

# TRIDIUM NIAGARA<sup>AX</sup> 3.6 BACNET PICS

## BACnet Protocol Implementation Conformance Statement

**Date:** August 12, 2011

**Vendor Name:** Tridium

**Product Name:** Niagara AX BACnet Integration

**Product Model Number:** Tridium JACE models T-2xx, T-6xx, T-7xx, T-SEC-J-2xx, T-SEC-J-6xx, T-J-NXS-AX-x, T-NXT-xx (T-J-NXS-AX-x and T-NXT-xx are IP or Ethernet only), JACE models JACE-4xx, JACE-5xx, JACE-NX (J-NX-AX, IP or Ethernet only), SoftJACE (SJ-XX-x, IP or Ethernet only)

**Application Software Version:** 3.6.35 or higher

**Firmware Revision:** 3.6.35 or higher

**BACnet Protocol Revision:** 7

### Product Description:

Niagara AX provides the ability to view, monitor, and control BACnet devices over IP, raw Ethernet, or MS/TP media. Devices, points, schedules, alarms, and logs can be learned and managed from Niagara AX. In addition, Niagara points, schedules, histories, and alarming can be exposed to BACnet for monitor and control by foreign BACnet clients.

### BACnet Standardized Device Profile (Annex L):

- ☐ BACnet Advanced Operator Workstation (B-AWS)
- ☐ BACnet Operator Workstation (B-OWS)
- ☐ BACnet Operator Display (B-OD)
- ☒ BACnet Building Controller (B-BC)
- ☐ BACnet Advanced Application Controller (B-AAC)
- ☐ BACnet Application Specific Controller (B-ASC)
- ☐ BACnet Smart Sensor (B-SS)
- ☐ BACnet Smart Actuator (B-SA)

### Additional BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing	Device & Network Management
DS-RP-A, B	DM-DDB-A, B
DS-RPM-A, B	DM-DOB-A, B
DS-WP-A, B	DM-DCC-B
DS-WPM-A, B	DM-RD-B
DS-COV-A, B	DM-TS-B
DS-COVU-A, B	DM-UTC-B
DS-V-A	DM-LM-A, B
DS-M-A	DM-BR-B
DS-COVP-B	DM-ANM-A
	DM-ADM-A
	DM-ATS-A
	DM-MTS-A

<b>Alarm &amp; Event Management</b> AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A	<b>Trending</b> T-VMT-A, I-B, -E-B T-ATR-A, B T-V-A
<b>Scheduling</b> SCHED-A, I-B, -E-B SCHED-VM-A SCHED-WS-I-B	<b>Network Management</b> NM-CE-A

### Segmentation Capability:

Feature	Supported	Window size
Transmit Segmented Messages	yes	10
Receive Segmented Messages	yes	any

### Standard Object Types Supported:

- The CreateObject and DeleteObject services are not supported, so no objects are dynamically creatable or deletable through BACnet service requests, although these objects are dynamically creatable and deletable through Niagara.
- No general range restrictions exist; however, certain specific applications may have specific range restrictions.
- All potentially available properties are listed for each object type.
- Optional properties are listed in *italics*. Not all instances support all optional properties.
- Writable properties are listed in **bold**. Any range limitations are expressed in parentheses following the property name.

### Notes from Table

1. The File\_Size property of File objects is only writable if the underlying system file is changeable.
2. The Setpoint property of Loop objects is writable only if the setpoint is not linked from within Niagara.
3. The Recipient\_List property of the Notification Class object will maintain entries that are internally configured within Niagara.
4. The List\_Of\_Object\_Property\_References property of the Schedule object will maintain entries that are internally configured within Niagara.
5. The Priority\_For\_Writing property of Schedule objects is not important for internal Niagara operation, as the priority at which a point is commanded is determined by the input to which the Schedule output is linked.
6. These Trend Log object properties are not writable if the backing history for the exported Trend Log is a Niagara-generated history. If the history is created as a BACnet Trend Log, then they are writable.

7. Trend Logs in Niagara are either COV or Interval. So the Log\_Interval property cannot be written to a value other than 0 for COV logs, or to 0 for interval logs.

Object Type	Properties
Analog Input	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Device_Type Status_Flags Event_State Reliability <b>Out_Of_Service</b> Units Min_Pres_Value Max_Pres_Value Resolution <b>COV_Increment</b> Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Analog Output	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Device_Type Status_Flags Event_State Reliability <b>Out_Of_Service</b> Units Min_Pres_Value Max_Pres_Value Resolution Priority_Array <b>Relinquish_Default</b> <b>COV_Increment</b> Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Analog Value	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Status_Flags Event_State Reliability <b>Out_Of_Service</b> Units Priority_Array <b>Relinquish_Default</b> <b>COV_Increment</b> Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps

