BACnet® TESTING LABORATORIES
ADDENDA

Addendum bv to
BTL Test Package 23.3

Revision final
Revised 9/25/2024

Approved by the BTL Working Group on September 23, 2024;
Approved by the BTL Working Group Voting Members on October 16, 2024;
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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.

In the following document, language to be added to existing clauses within the BTL Test Package 23.3 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 <mark>yellow</mark> 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.

BTL-23.3 bv-1: Write_Every_Scheduled_Action Testing [BTLWG-1266]

Overview:

135-2020 Addendum bv-1 added the Write_Every_Scheduled_Action property to the Schedule object.

135-2020 Clause 12.24.4 Present_Value states: "Any change in the value of this property shall be ==written to all members== of the List_Of_Object_Property_References property. An error writing to any member of the list shall not stop the Schedule object from writing to the remaining members."

The term 'written' infers both internal and external members.

Addendum bv adds "If the Write_Every_Scheduled_Action property is present and TRUE, all members of the List_Of_Object_Property_References ==property shall be written when a new time-value pair or when the Schedule_Default property== comes into effect regardless of whether the value of the Present_Value property changes or not (see Clause 12.24.X)"

Changes:

Checklist Changes

3 Objects

Schedule Object		
R	Base Requirements	
BTL-C[1]	Supports SCHED-I-B	
BTL-C[1]	Supports SCHED-WS-I-B	
BTL-C[1]	Supports SCHED-R-B	
O	Supports resizable Exception_Schedule property	
~~C[2]~~	~~Protocol_Revision 24 or higher is claimed~~	
C[2,3]	Supports Write_Every_Scheduled_Action property	
[1] You must support one of the listed scheduling BIBBs if your device contains a schedule object. [2] Protocol_Revision 24 or higher must be claimed. [3] ~~Contact BTL for interim tests for this object~~		

Test Plan Changes

3.19 Schedule Object

3.19.1 Base Requirements

Base requirements must be met by any IUT that can contain Schedule objects. ~~There are no base requirement tests for this section.~~

BTL - 7.3.2.23.X2 - Write_Every_Scheduled_Action FALSE Test		
Test Conditionality	Must be executed if the IUT claims Protocol_Revision >= 24.	
Test Directives		
Testing Hints		

3.19.X Supports Write_Every_Scheduled_Action Property

The IUT supports the Write_Every_Scheduled_Action property.

BTL - 7.3.2.23.X1 - Write_Every_Scheduled_Action TRUE Test		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

Specified Test Changes

7.3.2.23.X1 Write_Every_Scheduled_Action TRUE Test

Reason for Change: There is no test for this functionality.

Purpose: To verify the functionality of the Write_Every_Scheduled_Action property of the Schedule object when the value is TRUE.

Test Concept: The IUT is configured as specified in Configuration Requirements. The members of the List_Of_Object_Property_References are written to V1 by setting the IUT's clock to D1. The clock is advanced to D2 and writes of V1 to the members are verified. The members of the List_Of_Object_Property_References are written to the value of the Schedule_Default property by setting the IUT's clock to D3. The clock is advanced to D4 and writes to the members with the value of Schedule_Default is verified.

Configuration Requirements: The IUT shall be configured with a Schedule object (S1) containing a List_Of_Object_Property_References property that contains members internal to the IUT and, if supported, external members. The Schedule object shall be configured with Write_Every_Scheduled_Action equal to TRUE, the Effective_Period is active, and the Weekly Schedule or one or more Exception_Schedules are configured to create two consecutive BACnetTimeValues (D1 and D2) to occur that contain the same value (V1). The Weekly Schedule or an Exception_Schedule is configured with two consecutive BACnetTimeValues (D3 and D4) with D3 containing the same value as Schedule_Default and D4 containing a NULL such that the Schedule_Default comes into effect. PFW is the value of S1's Priority_For_Writing property.

Test Steps:

```
-- Set the value of all members to V1
1.  (TRANSMIT TimeSynchronization-Request, 'Time' = D1) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D1) |
        MAKE (the local date and time = D1)
2.  BEFORE Schedule Evaluation Fail Time {
3.      REPEAT X = (every member in List_Of_Object_Property_References) DO {
4.          IF (X.device-identifier is present AND X.device-identifier <> IUT) THEN
5.              RECEIVE WriteProperty-Request,
                    'Object Identifier' =        (X.object-identifier),
                    'Property Identifier' =          (X.property-identifier),
                    'Property Value' =       V1,
                    'Priority' =             (PFW)
6.              TRANSMIT BACnet-SimpleACK-PDU
            ELSE
7.              VERIFY X.object-identifier, X.property-identifier = V1
        }
    }

-- Test the same value is written to all internal and external members
8.  (TRANSMIT TimeSynchronization-Request, 'Time' = D2) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D2) |
        MAKE (the local date and time = D2)
9.  BEFORE Schedule Evaluation Fail Time {
10.     REPEAT X = (every member in List_Of_Object_Property_References) DO {
11.         IF (X.device-identifier is present AND X.device-identifier <> IUT) THEN
12.             RECEIVE WriteProperty-Request,
                    'Object Identifier' =        (X.object-identifier),
                    'Property Identifier' =          (X.property-identifier),
```

