

**[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-TP14.0j-1: Add DS-COVU-A Testing, pg 2.** [wID00313]

**BTL-TP14.0j-2: Add DS-COVP-A Testing, pg 8.** [wID00315]

In the following document, language to be added to existing clauses within the BTL Test Package 14.0 is indicated through the use of *italics*, while deletions are indicated by ~~strike through~~. Where entirely new subclauses are proposed to be added, plain type is used throughout.

In addition, changes to BTL Specified Tests might 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.

This addendum contains results of various clarification requests put forth to the BTL-WG that resulted in test package changes.

## BTL-TP14.0j-1: Add DS-COVU-A Testing

### Overview:

This document adds testing for BIBB DS-COVU-A:

- Specification of unsubscribed UnconfirmedCOVNotifications has been in clauses 13.7 and 13.7.1.2 since Protocol\_Revision 2. Testing for this was never specified in any SSPC proposal. Testing is added here for that.
- Addendum 135-2004b specified a standardized usage of this mechanism for Restart notifications. Consumption of those, or for any other purpose needed, is tested here.

### Changes:

[In Checklist, add DS-COVU-A just prior to existing DS-COVU-B]

### 4 Data Sharing

Support	Listing	Option
...		
<b>Data Sharing - COV Unsubscribed - A</b>		
	R	Base Requirements
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing NULL values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing BOOLEAN values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Enumerated values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Unsigned values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Integer values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing REAL values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Double values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Time values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Date values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing DateTime values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Octet String values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Bit String values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Character String values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Object Identifier values
	C <sup>1</sup>	Accepts UnconfirmedCOVNotifications containing Constructed values
<sup>1</sup> At least one of these options is required in order to claim conformance to this BIBB.		

[In Test Plan, renumber DS-COVU-B to make room for new BIBB.]

## 4.178 Data Sharing - COV Unsubscribed - B

### 4.178.1 Base Requirements

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

<b>BTL - 8.3.X11 - Unsubscribed COV Service Initiation Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

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[In Test Plan, add DS-COVU-A just prior to existing DS-COVU-B]

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## 4.17 Data Sharing - COV Unsubscribed - A

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### 4.17.1 Base Requirements

There are no Base Requirements for this BIBB.

### 4.17.2 Accepts UnconfirmedCOVNotifications containing NULL Values

The IUT accepts UnconfirmedCOVNotifications containing NULL values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is the NULL value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.3 Accepts UnconfirmedCOVNotifications containing BOOLEAN Values

The IUT accepts UnconfirmedCOVNotifications containing BOOLEAN values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a BOOLEAN value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.4 Accepts UnconfirmedCOVNotifications containing Enumerated Values

The IUT accepts UnconfirmedCOVNotifications containing Enumerated values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is an Enumerated value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.5 Accepts UnconfirmedCOVNotifications containing INTEGER Values

The IUT accepts UnconfirmedCOVNotifications containing INTEGER values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is an INTEGER value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.6 Accepts UnconfirmedCOVNotifications containing Unsigned Values

The IUT accepts UnconfirmedCOVNotifications containing Unsigned values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is an Unsigned value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.7 Accepts UnconfirmedCOVNotifications containing REAL Values

The IUT accepts UnconfirmedCOVNotifications containing REAL values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a REAL value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.17.8 Accepts UnconfirmedCOVNotifications containing Double Values

The IUT accepts UnconfirmedCOVNotifications containing Double values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a Double value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

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#### 4.17.9 Accepts UnconfirmedCOVNotifications containing Time Values

The IUT accepts UnconfirmedCOVNotifications containing Time values.

BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a Time value, and at least one other entry in the Notification is a constructed value.
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

#### 4.17.10 Accepts UnconfirmedCOVNotifications containing Date Values

The IUT accepts UnconfirmedCOVNotifications containing Date values.

BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a Date value, and at least one other entry in the Notification is a constructed value.
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

#### 4.17.11 Accepts UnconfirmedCOVNotifications containing DateTime Values

The IUT accepts UnconfirmedCOVNotifications containing DateTime values.

BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a DateTime value, and at least one other entry in the Notification is a constructed value.
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

#### 4.17.12 Accepts UnconfirmedCOVNotifications containing Character String Values

The IUT accepts UnconfirmedCOVNotifications containing Character String values.

BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a Character String value, and at least one other entry in the Notification is a

	constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.17.13 Accepts UnconfirmedCOVNotifications containing Octet String Values

The IUT accepts UnconfirmedCOVNotifications containing Octet String values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is an Octet String value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.17.14 Accepts UnconfirmedCOVNotifications containing Bit String Values

The IUT accepts UnconfirmedCOVNotifications containing Bit String values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a Bit String value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.17.15 Accepts UnconfirmedCOVNotifications containing BACnetObjectIdentifier Values

The IUT accepts UnconfirmedCOVNotifications containing BACnetObjectIdentifier values.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> . At least one of the properties observed to be processed by the test shall contain a BACnetObjectIdentifier value.
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a BACnetObjectIdentifier value, and at least one other entry in the Notification is a constructed value.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.17.16 Accepts UnconfirmedCOVNotifications containing Constructed Values

The IUT accepts UnconfirmedCOVNotifications containing constructed property values, whole arrays, and lists.

<b>BTL - 9.10.3.X1 - Unsubscribed COVNotification Execution Test</b>	
<b>Test Method</b>	Manual

<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	Apply the test where one of the entries in the Notification is a constructed value, whole array, or list.
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

[ In BTL Specified Tests, add new test as shown. These entirely new test are shown without italics or strike-through]

**9.10.3.X1 Unsubscribed COVNotification Execution Test**

Reason for Change: This test is not specified in any SSPC proposal.

Purpose: To verify that the IUT executes UnconfirmedCOVNotification service requests, with 'Process Identifier' equal to 0.

Test Concept: Using any received and supported unsubscribed UnconfirmedCOVNotification, observe the effect of its execution.

Test Steps:

1. TRANSMIT UnconfirmedCOVNotification-Request,
  - 'Subscriber Process Identifier' = 0,
  - 'Initiating Device Identifier' = TD,
  - 'Monitored Object Identifier' = (any object present in TD),
  - 'Time Remaining' = 0,
  - 'List of Values' = (any valid set of values)
2. CHECK (for any vendor-defined observable actions)

**BTL-TP14.0j-2: Add DS-COVP-A Testing**

**Overview:**

This document adds testing for BIBB DS-COVP-A:

**Changes:**

[In Checklist, add DS-COVP-A]

<b>Data Sharing - COVP - A</b>		
	R	Base Requirements
	R	Subscribes with lifetimes up to 8 hours in duration
	C <sup>1</sup>	Can subscribe for confirmed notifications
	C <sup>1</sup>	Can subscribe for unconfirmed notifications
	C <sup>2</sup>	Can subscribe to non-array properties
	C <sup>2</sup>	Can subscribe to array elements
	C <sup>2</sup>	Can subscribe to the size of an array
	C <sup>2</sup>	Can subscribe to whole arrays
	O	Can subscribe to list properties
	O	Can subscribe with a COV Increment
	O <sup>3</sup>	Can subscribe to NULL property values
	O <sup>3</sup>	Can subscribe to BOOLEAN property values
	O <sup>3</sup>	Can subscribe to Enumerated property values
	O <sup>3</sup>	Can subscribe to INTEGER property values
	O <sup>3</sup>	Can subscribe to Unsigned property values
	O <sup>3</sup>	Can subscribe to REAL property values
	O <sup>3</sup>	Can subscribe to Double property values
	O <sup>3</sup>	Can subscribe to Time property values
	O <sup>3</sup>	Can subscribe to Date property values
	O <sup>3</sup>	Can subscribe to CharacterString property values
	O <sup>3</sup>	Can subscribe to OctetString property values
	O <sup>3</sup>	Can subscribe to BitString property values
	O <sup>3</sup>	Can subscribe to BACnetObjectIdentifier property values
	O <sup>3</sup>	Can subscribe to constructed property values
	O <sup>3</sup>	Can subscribe to proprietary property values of basic data types
	O	Can cancel subscriptions
<sup>1</sup> At least one of these options is required in order to claim conformance to this BIBB. <sup>2</sup> At least one of these options is required in order to claim conformance to this BIBB. <sup>3</sup> At least one of these options is required in order to claim conformance to this BIBB.		

