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TRIDIUM NIAGARA 4 BACNET PICS

BACnet Protocol Implementation Conformance Statement

Date: 10 April 2019

Vendor Name: Tridium, Inc.

Product Name: JACE-8000

Product Model Number: 12977

Application Software Version: Tridium 4.7.110.26

Firmware Revision: 4.7.110.26

BACnet Protocol Revision: 14

Product Description:

Niagara 4 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 4.

Niagara points, schedules, histories, and alarming can be exposed to BACnet for monitor and control by foreign BACnet clients. In addition, BACnet objects like trendlog, schedule, calendar and event enrollment can be dynamically created, deleted and modified in Niagara 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):

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

Segmentation Capability:

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

Standard Object Types Supported:

- Calendar, Event-Enrollment, Notification-Class, Schedule, and Trend-Log Object types can be dynamically created and deleted
- 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.

Object Type	Properties
Analog Input	<p> <i>Resolution</i> COV_Increment Time_Delay (O) Notification_Class (O) High_Limit (O) Low_Limit (O) Deadband (O) Limit_Enable (O) Event_Enable (O) Acked_Transitions (O) Notify_Type (O) Event_Time_Stamps (O) Event-message-texts(O) Event-Detection-Enable (O) Property List </p> <p> Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Update_Interval Units <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> </p>

Object Type	Properties
Analog Output	<p>Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Device_Type <i>Status_Flags</i> <i>Event_State</i> Reliability Out_Of_Service <i>Units</i> Min_Pres_Value Max_Pres_Value Resolution <i>Priority_Array</i> Relinquish_Default</p> <p><i>COV_Increment</i> <i>Time_Delay (O)</i> <i>Notification_Class (O)</i> <i>High_Limit (O)</i> <i>Low_Limit (O)</i> <i>Deadband (O)</i> <i>Limit_Enable (O)</i> <i>Event_Enable (O)</i> <i>Acked_Transitions (O)</i> <i>Notify_Type (O)</i> <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) Property List</p>
Analog Value	<p>Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Reliability Out_Of_Service Units <i>Priority_Array</i> Relinquish_Default <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> Resolution</p> <p><i>COV_Increment (O)</i> <i>Time_Delay (O)</i> <i>Notification_Class (O)</i> <i>High_Limit (O)</i> <i>Low_Limit (O)</i> <i>Deadband (O)</i> <i>Limit_Enable (O)</i> <i>Event_Enable (O)</i> <i>Acked_Transitions (O)</i> <i>Notify_Type (O)</i> <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) Property List</p>

Object Type	Properties
Binary Input	<p> <i>Change_Of_State_Time (O)</i> Change_Of_State_Count (0) <i>Time_Of_State_Count_Reset (O)</i> Elapsed_Active_Time (0) <i>Time_Of_Active_Time_Reset (O)</i> Time_Delay (O) Notification_Class (O) Alarm_Value (O) Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) Property List </p>
Binary Output	<p> <i>Time_Of_State_Count_Reset (O)</i> Elapsed_Active_Time (0) <i>Time_Of_Active_Time_Reset (O)</i> Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay (O) Notification_Class (O) <i>Feedback_Value (O)</i> Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) Property List </p>

Object Type	Properties	
Binary Value	<p>Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service <i>Inactive_Text</i> <i>Active_Text</i> <i>Change_Of_State_Time (O)</i> Change_Of_State_Count (O) Time_Of_State_Count_Reset (O)</p>	<p><i>Elapsed_Active_Time (O)</i> <i>Time_Of_Active_Time_Reset (O)</i> Minimum_Off_Time Minimum_On_Time <i>Priority_Array</i> Relinquish_Default <i>Time_Delay (O)</i> Notification_Class (O) Alarm_Value (O) Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) Property List</p>
Calendar	<p>Object_Identifier Object_Name Object_Type</p>	<p>Description Present_Value Date_List Property List</p>

Object Type	Properties
Device	<p>Segmentation_Supported Max_Segments_Accepted Local_Time Local_Date UTC_Offset Daylight_Savings_Status APDU_Segment_Timeout APDU_Timeout Number_Of_APDU_Retries</p> <p>Time Synchronization Recipients Max_Master Max_Info_Frames Device_Address_Binding Database_Revision Configuration_Files Last_Restore_Time Backup_Failure_Timeout Backup_Preparation_Time Restore_Preparation_Time Restore_Completion_Time Backup_and_Restore_State Active_COV_Subscriptions Last_Restart_Reason Time_of_Device_Restart</p> <p>Restart Notification Recipients UTC Time Synchronization Recipients Time Synchronization Interval Align_Interval Interval_Offset Serial_Number Property_List</p>
File (Stream Access Only)	<p>Object_Identifier Object_Name Object_Type Description File_Type</p> <p>File_Size Modification_Date Archive Read_Only File_Access_Method Property_List</p>

