

## Clarification Request

**References:** BTL Specified Tests 7.3.2.24.2, 7.3.2.24.3, 7.3.2.24.6.1, 7.3.2.24.6.2, 7.3.2.24.7, 7.3.2.24.8 and 7.3.2.24.9

**Date of BTL-WG Response:** May 22, 2012

### Problem:

Tests for logging were written in an era when all logging objects would perpetually periodically add a record. The way that these are expressed needs to evolve for use on logs that operate only by Triggered (and for Event Log, where the addition of records is not periodic).

### Background:

#### 7.3.2.24.2 Start\_Time Test

Reason For Change: To make this test generic for all logging objects.

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

BACnet Reference Clause: 12.23.6.

Purpose: To verify that logging is enabled at the time specified by Start\_Time.

Test Concept: The log object is configured to acquire data by each mean available to the implementation. The test is begun at some time prior to the time specified in Start\_Time and non-collection of records is confirmed. Collection of records after the time specified by Start\_Time is then confirmed.

Configuration Requirements: Start\_Time shall be configured with a date and time such that steps 1 through 6 will be concluded before that time. Stop\_Time, if present shall be configured with the latest possible date and time, in order that it occurs after the end of the test. Stop\_When\_Full, if configurable, shall be set to FALSE; Enable shall be set to TRUE.

### Test Steps:

1. WRITE Record\_Count = 0
2. WAIT **Internal Processing Fail Time**
3. TRANSMIT ReadProperty-Request,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count
4. RECEIVE ReadProperty-ACK,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count
  - 'Property Value' = (any valid value, X)
5. MAKE (IUT collect another record)
6. WAIT (**Notification Fail Time** + **Internal Processing Fail Time**)

7. VERIFY Total\_Record\_Count = (value X returned in step 4)
8. **WHILE (IUT clock is earlier than Start\_Time) DO**
  - VERIFY Total\_Record\_Count = (value X returned in step 4)
  9. WAIT (**Notification Fail Time + Internal Processing Fail Time**)
10. MAKE (IUT collect another record)
11. WAIT (**Notification Fail Time + Internal Processing Fail Time**)
12. VERIFY Total\_Record\_Count > (value X returned in step 4)

Note to Tester: For each MAKE (IUT collect another record) perform the following steps

```

IF(Event Log Object) THEN
    MAKE (Event Log Object collect another record)
ELSE
    IF (COV subscription in use) THEN
        MAKE (monitored value change sufficient to generate another record)
    ELSE IF (interval or period logging is in use) THEN
        WAIT (Log_Interval)
    ELSE
        MAKE (Trend Log or Trend Log Multiple Object collect another record)

```

#### 7.3.2.24.3 Stop\_Time Test

Reason for Change: To make this test generic for all logging objects. Enable was being set to TRUE too early such that step 10 could pass incorrectly. The change is in JB-020.

Note: 135.1-2009g-16 ratified the prior version of this test—the version that appeared in BTL Specified Tests-5.0.final

Dependencies: ReadProperty Service Execution Tests, 9.15; WriteProperty Service Execution Tests, 9.18.

BACnet Reference Clause: 12.23.7.

Purpose: To verify that logging is disabled at the time specified by Stop\_Time.

Test Concept: The log object is configured to acquire data by each means available to the implementation. The test is begun at some time prior to the time specified in Stop\_Time and collection of records is confirmed. Non-collection of records after the time specified by Stop\_Time is then confirmed.

Configuration Requirements: Stop\_Time shall be configured with a date and time such that steps 1 through 9 will be concluded before that time. Start\_Time, if present shall be configured with date and time preceding the initiation of the test. Stop\_When\_Full, if configurable, shall be set to FALSE.

Test Steps:

1. WRITE Enable = FALSE
2. WAIT **Internal Processing Fail Time**
3. WRITE Record\_Count = 0
4. WRITE Enable = TRUE.
5. TRANSMIT ReadProperty-Request,
 

'Object Identifier' =	(the object being tested),
'Property Identifier' =	Total_Record_Count
6. RECEIVE ReadProperty-ACK,
 

'Object Identifier' =	(the object being tested),
'Property Identifier' =	Total_Record_Count
'Property Value' =	(any valid value, X)
7. WAIT **Internal Processing Fail Time**
8. MAKE (IUT collect another record)
9. WAIT (**Notification Fail Time + Internal Processing Fail Time**)
10. VERIFY Total\_Record\_Count > (value X returned in step 5)
11. **WHILE (IUT clock is earlier than Stop\_Time) DO { }**

