BSR/ASHRAE Addendum bb to
ANSI/ASHRAE Standard 135-2024

First Public Review Draft

Proposed Addendum bb to Standard 135-2024, BACnet® - A Data Communication Protocol for Building Automation and Control Networks

First Public Review (November 2026)
(Draft shows Proposed Changes to Current Standard)

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[This foreword and the "rationales" on the following pages are not part of this standard. They are merely informative and do not contain requirements necessary for conformance to the standard.]

FOREWORD

The purpose of this addendum is to present a proposed change for public review. These modifications are the result of change proposals made pursuant to the ASHRAE continuous maintenance procedures and of deliberations within Standing Standard Project Committee 135. The proposed changes are summarized below.

135-2024bb-1 Auto Configuration for MS/TP Nodes, p. 3

In the following document, language to be added to existing clauses of ANSI/ASHRAE 135-2024 and Addenda is indicated through the use of *italics*, while deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are proposed to be added, plain type is used throughout. Only this new and deleted text is open to comment at this time. All other material in this addendum is provided for context only and is not open for public review comment except as it relates to the proposed changes.

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135-2024*bb*-1 Auto Configuration for MS/TP Nodes

Rationale

Support creation of MS/TP devices that may optionally perform automatic bit rate negotiation and MAC address configuration without relying on hardware-based switch settings or manual soft-configuration.

[Add new **Clause 9.4.X**, p. 105]

9.4.X Optional MS/TP Features

Typically, MS/TP nodes determine the bit rate, single octet station address, and max-manager limit through either hardware-based switch settings or manual soft-configuration as a local matter. Some nodes might prefer to have some automatic mechanism(s) to determine these settings without needing explicit configuration. For the purposes of this standard, “Auto-Configuration” shall be used as the normative term. Property identifiers may use underscore-separated forms for consistency with Clause 12 naming conventions. The term “StationAddress Auto-Configuration” shall be used to mean an automatic procedure for selecting the single octet MAC (station) address and max-manager limits. The term “LinkSpeed Auto-Negotiate” shall be used to mean an automatic procedure for determining the bit rate to be used by MS/TP that does not require physical switches or manual soft-configuration.

Since not all nodes may choose to implement either or both options, the application in the device shall convey to its MS/TP implementation two settings that indicate whether each option should be used or not. Additionally, the Protocol Implementation Conformance Statement (PICS) shall indicate whether a given implementation supports each of these optional features, see Annex A.

There are many ways that these procedures could be implemented, and the choice of technique employed to implement each procedure is a local matter. An example process for automatically configured nodes, described in clause 9.5, utilizes a critical element that waits indefinitely ("detecting") in order to detect the bit rate and MAC addresses used by the other nodes on the same MS/TP segment.

9.4.X.1 LinkSpeed Auto-Negotiate of MS/TP Nodes

MS/TP nodes are not required to be capable of automatic bit rate detection (“LinkSpeed Auto-Negotiate”). Those nodes that are not capable of LinkSpeed Auto-Negotiate have a means of setting a fixed bit rate whose configuration is managed or observed through Network Port object(s) and/or local configuration (see Clause 12.56.19, 12.56.55, 12.56.Y, and 12.56.Z).

The example process for LinkSpeed Auto-Negotiate nodes described in clause 9.5 uses a minimum number of sequential ValidFrames to determine a usable bit rate from an array of bit rate values supported by this node.

9.4.X.2 StationAddress Auto-Configuration of MS/TP Manager Nodes

MS/TP nodes are not required to be capable of automatic MAC address selection (“StationAddress Auto-Configuration”). Those nodes that are not capable of StationAddress Auto-Configuration have a means of setting a static address which is managed or observed through Network Port object(s) and/or local configuration.

A StationAddress Auto-Configuration node is an MS/TP manager node that does not begin with a preconfigured MS/TP station address and chooses an MS/TP address after monitoring specific frames for an unused address.

