INTERPRETATION IC 135-2004-21 OF
ANSI/ASHRAE STANDARD 135-2004 BACnet® -
A Data Communication Protocol for Building
Automation and Control Networks

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 135-2004, Section 12.24.4, 12.24.7 and 12.24.8 regarding the Present_Value of an object is evaluated within a selected Weekly_Schedule or Exception_Schedule.

Background: In Clause 12.24.4, the standard describes how the Present_Value of a Schedule object is to be evaluated. The fifth paragraph provides direction on how to determine which value within a selected Weekly_Schedule or Exception_Schedule shall be selected:

"The method for evaluating the current value of a schedule (either exception or weekly) is to find the latest element in the list of BACnetTimeValues that occurs on or before the current time, and then use that element's value as the current value for the schedule. If no such element is found, then the current value for the schedule shall be NULL."

This language does not provide direction in the case where there are 2 or more entries with the same time.

Without understanding how a device will behave with such a schedule, developing an accurate graphical UI for an arbitrary schedule object is difficult, if not impossible.

We considered 4 possibilities for resolving this issue:

1) When there are 2 or more entries in a schedule that have the same Time, the entry that occurs first (or last) in the list shall take precedence.

But, given that the schedules are implemented as BACnet lists, it is our contention that there can be no order implied by the client that configured the properties. Since, through the use of AddListElement, the client cannot control the order of the elements in any given list and thus cannot convey any order to the Time/Value pairs other than through the Time portion. This could result in 2 different BACnet devices having a schedule that behaves differently after being built from the same set of AddListElement requests.

It is thus our opinion that the order of the entries in the list cannot be used to select the entry to use.

2) Any of the duplicate entries can be chosen at the discretion of the schedule object.

This could also result in 2 different BACnet devices having a schedule that behaves differently after being built from the same sequence of AddListElement requests.

3) The schedule object checks for this condition and rejects any attempt to place the schedule into this condition.

When modifying a schedule object via the AddListElement and RemoveListElement services, this requirement would require that RemoveListElement requests always precede AddListElement requests for entries where the Value has changed and the Time portion has not. This stipulation does not appear to be supported by anything in the standard.

4) The schedule object detects this condition and sets its Reliability to CONFIGURATION_ERROR.
While the Schedule object's description does not specifically call out the use of this error for this condition, this choice is supported by the description of the schedule's Reliability property: "The Reliability property, of type BACnetReliability, provides an indication that the properties of the schedule object are in a consistent state. …" and the description CONFIGURATION_ERROR: "The object's properties are not in a consistent state.".

Interpretation: A Weekly_Schedule or Exception_Schedule entry with 2 or more entries with the same Time shall result in the Schedule object setting its Reliability property to CONFIGURATION_ERROR.

Question: Is this interpretation correct?

Answer: No.

Comments: It is a local matter as to what the behavior of the Schedule object is when there are multiple entries in a Weekly_Schedule or Exception_Schedule entry with the same time. The committee will review this issue to determine if any changes are necessary.