		'Property Value' =	V1,
		'Priority' =	(PFW)

13. TRANSMIT BACnet-SimpleACK-PDU
        ELSE
14.   IF (X.property-identifier = Present-Value and X.object-identifier contains a Priority_Array) THEN
15.   VERIFY X.object-identifier, Priority_Array = V1, ARRAY INDEX = PFW
            ELSE
16.   VERIFY X.object-identifier, X.property-identifier = V1

        }
    }

-- Set the value of all members to the value of Schedule_Default
17. (TRANSMIT TimeSynchronization-Request, 'Time' = D3) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D3) |
        MAKE (the local date and time = D3)
18. BEFORE **Schedule Evaluation Fail Time** {
19.   REPEAT X = (every member in List_Of_Object_Property_References) DO {
20.   IF (X.device-identifier is present OR X.device-identifier <> IUT) THEN
21.   RECEIVE WriteProperty-Request,
                        'Object Identifier' =   (X.object-identifier),
                        'Property Identifier' =   (X.property-identifier),
                        'Property Value' =   Schedule_Default,
                        'Priority' =   (PFW)
22.   TRANSMIT BACnet-SimpleACK-PDU
            ELSE
23.   IF (X.property-identifier = Present-Value and X.object-identifier contains a Priority_Array) THEN
24.   VERIFY X.object-identifier, Priority_Array = Schedule_Default, ARRAY INDEX = PFW
                ELSE
25.   IF (Schedule_Default <> NULL) THEN
26.   VERIFY X.object-identifier, X.property-identifier = Schedule_Default

        }
    }

-- Test that when Schedule_Default comes into effect, it is written to all internal and external members
27. (TRANSMIT TimeSynchronization-Request, 'Time' = D4) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D4) |
        MAKE (the local date and time = D4)
28. BEFORE **Schedule Evaluation Fail Time** {
29.   REPEAT X = (every member in List_Of_Object_Property_References) DO {
30.   IF (X.device-identifier is present OR X.device-identifier <> IUT) THEN
31.   RECEIVE WriteProperty-Request,
                        'Object Identifier' =   (X.object-identifier),
                        'Property Identifier' =   (X.property-identifier),
                        'Property Value' =   Schedule_Default,
                        'Priority' =   (PFW)
32.   TRANSMIT BACnet-SimpleACK-PDU
            ELSE
33.   IF (X.property-identifier = Present-Value and X.object-identifier contains a Priority_Array) THEN
34.   VERIFY X.object-identifier, Priority_Array = Schedule_Default, ARRAY INDEX = PFW
                ELSE
35.   IF (Schedule_Default <> NULL) THEN
36.   VERIFY X.object-identifier, X.property-identifier = Schedule_Default
        }
    }

7.3.2.23.X2 Write_Every_Scheduled_Action FALSE Test

Reason for Change: There is no test for this functionality.

Purpose: To verify that when Write_Every_Scheduled_Action property is FALSE or not present, the schedule does not write to members of the List_Of_Object_Property_References when the Present_Value does not change when a new time-value pair comes into effect.

Test Concept: The IUT's Schedule object is configured to write to internal and, if supported, external objects. The Schedule object is configured with two sequential dates and times (D1 and D2) that contain the same value (V1). To set the value of all members to V1, the IUT's clock is set to D1, and the members are verified to contain V1. The clock is advanced to D2, and it is checked that no writes occurred.

Configuration Requirements: The IUT shall be configured with a Schedule object (S1) containing a List_Of_Object_Property_References property that contains members internal to the IUT and, if supported, external members. The Schedule object shall be configured with Write_Every_Scheduled_Action equal to FALSE, if present, the Effective_Period is active, and the Weekly Schedule or one or more Exception_Schedules are configured to create two consecutive BACnetTimeValues (D1 and D2) to occur that contain the same value (V1). PFW is the value of S1's Priority_For_Writing property.

Test Steps:

-- Set the value of all members to V1
1.   (TRANSMIT TimeSynchronization-Request, 'Time' = D1) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D1) |
        MAKE (the local date and time = D1)
2.   BEFORE **Schedule Evaluation Fail Time** {
3.   REPEAT X = (every member in List_Of_Object_Property_References) DO {
              -- verify internal and external members are equal to V1
4.   IF (X.property-identifier = Present-Value and X.object-identifier contains a Priority_Array) THEN
5.   VERIFY X.object-identifier, Priority_Array = V1, ARRAY INDEX = PFW
              ELSE
6.   VERIFY X.object-identifier, X.property-identifier = V1
          }
      }

-- Test the same value is not written to any external members
7.   (TRANSMIT TimeSynchronization-Request, 'Time' = D2) |
        (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D2) |
        MAKE (the local date and time = D2)
8.   BEFORE **Schedule Evaluation Fail Time** {
9.   REPEAT X = (every member in List_Of_Object_Property_References) DO {
10.   IF (X.device-identifier is present OR X.device-identifier <> IUT) THEN
11.   CHECK (the IUT does not initiate a Write_Property request to X)
          }
      }