The example process for StationAddress Auto-Configuration nodes described in clause 9.5 monitors Token frames, the Poll For Manager frames, and the Reply To Poll For Manager frames to detect which manager nodes exist on the network and determine the largest source MAC address on the MSTP segment. The Test Request and Test Response frames are used for address confirmation and includes information in the data portion of the frame that is unique to the node. After a

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StationAddress Auto-Configuration node chooses and confirms an MS/TP MAC address, it uses this address when token passing. The StationAddress Auto-Configuration node maintains this address across device restarts and loss of power and uses the address as its preferred address when it restarts. The StationAddress Auto-Configuration node continues to monitor all MS/TP frames and selects another available MAC address if it detects another node using its chosen MAC address. The StationAddress Auto-Configuration node uses a range of MS/TP addresses from 64 to 127 (64 addresses), which avoids address collisions with fixed address nodes from 0 to 63 (64 addresses). The StationAddress Auto-Configuration node uses a Max_Manager that is learned from monitoring other device manager node MS/TP frames.

[Add to **Clause 9.5.2**. p. 105]

9.5.2 Variables

…

If node supports LinkSpeed Auto-Negotiate:

LinkSpeedAutoNegotiateEnabled	*A Boolean flag that is used to determine if this node uses the optional automatic configuration bitrate mode. This variable is set to TRUE if this node uses LinkSpeed Auto-Negotiate detection, and set to FALSE if this node does not.*
ValidFrames	*The number of valid frames received since initialization at the current test bit rate.*
ValidFrameTimer	*The number of elapsed seconds since the last received valid frame.*
Nmax_test_bitrates	*The highest zero-based array index of TestBitrates. e.g. 5*
TestBitrates	*a zero-based array of bit rate values supported by this node. e.g. TestBitrates[0..Nmax_test_bitrates] = {115200, 76800, 57600, 38400, 19200, 9600}*
BitRateIndex	*The zero-based index in TestBitrates of the bit rate under test by the automatic bit rate detection algorithm*
CheckLinkSpeed	*A Boolean flag that is used to determine if this node should perform LinkSpeed Auto-Negotiate detection.*
Nvalid_frames	*The minimum number of sequential ValidFrames to determine a usable bit rate: 4*
Tvalid_frame_timeout	*The minimum time a node may allow to elapse since the last ValidFrame prior to incrementing BitRateIndex: 5 seconds*

If node supports StationAddress Auto-Configuration:

CheckAutoAddressing	*A Boolean flag that is used to determine if this node should perform StationAddress Auto-Configuration detection.*
AutoAddressingEnabled	*A Boolean flag that is used to determine if this node uses the optional automatic configuration addressing mode. This variable is set to TRUE if this node uses an automatically selected manager node MAC address and set to FALSE if this node does not.*
AutoAddressingStation	*The Manager node address that this node is testing to determine if the address is in use or not in the Manager Node MAC address range 64-127.*
AutoAddressingUUID	*A 16 octet UUID (Universally Unique IDentifier) that conforms to RFC-4122. Nodes that implement the Device object UUID property shall use that value.*

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AutoAddressingMaxManager	*This parameter tracks the highest polled station address. The value of this parameter shall be less than or equal to 127. In the absence of other fixed address nodes, this value shall be 127.*
AutoAddressingPreferredStation	*A valid station address in the range of Nmin_poll_station to Nmax_poll_station stored in non-volatile memory across device restarts and loss of power.* *This station address shall be set to a value outside the range of Nmin_poll_station to Nmax_poll_station when the address is detected as in-use by another node or otherwise invalid.* *A valid station address is stored after responding to a BACnet Data Expecting Reply or a BACnet Data Not Expecting Reply frame.*
Nmin_poll	*The minimum number of polls received before an MS/TP MAC address is claimed: 8.*
Npoll_slot	*This parameter is random value 1..64, used to choose the poll slot for an StationAddress Auto-Configuration node.* *The value could be derived from 6-bits of a random octet in the UUID.*
Nmin_poll_station	*The first StationAddress Auto-Configuration node MAC address: 64*
Nmax_poll_slot	*The number of StationAddress Auto-Configuration node station poll slots: 64*
PollCount	*The number of Poll-For-Manager frames received by this node with a destination address matching the AutoAddressingStation manager node address. When this counter reaches the value Nmin_poll + Npoll_slot, an StationAddress Auto-Configuration node shall choose the AutoAddressingStation manager node address.*

If node supports LinkSpeed Auto-Negotiate or StationAddress Auto-Configuration:

Detecting	*A Boolean flag that is used to determine if this node should accept and process all valid MS/TP frames regardless of DestinationAddress for the purpose of auto-configuration. If either LinkSpeed Auto-Negotiate or StationAddress Auto-Configuration are being used then this flag shall be TRUE, otherwise FALSE.*

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[Change **Clause 9.5.4.4**, p.111]

9.5.4.4 HEADER_CRC

...
NotForUs

If GoodHeader is TRUE and DataLength is zero and the value of DestinationAddress is not equal to either TS (this station) or 255 (broadcast) *and Detecting is FALSE,*

then enter the IDLE state to wait for the start of the next frame.