12. WAIT (**Notification Fail Time** + **Internal Processing Fail Time**)
13. TRANSMIT ReadProperty-Request,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count
14. RECEIVE ReadProperty-ACK,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count
  - 'Property Value' = (any valid value, X)
15. MAKE (IUT collect another record)
16. WAIT (**Notification Fail Time** + **Internal Processing Fail Time**)
17. VERIFY Total\_Record\_Count = (value X returned in step 14)

Note to Tester: For each MAKE (IUT collect another record) perform the following steps

```

IF(Event Log Object) THEN
    MAKE (Event Log Object collect another record)
ELSE
    IF (COV subscription in use) THEN
        MAKE (monitored value change sufficient to generate another record)
    ELSE IF (interval or period logging is in use) THEN
        WAIT (Log_Interval)
    ELSE
        MAKE (Trend Log or Trend Log Multiple Object collect another record)
  
```

#### 7.3.2.24.6.1 Stop\_When\_Full TRUE Test

Reason for Change: To make this test generic for all logging objects. The Configuration Requirements were incorrect. This test in some form will become included in 135.1 by virtue of 135.1-2009j-10 when that is approved.

Dependencies: ReadProperty Service Execution Tests, 9.15; WriteProperty Service Execution Tests, 9.18.

BACnet Reference Clause: 12.23.12.

Purpose: To verify that Stop\_When\_Full set to TRUE properly indicates that the log object ceases collecting data when its Log\_Buffer acquires Buffer\_Size data items.

Test Concept: The log object is configured to acquire data by whatever means. Data is collected until more than Buffer\_Size records have been collected and Enable is verified to be FALSE.

Configuration Requirements: Start\_Time, if present, shall be configured with a date and time preceding the beginning of the test. Stop\_Time, if present shall be configured with the latest possible date and time, in order that it occurs after the end of the test. Stop\_When\_Full, if configurable, shall be set to TRUE. Log\_Enable shall be set to FALSE.

Test Steps:

1. TRANSMIT ReadProperty-Request,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count,
2. RECEIVE ReadProperty-ACK,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count,
  - 'Property Value' = (any valid value, X)
3. WRITE Record\_Count = 0
4. WAIT **Internal Processing Fail Time**

5. WRITE Enable = TRUE
6. WHILE ( (Total\_Record\_Count) modulo  $2^{32}$  < Buffer\_Size ) DO { }
7. WAIT **Internal Processing Fail Time**
8. VERIFY ~~Log~~Enable = FALSE

#### 7.3.2.24.6.2 Stop\_When\_Full FALSE Test

Reason for Change: This test in some form will become included in 135.1 by virtue of 135.1-2009j-10 when that is approved.

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

BACnet Reference Clause: 12.23.12.

Purpose: To verify that Stop\_When\_Full set to FALSE properly indicates that the ~~Trend\_Log~~log object continues collecting data after its Log\_Buffer acquires Buffer\_Size data items.

Test Concept: The log object is configured to acquire data by whatever means. Data is collected until more than Buffer\_Size records have been collected and ~~Log~~Enable is verified to be TRUE.

Configuration Requirements: Start\_Time, if present, shall be configured with a date and time preceding the beginning of the test. Stop\_Time, if present shall be configured with the latest possible date and time, in order that it occur after the end of the test. Stop\_When\_Full, if configurable, shall be set to FALSE. ~~Log~~Enable shall be set to FALSE.

Test Steps:

1. WRITE Record\_Count = 0
2. WAIT **Internal Processing Fail Time**
3. TRANSMIT ReadProperty-Request,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count
4. RECEIVE ReadProperty-ACK,
  - 'Object Identifier' = (the object being tested),
  - 'Property Identifier' = Total\_Record\_Count,
  - 'Property Value' = (any valid value, X)
5. WRITE Enable = TRUE
6. WHILE ( (Total\_Record\_Count – (value X returned in step 4)) modulo  $2^{32}$  < (Buffer\_Size+1) ) DO { }
7. WAIT **Internal Processing Fail Time**
8. VERIFY Enable = TRUE

#### 7.3.2.24.7 Buffer\_Size Test

Reason for Change: To make this test generic for all logging objects. This test in some form will become included in 135.1 by virtue of 135.1-2009j-13 when that is approved.

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

BACnet Reference Clause: 12.23.13.

Purpose: To verify that Buffer\_Size properly indicates the number of records that can be stored in the Log\_Buffer.

Test Concept: The log object is configured to acquire data by whatever means. Data is collected until at least Buffer\_Size records have been collected, then the Log\_Buffer is read and the presence of Buffer\_Size discrete records is verified.