[In BTL Test Plan, Add new section for DS-COVP-A]

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**4.19 Data Sharing - Change Of Value Property - B**

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**4.19.1 Base Requirements**

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

<b>BTL - 8.11.2.X1 - Change of Value Notification Arrives after Subscription has Expired</b>		
	<b>Test Method</b>	
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	



<b>BTL - 8.11.2.X2 - Change of Value Notifications with Invalid Process Identifier</b>	
<b>Test Method</b>	
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	
<b>BTL - 8.11.2.X4 - Change of Value Notifications with Invalid Monitored Object Identifier</b>	
<b>Test Method</b>	
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

<b>BTL - 8.11.2.X5 - Change of Value Notifications with Invalid Monitored property</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.2 Subscribes with Lifetimes up to 8 Hours in Duration

The IUT is capable of subscribing with a lifetime less than or equal to 28800 seconds (8 hours).

<b>BTL - 8.11.X4 - Generates 8 Hour Lifetimes</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.3 Can Subscribe for Confirmed Notifications

The IUT can subscribe for, receive, and process confirmed Change of Value notifications.

<b>BTL - 8.11.1 - Confirmed Notifications Subscription</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>ASHRAE 135.1-2013</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.4 Can Subscribe for Unconfirmed Notifications

The IUT can subscribe for, receive, and process unconfirmed Change of Value notifications.

<b>BTL - 8.11.2 - Unconfirmed Notifications Subscription</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>ASHRAE 135.1-2013</i> .
<b>Test Conditionality</b>	Must be executed.
<b>Test Directives</b>	
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.5 Can subscribe to non-array properties

Purpose: To verify that the IUT can subscribe for, receive, and process a Change of Value notification that does not contain the 'Property Array Index' parameter and can correctly process the response

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any valid non-array property which the vendor supports in a SubscribeCOVProperty-Request)
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.6 Can subscribe to array elements

Purpose: To verify that the IUT can subscribe for, receive, and process a Change of Value notification that references a specific element of an array property and can correctly process the response

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any valid array property which the vendor supports in a SubscribeCOVProperty-Request and optional array index with value different from 0)
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.7 Can subscribe to the size of an array

Purpose: To verify that the IUT can subscribe for, receive, and process a Change of Value notification that references the size of an array property and can correctly process the response

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any valid array property which the vendor supports in a SubscribeCOVProperty-Request) and optional array index with value equal to 0)
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

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### 4.19.8 Can subscribe to whole arrays

Purpose: To verify that the IUT can subscribe for, receive, and process a Change of Value notification that does not contain the 'Property Array Index' parameter for an array property and can correctly process the response.

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any valid array property which the vendor supports in a SubscribeCOVProperty-Request) object with no optional array index)
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.9 Can subscribe to list properties

Purpose: To verify that the IUT can subscribe for, receive, and process a Change of Value notification that references a list property and can correctly process the response

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any list property which the vendor supports in a SubscribeCOVProperty-Request))
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.10 Can subscribe with a COV Increment

The IUT can subscribe with the parameter 'COV Increment' for, receive, and process Change of Value notifications

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request) and ensure that IUT generates a SubscribeCOVProperty-Request which contains 'COV Increment' parameter,
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.11 Can subscribe to NULL property values

The IUT can subscribe for, receive, and process Change of Value notifications from property that contains a NULL value

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>		
	<b>Test Method</b>	Manual