DataNotForUs

If GoodHeader is TRUE and DataLength is not zero and the value of DestinationAddress is not equal to either TS(this station) or 255 (broadcast) *and Detecting is FALSE,*

then set Index to zero and enter the SKIP_DATA state to consume the Data and Data CRC or Encoded Data and Encoded CRC-32K portions of the frame.

...
NoData

If GoodHeader is TRUE and *either Detecting is TRUE or* the value of DestinationAddress is equal to either TS (this station) or 255 (broadcast), and DataLength is zero,

then set ReceivedValidFrame to TRUE to indicate that a frame with no data has been received and enter the IDLE state to wait for the start of the next frame.

Data

If GoodHeader is TRUE and *either*
Detecting is TRUE or
the value of DestinationAddress is equal to either TS (this station) or 255 (broadcast), and
DataLength is not zero and
DataLength is less than or equal to InputBufferSize and either
this device does not support COBS-encoded frames or
FrameType indicates a non-encoded frame,

then set Index to zero; set DataCRC to X'FFFF'; and enter the DATA state to receive the data portion of the frame.

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[Change **Clause 9.5.6.1**, p.116]

9.5.6.1 INITIALIZE

When a manager node is powered up or reset, it shall unconditionally enter the INITIALIZE state.

AutoConfiguration
If LinkSpeedAutoNegotiateEnabled is TRUE and AutoAddressingEnabled is TRUE, then
set CheckLinkSpeed to TRUE,
set CheckAutoAddressing to TRUE,
set Detecting to TRUE,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
and enter the IDLE state.

AutoConfigurationBitrate
If LinkSpeedAutoNegotiateEnabled is TRUE and AutoAddressingEnabled is FALSE, then
set CheckLinkSpeed to TRUE,
set CheckAutoAddressing to FALSE,
set Detecting to TRUE,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
and enter the IDLE state.

AutoConfigurationAddressing
If LinkSpeedAutoNegotiateEnabled is FALSE and AutoAddressingEnabled is TRUE, then
set CheckLinkSpeed to FALSE,
set CheckAutoAddressing to TRUE,
set Detecting to TRUE,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
and enter the IDLE state.

DoneInitializing
If LinkSpeedAutoNegotiateEnabled is FALSE and AutoAddressingEnabled is FALSE, then
set CheckLinkSpeed to FALSE,
set CheckAutoAddressing to FALSE,
set Detecting to FALSE,
set TS to the node's station address,
set NS equal to TS (indicating that the next station is unknown),
set PS equal to TS,
set TokenCount to Npoll (thus causing a Poll For Manager to be sent when this node first receives the token),
set SoleManager to FALSE,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
and enter the IDLE state.

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[Change **Clause 9.5.6.2**, p.117]

9.5.6.2 IDLE

In the IDLE state, the node waits for a frame.
…
ReceivedUnwantedFrame
If ReceivedValidFrame is TRUE and either
(a) DestinationAddress is not equal to either TS (this station) or 255 (broadcast) or
(b) DestinationAddress is equal to 255 (broadcast) and FrameType has a value of Token, Test_Request, or a proprietary type known to this node that expects a reply (such frames may not be broadcast) or
(c) FrameType has a value that indicates a standard or proprietary type that is not known to this node or
(d) DestinationAddress is equal to TS and FrameType is equal to Reply To Poll For Manager or Reply Postponed
or
(e) SourceAddress is equal to TS (this station) and AutoAddressingEnabled is FALSE,
then an unexpected or unwanted frame was received.
Set ReceivedValidFrame to FALSE,
and enter the IDLE state to wait for the next frame.

DetectingBitrate
If CheckLinkSpeed is TRUE, then
set ValidFrames to 0,
set BitRateIndex to 0,
set ValidFrameTimer to 0,
set the bit rate to the value at TestBitrates[BitRateIndex%(Nmax_test_bitrates+1)],
and enter the AUTOMATIC_BITRATE_IDLE state.