Object Type	Properties	
Event Enrollment	Object_Identifier Object_Name Object_Type <i>Description</i> Event-Type Notify-Type Event-Parameters Status_Flags <i>Reliability</i>	Object-Property-reference Event-State Event-Enable <i>Acked_Transitions (O)</i> Notification-Class <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) <i>Property List</i>
Loop	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Update_interval Output_Units Manipulated_Variable_Reference Controlled_Variable_Reference Controlled_Variable_Value Controlled_Variable_Units Setpoint_Reference Setpoint Action Proportional_Constant	<i>Proportional_Constant_Units</i> Integral_Constant <i>Integral_Constant_Units</i> Derivative_Constant <i>Derivative_Constant_Units</i> Bias Maximum_Output Minimum_Output Priority_For_Writing COV_Increment Time_Delay Notification_Class Error_Limit Deadband Event_Enable <i>Acked_Transitions</i> <i>Notify_Type</i> <i>Event_Time_Stamps</i> <i>Event Message Texts</i> Event Detection Enable <i>Property List</i>
Multi-state Input	Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service	Number_Of_States State_Text Time_Delay (O) Notification_Class (O) Alarm_Values (O) Fault_Values (O) Event_Enable (O) Acked_Transitions (O) Notify_Type (O) Event_Time_Stamps (O) Event Message Texts Event Detection Enable <i>Property List</i>

Object Type	Properties	
Multi-state Output	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Device_Type Status_Flags Event_State Reliability Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default <i>Time_Delay (O)</i> <i>Notification_Class (O)</i> <i>Feedback_Value (O)</i> Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> Event_Message_Texts Event_Detection_Enable Property_List
Multi-state Value	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State Reliability Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default <i>Time_Delay (O)</i> <i>Notification_Class (O)</i> <i>Alarm_Values (O)</i> <i>Fault_Values (O)</i> Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> Event_Message_Texts Event_Detection_Enable Property_List
Notification Class	Object_Identifier Object_Name Object_Type <i>Description</i>	Notification_Class Priority Ack_Required Recipient_List Property_List
Schedule	Object_Identifier Object_Name Object_Type <i>Description</i> Present_Value Effective_Period <i>Weekly_Schedule</i> <i>Exception_Schedule</i>	Schedule_Default List_Of_Object_Property_References Priority_For_Writing Status_Flags Reliability Out_Of_Service Property_List

Object Type	Properties
Trend Log	<p> <i>Log_Buffer</i> Record_Count <i>Total_Record_Count</i> <i>Logging_Type</i> <i>Trigger</i> <i>Status_Flags</i> Notification_Threshold <i>Records_Since_Notification</i> <i>Last_Notify_Record</i> <i>Event_State</i> Notification_Class Event_Enable <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i> <i>Event_Message_Texts</i> <i>Event_Detection_Enable</i> <i>Property_List</i> </p> <p> <i>Object_Identifier</i> Object_Name <i>Object_Type</i> Description Enable Start_Time Stop_Time Log_DeviceObjectProperty Log_Interval COV_Resubscription_Interval Client_COV_Increment Stop_When_Full <i>Buffer_Size</i> </p>
Large Analog Value	<p> COV_Increment (O) Time_Delay (O) Notification_Class (O) High_Limit (O) Low_Limit (O) Deadband (O) Limit_Enable (O) Event_Enable (O) <i>Acked_Transitions (O)</i> Notify_Type (O) <i>Event_Time_Stamps (O)</i> <i>Event-message-texts(O)</i> Event-Detection-Enable (O) <i>Property_List</i> </p> <p> <i>Object_Identifier</i> <i>Object_Name</i> <i>Object_Type</i> Present_Value Description <i>Status_Flags</i> <i>Event_State</i> <i>Reliability</i> Out_Of_Service <i>Units</i> <i>Priority_Array</i> Relinquish_Default <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> <i>Resolution</i> </p>

Object Type	Properties
Integer Value	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Priority_Array</i> Relinquish_Default <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> <i>Resolution</i>
Positive Integer Value	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Priority_Array</i> Relinquish_Default <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> <i>Resolution</i>
Characterstring Value	Object_Identifier Object_Name Object_Type Present_Value <i>Description</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Priority_Array</i> Relinquish_Default Property List

Object Type	Properties
Structured-View	Object_Identifier Object_Name Object_Type Description Node-type Node-Subtype Subordinate-List Subordinate-annotations Property-List

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, 115200
- 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.

- ISO 10646 (UTF-8) IBM™/Microsoft™ DBCS ISO 8859-1
- ISO 10646 (UCS-2) ISO 10646 (UCS-4) JIS X 0208