INTERPRETATION IC 135-2010-9 OF
ANSI/ASHRAE STANDARD 135-2010 BACnet® -
A Data Communication Protocol for Building
Automation and Control Networks

Approval Date: November 7, 2012

Request from: Duffy O'Craven (btl-manager@bacnetinternational.org), Quinda Inc., 41 St. Hilda's Av. Toronto ON M4N 2P5 CANADA.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE 135-2010, Clauses 15.1.1.4.1.2, 15.1.1.4.2.2, 15.1.1.4.3.2, and 15.8.2, relating to the content of ReadRange-ACK when MORE_ITEMS is true, and the Count in the ReadRange-Request was negative.

Background: This interpretation request originated from the BTL-WG, whilst discussing Clarification Request CR-0278.

The standard states ambiguously what the content of ReadRange-ACK shall be when MORE_ITEMS is true, and the requested Count in the ReadRange-Request was negative.

In Standard 135, in Clause 15.1.1.4.1.2, under Reference Index the procedure states:
"… if 'Count' is negative the record specified by 'Reference Index' shall be the last record."

In Standard 135, in Clause 15.1.1.4.2.2, under Reference Sequence Number the procedure states:
"If 'Count' is negative the record specified by 'Reference Sequence Number' shall be the last and newest record read and returned."

In Standard 135, in Clause 15.1.1.4.3.2, under Reference Time the procedure states:
"… if 'Count' is negative, the newest record with a timestamp older than the time specified by 'Reference Time' shall be the last and newest record.

In Standard 135, in Clause 15.8.2 the service procedure states several things. However, because that uses slightly different wording, it throws the meaning of the above statements into doubt. For 'By Position' the service procedure states: "… the responding BACnet-user shall read and attempt to return all of the items specified. The items specified include the item at the index specified by 'Reference Index' plus up to 'Count' - 1 items following if 'Count' is positive, or up to -1 - 'Count' items preceding if 'Count' is negative."

For 'By Time' the service procedure states: "If 'Count' is negative, the records specified include the newest record with a timestamp older than 'Reference Time' and up to -1-'Count' records preceding. The sequence number of the first item returned shall be included in the response… The items shall be returned in chronological order."

For 'By Sequence Number' the service procedure states: "…in the range 'Reference Sequence Number' plus 'Count'+1 to 'Reference Sequence' if 'Count' is negative.

It has thus been argued that the phrase: shall "… be the last and newest record read and returned." could mean "… shall eventually be the last and newest record read and returned from the last of a series of ReadRange-Requests, subsequent to the first one returning a ReadRange-ACK which has MORE_ITEMS as true." That would be the first time that the 135 standard would be using the concept of the eventual response to a subsequent request.

It has been argued that when the content of ReadRange-ACK has MORE_ITEMS as true, then it should be permitted to return a contiguous range of entries as long as that is flush with either end of the whole requested range. First_Sequence_Number will indicate which records are included. But then any client using 'By Time' needs to also make requests for additional records, both prior and subsequent, to find those that potentially match the whole requested 'By Time' range.

Also if that interpretation is taken and the content of ReadRange-ACK is permitted to return a contiguous range of entries as long as that is flush with either end of the whole requested range, then any client using 'By Position' has no way to interpret what was received when the ReadRange-ACK has MORE_ITEMS as true, since there is nothing like a First_Position_Index when the request was 'By Position'.

Interpretation: As long as there are items in the list that match the 'Range' parameter criteria, then even when the requested Count in the ReadRange-Request was negative, and the ReadRange-ACK MORE_ITEMS flag is true, every ReadRange-ACK shall include a contiguous range of records ending with the record specified by 'Reference Index' if 'By Position'; the newest record with a timestamp older than the time specified by 'Reference Time' if 'By Time'; and record specified by 'Reference Sequence Number' if 'By Sequence Number'.

Question: Is this interpretation correct?

Answer: Yes.