DetectingAddress
If CheckAutoAddressing is TRUE and CheckLinkSpeed is FALSE, then
set AutoAddressingStation to a valid AutoAddressingPreferredStation or Nmin_poll_station,
set Npoll_slot to 1 + (rand() % Nmax_poll_slot),
set the UUID to a unique identifier of this node,
set AutoAddressingMaxManager to 0,
set PollCount to 0,
and enter the AUTOMATIC_ADDRESS_IDLE state.

DuplicateNode
If ReceivedValidFrame is TRUE and SourceAddress is equal to TS (this station)
and AutoAddressingEnabled is TRUE,
then a frame was received from a duplicate node.
set Detecting to TRUE,
set CheckAutoAddressing to TRUE,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
and enter the IDLE state to wait for the next frame.

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[Change **Clause 9.5.7.1**, p.123]

9.5.7.1 INITIALIZE

When a subordinate node is powered up or reset, it shall unconditionally enter the INITIALIZE state.

AutoConfigurationBitrate
If LinkSpeedAutoNegotiateEnabled is TRUE, then
set CheckLinkSpeed to TRUE,
set CheckAutoAddressing to FALSE,
set Detecting to TRUE,
set TS to the node's station address,
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE,
set ValidFrames to 0,
set BaudRateIndex to 0,
set ValidFrameTimer to 0,
set the bit rate to the value at TestBitrates[BitRateIndex%(Nmax_test_bitrates+1)],
and enter the AUTOMATIC_BITRATE_IDLE state.

DoneInitializing
If LinkSpeedAutoNegotiateEnabled is FALSE, then
set Detecting to FALSE,
set TS to the node's station address;
set ReceivedValidFrame and ReceivedInvalidFrame to FALSE;
and enter the IDLE state.

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[Add **Clause 9.5.X**, p.124]

9.5.X LinkSpeed Auto-Negotiate Detection Node Finite State Machine

Figure 9-X shows the LinkSpeed Auto-Negotiate Detection Node state machine, which is described fully in this clause. Each state is given a name, specified in all uppercase letters. Transitions are also named, in mixed upper- and lowercase letters. Transitions are described as a series of conditions followed by a series of actions to be taken if the conditions are met. The final action in each transition is entry into a new state, which may be the same as the current state.

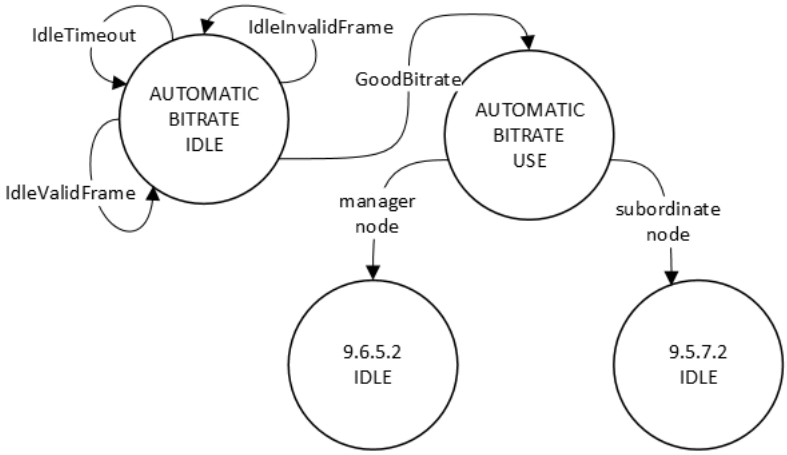


Figure 9-X. LinkSpeed Auto-Negotiate Detection Node Finite State Machine

When LinkSpeed Auto-Negotiate detection is enabled (LinkSpeedAutoNegotiateEnabled is TRUE) then this node shall monitor all the frames to detect which bit rate is in use on the MSTP segment.

9.5.X.1 Behavior of Non-routing LinkSpeed Auto-Negotiate Detection Nodes

Non-routing automatic bit rate detection nodes with LinkSpeed Auto-Negotiate detection is enabled (LinkSpeedAutoNegotiateEnabled is TRUE) shall wait indefinitely attempting to detect bit rate. Once detected, that bit rate shall remain in effect until the node restart occurs.

9.5.X.2 Behavior of Routing LinkSpeed Auto-Negotiate Detection Nodes

Devices that route to MS/TP shall not perform automatic bit rate detection and shall implement a configurable bit rate that is retained in non-volatile memory across resets and power cycles.

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9.5.X.4 AUTOMATIC_BITRATE_IDLE

The AUTOMATIC_BITRATE_IDLE state is entered when Detecting is TRUE, and CheckLinkSpeed is TRUE.

