BACnet® TESTING LABORATORIES ADDENDA

Addendum bx to BTL Test Package 26.1

Revision Final
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[This foreword and the "Overview" on the following pages are not part of this Test Package. They are merely informative and do not contain requirements necessary for conformance to the Test Package.]

FOREWORD

The purpose of this addendum is to present current changes being made to the BTL Test Package. These modifications are the result of change proposals made pursuant to the continuous maintenance procedures and of deliberations within the BTL-WG Committee. The changes are summarized below.

BTL-26.1 bx-1: Update Subordinate Tests to Support DAP [BTLWG-1724] 2

BTL-26.1 bx-2: Device Proxy Table Tests [BTLWG-1723].....6

In the following document, language to be added to existing clauses within the BTL Test Package 26.1 is indicated through the use of *italics*, while deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are proposed to be added, plain type is used throughout.

In contrast, changes to BTL Specified Tests also contain a yellow highlight to indicate the changes made by this addendum. When this addendum is applied, all highlighting will be removed. Change markings on tests will remain to indicate the difference between the new test and an existing 135.1 test. If a test being modified has never existed in 135.1, the applied result should not contain any change markings. When this is the case, square brackets will be used to describe the changes required for this test.

Each addendum can stand independently unless specifically noted via dependency within the addendum. If multiple addenda change the same test or section, each future released addendum that changes the same test or section will note in square brackets whether or not those changes are reflected.

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BTL-26.1 bx-1: Update Subordinate Tests to Support DAP [BTLWG-1724]

Overview:

Update 13.5.1, 13.5.2, and 13.5.3 to include checking the Device_Address_Proxy_Table.

Changes:

Checklist Changes

None

Test Plan Changes

8.30 Device Management - Subordinate Proxy - B

8.30.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

~~135.1-2025~~*BTL* - 13.5.1 - Manual Subordinate Binding Test		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	
...		

8.30.2 Supports Automatic Subordinate Address Binding

The IUT support automatic subordinate address binding.

~~135.1-2025~~*BTL* - 13.5.2 - Automatic Subordinate Discovery Test		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

Specified Test Changes

[Move tests 13.5.1 and 13.5.2 into BTL Specified Tests, and modify]

13.5.1 Manual Subordinate Binding Test

Reason for Change: Added Device_Address_Proxy_Table (PR 27 requirements)

Purpose: This test verifies that the IUT can find and confirm MS/TP subordinate devices listed in the Manual_Subordinate_Binding property in the IUT's device object. This test also verifies that the IUT correctly distinguishes between subordinate and manager devices, and that it performs periodic confirmation of subordinate devices.

Test Concept: Configure the Manual_Subordinate_Binding property with the address of two MS/TP devices. Attach a subordinate at one of the addresses and a manager that supports the Who-Is and I-Am services at the other address. Monitor the network to verify that the IUT confirms the devices and then verify that the subordinate device address is added into the Subordinate_Address_Binding *and Device_Address_Proxy_Table properties* ~~property~~ and that the manager address is not. The subordinate is then removed, and once the IUT re-confirms the subordinate, it is verified that the subordinate is removed from the Subordinate_Address_Binding *and Device_Address_Proxy_Table properties* ~~property~~.

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Configuration Requirements: The MS/TP network shall contain a subordinate device at address A1 with a device identifier of D1 and a manager device at address A2 with a device identifier of D2. The subordinate device shall not support the reading of its device object using the wildcard instance of 4194303. The manager device shall execute the Who-Is service and initiate the I-Am service. The IUT shall be configured to perform subordinate proxying.

Notes to Tester: The ReadProperty requests can in initiated in any order.

Test Steps:

1. WRITE Subordinate_Proxy_Enable = TRUE
~~1~~*2.* BEFORE Subordinate Proxy Confirm Interval
3. RECEIVE
DESTINATION=A1,
SRC=IUT,
ReadProperty-Request,
'Object Identifier' = (D1),
'Property Identifier' = Protocol_Services_Supported
4. TRANSMIT
DESTINATION=IUT,
SRC=A1,
ReadProperty-ACK
'Object-Identifier' = (D1),
'Property Identifier' = Protocol_Services_Supported,
'Property Value' = (any valid value for this property)
5. RECEIVE
DESTINATION=A2,
SRC=IUT,
ReadProperty-Request,
'Object Identifier' = (D2),
'Property Identifier' = Protocol_Services_Supported
6. TRANSMIT
DESTINATION=IUT,
SRC=A2,
ReadProperty-ACK
'Object-Identifier' = (D2),
'Property Identifier' = Protocol_Services_Supported,
'Property Value' = (any valid value for this property)
~~2. REPEAT addr=(A1, A2) DO {~~
~~3. RECEIVE DESTINATION=addr, SRC=IUT~~
~~ReadProperty-Request,~~
~~'Object Identifier' = (the correct value for the address being queried),~~
~~'Property Identifier' = Protocol_Services_Supported~~
~~4. RECEIVE DESTINATION=IUT, SRC=addr~~
~~BACnet-Complex-ACK,~~
~~'Object-Identifier' = (the correct value for the address being queried),~~
~~'Property Identifier' = Protocol_Services_Supported,~~
~~'Property Value' = (any valid value for this property)~~
~~}~~
~~5~~7. VERIFY Subordinate_Address_Binding = ((A1, D1))
8. IF Protocol_Revision >= 27 THEN
9. VERIFY Device_Address_Proxy_Table = (DAPT + (A1, D1))
-- Remove the subordinate device from the MS/TP network
~~6~~*10.*BEFORE Subordinate Proxy Confirm Interval
11. RECEIVE
DESTINATION=A1,
SRC=IUT,
ReadProperty-Request,
'Object Identifier' = (D1 | 4194303),
'Property Identifier' = Protocol_Services_Supported
~~7. RECEIVE DESTINATION=A1, SRC=IUT~~

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~~ReadProperty-Request,~~
~~'Object Identifier' = (DEVICE,the correct value for the address being queried),~~
~~'Property Identifier' = Protocol_Services_Supported~~
-- note that the subordinate will not reply to this request as it is no longer connected to the network.
~~8~~*12*.WAIT (longer than it takes for the IUT to timeout on this request)
~~9~~*13*.VERIFY Subordinate_Address_Binding = ()
14. IF Protocol_Revision >= 27 THEN
15. VERIFY Device_Address_Proxy_Table = (DAPT)

Passing Result: The IUT shall read the Protocol_Services_Supported property from each MS/TP device to determine whether or not it supports Who-Is. The implementer may have chosen to read this property after the IUT has determined that a device exists at a given MAC address. In this case, any property shall be accepted in *the ReadProperty request* ~~step 1~~, and the TD shall expect a subsequent read from the IUT for the Protocol_Services_Supported property for the two devices attached to the MS/TP segment. The IUT is also allowed to generate any other traffic it cares to during the test including, but not limited to, reading property values from the devices it finds.

13.5.2 Automatic Subordinate Discovery Test

Reason for Change: Added Device_Address_Proxy_Table (PR 27 requirements)

Purpose: This test verifies that an IUT that contains an Auto_Subordinate_Discovery property is able to find and confirm MS/TP subordinates that support reading with the wildcard instance of 4194303. This test also verifies that the IUT correctly distinguishes between subordinate and manager devices, and that it performs periodic confirmation of subordinate devices.

Test Concept: Configure the Auto_Subordinate_Binding property to enable automatic detection of subordinates. Connect a subordinate and a manager to the MS/TP network. Monitor the network to verify that the IUT searches for and finds each device connected to the MS/TP segment. Verify that the IUT added the subordinate to its Subordinate_Address_Binding *and Device_Address_Proxy_Table properties* ~~property~~ and that it did not add the manager to the list. A subordinate is then removed, and once the IUT re-confirms the subordinate, it is verified that the subordinate is removed from the Subordinate_Address_Binding *and Device_Address_Proxy_Table properties* ~~property~~.

Configuration Requirements: The MS/TP network shall contain a subordinate device at address A1 with a device identifier of D1 and a manager device at address A2 with a device identifier of D2. The subordinate device shall support the reading of its device object using the wildcard instance of 4194303. The manager device shall execute the Who-Is service and initiate the I-Am service. The IUT shall be configured to perform automatic subordinate detection on all MS/TP addresses except its own and the broadcast address.

