

Clarification Request

References: ASHRAE 135-2010, ASHRAE 135.1-2009, BTL Work Item wID0066, BTL CR 185

Background / Proposed Solution:

ASHRAE 135-2010 reads in sections 15.8.1.1.4.2:

15.8.1.1.4.2 By Sequence Number

The 'By Sequence Number' parameter shall indicate that the particular items to be read are referenced by a sequence number and that the response shall include the sequence number of the first returned item. This differs semantically from the 'By Position' parameter choice. The Reference Number provided in the 'By Position' choice references an item by its position in the list. In contrast, the Reference Number provided in the 'By Sequence Number' choice references an item by its sequence number, which is given when the item is added to the list. Not all lists implement the concept of a sequence number. An example of a list that does implement the concept of a sequence number is the Log_Buffer property of the Trend Log object.

15.8.1.1.4.2.1 Reference Sequence Number

The 'Reference Sequence Number' parameter specifies the sequence number of the first (if 'Count' is positive) or last (if 'Count' is negative) item to be read.

15.8.1.1.4.2.2 Count

The absolute value of the 'Count' parameter specifies the number of records to be read. If 'Count' is positive, the record specified by 'Reference Sequence Number' shall be the first and oldest record read and returned. **If 'Count' is negative the record specified by 'Reference Sequence Number' shall be the last and newest record read and returned. 'Count' shall not be zero.**

15.8.2 Service Procedure

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If the 'Range' parameter is present and specifies the 'By Sequence Number' parameters, then the responding BACnet-user shall read and attempt to return all of the items specified. The items specified are all items with a sequence number in the range 'Reference Sequence Number' to 'Reference Sequence Number' plus 'Count'-1 if 'Count' is positive, **or in the range 'Reference Sequence Number' plus 'Count'+1 to 'Reference Sequence' if 'Count' is negative.**

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To avoid missing items when using chained time-based reads, the first item in the desired set should be found using the 'By Time' form of the 'Range' parameter. Subsequent requests to retrieve the remaining items in the desired set should use the 'By Sequence Number' form of the 'Range' parameter. The reason for this is that lists that include a timestamp but are ordered by time of arrival may have entries with out-of-order timestamps due to negative time changes in the local device's clock. **If items are read that match the request parameters but cannot be returned in the response, the 'Result Flags' parameter shall contain the MORE_ITEMS flag set to TRUE, otherwise it shall be FALSE.** Remaining items may be obtained with subsequent requests specifying appropriately chosen parameters.

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BTL Specified Tests-9.0.final.doc

9.21.1.X5 Reading Items with Negative Count and MOREITEMS

Reason For Change: No existing test exists. This change is in
DO-018_ReadRange_with_Negative_Count_and_MOREITEMS .

Purpose: To verify that the IUT correctly responds to a ReadRange service request by returning the correct subset of items when a sequence number or byTime, and a negative count are requested, and the count is more items than the IUT actually returns.

Test Concept: A ReadRange request is transmitted by the TD requesting a range of items known to be in the Log_Buffer. This range is specified using a negative value for 'Count'. The TD shall be configured such that its Max APDU Length Accepted, Segmented Response Accepted, in combination with the chosen 'Count' selected, mean that the results cannot be conveyed in a single ReadRange-Ack, thus forcing the MOREITEMS flag to be TRUE in the response.

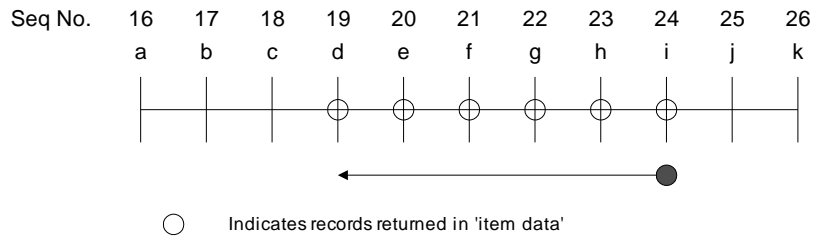
Test Steps:

1. TRANSMIT ReadRange-Request,
 'Object Identifier' = (the logging object configured for this test),
 'Property Identifier' = Log_Buffer,
 'Reference Sequence Number' = (any value x: known to be in the Log_Buffer),
 'Count' = (any value y: $y < 0$ and
 which forces the MOREITEMS flag TRUE in the
response.)
2. RECEIVE ReadRange-ACK,
 'Object Identifier' = (the logging object configured for this test),
 'Property Identifier' = Log_Buffer,
 'Result Flags' = {?, ?, TRUE},
 'Item Count' = (any value z: $0 < z < |y|$),
 'Item Data' = (the specified z records in order of increasing
 sequence number. The items specified are all
items in the
 range of (x - z + 1) through x in that order.),
 'First Sequence Number' = (x - z + 1)

Notes to Tester: Though expressed as a bySequence exchange, these could alternately be byTime.

Test Example (using sample buffer shown in diagram below):

1. TRANSMIT ReadRange-Request,
 'Object Identifier' = 20:1,
 'Property Identifier' = Log_Buffer,
 'Reference Sequence Number' = 24,
 'Count' = -9
2. RECEIVE ReadRange-ACK,
 'Object Identifier' = 20:1,
 'Property Identifier' = Log_Buffer,
 'Result Flags' = {FALSE, FALSE, TRUE},
 'Item Count' = 6,
 'Item Data' = Records < d, e, f, g, h, i > in that order.
 'First Sequence Number' = 19



Problem:

In the case where not all items can be returned in a single request resulting in the MOREITEMS flag being set, it is not obvious whether the oldest items or newest items should be returned in the response.

Question:

Has test 9.21.1.X5 correctly interpreted the standard?

Response:

A proposal will be sent to the SSPC for clarification, and in the meantime test 9.21.1.X5 will be dropped from the Test Plan.