IdleInvalidFrame
If ReceivedInvalidFrame is TRUE, then an invalid frame was received.
Set ReceivedInvalidFrame to FALSE and
enter the AUTOMATIC_BITRATE_IDLE state to wait for the next frame.

IdleValidFrame
If ReceivedValidFrame is TRUE and ValidFrames is less than Nvalid_frames, then
increment ValidFrames by 1,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_BITRATE_IDLE state to wait for the next frame.

GoodBitrate
If ReceivedValidFrame is TRUE and ValidFrames is greater than or equal to Nvalid_frames, then use the bit rate.
Set CheckLinkSpeed to FALSE,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_BITRATE_USE state to use the bit rate.

IdleTimeout
If ValidFrameTimer is greater than Tvalid_frame_timeout, then
set ValidFrames to 0,
increment BitRateIndex by 1,
set ValidFrameTimer to 0,
set the bit rate to the value at TestBitrates[BitRateIndex%(Nmax_test_bitrates+1)],
and enter the AUTOMATIC_BITRATE_IDLE state to wait for a frame.

9.5.X.5 AUTOMATIC_BITRATE_USE

The AUTOMATIC_BITRATE_USE state is entered after the node has detected a valid bit rate.

Enter 9.5.6.2 IDLE state for Manager nodes or 9.5.7.2 IDLE state for Subordinate nodes.

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[Add **Clause 9.5.Y**, p.124]

9.5.Y Auto Configuration Addressing Manager Node Finite State Machine

Figure 9-Y shows the Auto Configuration Addressing Manager Node state machine, which is described fully in this clause. Each state is given a name, specified in all uppercase letters. Transitions are also named, in mixed upper- and lowercase letters. Transitions are described as a series of conditions followed by a series of actions to be taken if the conditions are met. The final action in each transition is entry into a new state, which may be the same as the current state.

This node shall monitor all the Token frames, the Poll For Manager frames, and the Reply To Poll For Manager frames to detect which manager nodes exist on the network and the largest source MAC address on the MSTP segment. This node shall use the largest source MAC address as its Max_Manager value.

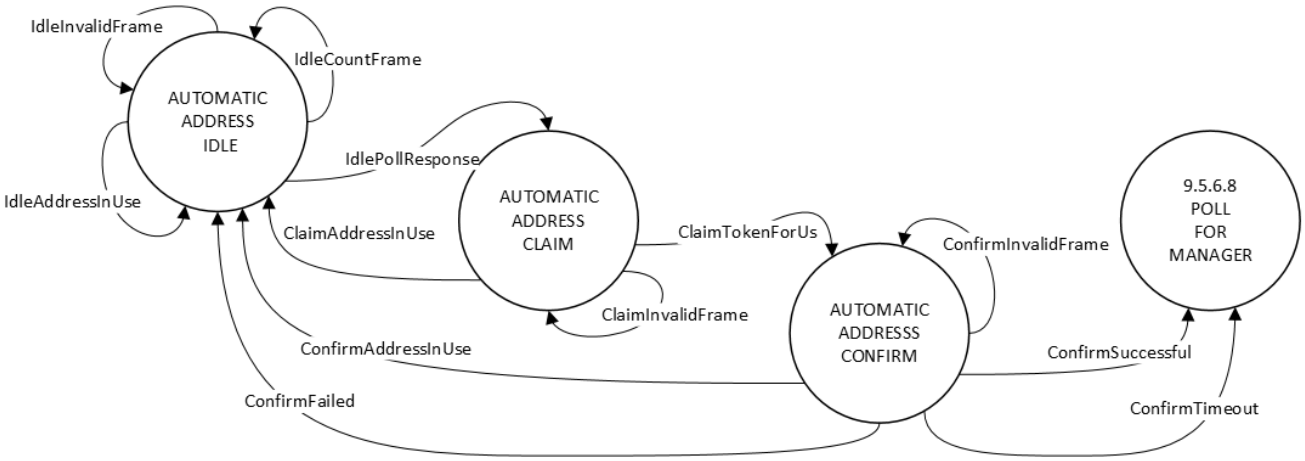


Figure 9-Y. Auto Configuration Manager Node Finite State Machine

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9.5.Y.1 AUTOMATIC_ADDRESS_IDLE

The AUTOMATIC_ADDRESS_IDLE state is entered when Detecting is TRUE, CheckLinkSpeed is FALSE, and CheckAutoAddress is TRUE. The node is waiting for a Poll For Manager frame.

