

# BACnet<sup>®</sup> TESTING LABORATORIES

# INTERIM TEST SPECIFICATION

To Be Used with Test Package 23.0 Version 2 April 14, 2023

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#### Foreward

The purpose of this document is to define interim tests and other test package changes made to support testing of a device that supports functionality currently not covered in the released BTL Test Package. This document shall be applied and used with BTL Test Package 23.0.

Vendors who are planning to submit a device for testing and who implement Protocol\_Revision 24 and higher, or which contain functionality not covered by the Official Test Package, should use this Interim Test document.

Please note that if the device contains functionality not yet covered by the official Test Package, nor by the Interim Tests document, development of new tests may be required for your device. Please contact the BTL Manager before submitting your device for testing to ensure you are aware of all tests that will need to be applied to your device.

The changes in this document are for interim use only and may or may not be used as documented here when the final changes are applied to the next Test Package revision. Devices tested using this interim test document shall be recalled for updated testing when the next revision of test package is released that includes the topics covered here.

In the following document, language to be added to existing clauses of ANSI/ASHRAE 135.1-2019 or any part of the Test Package 23.0 are indicated through the use of *italics*, while deletions are indicated by strikethrough. Where entirely new sections are proposed to be added, plain type is used throughout.

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# **BTL Checklist and BTL Test Plan Changes**

This section of the document contains interim changes to the BTL Checklist and the BTL Test Plan documents to support testing of products with functionality outside the scope of the official test plan.

This section is ordered the same as the BTL Checklist and BTL Test Plan documents to allow easy navigation of the material.

All test changes can be found in the next major section.

# 3.14 Multi-state Input Object

#### JIRA: BTLWG-1402

The current test package does not account for the optional writablity of the Number\_Of\_States property.

### **BTL Checklist Changes**

Mult	Multi-state Input Object		
	R	Base Requirements	
	S	Supports configurable Out_Of_Service property	
	S	Supports State_Text	
	0	Supports resizable State_Text property	
	<mark>0</mark>	Supports writable Number Of States	

### **BTL Test Plan Changes**

# 3.14.4 Supports Resizable State\_Text Property

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a *Multi-state Input object* with a State\_Text property that is resizable by writing to the array.

Verify Checklist		
	Test Conditionality	Must be executed.
	<mark>Test Directives</mark>	Verify that the IUT claims support for DS-WP-B option 'Contains
		resizable array properties'
	Testing Hints	
135.1-2019 - 7.3.2.18.5 - Number Of States and State Text Size Change Test		
BTL – 7.3.1.X110.1 – Resizable State Text Test		
	Test Conditionality	Must be executed if the IUT claims Protocol_Revision 4 or greater-and
		supports a resizable State_Text property.
	Test Directives	This test shall be performed using a Multi-state Input object.
	Testing Hints	

### 3.14.5 Supports writable Number\_Of\_States

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a Multi-state Input object with a writable Number\_Of\_States property.

BTL - 7.3.1.X73.1 – Writable Number_Of_States Test		
	Test Conditionality	Must be executed if the IUT claims Protocol Revision 4 or greater.
	<mark>Test Directives</mark>	This test shall be performed using a Multi-state Input object.
	Testing Hints	

# 3.15 Multi-state Output Object

### JIRA: BTLWG-1402

The current test package does not account for the optional writablity of the Number\_Of\_States property.

# **BTL Checklist Changes**

Multi-state Output Object		
R	Base Requirements	
R	Supports command prioritization	
S	Supports configurable Out_Of_Service property	
S	Supports State_Text	
0	Supports resizable State_Text property	
<mark>O</mark>	Supports writable Number Of States	
0	Supports the value source mechanism.	

### **BTL Test Plan Changes**

# 3.15.5 Supports Resizable State\_Text Property

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a *Multi-state Output object* with a State\_Text property that is resizable by writing to the array.

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for DS-WP-B option 'Contains
		resizable array properties'
	Testing Hints	
135.1-2019 - 7.3.2.19.6 - Number Of States and State Text Size Change Test		
BTL – 7.3.1.X110.1 - Resizable State Text Test		
	<b>Test Conditionality</b>	Must be executed if the IUT claims Protocol_Revision 4 or greater and
		supports a resizable State Text property.
	<b>Test Directives</b>	This test shall be performed using a Multi-state Output object.
	Testing Hints	

### 3.15.6 Supports writable Number\_Of\_States

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a Multi-state Output object with a writable Number\_Of\_States property.

BTL - 7.3.1.X73.1 - Writable Number_Of_States Test		
	Test Conditionality	Must be executed if the IUT claims Protocol Revision 4 or greater.
	Test Directives	This test shall be performed using a Multi-state Output object.
	<b>Testing Hints</b>	

# **<del>3.15.6***3.15.7*Supports the Value Source Mechanism</del>

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# 3.16 Multi-state Value Object

### JIRA: BTLWG-1402

The current test package does not account for the optional writablity of the Number\_Of\_States property.

# **BTL Checklist Changes**

Multi-state Value Object		
R	Base Requirements	
S	Supports configurable Out_Of_Service property	
S	Supports State_Text	
0	Supports command prioritization	
0	Supports resizable State_Text property	
<mark>O</mark>	Supports writable Number Of States	
0	Supports the value source mechanism.	