Configuration Requirements: Start\_Time, if present, shall be configured with a date and time preceding the beginning of the test. Stop\_Time, if present shall be configured with the latest possible date and time, in order that it occur after the end of the test. Enable shall be set to TRUE.

Test Steps:

1. **WHILE ( Record\_Count < Buffer\_Size ) DO { }**
2. WRITE Enable = FALSE
3. WAIT **Internal Processing Fail Time**
4. CHECK (that Log\_Buffer has Buffer\_Size discrete records)

#### 7.3.2.24.8 Record\_Count Test

Reason for Change: *To make this test generic for all logging objects.* The 135.1-2009 version of this test had incorrectly expected the Log\_Buffer to contain no records. This test in some form will become included in 135.1 by virtue of 135.1-2009j-14 when that is approved.

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

BACnet Reference Clause: 12.25.15.

Purpose: To verify that the Record\_Count property indicates the number of records that are stored in the Log\_Buffer.

Test Concept: The ~~Trend~~ Logging object is configured to acquire data by whatever means. Record\_Count is set to zero and Log\_Buffer is read to verify ~~no records are present~~ *only one record is present and it is the buffer-purged event*. Collection of data proceeds until Record\_Count is about Buffer\_Size/2, collection is halted and Log\_Buffer is read to verify the Record\_Count value. Collection then resumes until Buffer\_Size records are read; collection is then halted and Log\_Buffer read to verify Record\_Count again.

Configuration Requirements: Start\_Time, if present, shall be configured with a date and time preceding the beginning of the test. Stop\_Time, if present shall be configured with the latest possible date and time, in order that it occur after the end of the test. Log\_Enable shall be set to FALSE.

Test Steps:

1. WRITE Record\_Count = 0
2. WAIT **Internal Processing Fail Time**
3. ~~CHECK (that Log\_Buffer has no records)~~
3. *VERIFY (Log\_Buffer contains 1 entry, and it is the buffer-purged event)*
4. WRITE ~~Log~~\_Enable = TRUE
5. **WHILE ( Record\_Count < Buffer\_Size/2 ) DO { }**
6. WRITE ~~Log~~\_Enable = FALSE
7. WAIT **Internal Processing Fail Time**
8. ~~VERIFY~~CHECK ( that Log\_Buffer has the number of records indicated by Record\_Count )
9. WRITE ~~Log~~\_Enable = TRUE
10. WHILE ( Record\_Count < Buffer\_Size ) DO { }
11. WRITE ~~Log~~\_Enable = FALSE
12. WAIT **Internal Processing Fail Time**
13. ~~VERIFY~~CHECK ( that Log\_Buffer has the number of records indicated by Record\_Count )

#### 1. 7.3.2.24.9 Total\_Record\_Count Test

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

BACnet Reference Clause: ~~12.23.16~~ 12.25.16.

Purpose: To verify that the Total\_Record\_Count property increments for each record added to the Log\_Buffer, even after Buffer\_Size records have been added. (Note: it is not reasonable to test for the requirement of BACnet Clause 12.23.16 that the value wrap from  $2^{32}-1$  to 0; even if a record was collected every 100<sup>th</sup> of a second it could take more than 497 days to complete the test.)

Test Concept: The Trend Log is configured to acquire data by whatever means. Record\_Count is set to zero and Total\_Record\_Count is read. Collection of data proceeds until Record\_Count changes, collection is halted and Total\_Record\_Count is checked that it has incremented by Record\_Count. If, for whatever reason, the IUT cannot be configured such that the TD is able to halt collection before Buffer\_Size records are collected this test shall not be performed.

Configuration Requirements: Start\_Time, if present, shall be configured with a date and time preceding the beginning of the test. Stop\_Time, if present, shall be configured with the latest possible date and time in order that it occur after the end of the test. Log\_Enable shall be set to FALSE.

Test Steps:

1. WRITE Record\_Count = 0
2. WAIT **Internal Processing Fail Time**
3. READ X = Total\_Record\_Count
4. READ Y = Record\_Count
5. WRITE Log\_Enable = TRUE
6. WHILE ( Record\_Count = Y + 1) DO { }
7. WRITE Log\_Enable = FALSE
8. WAIT **Internal Processing Fail Time**
9. IF (Total\_Record\_Count - X != Record\_Count - Y) THEN  
    ERROR "Total\_Record\_Count has incorrect value."

#### Question:

How shall the tests be corrected in the aspect **shown** above, to account for logs that operate only by Triggered (and for Event Log, where the addition of records is not periodic)?

#### Response:

No change is required. The sentence "Logging object is configured to acquire data by whatever means." means that the logging object is actively acquiring data. If the logging object is not doing that all on its own, it is necessary to provide instructions to the tester of how to get it to do that.