IdleInvalidFrame
If ReceivedInvalidFrame is TRUE, then an invalid frame was received.
Set ReceivedInvalidFrame to FALSE and
enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

IdleAddressInUse
If ReceivedValidFrame is TRUE and
the SourceAddress is equal to AutoAddressingStation, then
set AutoAddressingStation to
Nmin_poll_station + (AutoAddressingStation + 1) % ((Nmax_poll_station - Nmin_poll_station) + 1),
set the PollCount to 0,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

IdleCountFrame
If ReceivedValidFrame is TRUE and
the FrameType is Poll For Manager and
the DestinationAddress is equal to AutoAddressingStation and
PollCount does not equal Nmin_poll + Npoll_slot, then
increment PollCount by 1,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

IdlePollResponse
If ReceivedValidFrame is TRUE and
the FrameType is Poll For Manager and
the DestinationAddress is equal to AutoAddressingStation and
PollCount equals Nmin_poll + Npoll_slot, then respond.
Call SendFrame to transmit a Reply To Poll For Manager frame to the node whose address is specified by SourceAddress (Source Address of the Poll) from the AutoAddressingStation address,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_CLAIM state to wait for the next frame.

9.5.Y.3 AUTOMATIC_ADDRESS_CLAIM

The AUTOMATIC_ADDRESS_CLAIM state is entered when a node is waiting for a Token frame sent to the AutoConfigurationAddress it has chosen, and CheckAutoAddress is TRUE.

ClaimInvalidFrame
If ReceivedInvalidFrame is TRUE, then an invalid frame was received.
set ReceivedInvalidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_CLAIM state to wait for the next frame.

ClaimAddressInUse
If ReceivedValidFrame is TRUE and the SourceAddress is equal to AutoAddressingStation, then
set AutoAddressingStation to
Nmin_poll_station + (AutoAddressingStation + 1) % ((Nmax_poll_station - Nmin_poll_station) + 1),
set the PollCount to 0,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

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ClaimTokenForUs

If ReceivedValidFrame is TRUE, and
the FrameType is Token, and
the DestinationAddress is equal to AutoAddressingStation,

then claim Token at the AutoAddressingStation address.
Call SendFrame to transmit a Test Request frame to AutoAddressingStation with a AutoAddressingUUID in the data portion portion of the frame
and enter the AUTOMATIC_ADDRESS_CONFIRM state to wait for the next frame.

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9.5.Y.4 AUTOMATIC_ADDRESS_CONFIRM

The AUTOMATIC_ADDRESS_CONFIRM state is entered when a node is waiting for a Test Response frame and CheckAutoAddress is TRUE.

ConfirmInvalidFrame
If ReceivedInvalidFrame is TRUE, then an invalid frame was received.
set ReceivedInvalidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_CONFIRM state to wait for the next frame.

ConfirmTimeout
If SilenceTimer is greater than or equal to Treply_timeout, then use the Address.
set Detecting to FALSE,
set TS (this station) to AutoAddressingStation;
set NS to TS (no known successor node);
set RetryCount and EventCount to zero;
set TokenCount to Npoll (thus causing a Poll For Manager to be sent when this node first receives the token),
set SoleManager to FALSE;
and enter the POLL_FOR_MANAGER state to find a new successor to TS.

ConfirmSuccessful
If SilenceTimer is less than Treply_timeout, and
ReceivedValidFrame is TRUE, and
FrameType is Test Response, and
DestinationAddress is equal to AutoAddressingStation, and
the data portion sent in the Test Request match, then use the Address.
set Detecting to FALSE,
set TS (this station) to AutoAddressingStation;
set NS to TS (no known successor node);
set RetryCount and EventCount to zero;
set TokenCount to Npoll (thus causing a Poll For Manager to be sent when this node first receives the token),
set SoleManager to FALSE;
and enter the POLL_FOR_MANAGER state to find a new successor to TS.

ConfirmFailed
If SilenceTimer is less than Treply_timeout, and
ReceivedValidFrame is TRUE, and
FrameType is Test Response and
either
(a) DestinationAddress is not equal to AutoAddressingStation or
(b) the data portion sent in the Test Request does not match,

then enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

ConfirmAddressInUse
If ReceivedValidFrame is TRUE, and
FrameType is not Test Response, and
the SourceAddress is equal to AutoAddressingStation, then
set AutoAddressingStation to
Nmin_poll_station + (AutoAddressingStation + 1) % ((Nmax_poll_station - Nmin_poll_station) + 1),
set the PollCount to 0,
set ReceivedValidFrame to FALSE,
and enter the AUTOMATIC_ADDRESS_IDLE state to wait for the next frame.