Test Steps:

1. WRITE Subordinate_Proxy_Enable = TRUE
2. IF Protocol_Revision >= 27 THEN
3. WRITE Device_Address_Proxy_Enable = FALSE
4. READ DAPT = Device_Address_Proxy_Table
~~1. MAKE(the IUT start its automatic subordinate detection)~~
~~2. BEFORE **Subordinate Proxy Confirm Interval***~~
*5. BEFORE **Subordinate Proxy Confirm Interval** {*
6. REPEAT addr=(all MS/TP addresses excluding the IUT's MAC address) DO {
7. RECEIVE
DESTINATION=addr,
SRC=IUT,
ReadProperty-Request,
'Object Identifier' = (Device, 4194303),
'Property Identifier' = Protocol_Services_Supported
8. IF (addr is present on the network) THEN {
9. TRANSMIT
DESTINATION=IUT,
SRC=addr,
ReadProperty-ACK
'Object-Identifier' = (any valid value),
'Property Identifier' = Protocol_Services_Supported,
'Property Value' = (any valid value for this property)

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}
ELSE
WAIT (for the IUT to move to the next addr. This may include Number_Of_APDU_Retries attempts)
}
}
~~RECEIVE DESTINATION=addr, SRC=IUT~~
~~ReadProperty-Request,~~
~~'Object Identifier' = (DEVICE,4194303),~~
~~'Property Identifier' = Protocol_Services_Supported~~
~~RECEIVE DESTINATION=IUT, SRC=addr~~
~~BACnet-Complex-ACK,~~
~~'Object Identifier' = (the correct value for the address being queried),~~
~~'Property Identifier' = Protocol_Services_Supported,~~
~~'Property Value' = (any valid value for this property)~~
~~}~~
~~3~~*10.* VERIFY Subordinate_Address_Binding = ((A1, D1))
11. IF Protocol_Revision >= 27 THEN
12. VERIFY Device_Address_Proxy_Table = (DAPT + (A1, D1))
~~4. Remove the subordinate device from the MS/TP network~~
13. MAKE (remove the subordinate device from the MS/TP network)
~~5~~*14.* BEFORE **Subordinate Proxy Confirm Interval**
15. RECEIVE
DESTINATION=A1,
SRC=IUT,
ReadProperty-Request,
'Object Identifier' = (D1 | 4194303),
'Property Identifier' = Protocol_Services_Supported
~~RECEIVE DESTINATION=A1, SRC=IUT~~
~~ReadProperty-Request,~~
~~'Object Identifier' = (DEVICE, the correct value for the address being queried),~~
~~'Property Identifier' = Protocol_Services_Supported~~
-- note that the subordinate will not reply to this request as it is no longer connected to the network.
~~6~~*16.* WAIT (longer than it takes the IUT to timeout on this request)
~~7~~*17.* VERIFY Subordinate_Address_Binding = ()
18. IF Protocol_Revision >= 27 THEN
19. VERIFY Device_Address_Proxy_Table = (DAPT)

Passing Result: The IUT shall read the Protocol_Services_Supported property from each MS/TP device to determine whether or not it supports Who-Is. The implementer may have chosen to read this property after the IUT has determined that a device exists in a given slot. In this case, any property shall be accepted in *the ReadProperty request* ~~step 1~~, and the TD shall expect a subsequent read from the IUT for the Protocol_Services_Supported property for the two devices attached to the MS/TP segment. The IUT is also allowed to generate any other traffic it cares to during the test including, but not limited to, reading property values from the devices it finds.

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BTL-26.1 bx-2: Device Proxy Table Tests [BTLWG-1723]

Overview:

Addendum 135-2020bx (PR27) added Device Address Proxy functionality which allows a device to provide I-Am messages for proxied devices. The addenda includes new BIBBS, new properties in both the Device and Network Port objects, and introduces the RESTART_SUBORDINATE_DISCOVERY command.

Changes:

Checklist Changes

[Add new sections to end of Device Management section]

Support	Listing	Option
…		
Device Management - Device Address Proxying - View and Modify - A		
	R[1]	Base Requirements
	R	Initiates ReadRange
	R	Supports DM-LM-A
	R	Supports DM-SP-VM-A
[1] Protocol Revision 27 or higher must be claimed		
Device Management - Device Address Proxying - B		
	R[1]	Base Requirements
	R	Executes ReadRange
	R	Supports DS-RP-A
	R	Supports DS-WP-A
	R	Supports DM-LM-B
	R	Supports NM-RC-B
[1] Protocol Revision 27 or higher must be claimed		

9 Data Link Layer

[In Data Link Layer section 9, add new highlighted items]

Support	Listing	Option
Data Link Layer - MS/TP - Manager Node		
	R	Base Requirements
	C[1]	Supports writable Max_Manager property
	C[1]	Supports read only Max_Manager property
	C[2]	Contains configurable Max_Info_Frames property
	C[2]	Contains non-configurable Max_Info_Frames property
	O	Is a BACnet router
	C[3,4]	Supports extended MS/TP frames (over 501 octets)
	C[5]	Supports the Network Port object
	O[6]	Supports configurable Out_Of_Service property
	C[7]	Supports hierarchical Network Port objects

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Support	Listing	Option
	C[7]	Supports Non-hierarchical Network Port objects
	C[6,8]	Supports writable Network_Number property
	O[6]	Supports the Routing_Table property
	O[6]	Supports the Network Port object Command property
	O[6,9]	Supports the DISCARD_CHANGES command
	O[6,9]	Supports the RESTART_SUBORDINATE_DISCOVERY command
	O[6,9]	Supports the RESTART_AUTONEGOTIATION command
	O[6,9]	Supports the RESTART_PORT command
	O[9,10]	Supports the VALIDATE_CHANGES command
	O[9,11]	Supports the RESTART_DEVICE_DISCOVERY command
	O[11]	Supports Device Address Proxy for this data link
[1] Exactly one of these options is required in order to claim conformance to this BIBB. [2] Exactly one of these options is required in order to claim conformance to this BIBB. [3] Protocol_Revision 16 or higher must be claimed. [4] Required if the device is a router and claims Protocol_Revision 16 or higher. [5] Required for devices which claim Protocol_Revision 17. [6] Protocol_Revision 17 or higher must be claimed. [7] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [8] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [9] At least one of these options is required if the Network Port object Command property is supported. [10] Protocol_Revision 24 or higher must be claimed. [11] Protocol_Revision 27 or higher must be claimed.		
…		
Data Link Layer - IPv4		
	R	Base Requirements
	C[1]	Is able to operate in Normal mode
	C[1]	Is able to operate in Foreign mode
	C[1]	Is able to operate in BBMD mode
	C[2]	Supports the Network Port object
	O	Is able to initiate broadcast messages
	O	Supports Network Port objects and DHCP
	O	Supports Network Address Translation in BBMD mode
	O[3]	Supports configurable Out_Of_Service property
	C[4]	Supports hierarchical Network Port objects
	C[4]	Supports Non-hierarchical Network Port objects
	C[3,5]	Supports writable Network_Number property
	O[3]	Supports the Routing_Table property
	O[3]	Supports the Network Port Object Command property
	O[3,6]	Supports the DISCARD_CHANGES command
	O[3,6]	Supports the RENEW_FD_REGISTRATION command
	O[3,6]	Supports the RENEW_DHCP command
	O[3,6]	Supports the RESTART_AUTONEGOTIATION command
	O[3,6]	Supports the RESTART_PORT command
	O[6,7]	Supports the VALIDATE_CHANGES command
	O[6,8]	Supports the RESTART_DEVICE_DISCOVERY command
	O[8]	Supports Device Address Proxy for this data link

