BACnet® TESTING LABORATORIES ADDENDA

Addendum bg to
BTL Test Package 16.1

Revision 2
Revised 4/9/2020

Approved by the BTL Working Group on March 26, 2020.
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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 16.1 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.

BTL-16.1bg-1: Remove GetEnrollmentSummary Initiation Requirements from BIBBs - BTLWG-519

Overview:

Addenda 135-2012bg (PR18) has removed all requirements for GetEnrollmentSummary initiation.

Changes:

[In BTL Checklist, remove from AE-AS-A the seven line-items related to GetEnrollmentSummary service initiation, as shown.]

Alarm and Event Management - Alarm Summary View - A		
	R	Base Requirements
	R	Supports initiation of GetEventInformation service
	R	Supports initiation of GetAlarmSummary service
	~~R~~	~~Supports initiation of GetEnrollmentSummary service~~
	~~O~~	~~Generates GetEnrollmentSummary requests with an Enrollment filter~~
	~~O~~	~~Generates GetEnrollmentSummary requests with an Event State filter~~
	~~O~~	~~Generates GetEnrollmentSummary requests with an Event Type filter~~
	~~O~~	~~Generates GetEnrollmentSummary requests with a Priority filter~~
	~~O~~	~~Generates GetEnrollmentSummary requests with a Notification Class filter~~
	~~O~~	~~Generates GetEnrollmentSummary requests with multiple filters~~

[In BTL Test Plan, remove from AE-AS-A the references to tests of GetEnrollmentSummary initiation. Remove entirely in BTL Test Plan under AE-AS-A the seven different sections related to GetEnrollmentSummary service initiation.]

~~5.20.4   Supports Initiation of GetEnrollmentSummary Service~~

~~The IUT shall support GetEnrollmentSummary service in order to update alarm parameters modified by the user .~~

~~135.1-2013 - 8.7.1 - Acknowledgment Filter~~	
~~Test Method~~	~~Manual~~
~~Configuration~~	~~As per *ASHRAE 135.1-2013.*~~
~~Test Conditionality~~	~~Must be executed.~~
~~Test Directives~~	
~~Testing Hints~~	
~~Notes & Results~~	

~~5.20.5   Generates GetEnrollmentSummary Requests with an Enrollment Filter~~

~~The IUT can generate GetEnrollmentSummary requests that contain an Enrollment filter.~~

~~135.1-2013 - 8.7.2 - Enrollment Filter~~	
~~Test Method~~	~~Manual~~
~~Configuration~~	~~As per *ASHRAE 135.1-2013.*~~
~~Test Conditionality~~	~~Must be executed.~~
~~Test Directives~~	
~~Testing Hints~~	
~~Notes & Results~~	

~~5.20.6   Generates GetEnrollmentSummary Requests with an Event State Filter~~

~~The IUT can generate GetEnrollmentSummary requests that contain an Event State filter.~~

135.1-2013 - 8.7.3 - Event State Filter	
Test Method	Manual
Configuration	As per *ASHRAE 135.1-2013.*
Test Conditionality	Must be executed.
Test Directives	
Testing Hints	
Notes & Results	

5.20.7 Generates GetEnrollmentSummary Requests with an Event Type Filter

The IUT can generate GetEnrollmentSummary requests that contain an Event Type filter.

135.1-2013 - 8.7.4 - Event Type Filter	
Test Method	Manual
Configuration	As per *ASHRAE 135.1-2013.*
Test Conditionality	Must be executed.
Test Directives	
Testing Hints	
Notes & Results	

5.20.8 Generates GetEnrollmentSummary Requests with a Priority Filter

The IUT can generate GetEnrollmentSummary requests that contain a Priority filter.

135.1-2013 - 8.7..5 - Priority Filter	
Test Method	Manual
Configuration	As per *ASHRAE 135.1-2013.*
Test Conditionality	Must be executed.
Test Directives	
Testing Hints	
Notes & Results	

5.20.9 Generates GetEnrollmentSummary Requests with a Notification Class Filter

The IUT can generate GetEnrollmentSummary requests that contain a Notification Class filter.

135.1-2013 - 8.7.6 - Notification Class Filter	
Test Method	Manual
Configuration	As per *ASHRAE 135.1-2013.*
Test Conditionality	Must be executed.
Test Directives	
Testing Hints	
Notes & Results	

5.20.10 Supports Initiation of GetEnrollmentSummary Service

The IUT can generate GetEnrollmentSummary requests that contain multiple filters.

