

### Clarification Request

**References:** BTL Specified Test 12.0, 7.3.1.9 - Binary Object Elapsed Active Time Tests, BTL wID0133

**Date of BTL-WG Response:** August 15, 2013

#### Background:

With the adoption of Addendum ad to ANSI/AHRAE 135-2010 (protocol revision 13), the definition of the Elapsed\_Active\_Time property was revised for the Binary Output object as follows:

“12.7.17 Elapsed\_Active\_Time

This property, of type Unsigned32, represents the accumulated number of seconds that the Present\_Value property *or the Feedback\_Value property* has had the value ACTIVE since this property was most recently set to a zero value. If one of the optional properties Elapsed\_Active\_Time or Time\_Of\_Active\_Time\_Reset is present, then both of these properties shall be present. *Whether Present\_Value or Feedback\_Value is used as the indicator for the calculation of the Elapsed\_Active\_Time is a local matter.*”

The BTL-WG intends to modify the corresponding test for BTL Test Package v13 (BTL – 7.3.1.9 Binary Object Elapsed Active Time Tests, BTL wID0133). However, while the redefinition of the Elapsed\_Active\_Time property was introduced in protocol revision 13, it should also be valid for protocol revision 12 and lower. The “Rationale” section in Addendum ad, Clause 3, implies that the changes made to the Elapsed\_Active\_Time property represent a correction to the former definition rather than a new functionality:

#### “135-2010ad-3 Allow Feedback\_Value to be used to calculate Elapsed\_Active\_Time

##### Rationale

Mechanical systems controlled by a Binary Output object often provide additional external means to control the running state of the system, such as mechanical service-switches, security means to switch overheated motors, electrical fuses, etc. The actual active time of the mechanical system may therefore differ from the value calculated from the Present\_Value. A more appropriate basis to calculate the active time may be the Feedback\_Value, which indicates the effective status of the controlled mechanical system.”

To allow for the usage of the Feedback\_Value property when applying BTL Test Package 12.0 (affects implementations supporting protocol revision 12 or lower), test BTL – 7.3.1.9 should be modified as follows:

#### 7.3.1.9 Binary Object Elapsed Active Time Tests

Reason for Change: Errors were pointed out via BTL-CR-0253.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: 12.6.17, 12.6.18, 12.7.17, 12.7.18, 12.8.15, and 12.8.16.

Purpose: To verify that the properties of binary objects **that** collectively track active time function properly. If the Elapsed\_Active\_Time and Time\_Of\_Active\_Time\_Reset properties are not supported then this test shall be omitted. This test applies to Binary Input, Binary Output, and Binary Value objects.

Test Concept: The Present\_Value of the binary object being tested is set to INACTIVE. The Elapsed\_Active\_Time property is checked to verify that it does not accumulate time while the object is in an INACTIVE state. The Present\_Value is then set to ACTIVE. The Elapsed\_Active\_Time property is checked to verify that it is accumulating time while the object is in an ACTIVE state. The Present\_Value is then set to INACTIVE and the Elapsed\_Active\_Time is reset. The Time\_Of\_Active\_Time\_Reset property is checked to verify that it has been updated.

Configuration Requirements: The object being tested shall be configured such that the Present\_Value and Elapsed\_Active\_Time properties are writable or another means of changing these properties shall be provided. *If the test is applied to the Binary\_Output object, the Feedback\_Value may, at the vendor's discretion, be used instead of the Present\_Value.*

#### Test Steps:

1. IF (Present\_Value is writable) THEN  
     WRITE Present\_Value = INACTIVE  
     VERIFY Present\_Value = INACTIVE  
   ELSE  
     MAKE (Present\_Value = INACTIVE)
2. TRANSMIT ReadProperty-Request,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time
3. RECEIVE ReadProperty-ACK,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time,  
     'Property Value' = (the elapsed active time,  $T_{ELAPSED}$  in seconds)
4. WAIT (1 minute)
5. TRANSMIT ReadProperty-Request,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time
6. RECEIVE ReadProperty-ACK,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time,  
     'Property Value' = (the same  $T_{ELAPSED}$  as step 3)
7. IF (Present\_Value is writable) THEN  
     WRITE Present\_Value = ACTIVE  
     VERIFY Present\_Value = ACTIVE  
   ELSE  
     MAKE (Present\_Value = ACTIVE)
8. WAIT (**Internal Processing Fail Time** + 30 seconds)
9. IF (Present\_Value is writable) THEN  
     WRITE Present\_Value = INACTIVE  
     VERIFY Present\_Value = INACTIVE  
   ELSE  
     MAKE (Present\_Value = INACTIVE)
10. TRANSMIT ReadProperty-Request,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time
11. RECEIVE ReadProperty-ACK,  
     'Object Identifier' = (the object being tested),  
     'Property Identifier' = Elapsed\_Active\_Time,  
     'Property Value' = ( $T: (T_{ELAPSED} + 30) \leq T \leq (T_{ELAPSED} + \text{TimeX})$ , where TimeX is the time between the beginning of step 7 and this step30 + **Internal Processing Fail Time**))
11. IF (Present\_Value is writable) THEN  
     WRITE Present\_Value = INACTIVE

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_____VERIFY Present_Value = INACTIVE
_____ELSE
_____MAKE (Present_Value = INACTIVE)
12. IF (Elapsed_Active_Time is writable) THEN
    WRITE Elapsed_Active_Time = 0
    VERIFY Elapsed_Active_Time = 0
    ELSE
        MAKE (Elapsed_Active_Time = 0)
13. TRANSMIT ReadProperty-Request,
    'Object Identifier' = (the IUT's Device object),
    'Property Identifier' = Local_Date
14. RECEIVE ReadProperty-ACK,
    'Object Identifier' = (the IUT's Device object),
    'Property Identifier' = Local Date,
    'Property Value' = (the current local date, D)
15. TRANSMIT ReadProperty-Request,
    'Object Identifier' = (the IUT's Device object),
    'Property Identifier' = Local_Time
16. RECEIVE ReadProperty-ACK,
    'Object Identifier' = (the IUT's Device object),
    'Property Identifier' = Local_Time,
    'Property Value' = (the current local time, TLoc)
17. TRANSMIT ReadProperty-Request,
    'Object Identifier' = (the object being tested),
    'Property Identifier' = Time_Of_Active_Time_Reset
18. RECEIVE ReadProperty-ACK,
    'Object Identifier' = (the object being tested),
    'Property Identifier' = Present_Value,
    'Property Value' = (a date and time such that the date = D and the time is
approximately TLoc)

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**Note: Consider this change when incorporating BTL-CR-0253 (BTL wID0209) into BTL Test Package 12.1.**

**Question:**

Shall the Feedback\_Value property be considered for test BTL - 7.3.1.9 when applying BTL Test Package 12.0?

**Response:**

**"Yes. The BTL will modify the test to make clear that Feedback\_Value is an acceptable alternative to the Present\_Value when calculating Elapsed\_Active\_Time."**