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Support	Listing	Option
		[1] Either BBMD or both Normal and Foreign modes are required. [2] This option is required if the IUT claims Protocol_Revision 17 or higher. [3] Protocol_Revision 17 or higher must be claimed. [4] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [5] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [6] At least one of these options is required if the Network Port object Command property is supported. [7] Protocol_Revision 24 or higher must be claimed. [8] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - ZigBee		
	R	Base Requirements
	C[1]	Supports the Network Port object
	O[2]	Supports configurable Out_Of_Service property
	C[3]	Supports hierarchical Network Port objects
	C[3]	Supports Non-hierarchical Network Port objects
	C[2,4]	Supports writable Network_Number property
	O	Supports the Routing_Table property
	O	Supports the Network Port Object Command property
	O[2,5]	Supports the DISCARD_CHANGES command
	O[2,5]	Supports the RESTART_AUTONEGOTIATION command
	O[2,5]	Supports the RESTART_PORT command
	O[5,6]	Supports the VALIDATE_CHANGES command
	O[5,7]	Supports the RESTART_DEVICE_DISCOVERY command
	O[7]	Supports Device Address Proxy for this data link
		[1] Required if the IUT claims Protocol_Revision 17 or higher. [2] Protocol_Revision 17 or higher must be claimed. [3] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [4] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [5] At least one of these options is required if the Network Port object Command property is supported. [6] Protocol_Revision 24 or higher must be claimed. [7] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - Ethernet		
	R	Base Requirements
	C[1]	Supports the Network Port object
	O[2]	Supports configurable Out_Of_Service property
	C[3]	Supports hierarchical Network Port objects
	C[3]	Supports Non-hierarchical Network Port objects
	C[2,4]	Supports writable Network_Number property
	O	Supports the Routing_Table property
	O	Supports the Network Port Object Command property
	O[2,5]	Supports the DISCARD_CHANGES command
	O[2,5]	Supports the RESTART_AUTONEGOTIATION command
	O[2,5]	Supports the RESTART_PORT command
	O[5,6]	Supports the VALIDATE_CHANGES command
	O[5,7]	Supports the RESTART_DEVICE_DISCOVERY command
	O[7]	Supports Device Address Proxy for this data link

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Support	Listing	Option
		[1] Required if the IUT claims Protocol_Revision 17 or higher. [2] Protocol_Revision 17 or higher must be claimed. [3] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [4] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [5] At least one of these options is required if the Network Port object Command property is supported. [6] Protocol_Revision 24 or higher must be claimed. [7] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - ARCNET		
	R	Base Requirements
	C[1]	Supports the Network Port object
	O[2]	Supports configurable Out_Of_Service property
	C[3]	Supports hierarchical Network Port objects
	C[3]	Supports Non-hierarchical Network Port objects
	C[2,4]	Supports writable Network_Number property
	O	Supports the Routing_Table property
	O	Supports the Network Port Object Command property
	O[2,5]	Supports the DISCARD_CHANGES command
	O[2,5]	Supports the RESTART_AUTONEGOTIATION command
	O[2,5]	Supports the RESTART_PORT command
	O[5,6]	Supports the VALIDATE_CHANGES command
	O[5,7]	Supports the RESTART_DEVICE_DISCOVERY command
	O[7]	Supports Device Address Proxy for this data link
		[1] Required if the IUT claims Protocol_Revision 17 or higher. [2] Protocol_Revision 17 or higher must be claimed. [3] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [4] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [5] At least one of these options is required if the Network Port object Command property is supported. [6] Protocol_Revision 24 or higher must be claimed. [7] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - LonTalk		
	R	Base Requirements
	C[1]	Supports the Network Port object
	O[2]	Supports configurable Out_Of_Service property
	C[3]	Supports hierarchical Network Port objects
	C[3]	Supports Non-hierarchical Network Port objects
	C[2,4]	Supports writable Network_Number property
	O	Supports the Routing_Table property
	O	Supports the Network Port Object Command property
	O[2,5]	Supports the DISCARD_CHANGES command
	O[2,5]	Supports the RESTART_AUTONEGOTIATION command
	O[2,5]	Supports the RESTART_PORT command
	O[5,6]	Supports the VALIDATE_CHANGES command
	O[5,7]	Supports the RESTART_DEVICE_DISCOVERY command
	O[7]	Supports Device Address Proxy for this data link

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Support	Listing	Option
		[1] Required if the IUT claims Protocol_Revision 17 or higher. [2] Protocol_Revision 17 or higher must be claimed. [3] At least one of these options is required if the IUT claims Protocol_Revision 17 or higher. [4] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [5] At least one of these options is required if the Network Port object Command property is supported. [6] Protocol_Revision 24 or higher must be claimed. [7] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - IPv6		
	R	Base Requirements
	C[1]	Is able to operate in Normal mode
	C[1]	Is able to operate in Foreign mode
	C[1]	Is able to operate in BBMD mode
	R	Supports the Network Port object
	O	Supports DHCP
	O	Supports configurable Out_Of_Service property
	C[2]	Supports hierarchical Network Port objects
	C[2]	Supports Non-hierarchical Network Port objects
	C[3]	Supports writable Network_Number property
	O	Supports the Routing_Table property
	O	Supports the Network Port Object Command property
	O[4]	Supports the DISCARD_CHANGES command
	O[4]	Supports the RENEW_FD_REGISTRATION command
	O[4]	Supports the RENEW_DHCP command
	O[4]	Supports the RESTART_AUTONEGOTIATION command
	O[4]	Supports the RESTART_PORT command
	O[4,5]	Supports the VALIDATE_CHANGES command
	O[4,6]	Supports the RESTART_DEVICE_DISCOVERY command
	O[6]	Supports Device Address Proxy for this data link
		[1] Either BBMD or both Normal and Foreign modes are required. [2] At least one of these options is required. [3] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [4] At least one of these options is required if the Network Port object Command property is supported. [5] Protocol_Revision 24 or higher must be claimed. [6] Protocol_Revision 27 or higher must be claimed.
Data Link Layer - Secure Connect		
	R	Base Requirements
	C[1]	Is able to operate as a node without a local hub function
	C[1]	Is able to operate as a hub
	O	Supports direct connections
	O[2]	Is able to accept direct connections
	O[2]	Is able to initiate direct connections
	C[3]	Supports the Network Port object
	C[4]	Contains a Network Port object with a Proprietary Network_Type
	C[5]	Supports DM-TS-B
	C[5]	Supports DM-UTC-B
	C[5]	Supports Time Synchronization by Some Other Method
	C[6]	Supports B/SC over IPv4

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Support	Listing	Option
	C[6]	Supports B/SC over IPv6
	O[7]	Supports configurable Out_Of_Service property
	C[7,8]	Supports hierarchical Network Port objects
	C[7,8]	Supports Non-hierarchical Network Port objects
	C[7,10]	Supports writable Network_Number property
	O[7]	Supports the Routing_Table property
	O[7]	Supports the Network Port Object Command property
	O[7,9]	Supports the DISCARD_CHANGES command
	O[7,9]	Supports the RESTART_PORT command
	O[9,11]	Supports the GENERATE_CSR_FILE command
	O[9,11]	Supports the VALIDATE_CHANGES command
	O[9,12]	Supports the RESTART_DEVICE_DISCOVERY command
	O[12]	Supports Device Address Proxy for this data link
[1] At least one of these options must be supported. [2] At least one of these options must be supported if the device supports direct connections. [3] Required if the IUT claims Protocol_Revision 24 or higher. [4] Required if the IUT claims a Protocol_Revision greater than 16 and less than 24. [5] At least one of these options must be supported. [6] At least one of these options must be supported. [7] Protocol_Revision 17 or higher must be claimed. [8] At least one of these options must be supported. [9] At least one of these options is required if the Network Port object Command property is supported. [10] Support for writable Network_Number properties is required in routers and other IUTs that need to know the network number in order to operate. [11] Protocol_Revision 24 or higher must be claimed. [12] Protocol_Revision 27 or higher must be claimed.		
…		

Test Plan Changes

[Add new sections to the end of the Device Management section]

8.X1 Device Management - Device Address Proxying - View and Modify - A

8.X1.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

135.1-2025 - 8.18.3 - Reading and Presenting Properties		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each of the required properties listed in the BIBB definition. The TD for this test shall contain a Device_Address_Binding_Table with 128 entries and Subordinate_Address_Binding and Manual_Subordinate_Address_Binding properties containing 32 entries. Repeat the test for a variety of values that cover the range of values required by the “Minimum Writable Value Ranges” table in the DS-M-A BIBB definition.
	Testing Hints	
135.1-2025 - 8.18.6 - Reading and Presenting Large List Properties		

