INTERPRETATION IC 135-2004-22 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, Sections 6.5.3 and 9.5.6.4 regarding the methods for establishing the address of a BACnet router for a particular DNET.

Background: In Clause 6.5.3 of Standard 135 four methods for establishing the address of a router are detailed. The methods are:
1) the address may be established manually at the time a device is configured,
2) the address may be learned by issuing a Who-Is request and noting the SA associated with the subsequent I-Am message (assuming the device specified in the Who-Is is located on a remote DNET and the I-Am message was handled by a router on the local network),
3) by using the network layer message Who-Is-Router-To-Network, and
4) by using the local broadcast MAC address in the initial transmission to a device on a remote DNET and noting the SA associated with any subsequent responses from the remote device.

Note that none of these options describe extracting the router's address from a non-solicited message (such as a ConfirmedRequest-PDU) in order to send a response although this is what most implementations will do.

In Clause 9.5.6.4, WAIT_FOR_REPLY, in MS/TP Master Node State Machine description, the ReceivedReply transition requires that the DestinationAddress of the received packet is equal to TS (this station) thus disallowing the use of a local broadcast MAC address in a non-delayed response frame on MS/TP.

In Clause 10.1 of Standard 135.1-2003, which is testing that the IUT can respond to requests that originate from a remote network, test step 2 allows the response to be sent with a LOCAL BROADCAST.

Interpretation: In Clause 6.5.3 of 135 the 4th method for establishing the address of a router was never intended to be used for replies as the request indicates the router address. When replying to a DER frame from a remote network, if the responding device does not already know a route to the remote network, it shall use the source MAC address from the DER frame as the address through which to route the response frame.

Question: Is this interpretation correct?

Answer: Yes, this interpretation is correct. The 4th method for establishing the address of a router was never intended to be used for replies, since it is implied that the address and route of the requestor is known at the time of response to the request.

Comments: While the interpretation is correct, it should be noted that some current implementations take advantage of method 4 to re-determine the route to the requestor. It is the view of the committee that this method will work in the case of non-MS/TP networks. In the case of MS/TP, the sender's (a router, in this case) MasterNodeStateMachine is not expecting a broadcast at this point. This scenario will cause the broadcasted response to be discarded. In order for method 4 to work on MS/TP, a device must first send a ReplyPostponed to the source MS/TP MAC address and then send the broadcasted response the next time it becomes the token holder. It should also be noted that method 4 will not work for MS/TP slave devices since they are incapable of token passing.