<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a NULL value)
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.12 Can subscribe to BOOLEAN property values

The IUT can subscribe for, receive, and process Change of Value notifications from BOOLEAN property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a BOOLEAN value)
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.13 Can subscribe to Enumerated property values

The IUT can subscribe for, receive, and process Change of Value notifications from Enumerated property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain an Enumerated value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.14 Can subscribe to INTEGER property values

The IUT can subscribe for, receive, and process Change of Value notifications from INTEGER property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain an INTEGER value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.15 Can subscribe to Unsigned property values

The IUT can subscribe for, receive, and process Change of Value notifications from Unsigned property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain an Unsigned value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.16 Can subscribe to REAL property values

The IUT can subscribe for, receive, and process Change of Value notifications from REAL property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a REAL value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.17 Can subscribe to Double property values

The IUT can subscribe for, receive, and process Change of Value notifications from Double property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a Double value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

#### 4.19.18 Can subscribe to Time property values

The IUT can subscribe for, receive, and process Change of Value notifications from Time property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a Time value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.19 Can subscribe to Date property values

The IUT can subscribe for, receive, and process Change of Value notifications from Date property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a Date value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.20 Can subscribe to CharacterString property values

The IUT can subscribe for, receive, and process Change of Value notifications from CharacterString property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a CharacterString value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.21 Can subscribe to OctetString property values

The IUT can subscribe for, receive, and process Change of Value notifications from OctetString property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain an OctetString value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

### 4.19.22 Can subscribe to BitString property values

The IUT can subscribe for, receive, and process Change of Value notifications from BitString property values

<b>BTL- 8.11.1.X1 - Change of Value Notifications</b>	
<b>Test Method</b>	Manual
<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a BitString value )
<b>Testing Hints</b>	
<b>Notes &amp; Results</b>	

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### 4.19.23 Can subscribe to BACnetObjectIdentifier property values

The IUT can subscribe for, receive, and process Change of Value notifications from BACnetObjectIdentifier property values

BTL- 8.11.1.X1 - Change of Value Notifications		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a BACnetObjectIdentifier value )
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.24 Can subscribe to constructed property values

The IUT can subscribe for, receive, and process Change of Value notifications from constructed property values

BTL- 8.11.1.X1 - Change of Value Notifications		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a constructed value )
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.25 Can subscribe to proprietary property values of basic data types

The IUT can subscribe for, receive, and process Change of Value notifications from proprietary property values of basic data types

BTL- 8.11.1.X1 - Change of Value Notifications		
	<b>Test Method</b>	Manual
	<b>Configuration</b>	As per <i>BTL Specified Tests</i> .
	<b>Test Conditionality</b>	Either a confirmed or an unconfirmed COV notification may be observed.
	<b>Test Directives</b>	Execute test using 'Monitored Property Identifier' = (any property which the vendor supports in a SubscribeCOVProperty-Request that can contain a proprietary value of basic data types)
	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

### 4.19.26 Can Cancel Subscriptions

The IUT can explicitly cancel COV subscriptions (in contrast to just letting the subscription expire).

BTL - 8.11.3 - Canceling a Subscription		
	<b>Test Method</b>	<b>Manual</b>
	<b>Configuration</b>	As per <i>ASHRAE 135.1-2013</i> .
	<b>Test Conditionality</b>	Must be executed.
	<b>Test Directives</b>	

	<b>Testing Hints</b>	
	<b>Notes &amp; Results</b>	

[In BTL Specified Tests, Add new tests]

### 8.11.2.X1 Change of Value Notification Arrives after Subscription has Expired

Purpose: To verify that an appropriate error is returned if a COV notification arrives after the subscription time period has expired.

Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU
4. BEFORE Notification Fail Time
  - TRANSMIT ConfirmedCOVNotification-Request,
    - 'Subscriber Process Identifier' = (the process identifier used in step 1),
    - 'Initiating Device Identifier' = TD,
    - 'Monitored Object Identifier' = X
    - 'Time Remaining' = (any value appropriate for the Lifetime selected),
    - 'List of Values' = (values appropriate to the property Y subscribed to, and any other properties the IUT provides with it, such as Status\_Flags)
  - RECEIVE BACnet-SimpleACK-PDU
5. WAIT (a value two times Lifetime)
6. TRANSMIT ConfirmedCOVNotification-Request,
  - 'Subscriber Process Identifier' = (the process identifier used in step 1),
  - 'Initiating Device Identifier' = TD,
  - 'Monitored Object Identifier' = X
  - 'Time Remaining' = (any value appropriate for the Lifetime selected),
  - 'List of Values' = (values appropriate to the property Y subscribed to, and any other properties the IUT provides with it, such as Status\_Flags)
7. IF (Protocol\_Revision is present and Protocol\_Revision ≥ 10) THEN
  - RECEIVE
    - BACnet-Error-PDU,
    - Error Class = SERVICES,
    - Error Code = (UNKNOWN\_SUBSCRIPTION) |
 (BACnet-SimpleACK-PDU)
  - ELSE
    - RECEIVE BACnet-Error-PDU,
    - Error Class = SERVICES,
    - Error Code = (any valid error code for class SERVICES) |
 (BACnet-SimpleACK-PDU)



### 8.11.2.X2 Change of Value Notifications with Invalid Process Identifier

Purpose: To verify that an appropriate error is returned if a COV notification arrives that contains a process identifier that does not match any current subscriptions.

Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU
4. TRANSMIT ConfirmedCOVNotification-Request,
  - 'Subscriber Process Identifier' = (a process identifier different from the one used in step 1),
  - 'Initiating Device Identifier' = TD,
  - 'Monitored Object Identifier' = X
  - 'Time Remaining' = (any value appropriate for the Lifetime selected),
  - 'List of Values' = (values appropriate to the property Y subscribed to, and any other properties the IUT provides with it, such as Status\_Flags)
5. IF (Protocol\_Revision is present and Protocol\_Revision  $\geq$  10) THEN
  - RECEIVE
    - BACnet-Error-PDU,
    - Error Class = SERVICES,
    - Error Code = (UNKNOWN\_SUBSCRIPTION) |
 (BACnet-SimpleACK-PDU)
  - ELSE
    - RECEIVE
      - BACnet-Error-PDU,
      - Error Class = SERVICES,
      - Error Code = (any valid error code for class SERVICES) |
 (BACnet-SimpleACK-PDU)

### 8.11.2.X4 Change of Value Notifications with Invalid Monitored Object Identifier

Purpose: To verify that an appropriate error is returned if a COV notification arrives that contains a monitored object identifier that does not match any current subscriptions.

Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)

3. TRANSMIT BACnet-SimpleACK-PDU
4. TRANSMIT ConfirmedCOVNotification-Request,
  - 'Subscriber Process Identifier' = (the process identifier used in step 1),
  - 'Initiating Device Identifier' = TD,
  - 'Monitored Object Identifier' = (any object Y supporting COV notification except X),
  - 'Time Remaining' = (any value appropriate for the Lifetime selected),
  - 'List of Values' = (any value)
5. IF (Protocol\_Revision is present and Protocol\_Revision  $\geq$  10) THEN
  - RECEIVE
    - BACnet-Error-PDU,
    - Error Class = SERVICES,
    - Error Code = (UNKNOWN\_SUBSCRIPTION) |
    - (BACnet-SimpleACK-PDU)
  - ELSE
    - RECEIVE
      - BACnet-Error-PDU,
      - Error Class = SERVICES,
      - Error Code = (any valid error code for class SERVICES) |
      - (BACnet-SimpleACK-PDU)

### 8.11.2.X5 Change of Value Notifications with Invalid Monitored property

Purpose: To verify that an appropriate error is returned if a COV notification arrives that contains a monitored object identifier that does not match any current subscriptions.

Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU
4. TRANSMIT ConfirmedCOVNotification-Request,
  - 'Subscriber Process Identifier' = (the process identifier used in step 1),
  - 'Initiating Device Identifier' = TD,
  - 'Monitored Object Identifier' = X
  - 'Time Remaining' = (any value appropriate for the Lifetime selected),
  - 'List of Values' = (any property supporting COV notification except Y),
5. IF (Protocol\_Revision is present and Protocol\_Revision  $\geq$  10) THEN
  - RECEIVE
    - BACnet-Error-PDU,
    - Error Class = SERVICES,
    - Error Code = (UNKNOWN\_SUBSCRIPTION) |
    - (BACnet-SimpleACK-PDU)
  - ELSE
    - RECEIVE
      - BACnet-Error-PDU,
      - Error Class = SERVICES,
      - Error Code = (any valid error code for class SERVICES) |
      - (BACnet-SimpleACK-PDU)

### 8.11.1.X1 Change of Value Notification

Purpose: To verify that the IUT can execute COVNotification requests from object types that provides a Property and Status\_Flags properties in COV notifications.

Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE | FALSE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU
4. BEFORE Notification Fail Time
  - IF (the subscription was for confirmed notifications) THEN
    - TRANSMIT ConfirmedCOVNotification-Request,
      - 'Subscriber Process Identifier' = (the process identifier used in step 1),
      - 'Initiating Device Identifier' = TD,
      - 'Monitored Object Identifier' = X
      - 'Time Remaining' = (any value appropriate for the Lifetime selected),
      - 'List of Values' = (values appropriate to the property Y subscribed to, and any other properties the IUT provides with it, such as Status\_Flags)
    - RECEIVE BACnet-SimpleACK-PDU
  - ELSE
    - TRANSMIT UnconfirmedCOVNotification-Request,
      - 'Subscriber Process Identifier' = (the process identifier used in step 1),
      - 'Initiating Device Identifier' = TD,
      - 'Monitored Object Identifier' = X
      - 'Time Remaining' = (any value appropriate for the Lifetime selected),
      - 'List of Values' = (values appropriate to the property Y subscribed to, and any other properties the IUT provides with it, such as Status\_Flags)
5. CHECK (to ensure that any appropriate functions defined by the manufacturer, such as displaying information on a workstation screen are carried out)

### 8.11.X4 Requests 8 Hour Lifetimes

Purpose: To verify that the IUT correctly generates subscription requests with lifetimes less than or equal to 8 hours. Either confirmed or unconfirmed notifications may be used, but at least one of these options shall be supported by the IUT.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request,
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE | FALSE,
  - 'Lifetime' = (any valid lifetime between 1 and 28800)
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU

[In BTL Specified Tests, Add modified tests deriving from 135.1-2013]

### 8.11.1 Confirmed Notifications Subscription

Purpose: To verify that the IUT can initiate a SubscribeCOVProperty service request for confirmed notifications.

*Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.*

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = TRUE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU

### 8.11.2 Unconfirmed Notifications Subscription

Purpose: To verify that the IUT can initiate a SubscribeCOVProperty service request for unconfirmed notifications.

*Test Concept: A subscription for COV notifications is established, using a Lifetime of L. L shall be set to a value less than 24 hours and large enough to complete the test.*

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Issue Confirmed Notifications' = FALSE,
  - 'Lifetime' = L,
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU

### 8.11.3 Canceling a Subscription

Purpose: To verify that the IUT can initiate a SubscribeCOVProperty service request to cancel a subscription.

Test Steps:

1. MAKE (the IUT send a SubscribeCOVProperty-Request),
2. RECEIVE SubscribeCOVProperty-Request,
  - 'Subscriber Process Identifier' = (any valid process identifier),
  - 'Monitored Object Identifier' = X
  - 'Monitored Property Identifier' = (the property Y to be monitored),
  - 'COV Increment' = (Any REAL value -- optional)
3. TRANSMIT BACnet-SimpleACK-PDU