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	Test Conditionality	Must be executed.
	Test Directives	Repeat for each of the required properties listed in the BIBB definition. The TD for this test shall contain a Device_Address_Binding_Table with 128 entries and Subordinate_Address_Binding and Manual_Subordinate_Address_Binding properties containing 32 entries. Repeat the test for a variety of values that cover the range of values required by the "Minimum Writable Value Ranges" table in the DS-M-A BIBB definition.
	Testing Hints	
135.1-2025 - 8.22.4 - Accepting Input and Modifying Properties		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each of the required properties listed in the BIBB definition. The TD for this test shall contain a Device_Address_Binding_Table with 128 entries and Subordinate_Address_Binding and Manual_Subordinate_Address_Binding properties containing 32 entries. Repeat the test for a variety of values that cover the range of values required by the "Minimum Writable Value Ranges" table in the DS-M-A BIBB definition.
	Testing Hints	
135.1-2025 - 8.22.7 - Accepting Input and Modifying Large List Properties		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each of the required properties listed in the BIBB definition. The TD for this test shall contain a Device_Address_Binding_Table with 128 entries and Subordinate_Address_Binding and Manual_Subordinate_Address_Binding properties containing 32 entries. Repeat the test for a variety of values that cover the range of values required by the "Minimum Writable Value Ranges" table in the DS-M-A BIBB definition.
	Testing Hints	

8.X1.2 Initiates ReadRange

The IUT is able to initiate ReadRange requests to read the Manual_Subordinate_Address_Binding, Subordinate_Address_Binding, and Device_Address_Proxy_Table properties.

135.1-2025 - 8.21.1 - Reading Values with no Specified Range, or 135.1-2025 - 8.21.3 - Reading a Range of Values by Position		
	Test Conditionality	Must be executed
	Test Directives	Execute against the Manual_Subordinate_Address_Binding, Subordinate_Address_Binding, and Device_Address_Proxy_Table properties.
	Testing Hints	The tester should expect that the IUT may only use ReadRange as a fallback mechanism. Segmentation-accepted, support for ReadPropertyMultiple and APDU size are parameters in the TD that can be used to force the IUT to fallback.

8.X1.3 Supports DM-LM-A

The IUT shall support DM-LM-A

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for DM-LM-A.
	Testing Hints	

8.X1.4 Supports DM-SP-VM-A

The IUT shall support DM-SP-VM-A

Verify Checklist

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	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for DM-SP-VM-A.
	Testing Hints	

8.X2 Device Management - Device Address Proxying - B

8.X2.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

BTL - 13.X.1 - Device Proxying Test		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.2 - Device Added when Detected via I-Am		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.3 - Device Discovery without I-Am		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.4 - Update of Last I Am Time		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.5 - Revalidation of Proxied Devices After Restart		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.6 - Automatic Removal of Offline Devices from Device_Address_Proxy_Table		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.7 - Processing Who-Is Messages from Proxied Network		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.8 - Sending Who-Is Messages Through the Proxied Network		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.9 - Entry for Self in Device_Address_Proxy_Table		
	Test Conditionality	If the IUT cannot be made to support device proxy functionality on its home network or the IUT is multi-homed, this test shall be skipped.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.10 - Proxy Table Cleared when Proxy Enable Set to False		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X.11 - Proxying Multiple Devices Test		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X1.1 - I-Am From Non-Proxied Networks		
	Test Conditionality	Must be executed.

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	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	
BTL - 13.X1.2 - Device I-Am Forwarding Test		
	Test Conditionality	Must be executed.
	Test Directives	Repeat for each type of data link that supports device proxying
	Testing Hints	

8.X2.2 Executes ReadRange

The IUT is able to execute the ReadRange service.

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support Executes ReadRange in the Checklist.
	Testing Hints	

8.X2.3 Supports DS-RP-A

The IUT shall support DS-WP-A

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for DS-RP-A.
	Testing Hints	

8.X2.4 Supports DM-LM-B

The IUT shall support DM-LM-B

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for DM-LM-B.
	Testing Hints	

8.X2.5 Supports NM-RC-B

The IUT shall support NM-RC-B

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for NM-RC-B
	Testing Hints	

[Add the following to all datalinks]

9.x.y Supports the Network Port Object Command Property

The IUT contains a Network Port object with Network_Type = … and supports the Command property.

…		
BTL - 7.3.2.46.3.X.3 - RESTART_DEVICE_DISCOVERY Command Failure Test		
	Test Conditionality	*Must be executed if the Network Port object does not support the RESTART_DEVICE_DISCOVERY command.*
	Test Directives	
	Testing Hints	

[Add the following to the appropriate datalink, pay attention to the section numbers!]

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9.1.20 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = MSTP and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.2 - RESTART_DEVICE_DISCOVERY Command Test for MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.1.21 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected MSTP Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

9.3.21 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = IPv4 and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.3.22 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected IPv4 Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

9.4.13 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = Zigbee and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.4.14 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected Zigbee Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

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9.5.13 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = Ethernet and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.5.14 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected Ethernet Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

9.6.13 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = ARCNET and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.6.14 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected Ethernet Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

9.7.13 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = LonTalk and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.7.14 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected LonTalk Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

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9.8.19 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = IPv6 and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.8.20 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected IPv6 Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

9.9.24 Supports the RESTART_DEVICE_DISCOVERY Command

The IUT contains a Network Port object with Network_Type = Secure Connect and Protocol_Level = BACNET_APPLICATION and supports the RESTART_DEVICE_DISCOVERY command

BTL - 7.3.2.46.3.X.1 - RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

9.9.25 Supports Device Address Proxy for this data link

The IUT supports Device Address Proxy functionality for directly connected Secure Connect Networks

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify the IUT claims support for DS-DAP-B
	Testing Hints	

Specified Test Changes

[In BTL Specified Tests, add the following clauses]

7.3.2.46.3.X.1 RESTART_DEVICE_DISCOVERY Command Test for Non-MSTP Networks

Reason for Change: No tests exist for this functionality

Purpose: To verify the IUT correctly clears the Device_Address_Proxy_Table and restarts Device Address Proxying when it receives a RESTART_DEVICE_DISCOVERY Command.

Test Concept:
With the IUT configured to proxy the network associated with the Network Port object being tested (NP), D1 is added to the Device_Address_Proxy_Table. D1 is then removed from the network, and the RESTART_DEVICE_DISCOVERY command is sent to NP. The Command property is read to verify that it went to IDLE and the Device_Address_Proxy_Table is read to verify that it no longer contains D1. D1 is then added to the network and the RESTART_DEVICE_DISCOVERY command is sent to NP. The Device_Address_Proxy_Table is read to verify that contains D1.

Configuration Requirements: Device_Address_Proxy_Enable = True. NP is the proxied network's Network Port object.

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Test Steps:

1. TRANSMIT
   DA = LOCAL BROADCAST
   SA = D1
   I-Am Request,
   'Device Identifier' = (D1's Device Identifier),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (TD's Vendor_Identifier
2. WAIT (10 seconds)
3. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1)

-- Remove D1 from the network

4. MAKE (Remove D1 from the network)
5. WRITE NP, Command = RESTART_DEVICE_DISCOVERY
6. WAIT **Internal Processing Fail Time**
7. VERIFY NP, Command = IDLE
8. VERIFY Device_Address_Proxy_Table = (an empty list) | (a list containing only the IUT)
9. WAIT (10 seconds)
10. VERIFY Device_Address_Proxy_Table = (an empty list) | (a list containing only the IUT)

--Add D1 to the network

11. MAKE (Add D1 to the network)
10. WRITE NP, Command = RESTART_DEVICE_DISCOVERY
11. WAIT **Internal Processing Fail Time**
12. VERIFY NP, Command = IDLE
13. TRANSMIT
    DA = LOCAL BROADCAST
    SA = D1
    I-Am Request,
    'Device Identifier' = (D1's Device Identifier),
    'Max APDU Length Accepted' = (any valid value),
    'Segmentation Supported' = (any valid value),
    'Vendor Identifier' = (The TD's Vendor Identifier)
14. WAIT (10 seconds)
15. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1)

7.3.2.46.3.X.2 RESTART_DEVICE_DISCOVERY Command Test for MSTP Networks

Purpose: To verify the IUT clears the Device_Address_Proxy_Table and restarts manager and subordinate node discovery when commanded to RESTART_DEVICE_DISCOVERY.