Object Type	Properties
Binary Input	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Device_Type Status_Flags Event_State Reliability <b>Out_Of_Service</b> Polarity <b>Inactive_Text</b> <b>Active_Text</b> Change_Of_State_Time <b>Change_Of_State_Count</b> (0) Time_Of_State_Count_Reset <b>Elapsed_Active_Time</b> (0) Time_Of_Active_Time_Reset <b>Time_Delay</b> <b>Notification_Class</b> <b>Alarm_Value</b> Event_Enable Acked_Transitions <b>Notify_Type</b> Event_Time_Stamps
Binary Output	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Device_Type Status_Flags Event_State Reliability <b>Out_Of_Service</b> Polarity <b>Inactive_Text</b> <b>Active_Text</b> Change_Of_State_Time <b>Change_Of_State_Count</b> (0) Time_Of_State_Count_Reset <b>Elapsed_Active_Time</b> (0) Time_Of_Active_Time_Reset <b>Minimum_Off_Time</b> <b>Minimum_On_Time</b> Priority_Array <b>Relinquish_Default</b> <b>Time_Delay</b> <b>Notification_Class</b> Feedback_Value Event_Enable Acked_Transitions <b>Notify_Type</b> Event_Time_Stamps
Binary Value	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Status_Flags Event_State Reliability <b>Out_Of_Service</b> <b>Inactive_Text</b> <b>Active_Text</b> Change_Of_State_Time <b>Change_Of_State_Count</b> (0) Time_Of_State_Count_Reset <b>Elapsed_Active_Time</b> (0) Time_Of_Active_Time_Reset <b>Minimum_Off_Time</b> <b>Minimum_On_Time</b> Priority_Array <b>Relinquish_Default</b> <b>Time_Delay</b> <b>Notification_Class</b> <b>Alarm_Value</b> Event_Enable Acked_Transitions <b>Notify_Type</b> Event_Time_Stamps
Calendar	Object_Identifier <b>Object_Name</b> Object_Type <b>Description</b> Present_Value <b>Date_List</b>

Object Type	Properties
Device	Object_Identifier Object_Name Object_Type System_Status Vendor_Name Vendor_Identifier Model_Name Firmware_Revision Application_Software_Revision <b>Location</b> <b>Description</b> Protocol_Version Protocol_Revision Protocol_Services_Supported Protocol_Object_Types_Supported Object_List Max_APDU_Length_Accepted Segmentation_Supported Max_Segments_Accepted Local_Time Local_Date UTC_Offset Daylight_Savings_Status APDU_Segment_Timeout APDU_Timeout Number_Of_APDU_Retries Max_Master Max_Info_Frames Device_Address_Binding Database_Revision Configuration_Files Last_Restore_Time <b>Backup_Failure_Timeout</b> Active_COV_Subscriptions
File (Stream Access Only)	Object_Identifier <b>Object_Name</b> Object_Type <b>Description</b> File_Type <b>File_Size</b> <sup>1</sup> Modification_Date <b>Archive</b> Read_Only File_Access_Method
Loop	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Status_Flags Event_State Reliability <b>Out_Of_Service</b> Output_Units Manipulated_Variable_Reference Controlled_Variable_Reference Controlled_Variable_Value Controlled_Variable_Units Setpoint_Reference <b>Setpoint</b> <sup>2</sup> Action <b>Proportional_Constant</b> Proportional_Constant_Units <b>Integral_Constant</b> Integral_Constant_Units <b>Derivative_Constant</b> Derivative_Constant_Units <b>Bias</b> <b>Maximum_Output</b> <b>Minimum_Output</b> Priority_For_Writing <b>COV_Increment</b> <b>Time_Delay</b> Notification_Class <b>Error_Limit</b> Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps

Object Type	Properties
Multi-state Input	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> <b>Out_Of_Service</b> Number_Of_States State_Text Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Multi-state Output	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> <b>Out_Of_Service</b> Number_Of_States State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Multi-state Value	Object_Identifier <b>Object_Name</b> Object_Type Present_Value <b>Description</b> Status_Flags Event_State <i>Reliability</i> <b>Out_Of_Service</b> Number_Of_States State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Notification Class	Object_Identifier <b>Object_Name</b> Object_Type <b>Description</b> Notification_Class Priority Ack_Required Recipient_List <sup>3</sup>
Schedule	Object_Identifier <b>Object_Name</b> Object_Type <b>Description</b> <b>Effective_Period</b> <b>Weekly_Schedule</b> <b>Exception_Schedule</b> Schedule_Default List_Of_Object_Property_References <sup>4</sup> Priority_For_Writing <sup>5</sup> Status_Flags Reliability Out_Of_Service

Object Type	Properties
Trend Log	Object_Identifier <b>Object_Name</b> Object_Type <b>Description</b> <b>Log_Enable</b> <sup>6</sup> <b>Start_Time</b> <b>Stop_Time</b> Log_DeviceObjectProperty <b>Log_Interval</b> <sup>6, 7</sup> COV_Resubscription_Interval Client_COV_Increment Stop_When_Full Buffer_Size Log_Buffer <b>Record_Count</b> (0) <sup>6</sup> Total_Record_Count Notification_Threshold Records_Since_Notification Last_Notify_Record Event_State <b>Notification_Class</b> Event_Enable Acked_Transitions <b>Notify_Type</b> Event_Time_Stamps

### Data Link Layer Options:

- ☒ BACnet IP, (Annex J)
- ☒ BACnet IP, (Annex J), Foreign Device
- ☒ ISO 8802-3, Ethernet (Clause 7)
- ☐ ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ☐ ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) \_\_\_\_\_
- ☒ MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 76800
- ☐ MS/TP slave (Clause 9), baud rate(s): \_\_\_\_\_
- ☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s): \_\_\_\_\_
- ☐ Point-To-Point, modem, (Clause 10), baud rate(s): \_\_\_\_\_
- ☐ LonTalk, (Clause 11), medium: \_\_\_\_\_
- ☐ Other:

### Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) ☒ Yes ☐ No

### Networking Options:

- ☒ Router, Clause 6 – Routing configurations: Ethernet-IP, Ethernet-MS/TP, IP-MS/TP
  - ☐ Annex H, BACnet Tunneling Router over IP
  - ☒ BACnet/IP Broadcast Management Device (BBMD)
- Does the BBMD support registrations by Foreign Devices? ☒ Yes ☐ No

### Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ☒ ANSI X3.4 ☐ IBM™/Microsoft™ DBCS ☒ ISO 8859-1
- ☒ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ JIS C 6226

**If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:**

This product supports communications between BACnet and any third-party system to which Niagara can connect. Contact Tridium for a list of supported protocols.

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