INTERPRETATION IC 135-2020-34 OF ANSI/ASHRAE STANDARD 135-2020 BACnet® - A Data Communication Protocol for Building Automation and Control Networks

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Reference: This request for interpretation refers to ANSI/ASHRAE Standard 135-2020 and pertains to the expectations of a BACnet/SC device when it receives a message with a data option it does not understand.

Background:

Clause AB.2.3 requires that when the 'Must Understand' bit is 1, the header option must be understood to consume the message. AB.2.3 is for both data options and destination options.

AB.2.3 Header Options

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The optional 'Destination Options' parameter is a list of header options. The header options in this list are addressed to the destination node or nodes addressed by the 'Destination VMAC Address' parameter. Destination options are used at the data link layer only and are limited to destination nodes within the same BACnet/SC network. Therefore, destination header options are never passed up to or received from the network layer or application layer.

The optional 'Data Options' parameter is a list of header options that accompany data payloads that are intended for upper layers. For standard BVLC messages, this parameter shall only be present in BVLC messages that convey an NPDU, in which case, the header options in this list are associated with an NPDU that originates at the source BACnet device and accompany the NPDU to the ultimate destination device or devices. Because these are BACnet/SC options, they can only be conveyed to the ultimate destination device if that device is also a BACnet/SC device and the message has not passed through any non-BACnet/SC network segments while being routed.

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The 'Header Marker' octet includes the fields as follows:

Bit 7	More Options	1 = Another header option follows in the current header option list. 0 = This is the last header option in the current header option list.
Bit 6:	Must Understand	1 = This header option must be understood for consuming the message. 0 = This header option can be ignored if not understood.
Bit 5:	Header Data Flag	1 = The 'Header Length' and 'Header Data' fields are present 0 = The 'Header Length' and 'Header Data' fields are absent
Bits 4..0:	Header Option Type	1..31, The numeric header option type.

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Clause AB.2.3.1 defines the 'Secure Path' header option which is the only defined standard data option. The clause requires that the 'Must Understand' bit is 1 for the Secure Path data option.

> **AB.2.3.1 Secure Path Header Option**
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> The 'Secure Path' header option specifies, by its presence, whether the service being requested represents a message which has only been transferred by BACnet/SC data links and secure connect BACnet routers.
>
> The 'Secure Path' header option consists of the following fields.
>
> | | | |
> |---|---|---|
> | Header Marker | 1-octet | 'Last Option' = 0 or 1, 'Must Understand' = 1,
'Header Data Flag' = 0, 'Header Option Type' = 1 |
>
> This header option, if present, shall be a data option in the 'Data Options' parameter of BVLC messages conveying an NPDU. This header option shall be initially provided by the network or application entity initiating the payload of the NPDU being conveyed. It shall remain with the NPDU as long as the message does not pass through any BACnet network of a type that does not support conveying this data header option while being routed. The processing of this information when received by the NPDU's payload final destination device's network or application entity is a local matter.

Clause AB.3.1.4 requires that for Destination Options, a BVLC-Result NAK shall be returned in the case of the BVLC entity received an option that doesn't understand. But it is mute on what to do when an NPDU is received with a Data Option that the destination BACnet User does not understand.

Since the definition of the bit says, “must be understood for consuming”, the message should not be processed, but there is no defined error code to be returned in this case. And, of course, this option can be on NPDUs for both the destination network layer or application layer, and for broadcasts and unicast.

Interpretation: A BACnet/SC node that receives a message that contains a 'Data Options' parameter with a Header Option Type it does not understand, and the 'Must Understand' bit is 1, it is a local matter if an error/reject is returned or if the message is silently dropped, but in no case should the message be further processed.

Question: Is this Interpretation correct?

Answer: Yes.