Test Concept: With the IUT configured to proxy the MSTP network associated with the Network Port object being tested (NP), a manager device, D1 and subordinate device, D2 are added to the Device_Address_Proxy_Table. D1 and D2 are removed from the network, and the RESTART_DEVICE_DISCOVERY command is sent to NP. The command property is read to verify that it went to idle and the Device_Address_Proxy_Table is read to verify that it no longer contains D1 nor D2. D1 and D2 are then added to the network, and the RESTART_DEVICE_DISCOVERY command is sent to the NP. The command property is read to verify that it went to idle, the Device_Address_Proxy_Table is read to verify that contains both D1 and D2, and the Subordinate_Address_Binding is read to verify it contains D2.

Test Configuration: The proxied MSTP network corresponding to the network port being tested (NP) is configured with a manager device, D1 and a subordinate device, D2. NP is configured with Subordinate_Proxy_Enable = TRUE and Device_Address_Proxy_Enable = TRUE. D2 shall be configured to support the special object instance of 4194303 and be configured with the Protocol_Services_Supported bit corresponding to the Who-Is service set to False. If the device supports auto subordinate discovery, Auto_Subordinate_Discovery shall be set to TRUE. Otherwise, D2 shall be present in the Manual_Subordinate_Address_Binding property at the start of the test. The vendor shall supply a maximum subordinate discovery time, DT.

Test Steps:

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--make sure our initial conditions are good
1. VERIFY Network_Type = MSTP
2. VERIFY Subordinate_Proxy_Enable = TRUE
3. VERIFY Device_Address_Proxy_Enable = TRUE
4. TRANSMIT
   DA = LOCAL BROADCAST
   SA = D1
   I-Am Request,
   'Device Identifier' = (D1's Device Identifier),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (TD's Vendor_Identifier)
5. WAIT **Internal Processing Fail Time** + 10 seconds
6. VERIFY Device_Address_Proxy_Table = (a list containing D1)
7. WAIT (for subordinate discovery to complete)
8. VERIFY Device_Address_Proxy_Table (a list containing both D1 and D2)
9. VERIFY NP, Subordinate_Address_Binding = (a list containing D2)
10. MAKE (Remove D1 and D2 from the network)
11. WRITE NP, Command = RESTART_DEVICE_DISCOVERY
12. WAIT **Internal Processing Fail Time**
13. VERIFY NP, Command = IDLE
14. VERIFY Device_Address_Proxy_Table = (a list that contains neither D1 nor D2)
15. MAKE (Add D1 and D2 to the network)
16. WAIT (time sufficient for D1 and D2 to join the network)
17. WRITE NP, Command = RESTART_DEVICE_DISCOVERY
18. WAIT **Internal Processing Fail Time**
19. VERIFY NP, Command = IDLE

--make sure devices are automatically added
20. TRANSMIT
    DA = LOCAL BROADCAST
    SA = D1
    I-Am Request,
    'Device Identifier' = (D1's Device Identifier),
    'Max APDU Length Accepted' = (any valid value),
    'Segmentation Supported' = (any valid value),
    'Vendor Identifier' = (TD's Vendor_Identifier)

21. WAIT (for manager and subordinate discovery to complete or DT)
22. VERIFY Device_Address_Proxy_Table (a list containing both D1 and D2)
23. VERIFY NP, Subordinate_Address_Binding = (a list containing D2)

7.3.2.46.3.X.3 RESTART_DEVICE_DISCOVERY Command Failure Test
Reason for Change: No tests exist for this functionality

Purpose: To verify that the Network Port object responds to RESTART_DEVICE_DISCOVERY commands when the command is not supported.

Test Concept:

Attempt to command a Network Port which does not support Device Proxying or Subordinate Proxying to RESTART_DEVICE_DISCOVERY. Verify that the attempt fails with an Error Class of PROPERTY and an Error Code of OPTIONAL_FUNCTIONALITY_NOT_SUPPORTED

Configuration Requirements: Select a Network Port which is not configured to support Device Proxying or Subordinate Proxying. If the IUT does not support the Command property, then this test shall be skipped.

Test Steps:

1. TRANSMIT WriteProperty-Request

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'Object Identifier' = (The Network Port object),
'Property Identifier' = Command,
'Property Value' = RESTART_DEVICE_DISCOVERY

2. RECEIVE BACnet-Error-PDU
'Error Class' = PROPERTY,
'Error Code' = OPTIONAL_FUNCTIONALITY_NOT_SUPPORTED
3. VERIFY Command = IDLE

13.X Device Proxying Functionality Tests

This clause defines the tests required to verify device proxying functionality. The tests assume that the device under test (IUT) has two ports: **Port 1**, which is directly connected to **Network 1**, and **Port 2**, which is directly connected to **Network 2**. Port 1 represents the BACnet network for which the IUT performs device proxying. Devices that support device proxying on more than one datalink shall be tested using these procedures, with Port 1 configured for each applicable datalink.
The test descriptions in this clause assume that the Test Device (TD) can connect to both Network 1 and Network 2 simultaneously and can emulate all other devices in the test environment. The TD's connection to Network 1 is referred to as **Port A**, and its connection to Network 2 as **Port B**. As an acceptable alternative, an internetwork may be constructed using real devices instead of TD emulation. Devices **D1**, **D2, D3, D4, and D5** must be capable of initiating *I-Am* requests (i.e., they cannot be subordinate devices).

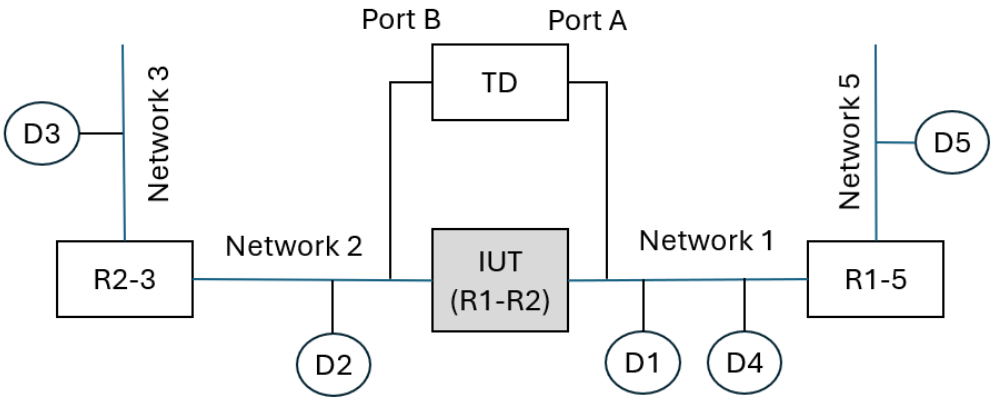


Figure 13-X. Logical internetwork configuration for device proxying functionality tests.

13.X.1 Device Proxying Test

Reason for Change: No tests exist for this functionality

Purpose: To verify the IUT correctly executes Who-Is requests when device proxying is enabled.

Test Concept:

The IUT is configured to proxy for device D1 on Network 1. A broadcast Who-Is request, with a range including D1, is sent to the IUT from D2 and another from D3 to verify the IUT responds with the appropriate unicast I-Am response on behalf of D1 and does not initiate any I-Am requests on Network 1.
A broadcast Who-Is request, with a range that does not include D1, is sent to the IUT from D2 to verify the IUT does not respond on behalf of D1.

Configuration Requirements: Device_Address_Proxy_Enable = True in the network port object, NP, corresponding to the proxied network (Network 1).