135.1-2013 - 8.7.7 - Multiple Filters	
Test Method	Manual

Configuration	As per *ASHRAE 135.1-2013.*
Test Conditionality	Must be executed.
Test Directives	
Testing Hints	
Notes & Results	

BTL-16.1bg-2: Add Nth Week Testing for WeekNDay - BTLWG-596

Overview:

135-2012bg-4 adds the Nth week specification to the WeekNDay type.

Changes:

[There are no changes required for BTL Checklist]
[In BTL Test Plan, modify test name in Base Requirements in Scheduling - Internal - B]

6.4.1 Base Requirements

…		
BTL - 7.3.2.23.10.3.6 - Revision 4 Calendar Entry WeekNDay ~~Last~~*Special* Week Of Month Test		
	Test Conditionality	If the IUT is protocol revision 4 or higher,Must be executed.
	Test Directives	Tester shall use the special WeekOfMonth value of 6. If the IUT is protocol revision 18 or higher, this test shall be run an additional 3 times. Once for each of the special WeekOfMonth values introduced in Protocol_Revision 18. [7,8,9]
	Testing Hints	
…		

[In BTL Test Plan, modify test name in Scheduling - Readonly - B section]

6.7.19 Can Be Made to Contain an Exception_Schedule Property with a WeekNDay

…		
BTL - 7.3.2.23.10.3.6 - Revision 4 Calendar Entry WeekNDay ~~Last~~*Special* Week Of Month Test		
	Test Conditionality	If the IUT is protocol revision 4 or higher, must be executed. If it is impossible to configure the IUT in the manner specified by this test, the test shall be omitted.
	Test Directives	The tester shall select the special WeekOfMonth value of [6]. In addition, if the IUT supports protocol revision 18 or higher, the tester shall select the special WeekOfMonth values of [7,8,9]
	Testing Hints	
…		

[In BTL Test Plan, modify reference to test in Scheduling - View Modify - A, Section 6.2.6 Is able to Present and Modify a Calendar Object]

BTL~~135.1 2013~~ - 13.10.5.4 - Modify a Calendar Object by adding a BACnetCalendarEntry of choice WeekNDay to the Date_List		
	Test Conditionality	Must be executed.
	Test Directives	The tester should attempt to add an entire BACnetCalendarEntry of choice WeekNDay to the reference calendar.
	Testing Hints	

[In BTL Test Plan, modify reference to the following test in Scheduling - View Modify - A, Section 6.2.7 Is able to Present and Modify a Schedules of Enumerated Type]

BTL~~135.1 2013~~ - 13.10.4.9 - Modify an Exception_Schedule by adding a BACnetSpecialEvent with period of choice calendarEntry of choice WeekNDay		
	Test Conditionality	The reference server schedule (S1) shall contain BACnetTimeValue of type Enumerated.
	Test Directives	The tester should attempt to add an entire BACnetSpecialEvent of choice WeekNDay to the reference schedule.
	Testing Hints	

[In BTL Specified Tests, Modify existing test to test the new weekOfMonth options.]

7.3.2.23.10.3.6 Revision 4 Calendar Entry WeekNDay ~~Last~~*Special* Week Of Month Test
Reason for Changes: New functionality testing WeekNDay new WeekOfMonth entries added in 135-2012bg-4 for Protocol_Revision 18.
Purpose: To verify that a date matching a WeekNDay's WeekOfMonth field in an Exception_Schedule enables the referencing Schedule object.

Test Concept: The IUT's local date and time are changed to values that are selected by the TD based on the criteria in Table 7-16. The value of the Present_Value property is monitored to verify that the scheduled write operations occur.

Configuration Requirements: The IUT shall be configured to contain a Schedule object, S, with an Exception_Schedule containing a BACnetCalendarEntry with a WeekNDay entry specifying the *one of the special week of month values, WM [6,7,8,9]*~~last week of the month~~. The criteria for the dates used in the test are given in Table 7-16. The local date and time shall be set such that the Present_Value property has a value other than V_1.