### **BTL Test Plan Changes**

### 3.16.5 Supports Resizable State\_Text Property

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a *Multi-state Value object* with a State\_Text property that is resizable by writing to the array.

Verify Checklist		
	Test Conditionality	Must be executed.
	<mark>Test Directives</mark>	Verify that the IUT claims support for DS-WP-B option 'Contains
		resizable array properties'
	Testing Hints	
135.1-2019 - 7.3.2.20.5 - Number Of States and State Text Size Change Test		
BTL – 7.3.1.X110.1 – Resizable State Text Test		
	<b>Test Conditionality</b>	Must be executed if the IUT claims Protocol_Revision 4 or greater and
		supports a resizable State_Text property.
	Test Directives	This test shall be performed using a Multi-state Value object.
	Testing Hints	

# 3.16.6 Supports writable Number Of States

The IUT is protocol revision 4 or higher and the IUT contains, or can be made to contain, a Multi-state Value object with a writable Number Of States property.

BTL - 7.3.1.X73.1 – Writable Number_Of_States Test		
	Test Conditionality	Must be executed if the IUT claims Protocol Revision 4 or greater.
	<mark>Test Directives</mark>	This test shall be performed using a Multi-state Value object.
	Testing Hints	

# **3.16.63.16.7**Supports the Value Source Mechanism

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# **BTL Specified Tests Changes**

This section contains all of the new and changed tests required by the interim test BTL Checklist and BTL Test Plan changes.

#### JIRA: BTLWG-1402

#### [Add new Test] 7.3.1.X110.1 Resizable State Text Test

Purpose: This test verifies that when the State\_Text array is changed, the value of the Number\_Of\_States property is changed accordingly to the same size.

Test Concept: N1 and N2 are valid sizes for the State\_Text property, N1 and N2 do not equal the present size of the State\_Text, and N1 does not equal N2. The size of the State\_Text property is written to N1 and the value of the Number\_Of\_States and the size of the State\_Text is verified. The procedure is repeated with N2. The size of the State\_Text is changed to N1 by writing the entire array and Number\_Of\_States and the size of the State\_Text is verified. The procedure is repeated with N2.

Configuration Requirements: The IUT shall be configured with a Multi-state object O1, with a resizable State\_Text array.

Test Steps:

- 1. WRITE O1, State\_Text = N1, ARRAY INDEX = 0
- 2. VERIFY Number\_Of\_States = N1
- 3. VERIFY State\_Text = N1, ARRAY INDEX = 0
- 4. WRITE O1, State\_Text = N2, ARRAY INDEX = 0
- 5. VERIFY Number\_Of\_States = N2
- 6. VERIFY State\_Text = N2, ARRAY INDEX = 0
- 7. TRANSMIT WriteProperty-Request, 'Object Identifier' = (O1), 'Property Identifier' = State\_Text, 'Property Value' = (State Text array of length N1)
- 8. RECEIVE Simple-ACK-PDU
- 9. VERIFY Number Of States = N1
- 10. VERIFY State Text = N1, ARRAY INDEX = 0
- 11. TRANSMIT WriteProperty-Request,
  'Object Identifier' = (O1),
  'Property Identifier' = State\_Text,
  'Property Value' = (State Text array of length N2)
- 12. RECEIVE Simple-ACK-PDU
- 13. VERIFY Number Of States = N2
- 14. VERIFY State\_Text = N2, ARRAY INDEX = 0

#### [Add new Test] 7.3.1.X73.1 Writable Number\_Of\_States Test

Purpose: This test verifies that when the value of the Number\_Of\_States property is written, the size of the State\_Text array is changed accordingly.

Test Concept: N1 and N2 are valid values of the Number\_Of\_States property, N1 and N2 do not equal the value of the Number\_Of\_States, and N1 does not equal N2. The value of the Number\_Of\_States property is written to N1 and

the size of the State\_Text and the value of the Number\_Of\_States property is verified. The procedure is repeated with N2 and again with N1.

Configuration Requirements: The IUT shall be configured with a Multi-state object O1, with a writable Number\_Of\_States-property.

Test Steps:

- 1. WRITE O1, Number\_Of\_States = N1
- 2. VERIFY Number\_ $Of_States = N1$
- 3. VERIFY State Text = N1, ARRAY INDEX = 0
- 4. WRITE O1, Number\_Of\_States = N2
- 5. VERIFY Number\_ $Of_States = N2$
- 6. VERIFY State Text = N2, ARRAY INDEX = 0
- 7. WRITE O1,  $Number_Of_States = N1$
- 8. VERIFY Number  $O\bar{f}$  States = N1
- 9. VERIFY State Text = N1, ARRAY INDEX = 0

### 7.3.2.18.5 Number\_Of\_States and State\_Text Size Change Test

[Delete this test from 135.1-2019]

### 7.3.2.19.6 Number\_Of\_States and State\_Text Size Change Test

[Delete this test from 135.1-2019]

#### 7.3.2.20.2 Number\_Of\_States and State\_Text Size Change Test

[Delete this test from 135.1-2019]