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT

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DA = LOCAL BROADCAST
SA = D1
I-Am Request,
'Device Identifier' = (D1's Device Identifier),
'Max APDU Length Accepted' = (any valid value),
'Segmentation Supported' = (any valid value),
'Vendor Identifier' = (TD's Vendor_Identifier

3. WAIT (10 seconds)
4. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1)
5. READ L1 = Device_Address_Proxy_Table[D1]('max-apdu-length-accepted'
6. READ S1 = Device_Address_Proxy_Table[D1]('segmentation-supported")
7. READ V1 = Device_Address_Proxy_Table[D1]('vendor-id')
8. READ N1 = NP, Network_Number
9. TRANSMIT,
   SA = D2
   DA = IUT
   DNET = Network 1
   DADR = BROADCAST
   Who-Is-Request,
   'Device Instance Range Low Limit'= (The Device object instance number of D1),
   'Device Instance Range High Limit' = (The Device object instance number of D1)
10. RECEIVE PORT B,
    DA = D2
    SNET = Network 1
    SADR = (MAC address of D1)
    I-Am Request,
    'Device Identifier' = (D1),
    'Max APDU Length Accepted' = L1
    'Segmentation Supported' = S1,
    'Vendor Identifier' = V1
11. CHECK (the IUT does not transmit the Who-Is-Request on Port A)
12. CHECK (the IUT does not transmit the I-Am Request on Port A)

-- (Who Is from a remote network)
13. TRANSMIT,
    DA = IUT
    SNET = Network 3
    SADR = D3
    DNET = Network 1
    DADR = BROADCAST
    Who-Is-Request,
    'Device Instance Range Low Limit'= (The Device object instance number of D1),
    'Device Instance Range High Limit' = (The Device object instance number of D1)
14. RECEIVE PORT B,
    DA = R2-3
    SNET = Network 1
    SADR = (MAC address of D1)
    DNET = Network 3
    DADR = D3
    I-Am Request,
    'Device Identifier' = (D1),
    'Max APDU Length Accepted' = L1
    'Segmentation Supported' = S1,
    'Vendor Identifier' = V1
15. CHECK (the IUT does not transmit the Who-Is-Request on Port A)
16. CHECK (the IUT does not transmit the I-Am Request on Port A)

-- (Who-Is with range that does not include D1)
17. TRANSMIT PORT B,
    DA = IUT

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DNET = Network 1
DADR = BROADCAST
Who-Is-Request,
'Device Instance Range Low Limit'= (LL, any value <> D1),
'Device Instance Range High Limit' = (LL)

18. CHECK (the IUT does not transmit an I-Am for D1 on Port A or Port B)

13.X.2 Device Added When Detected via I-Am

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT will add a new device to its Device_Address_Proxy_Table, when it receives an I-Am that originated from the proxied network (Network 1).

Test Concept:

The IUT is configured to proxy devices on network 1. An I-Am from device, D1, is transmitted as a local broadcast, and it's verified that D1 is added to the IUT's Device_Address_Proxy_Table. An I-Am from device, D4, is transmitted as a global broadcast. It's verified that D4 is added to the IUT's Device_Address_Proxy_Table.

Configuration Requirements: Device_Address_Proxy_Enable = True in the network port object, NP, corresponding to the proxied network (Network 1). At the start of the test, D1, and D4 are not in the IUT's Device_Address_Proxy_Table. NP is the proxied network's Network Port object.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT,
   SA = D1
   DA = LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (D1),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. WAIT **Internal Processing Fail Time + 10s**
4. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1)
5. TRANSMIT,
   SA = D4
   DA = LOCAL BROADCAST
   DNET = GLOBAL BROADCAST
   DLEN = 0
   I-Am Request,
   'Device Identifier' = (D4),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
6. WAIT **Internal Processing Fail Time + 10s**
7. VERIFY Device_Address_Proxy_Table = (a list of values that contains both D1 and D4)

13.X.3 Device Discovery Without I-Am

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT can detect a device that is added to the network when that device does not initiate unsolicited I-Am's.

Test Concept:

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The TD is silently added to the proxied network such that it does not initiate any unsolicited messages. The IUT is made to discover the TD and the Device_Address_Proxy_Table is checked to verify the TD has been added.

Configuration Requirements: Device_Address_Proxy_Enable = True in the network port object, NP, corresponding to the proxied network (Network 1). The TD is configured such that it will not initiate any unsolicited requests. At the start of the test, the IUT is not aware of the TD and there is no entry for it in the Device_Address_Proxy_Table.

Notes to tester: The vendor may provide instructions regarding device discovery that could facilitate execution of this test in a timely manner (for example: if the IUT discovers devices at midnight, adjust the clock to 23:59:00.00).

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. WAIT (a vendor defined time to discover devices)
3. VERIFY Device_Address_Proxy_Table = (a list of values that contains the TD)

13.X.4 Update of Last I-Am Time

Reason for Change: No tests exist for this functionality

Purpose: To verify that the Last I-Am time in the Device_Address_Proxy_Table updates when the corresponding device initiates an I-Am.

Test Concept:

The TD initiates an I-Am message on the proxied network of the IUT. The Last I-Am Time portion of the TD's entry in the Device_Address_Proxy_Table is compared with the IUT's local date and time.

Configuration Requirements: Device_Address_Proxy_Enable = True in the network port object, NP, corresponding to the proxied network (Network 1).

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT PORT A,
   DA = LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (TD),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. READ currentDate = (the IUT's Device object), Local_Date
4. READ currentTime = (the IUT's Device object), Local_Time
5. WAIT **Internal Processing Fail Time**
6. READ T1 = Device_Address_Proxy_Table, 'Last I-Am Time' corresponding to TD's entry
7. VERIFY T1 ~= {currentDate, currentTime}

13.X.5 Revalidation of Proxied Devices After Restart

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT revalidates all devices in the Device_Address_Proxy_Table after a restart and removes offline devices.

Test Concept:

With the IUT proxying for devices D1 and D4, the IUT is reset and D4 is removed from the network. When the IUT has returned to an operational state, it's verified that it attempts to validate the presence of D1 and D4 by initiating unicast Who-

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Is requests. When D4 fails to respond after 10 seconds, it's verified that the IUT sends another Who-Is for D4. 10 seconds after the second Who-Is for D4, the Device_Address_Proxy_Table is read to verify that it only contains D1.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network.

Notes to tester: The sequence of steps 11,12,13 may also be 12,11,13 or 11,13,12

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT
   DA = LOCAL BROADCAST
   SA = D1
   I-Am Request,
   'Device Identifier' = (D1's Device Identifier),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (TD's Vendor_Identifier
3. TRANSMIT
   DA = LOCAL BROADCAST
   SA = D4
   I-Am Request,
   'Device Identifier' = (D4's Device Identifier),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (TD's Vendor_Identifier
4. WAIT (10 seconds)
5. VERIFY Device_Address_Proxy_Table = (a list of values that contains both D1 and D4)
6. IF (IUT supports the ReinitializeDevice service) THEN {
7. TRANSMIT ReinitializeDevice-Request
   'Reinitialized State of Device' = WARMSTART
   'Password' = (any valid password) --if required by IUT
   }
8. ELSE
9. MAKE (the IUT restart)
10. Remove D4 from the network
11. WHILE (System_Status <> Operational) {}
12. RECEIVE,
    DA = D1
    Who-Is-Request,
    'Device Instance Range Low Limit'= (any value <= the device object instance number of D1),
    'Device Instance Range High Limit' = (any value >= the device object instance number of D1)
13. RECEIVE,
    DA = D4
    Who-Is-Request,
    'Device Instance Range Low Limit'= (any value <= the device object instance number of D4),
    'Device Instance Range High Limit' = (any value <= the device object instance number of D4)
14. TRANSMIT,
    DA = IUT | LOCAL BROADCAST
    I-Am Request,
    'Device Identifier' = (D1),
    'Max APDU Length Accepted' = (any valid value),
    'Segmentation Supported' = (any valid value),
    'Vendor Identifier' = (any valid value)
15. WAIT **Internal Processing Fail Time + 10s**
16. RECEIVE,
    DA = D4
    Who-Is-Request,
    'Device Instance Range Low Limit'= (any value <= the device object instance number of D4),

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'Device Instance Range High Limit' = (any value <= the device object instance number of D4)
17. WAIT **Internal Processing Fail Time + 10s**
18. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1 and excludes D4)

13.X.6 Automatic Removal of Offline Devices from Device_Address_Proxy_Table

Reason for Change: No tests exist for this functionality

Purpose: To verify that offline devices are removed from the Device_Address_Proxy_Table on or before Device_Address_Proxy_Timeout is reached.

Test Concept:

A device, D1, is added to the IUT's Device_Address_Proxy_Table and then removed from the network. Before Device_Address_Proxy_Timeout is reached, the IUT detects that D1 is no longer on the network and removes D1 from the Device_Address_Proxy_Table.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network.