Table 7-16. Criteria for Calendar Entry WeekNDay ~~Last~~*Special* Week Of Month Test Dates and Values

Date	Criteria	Value
D_1	1. Date occurs during Effective_Period, 2A. BACnetSpecialEvent incorporates calendarEntry: WeekNDay, 2B. calendarEntry: WeekNDay specifies WeekOfMonth, 2C. calendarEntry: WeekNDay: WeekOfMonth has the value ~~6~~*WM*, 2D. Date is in the ~~last week of the month~~*WeekOfMonth specified by 2C*, 2E. WeekNDay:Month matches the specified month, 2F. WeekNDay:dayOfWeek matches the specified day of the week, 2G. Time is on or after the time of the entry with V_1, but before any other entry in the Exception_Schedule, and 2H. BACnetSpecialEvent has a higher eventPriority than any coincident BACnetSpecialEvent records.	V_1
D_2	1. Date occurs during Effective_Period, 2A. BACnetSpecialEvent incorporates calendarEntry: WeekNDay, 2B. calendarEntry: WeekNDay specifies WeekOfMonth, 2C. calendarEntry: WeekNDay: WeekOfMonth has the value ~~6~~*WM*, and 2D. Date is not in ~~the last week of the month~~*the WeekOfMonth specified by 2C*.	V_2 different from V_1

Test Steps:
1. VERIFY (S), Present_Value = any value other than V_1
2. (TRANSMIT TimeSynchronization-Request, 'Time' = D_1) |
    (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D_1) |
    MAKE (the local date and time = D_1)
3. WAIT **Schedule Evaluation Fail Time**
4. VERIFY S, Present_Value = V_1
5. (TRANSMIT TimeSynchronization-Request, 'Time' = D_2) |
    (TRANSMIT UTCTimeSynchronization-Request, 'Time' = D_2) |
    MAKE (the local date and time = D_2)
6. WAIT **Schedule Evaluation Fail Time**
7. VERIFY S, Present_Value = V_2

[In BTL Specified Tests, add the existing 135.1 tests and modify as shown]

13.10.4.9 Modify an Exception_Schedule by Adding a BACnetSpecialEvent with Period of Choice calendarEntry of Choice WeekNDay

Reason for Change: Modified to include new WeekOfMonth values defined in PR 18.
Purpose: Demonstrate that the IUT can accept user input and modify the Exception_Schedule by adding a BACnetSpecialEvent of the schedule with the calendarEntry of type WeekNDay.

Test Concept: For different WeekNDay values, add a BACnetCalendarEntry to the Date_List property of an Exception_Schedule and verify the IUT writes the modified Date_List correctly to the reference device.

Test Configuration: A reference device contains reference objects S1, C1, and C2. *Choose the value set to use from the table below based on the protocol-revision for the IUT.*

| Value Set | Protocol Revision | WeekNDay = <Month><weekOfMonth><dayOfWeek> | | |
		Month	weekOfMonth	dayOfWeek
1	PR < 4	0 to 12 and FF	1 to 6 and FF	1 to 7 and FF
2	PR >= 4	0 to 12 and FF and 13 and 14	1 to 6 and FF	1 to 7 and FF
3	PR >= 18	0 to 12 and FF and 13 and 14	1 to 9 and FF	1 to 7 and FF

Test Steps:

REPEAT WND = (WeekNDay Value Set from table)
{
    1.   MAKE (the IUT add an entire BACnetSpecialEvent with period of choice calendarEntry of choice WeekNDay *with value of WND* to the Exception_Schedule of S1)
    2.   CHECK (Did the IUT write the modified Exception_Schedule correctly?)
}
~~Notes to Tester: For example, try different WeekNDay representations that leave one or more of each of the following fields unspecified: month, weekOfMonth, dayOfWeek. If the IUT supports devices with Protocol_Revision ≥ 4, try using the special values for month 13 (all odd) and 14 (all even).~~

13.10.5.4 Modify a Calendar by Adding a BACnetCalendarEntry of Choice WeekNDay to the Date_List

Reason for Change: Modified to include new WeekOfMonth values defined in PR 18.
Purpose: Demonstrate that the IUT can accept user input and use it to add a BACnetCalendarEntry of choice WeekNDay to the Date_List.

Test Concept: For different WeekNDay values, add a BACnetCalendarEntry to the Date_List property of a Calendar and verify the IUT writes the modified Date_List correctly to the reference device.