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[Change **Clause 9.11**, p.131]

9.11 Documenting MS/TP Node Design Choices

Every MS/TP node includes a collection of design choices that affect the behavior of the node. Among these, the following choices are important in terms of MS/TP interoperability:

(a) manager or subordinate implementation
(b) isolated or non-isolated power source for EIA/TIA-485 transceiver
(c) whether local biasing is built-in to the node
(d) transceiver unit loading
(e) bit rates supported by the node
(f) support for StationAddress Auto-Configuration
(g) support for LinkSpeed Auto-Negotiate

Each MS/TP node shall indicate all of this information in its Protocol Implementation Conformance Statement (PICS). See Annex A.

[Add **Clause 9.11.X**, p.131]

9.11.X StationAddress Auto-Configuration

The PICS shall indicate whether StationAddress Auto-Configuration is supported by the node.

[Add **Clause 9.11.Y**, p.131]

9.11.Y LinkSpeed Auto-Negotiate

The PICS shall indicate whether LinkSpeed Auto-Negotiate is supported by the node.

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[Change **Table 12-71.6**, p. 569]

Table 12-71.6. Additional Properties of the Network Port Object Type if Network_Type is MSTP

Property Identifier	Property Datatype	BACNET_APPLICATION	PROTOCOL	PHYSICAL
Network_Number	Unsigned16	(R)		
Network_Number_Quality	BACnetNetworkNumberQuality	(R)		
APDU_Length	Unsigned	(R)		
Routing_Table	BACnetLIST of BACnetRouterEntry	O		
Subordinate_Proxy_Enable	Boolean	O[1]		
Manual_Subordinate_Address_Binding	BACnetLIST of BACnetAddressBinding	O[1]		
Auto_Subordinate_Discovery	Boolean	O[2]		
Subordinate_Address_Binding	BACnetLIST of BACnetAddressBinding	O[1]		
MAC_Address	OctetString		(R)[3]	
Max_Manager	Unsigned8		O[4]	
Max_Info_Frames	Unsigned8		O[4]	
Auto_Config_Addressing_Enable	*Boolean*		*O[6]*	
Auto_Config_Bitrate_Enable	*Boolean*		*O[7]*	
Device_Address_Proxy_Enable	Boolean	O[5]		
Device_Address_Proxy_Timeout	Unsigned	O[5]		

1 Required to be present if, and only if, the port is capable of being a Subordinate Proxy.
2 Required to be present if, and only if, the port is capable of being a Subordinate Proxy that implements automatic discovery of subordinates.
3 Required to be ~~configurable~~ *configurable, unless Auto_Config_Addressing_Enable is TRUE*
4 Required to be present if, and only if, the port is an MSTP manager.
5 Required to be present and writable if the port supports device address proxying as specified in Clause 19.9.
6 Required to be present if, and only if, the port supports MS/TP StationAddress Auto-Configuration.
7 Required to be present if, and only if, the port supports MS/TP LinkSpeed Auto-Negotiate.

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[Change **Clause 12.56.19**, p. 583]

12.56.19 MAC_Address

This property, of type OctetString, contains the BACnet MAC address used on this network. The value of this property shall be conveyed with the most significant octet first.

When a port is represented by a single non-hierarchical Network Port object, this property is required except when Network_Type is PTP.

If this property is writable, then a successful write to this property shall set the Changes_Pending property to TRUE. The value of this property shall become effective when the device receives a ReinitializeDevice service request with a 'Reinitialized State of Device' of ACTIVATE_CHANGES or WARMSTART.

If the Network_Type is MSTP and Auto_Config_Addressing_Enable is TRUE, the value of this property shall be read-only.

[Change **Clause 12.56.55**, p. 589]

12.56.55 Max_Manager

This property, of type Unsigned8, shall be present if the Network_Type is MSTP and the device is a manager node on the MS/TP network connected to this port. If *Auto_Config_Addressing_Enable is FALSE and* the device supports execution of the WriteProperty service, then this property shall be writable and the valid range for the value of this property shall be 0 to 127. Otherwise, *if the device does not support execution of the WriteProperty service,* its value shall be 127. See Clause 9.5.3.