Notes to Tester: The IUT is permitted to use non-BACnet means to determine the presence or absence of D1 on the network, including monitoring non-BACnet traffic such as ARP-requests, therefore, D1 must be completely removed from the network in Step 5. For this reason, the TD cannot be used for D1.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2~~3~~. TRANSMIT,
   DA = IUT | LOCAL BROADCAST
   SA = D1
   I-Am Request,
   'Device Identifier' = (D1),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. WAIT **Internal Processing Fail Time + 10s**
4. VERIFY Device_Address_Proxy_Table = (a list of values that contains D1)
5. MAKE (D1 removed from the network)
6. WAIT (NP, Device_Address_Proxy_Timeout)
7. VERIFY Device_Address_Proxy_Table = (a list of values that does not include D1)
8. TRANSMIT PORT B,
   DA = LOCAL BROADCAST,
   Who-Is Request
9. RECEIVE PORT A,
   SA = IUT
   DA = LOCAL BROADCAST,
   SNET = NETWORK 2
   SADR = (TD's MAC address)
   Who-Is Request
10. CHECK (the IUT does not send I-Am's for D1)

13.X.7 Processing Who-Is Messages from Proxied Network

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT correctly processes Who-Is Messages originating from devices on the proxied network.

Test Concept:

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Remote and Global broadcast Who-Is messages, with different ranges, are originated from devices located on the proxied network of the IUT. In the first case, the Who-Is requests have no range, and it's verified that the IUT correctly forwards the Who-Is requests. In the second case, the Who-Is requests have a range but one that does not include any devices in the Device_Address_Proxy_Table, and it's verified that the IUT correctly forwards the Who-Is requests. In the third case, the Who-Is requests have a range matching a device in the Device_Address_Proxy_Table, and it's verified the IUT does not forward the Who-Is requests, nor does it send a I-Am on behalf of the device in it's Device_Address_Proxy_Table.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network.

Notes to Tester: When a specific DNET (i.e. DNET = Network 3) is used in the Who-Is request, the IUT may attempt to discover the router to the network before forwarding the Who-Is. If this is the case, the tester must use a real router to the remote network or simulate the response(s) to satisfy the IUT's router discovery mechanism.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT PORT A,
   DA = IUT | LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (TD),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. VERIFY Device_Address_Proxy_Table = (a list of values that contains the TD)

-- (case 1a: no range – local broadcast message, Who-Is destined for remote network)

4. TRANSMIT PORT A,
   SA = TD
   DA = LOCAL BROADCAST
   DNET = Network 3
   DLEN = 0
   Who-Is Request
5. RECEIVE PORT B,
   DA = LOCAL BROADCAST | Unicast to router for N2-3
   SNET = Network 1
   SADR = TD
   DNET = Network 3
   DLEN = 0
   Who-Is Request
6. CHECK (the IUT does not forward the Who-Is to Network 1)
7. CHECK (the IUT does not transmit any I-Ams for proxied devices)

-- (case 1b: no range – global broadcast Who-Is)

8. TRANSMIT PORT A,
   SA = TD
   DA = LOCAL BROADCAST
   DNET = GLOBAL BROADCAST
   DLEN = 0
   Who-Is Request
9. RECEIVE PORT B,
   DA = LOCAL BROADCAST
   SADR = TD
   SNET = Network 1
   DNET = GLOBAL BROADCAST
   DLEN = 0
   Who-Is Request
10. CHECK (the IUT does not forward the Who-Is to Network 1)
11. CHECK (the IUT does not send I-Am's for proxied devices)

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-- (case 1c: no range – local broadcast)
12. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    Who-Is Request
13. CHECK (the IUT does not forward the Who-Is request on Port B)
14. CHECK (the IUT does not send I-Am's for proxied devices)

-- (case 2a: range does not include any devices in the IUT's Device_Address_Proxy_Table, local broadcast message, destined for remote network)
15. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    DNET = Network 3
    DLEN = 0
    Who-Is Request,
    'Device Instance Range Low Limit'= (LL, any value not in the IUT's Device_Address_Proxy_Table),
    'Device Instance Range High Limit' = LL
16. RECEIVE PORT B,
    DA = LOCAL BROADCAST | Unicast to router for N2-3
    SNET = Network 1
    SADR = TD
    DNET = Network 3
    DLEN = 0
    Who-Is Request,
    'Device Instance Range Low Limit'= (LL, any value not in the IUT's Device_Address_Proxy_Table),
    'Device Instance Range High Limit' = LL
17. CHECK (the IUT does not forward the Who-Is to Network 1)
18. CHECK (the IUT does not transmit any I-Ams for proxied devices)

-- (case 2b: range does not include any devices in the IUT's Device_Address_Proxy_Table, global broadcast)
19. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    DNET = GLOBAL BROADCAST
    DLEN = 0
    Who-Is Request,
    'Device Instance Range Low Limit'= (LL, any value not in the IUT's Device_Address_Proxy_Table),
    'Device Instance Range High Limit' = LL
20. RECEIVE PORT B,
    DA = LOCAL BROADCAST
    SADR = TD
    SNET = Network 1
    DNET = GLOBAL BROADCAST
    DLEN = 0
    Who-Is Request,
    'Device Instance Range Low Limit'= (LL, any value not in the IUT's Device_Address_Proxy_Table),
    'Device Instance Range High Limit' = LL
21 CHECK (the IUT does not forward the Who-Is to Network 1)
22. CHECK (the IUT does not transmit any I-Ams for proxied devices)

-- (case 2c: range does not include any devices in the IUT's Device_Address_Proxy_Table, local broadcast)
23. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    Who-Is Request,
    'Device Instance Range Low Limit'= (LL, any value not in the IUT's Device_Address_Proxy_Table),
    'Device Instance Range High Limit' = LL
24. CHECK (the IUT does not forward the Who-Is request on Port B)
25. CHECK (the IUT does not transmit any I-Ams for proxied devices)

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-- (case 3a: range specifies D1, global broadcast Who-Is)
26. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    DNET = GLOBAL BROADCAST
    DLEN = 0
    Who-Is Request,
    'Device Instance Range Low Limit'= D1
    'Device Instance Range High Limit' = D1
27. CHECK (the IUT does not forward the Who-Is to N1)
28. CHECK (the IUT does not send any I-Ams for proxied devices)

-- (case 3b: range specifies D1, local broadcast Who-Is)
29. TRANSMIT PORT A,
    SA = TD
    DA = LOCAL BROADCAST
    Who-Is Request,
    'Device Instance Range Low Limit'= D1
    'Device Instance Range High Limit' = D1
30. CHECK (the IUT does not forward the Who-Is to Network 1)
31. CHECK (the IUT does not send any I-Ams for proxied devices)

13.X.8 Sending Who-Is Messages Through the Proxied Network

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT will correctly pass along a Who-Is request to a router on its proxied network.

Test Concept:

The IUT is made to discover BACnet routers located on it's proxied network. After router discovery is complete, The TD transmits a global broadcast Who-Is on Port B with no range restriction. The IUT sends I-Am's on behalf of it's proxied devices and sends the Who-Is request to the router(s) located on its proxied network. The TD then transmits a global broadcast Who-Is on Port B with range parameters for devices not contained in the Device_Address_Proxy_Table. The IUT transmits the Who-Is request to the router(s) located on its proxied network.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. MAKE (the IUT discover routers)
3. WAIT (vendor specified time for router discovery to complete)

   -- (Global broadcast with no range)
4. TRANSMIT PORT B,
    DA = LOCAL BROADCAST
    DNET = GLOBAL BROADCAST
    DLEN = 0
    Who-Is Request
5. IF (NP is not the IUT's home network) {
6. RECEIVE PORT B,
        DA = DA = TD | LOCAL BROADCAST | GLOBAL BROADCAST
        SA = IUT
        I-Am Request,
        'Device Identifier' = (the IUT's device object),
        'Max APDU Length Accepted' = (any valid value),
        'Segmentation Supported' = (any valid value),

