choice' = ReadProperty-ACK,
'Object Identifier' = O2,
'Property Identifier' = P2,
'Property Value' = (any valid value)

10.X.3 Router Binding via Who-Is-Router-To-Network

Reason for Change: No relevant test exists in 135.1. This change is in CN-092.

Dependencies: ReadProperty Service Initiation Tests, 8.15, ReadProperty Service Execution Tests, 9.15, Locating Routers, 10.5.1

BACnet Reference Clause: 6.5.3

Purpose: To verify that the IUT can initiate requests to a remote network and respond to requests from a remote network after the IUT uses the Who-Is-Router-To-Network Network Layer service to discover the MAC address of the router to that remote network.

Test Concept: The IUT broadcasts a Who-Is-Router-To-Network request to discover the router to the desired network. The TD transmits a request to a device on the remote network and responds to a request from the remote network without performing any further form of dynamic router binding. If the IUT does not support who-is-router-to-network router binding or if the IUT cannot initiate a request, then this test shall be omitted. If the IUT cannot initiate a ReadProperty request then another confirmed service can be substituted. The IUT may use either the general query or specific network number query form of the Who-Is-Router-To-Network service.

Note that Clause 6.5.3 specifically mentions router binding via Who-Is-Router-To-Network, and does not mention router binding by lurking and noting unsolicited I-Am-Router-To-Network messages.

Test Steps:

1. MAKE (IUT transmit Who-Is-Router-To-Network to discover the router to DNET2)
2. RECEIVE
   DESTINATION = BROADCAST,
   SOURCE = IUT,
   Who-Is-Router-To-Network,
   | DESTINATION = BROADCAST,
   SOURCE = IUT,
   Who-Is-Router-To-Network,
   DNET = DNET2
3. TRANSMIT
   DESTINATION = BROADCAST,
   SOURCE = TD,
   I-Am-Router-To-Network,
   Network Numbers = DNET2
4. MAKE (IUT transmit a ReadProperty request to the D2A device on the remote network)
5. RECEIVE
   DESTINATION = TD,
   SOURCE = IUT,
   DNET = DNET2,
   DADR= D2A,
   Hop Count = 255,

BACnet-Confirmed-Request-PDU,
'Service Choice' = ReadProperty-Request,
'Object Identifier' = O1 (any BACnet standard object in D2A),
'Property Identifier' = P1 (any required property of the specified object)

6. TRANSMIT
DESTINATION = IUT,
SOURCE = TD,
SNET = DNET2,
SADR = D2A,
~~Hop Count = 254,~~
BACnet-Complex-Ack-PDU,
'Service ACK Choice' = ReadProperty-ACK,
'Object Identifier' = O1,
'Property Identifier' = P1,
'Property Value' = (any valid value)

7. TRANSMIT
DESTINATION = IUT,
SOURCE = TD,
SNET = DNET2,
SADR = D2A,
~~Hop Count = 254,~~
BACnet-Confirmed-Request-PDU,
'Service Choice' = ReadProperty-Request,
'Object Identifier' = O2 (any BACnet standard object in IUT),
'Property Identifier' = P2 (any required property of the specified object)

8. RECEIVE
DESTINATION = TD,
SOURCE = IUT,
DNET = DNET2,
DADR = D2A,
Hop Count = 255,
BACnet-Complex-Ack-PDU,
'Service ACK Choice' = ReadProperty-ACK,
'Object Identifier' = O2,
'Property Identifier' = P2,
'Property Value' = (any valid value)

10.X.4 Router Binding via Broadcast

Reason for Change: No relevant test exists in 135.1. This change is in CN-092.

Dependencies: ReadProperty Service Initiation Tests, 8.15, ReadProperty Service Execution Tests, 9.15

BACnet Reference Clause: 6.5.3

Purpose: To verify that the IUT can initiate requests to a remote network and respond to requests from a remote network when the IUT uses an *initial* broadcast to discover the MAC address of the router to that remote network.

Test Concept: The IUT broadcasts a request to a device on the remote network and notes the MAC address of the intervening router in the reply. The IUT responds to a request from the remote network without performing any further form of dynamic router binding. If the IUT does not support router binding via broadcast or if the IUT cannot initiate a request then this test shall be omitted. If the IUT cannot initiate a ReadProperty request then another confirmed service can be substituted.

Test Steps:

1. MAKE (IUT transmit a ReadProperty request to the D2A device on the remote network)

2. RECEIVE
   DESTINATION = BROADCAST,
   SOURCE = IUT,
   DNET = DNET2,
   DADR= D2A,
   Hop Count = 255,
   BACnet-Confirmed-Request-PDU,
   'Service Choice' = ReadProperty-Request,
   'Object Identifier' = O1 (any BACnet standard object in D2A),
   'Property Identifier' = P1 (any required property of the specified object)

3. TRANSMIT
   DESTINATION = IUT,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   ~~Hop Count = 254,~~
   BACnet-Complex-Ack-PDU,
   'Service ACK Choice' = ReadProperty-ACK,
   'Object Identifier' = O1,
   'Property Identifier' = P1,
   'Property Value' = (any valid value)

4. TRANSMIT
   DESTINATION = IUT,
   SOURCE = TD,
   SNET = DNET2,
   SADR = D2A,
   ~~Hop Count = 254,~~
   BACnet-Confirmed-Request-PDU,
   'Service Choice' = ReadProperty-Request,
   'Object Identifier' = O2 (any BACnet standard object in IUT),
   'Property Identifier' = P2 (any required property of the specified object)

5. RECEIVE
   DESTINATION = TD,
   SOURCE = IUT,
   DNET = DNET2,
   DADR = D2A,
   Hop Count = 255,
   BACnet-Complex-Ack-PDU,
   'Service ACK Choice' = ReadProperty-ACK,
   'Object Identifier' = O2,
   'Property Identifier' = P2,
   'Property Value' = (any valid value)

Question:

Are the tests shown above now correct?

Response:

BTL-WG: Yes. The above changes will be applied to the tests in the BTL Test Package.