If Auto_Config_Addressing_Enable is TRUE, then Max_Manager shall be read-only.

[add **Clause 12.56.Y**, p. 600]

12.56.Y Auto_Config_Addressing_Enable

This property, of type Boolean, shall indicate whether or not MS/TP StationAddress Auto-Configuration is enabled. A value of TRUE indicates that StationAddress Auto-Configuration is enabled, FALSE indicates it is not. This property is required if MS/TP StationAddress Auto-Configuration is supported by this network port. If this property is read-only, it shall contain a value of TRUE.

If this property is writable, then a successful write to this property shall set the Changes_Pending property to TRUE. A value written to this property shall become effective when the device receives a ReinitializeDevice service request with a 'Reinitialized State of Device' of ACTIVATE_CHANGES or WARMSTART. Any changes to Auto_Config_Addressing_Enable shall determine the initial value of the corresponding MS/TP state variable AutoAddressingEnabled upon restart as defined in Clause 9.4.

When Network_Type is MSTP, enabling Auto_Config_Addressing_Enable affects the MS/TP station address as defined in Clause 9.4.

[add **Clause 12.56.Z**, p. 600]

12.56.Z Auto_Config_Bitrate_Enable

This property, of type Boolean, shall indicate whether or not MS/TP LinkSpeed Auto-Negotiate is enabled. A value of TRUE indicates that LinkSpeed Auto-Negotiate is enabled, FALSE indicates it is not. This property is required if MS/TP LinkSpeed Auto-Negotiate is supported by this network port. If this property is read-only, it shall contain a value of TRUE.

If this property is writable, then a successful write to this property shall set the Changes_Pending property to TRUE. A value written to this property shall become effective when the device receives a ReinitializeDevice service request with a

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'Reinitialized State of Device' of ACTIVATE_CHANGES or WARMSTART. Any changes to Auto_Config_Bitrate_Enable shall determine the initial value of the corresponding MS/TP state variable LinkSpeedAutoNegotiateEnabled upon restart as defined in Clause 9.4.

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[Add to **Clause 21**, p. 997]

BACnetPropertyIdentifier ::= ENUMERATED {
...
auto-config-addressing-enable (n),
auto-config-bitrate-enable (n+1),

-- auto-config-addressing-enable (n),
-- auto-config-bitrate-enable (n+1),
...

[Change **ANNEX A**, p. 1038]
...
Data Link Layer Options:
...
☐ MS/TP (Clause 9)
☐ *MS/TP auto configuration addressing, see 9.4.X.2*
☐ *MS/TP auto configuration bitrate, see 9.4.X.1*

[Add to ANNEX K, p. 1857]

K.6.X1 BIBB - Network Management-MS/TP Auto-Configuration-Addressing-B (NM-MSTP-ACA-B)

The B device implements the MS/TP Auto-Configuration Addressing functionality.

BACnet Service	Initiate	Execute
ReadProperty		x
WriteProperty		x
ReinitializeDevice		x

Devices claiming conformance to NM-MSTP-ACA-B shall support the MAC_Address, Max_Manager, and Auto_Config_Addressing_Enable properties of Network Port object types.

A device claiming support for NM-MSTP-ACA-B is interoperable with devices that support NM-CC-A.

K.6.X2 BIBB - Device Management-MS/TP Auto-Configuration-Bitrate-B (NM-MSTP-ACB-B)

The B device implements the MS/TP Auto-Configuration Bitrate functionality.

BACnet Service	Initiate	Execute
ReadProperty		x
WriteProperty		x
ReinitializeDevice		x

Devices claiming conformance to NM-MSTP-ACB-B shall support the Auto_Config_Bitrate_Enable, Link_Speed, Link_Speeds, and Link_Speed_Autonegotiate properties of Network Port object types.

A device claiming support for NM-MSTP-ACB-B is interoperable with devices that support NM-CC-A.

[Add a new entry to **History of Revisions**, p. 1527]

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(This History of Revisions is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard.)

HISTORY OF REVISIONS

…	…	**…**
1	X	**Addendum *bb* to ANSI/ASHRAE 135-2024** Approved by the ASHRAE Standards Committee MONTH X, 20XX; by the ASHRAE Board of Directors MONTH X, 20XX; and by the American National Standards Institute MONTH X, 20XX. 1. Auto Configuration for MS/TP Nodes

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