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‘Vendor Identifier’ = (any valid value)
}
7. REPEAT X = (all devices in the IUT’s Device_Address_Proxy_Table) DO {
RECEIVE PORT B,
DA = TD | LOCAL BROADCAST | GLOBAL BROADCAST
SA = IUT
SADR = (MAC address of X)
SNET = Network 1
I-Am Request,
‘Device Identifier’ = (X),
‘Max APDU Length Accepted’ = (any valid value),
‘Segmentation Supported’ = (any valid value),
‘Vendor Identifier’ = (any valid value)
}
8. RECEIVE PORT A,
SA = IUT
DA = R1-5
DNET = GLOBAL BROADCAST
DLEN = 0
Who-Is Request

-- (Global broadcast with range not in proxy table)
9. TRANSMIT PORT B,
DA = LOCAL BROADCAST
DNET = GLOBAL BROADCAST
DLEN = 0
Who-Is Request,
‘Device Instance Range Low Limit’= (LL, any value not in the IUT’s Device_Address_Proxy_Table),
‘Device Instance Range High Limit’ = LL

10. RECEIVE PORT A,
SA = IUT
DA = R1-5
DNET = GLOBAL BROADCAST
DLEN = 0
Who-Is Request,
‘Device Instance Range Low Limit’= LL,
‘Device Instance Range High Limit’ = LL
11. CHECK (the IUT does not send I-Ams for any entry in it’s Device_Address_Proxy_Table)

13.X.9 Entry for Self in Device Address Proxy Table

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT’s Device Address Proxy Table has an entry for itself when the proxied network is the home network.

Test Concept:

With the IUT configured to perform Device Proxy functionality on its home network, the Device_Address_Proxy_Table is checked to verify that it contains an entry for the IUT and that the parameters for that entry are correct.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network. The network represented by NP is considered the home network.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. READ N1 = NP, Network_Number

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3. READ M1 = NP, MAC_Address
4. READ currentDate = (the IUT's Device object), Local_Date
5. READ currentTime = (the IUT's Device object), Local_Time
6. READ Segmentation = (the IUT's Device object), Segmentation_Supported
7. READ VID = (the IUT's Device object), Vendor_Identifier
8. VERIFY U1 = (the IUT's Device object), Device_Address_Proxy_Table [entry for U1],
   Address = (N1, M1),
   I Am = (the IUT's Device object, any valid value, Segmentation, VID),
   Last I Am Time ~= {currentDate, currentTime}

13.X.10 Proxy Table Cleared when Proxy Enable Set to False

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT's Device_Address_Proxy_Table is cleared and device proxy functionality is disabled when the Device_Proxy_Enable property is set to false.

Test Concept:

The IUT's Device_Address_Proxy_Table is populated with multiple entries (D1 and the D4). The Device_Proxy_Enable property is then set to False and the table is read again to verify that it is empty. A Who-Is request, with a range including D1 is sent to the IUT and it's verified the request reaches D1.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT,
   DA = IUT | LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (D1),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. TRANSMIT,
   DA = IUT | LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (D4),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
4. WAIT **Internal Processing Fail Time + 10s**
5. VERIFY Device_Address_Proxy_Table = (a list of values that contains both D1 and D4)
6. WRITE NP, Device_Address_Proxy_Enable = FALSE
7. VERIFY Device_Address_Proxy_Table = (an empty list)
8. TRANSMIT,
   SA = D2
   DA = LOCAL BROADCAST
   DNET = Network 1
   DLEN = 0
   Who-Is Request,
   'Device Instance Range Low Limit'= D1,
   'Device Instance Range High Limit' = D1
9. RECEIVE PORT A,
   SA = IUT
   DA = BROADCAST
   SADR = (MAC address of D2)

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SNET = Network 2
Who-Is Request,
'Device Instance Range Low Limit'= D1,
'Device Instance Range High Limit' = D1

10. TRANSMIT,
SA = D1
DA = IUT
DNET = Network 2
DADR = (MAC address of D2)
I-Am Request,
'Device Identifier' = (D1),
'Max APDU Length Accepted' = (any valid value),
'Segmentation Supported' = (any valid value),
'Vendor Identifier' = (any valid value)
11. RECEIVE PORT B,
SA = IUT
DA = D2
SADR = (MAC address of D1)
SNET = Network 1
I-Am Request,
'Device Identifier' = (D1),
'Max APDU Length Accepted' = (any valid value),
'Segmentation Supported' = (any valid value),
'Vendor Identifier' = (any valid value)

13.X.11 Proxying Multiple Devices Test

Reason for Change: No tests exist for this functionality

Purpose: To verify the IUT can proxy for multiple devices on the proxied network. Standard 135 stipulates 128 proxied devices.

Test Concept: The IUT is proxying at least devices D1 and D4 on Network 1. D2 initiates a Who-Is for all devices on Network 1. Check the IUT initiates I-Am requests for D1 and D4 and all other proxied devices.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network. No router exists on Network 1.

Notes to Tester: The I-Ams can be received in any order.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT PORT B,
SA = D2
DA = IUT
DNET = Network 1
DADR = BROADCAST
Who-Is-Request,
3. REPEAT X = (the number of proxied devices on Network 1) {
4. RECEIVE PORT B,
DA = D2
SNET = Network 1
SADR = (MAC address of X)
I-Am Request,
'Device Identifier' = (X),
'Max APDU Length Accepted' = (value specified for X)
'Segmentation Supported' = (value specified for X),
'Vendor Identifier' = (value specified for X)
}

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13.X1.1 I-Am from Non-Proxied Network Not Added to Table

Reason for Change: No tests exist for this functionality

Purpose: To verify that the IUT will not add a new device to its Device_Address_Proxy_Table when it receives an I-Am from a non-proxied network.

Test Concept:

The IUT is configured to proxy devices on network 1. An I-Am for device, D2 is received by the IUT and it's verified that D2 is not added to the IUT's Device_Address_Proxy_Table. Another I-Am, sent from a remote device, D5, is received by the IUT from a router on the proxied network and it's verified that D5 is not added to the IUT's Device_Address_Proxy_Table.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network. At the start of the test, D2 and D5 are not in the IUT's Device_Address_Proxy_Table.

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT,
   DA = LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (D2),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
3. WAIT **Internal Processing Fail Time + 10s**
4. VERIFY Device_Address_Proxy_Table = (a list of values that does not include D2)
5. TRANSMIT,
   SA = R1-5
   DA = LOCAL BROADCAST
   SNET = Network 5
   SADR = (MAC Address of D5)
   DNET = GLOBAL BROADCAST
   DADR = BROADCAST
   I-Am Request,
   'Device Identifier' = (D5),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
6. BEFORE **Internal Processing Fail Time**
7. RECEIVE PORT B,
   DA = LOCAL BROADCAST
   SNET = Network 5
   SADR = (MAC address of D5)
   DNET = GLOBAL BROADCAST
   DLEN = 0
   I-Am Request,
   'Device Identifier' = (D5),
   'Max APDU Length Accepted' = (any valid value),
   'Segmentation Supported' = (any valid value),
   'Vendor Identifier' = (any valid value)
8. WAIT (the remainder of **Internal Processing Fail Time**) **+ 10s**
9. VERIFY Device_Address_Proxy_Table = (a list of values that does not include D5)

13.X1.2 Device I-Am Forwarding Test

Reason for Change: No tests exist for this functionality

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Purpose: To verify the IUT does not forward I-Ams initiated by proxied devices.

Test Concept: The IUT is proxying the TD on Network 1. The TD initiates a global broadcast I-Am and it is verified the IUT does not initiate an I-Am for the TD on Network 2 because of the initial I-Am.

Configuration Requirements: Device_Address_Proxy_Enable = True in the Network Port object, NP, for the proxied network

Test Steps:

1. VERIFY NP, Device_Address_Proxy_Enable = TRUE
2. TRANSMIT PORT A
   DA = LOCAL BROADCAST
   I-Am Request,
   'Device Identifier' = (TD's Device Identifier)
3. WAIT **Internal Processing Fail Time** + 10 seconds
4. VERIFY Device_Address_Proxy_Table = (a list containing the TD)
5. TRANSMIT PORT A
   DA = LOCAL BROADCAST
   DNET = GLOBAL BROADCAST
   DLEN = 0
   I-Am Request,
   'Device Identifier' = (TD's Device Identifier)
6. CHECK (the IUT does not initiate an I-Am request for the TD on Network 2)

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