3951 Westerre Parkway, Suite 350
Richmond, Virginia 23233 USA
1.804.747.4771 Phone
1.804.747.5204 Fax

TRIDIUM NIAGARA^{AX} 3.8
BACnet PICS

BACnet Protocol Implementation Conformance Statement

Date: August 31, 2016
Vendor Name: Tridium
Product Name: Niagara AX BACnet Integration
Product Model Number: Tridium JACE models
Application Software Version: 3.8.112 or higher
Firmware Revision: 3.8.112.1 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)**

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Additional BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing DS-RP-A, B DS-RPM-A, B DS-WP-A, B DS-WPM-A, B DS-COV-A, B DS-COVU-A, B DS-V-A DS-M-A DS-COVP-B	**Device & Network Management** DM-DDB-A, B DM-DOB-A, B DM-DCC-B DM-RD-B DM-TS-B DM-UTC-B DM-LM-A, B DM-BR-B DM-ANM-A DM-ADM-A DM-ATS-A DM-MTS-A
Alarm & Event Management AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A	**Trending** T-VMT-A, I-B, -E-B T-ATR-A, B T-V-A
Scheduling SCHED-A, I-B, -E-B SCHED-VM-A SCHED-WS-I-B	**Network Management** NM-CE-A

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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 use internal triggering and are either COV or Interval. So the Log_Interval property cannot be written from BACnet.

Object Type	Properties	
Analog Input	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service** Units *Min_Pres_Value* *Max_Pres_Value*	*Resolution* ***COV_Increment*** ***Time_Delay*** ***Notification_Class*** ***High_Limit*** ***Low_Limit*** ***Deadband*** ***Limit_Enable*** *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*
Analog Output	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service** Units *Min_Pres_Value* *Max_Pres_Value* *Resolution*	Priority_Array **Relinquish_Default** ***COV_Increment*** ***Time_Delay*** ***Notification_Class*** ***High_Limit*** ***Low_Limit*** ***Deadband*** ***Limit_Enable*** *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*
Analog Value	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** Status_Flags Event_State *Reliability* **Out_Of_Service** Units *Priority_Array* ***Relinquish_Default***	***COV_Increment*** ***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 **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service** Polarity ***Inactive_Text*** ***Active_Text***	*Change_Of_State_Time* ***Change_Of_State_Count*** (0) *Time_Of_State_Count_Reset* ***Elapsed_Active_Time*** (0) *Time_Of_Active_Time_Reset* ***Time_Delay*** ***Notification_Class*** ***Alarm_Value*** *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*
Binary Output	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service** Polarity ***Inactive_Text*** ***Active_Text*** *Change_Of_State_Time* ***Change_Of_State_Count*** (0)	*Time_Of_State_Count_Reset* ***Elapsed_Active_Time*** (0) *Time_Of_Active_Time_Reset* ***Minimum_Off_Time*** ***Minimum_On_Time*** Priority_Array **Relinquish_Default** ***Time_Delay*** ***Notification_Class*** *Feedback_Value* *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*
Binary Value	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** Status_Flags Event_State *Reliability* **Out_Of_Service** ***Inactive_Text*** ***Active_Text*** *Change_Of_State_Time* **Change_Of_State_Count** *(0)* *Time_Of_State_Count_Reset*	***Elapsed_Active_Time*** (0) *Time_Of_Active_Time_Reset* ***Minimum_Off_Time*** ***Minimum_On_Time*** *Priority_Array* ***Relinquish_Default*** ***Time_Delay*** ***Notification_Class*** ***Alarm_Value*** *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*

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Object Type	Properties	
Calendar	Object_Identifier	***Description***
	Object_Name	Present_Value
	Object_Type	**Date_List**
Device	Object_Identifier	Segmentation_Supported
	Object_Name	*Max_Segments_Accepted*
	Object_Type	*Local_Time*
	System_Status	*Local_Date*
	Vendor_Name	*UTC_Offset*
	Vendor_Identifier	*Daylight_Savings_Status*
	Model_Name	*APDU_Segment_Timeout*
	Firmware_Revision	APDU_Timeout
	Application_Software_Revision	Number_Of_APDU_Retries
	Location	*Max_Master*
	Description	*Max_Info_Frames*
	Protocol_Version	Device_Address_Binding
	Protocol_Revision	Database_Revision
	Protocol_Services_Supported	*Configuration_Files*
	Protocol_Object_Types_Supported	*Last_Restore_Time*
	Object_List	***Backup_Failure_Timeout***
	Max_APDU_Length_Accepted	*Active_COV_Subsriptions*
File (Stream Access Only)	Object_Identifier	**File_Size**[1]
	Object_Name	Modification_Date
	Object_Type	**Archive**
	Description	Read_Only
	File_Type	File_Access_Method

Object Type	Properties	
Loop	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** Status_Flags Event_State *Reliability* **Out_Of_Service** Output_Units Manipulated_Variable_Reference Controlled_Variable_Reference Controlled_Variable_Value Controlled_Variable_Units Setpoint_Reference **Setpoint**[2] Action ***Proportional_Constant***	*Proportional_Constant_Units* ***Integral_Constant*** *Integral_Constant_Units* ***Derivative_Constant*** *Derivative_Constant_Units* ***Bias*** ***Maximum_Output*** ***Minimum_Output*** Priority_For_Writing ***COV_Increment*** ***Time_Delay*** *Notification_Class* ***Error_Limit*** *Event_Enable* *Acked_Transitions* *Notify_Type* *Event_Time_Stamps*
Multi-state Input	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service**	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 **Object_Name** Object_Type Present_Value ***Description*** *Device_Type* Status_Flags Event_State *Reliability* **Out_Of_Service** Number_Of_States	***State_Text*** Priority_Array **Relinquish_Default** ***Time_Delay*** ***Notification_Class*** *Feedback_Value* *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*

Object Type	Properties	
Multi-state Value	Object_Identifier **Object_Name** Object_Type Present_Value ***Description*** Status_Flags Event_State *Reliability* **Out_Of_Service** 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 **Object_Name** Object_Type ***Description***	Notification_Class **Priority** **Ack_Required** **Recipient_List**[3]
Schedule	Object_Identifier **Object_Name** Object_Type ***Description*** **Effective_Period** ***Weekly_Schedule*** ***Exception_Schedule***	**Schedule_Default** **List_Of_Object_Property_References**[4] **Priority_For_Writing**[5] Status_Flags Reliability **Out_Of_Service**
Trend Log	Object_Identifier **Object_Name** Object_Type ***Description*** **Log_Enable**[6] ***Start_Time*** ***Stop_Time*** *Log_DeviceObjectProperty* ***Log_Interval***[6, 7] *COV_Resubscription_Interval* *Client_COV_Increment* Stop_When_Full Buffer_Size	Log_Buffer **Record_Count** (0)[6] Total_Record_Count *Notification_Threshold* *Records_Since_Notification* *Last_Notify_Record* Event_State ***Notification_Class*** *Event_Enable* *Acked_Transitions* ***Notify_Type*** *Event_Time_Stamps*

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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.