Test Configuration: A reference device contains reference object C1. *Choose the value set to use from the table below based on the protocol-revision for the IUT.*

| Value Set | Protocol Revision | WeekNDay = <Month><weekOfMonth><dayOfWeek> | | |
		Month	weekOfMonth	dayOfWeek
1	PR < 4	0 to 12 and FF	1 to 6 and FF	1 to 7 and FF
2	PR >= 4	0 to 12 and FF and 13 and 14	1 to 6 and FF	1 to 7 and FF
3	PR >= 18	0 to 12 and FF and 13 and 14	1 to 9 and FF	1 to 7 and FF

Test Steps:

REPEAT WND = (WeekNDay Value Set from table)
{
    1.   MAKE (the IUT add a BACnetCalendarEntry of type WeekNDay *with value of WND* to the Date_List of C1)
    2.   CHECK (Did the IUT write the modified Date_List correctly?)
}
~~Notes to Tester: For example, try different WeekNDay representations that leave one or more of each of the following fields unspecified: month, weekOfMonth, dayOfWeek. If the IUT supports devices with Protocol_Revision ≥ 4, try using the special month values 13 (all odd) and 14 (all even)~~

BTL-16.1bg-3: Add UTC_Offset Configurable Test - BTLWG-659

Overview:

UTC_Offset shall be configurable and accept any multiple of 15 minutes across the full range.

Changes:

[In BTL Checklist, add to Device object section]

	O	Supports UTC_Offset Property

[In BTL Test Plan, add section 3.10.X]

3.10   Device Object

3.10.X   Supports UTC_Offset Property

Ensures UTC_Offset property is configurable.

BTL - 7.3.2.10.X - Ensure UTC_Offset is configurable		
	Test Conditionality	If the device supports Protocol_Revision < 18, this test shall be skipped.
	Test Directives	
	Testing Hints	

[In BTL Specified Tests, add test BTL - 7.3.2.10.X]
BTL -7.3.2.10.X - Ensure UTC_Offset is configurable

Purpose: This test verifies UTC_Offset is configurable and accepts from -1140 to +1440.

Test Concept: For each value in a set of valid values across the acceptable range for UTC_Offset, verify that the UTC_Offset can be configured with the value.

Configuration Requirements: If the Protocol_Revision of the device is less than 18, this test shall be skipped.

Test Steps:

1.   REPEAT UO = (-1440, -780, 0, +780, +1440, and 2 other values which are multiples of 15 minutes) DO {
        IF (UTC_Offset is writable) THEN
                WRITE UTC_Offset = UO
        ELSE
                MAKE UTC_Offset = UO
        VERIFY (Device Object) UTC_Offset = UO
}

BTL-16.1bg-4: Clarify the Effect of Changing Buffer_Size - BTLWG-661

Overview:

Addendum 135-2012*bg*-8 states a write to the Buffer_Size property where all records are deleted shall act as if the value of the Record_Count property was set to 0.

Changes:

[No Changes in BTL Checklist]

[In BTL Test Plan, add to sections 5.14.1, 5.15.1, 7.3.1, and 7.7.1]

BTL - 7.4.2.24.X1 - Buffer_Size Write Test		
	Test Conditionality	If a write to the Buffer_Size does not delete all records in the log, this test shall be skipped.
	Test Directives	
	Testing Hints	

[In BTL Specified Tests, add a new test in this section]

7.4.2.24.X1 Buffer_Size Write Test

Purpose: To verify the content of the log buffer after a write to the Buffer_Size property.

Test Concept: The logging object, O1, is configured to acquire data by whatever means. Logging is disabled and Buffer_Size set to a different valid value, V1. The content of the Log_Buffer is read to confirm a single entry that is a buffer purged event.

Configuration Requirements: The logging object, O1, is configured to acquire data by whatever means. If a write to the Buffer_Size does not delete all records in the log, this test shall be skipped.

Test Steps:

1. WRITE Enable = FALSE
2. WRITE Buffer_Size = V1
3. WAIT **Internal Processing Fail Time**
4. CHECK (Log_Buffer contains one entry, and it is a buffer-purged event)

BTL-16.1bg-5: Ensure Alert Enrollment Behavior- BTLWG-595

Overview:

Add the tests for verifying that the Alert Enrollment object's notifications are not acknowledgeable.

Changes:

None

-- BTL Test Plan-16.1 already contains reference to list addendum q as one of the documents needed. Look to the start of the document…

The test for this work item has been already covered under the addendum 135.1-2013 q. This addendum has been included in 135.1-2019. The test listed in the BTL test plan 16.1 is **135.1-2013q - 7.3.2.30.2 - Alert Enrollment Does Not Generate Acknowledgeable Transitions.** The test listed in **135.1-2019 is 7.3.2.31.2 Alert Enrollment Does Not Generate Acknowledgeable Transitions.**