BACnet Introduction

APPLICATION NOTE

October 2015

Description: BACnet introductory information.

What is BACnet

BACnet stands for Building Automation and Control Networks – from this specification you may find a purpose of this communication protocol. It has been specified and is maintained by ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) and can be defined as a global standard for open building management. BACnet protocol provides complex mechanisms for computerized building automation devices to exchange information, which allows achieving maximized building energy efficiency and other aspects of "green" buildings. Latest BACnet specification ASHRAE 135-2012 describes more than 50 object types, a number of communication services and a communication packet structure.

Each BACnet object type has its own purpose and contains several properties that hold information. BACnet devices typically use MS/TP (Master-Slave/Token-Passing) bus and/or IP protocol for communication. These devices can be uniquely identified by Network ID and Device ID. No details are required to connect to a BACnet device when the client and device share a subnet. Device discovery is handled by Who-Is and I-Am services, outlined in detail in the specification.

BACnet objects are able to perform many tasks, including simple Data Sharing, Alarms & Events, Trend Logging, Scheduling, Device Management and more. These features are known as BIBBs – BACnet Interoperability Building Blocks.

BACnet standard specifies various device profiles (each with a different purpose and level of this purpose), some examples include:

- B-AWS BACnet Advanced Workstation
- B-OWS BACnet Operator Workstation
- B-OD BACnet Operator Display
- B-LSWS BACnet Life Safety Workstation
- B-BC BACnet Building Controller
- B-AAC BACnet Advanced Application Controller
- B-ASC BACnet Application Specific Controller
- B-SS BACnet Smart Sensor
- B-SA BACnet Smart Actuator
- B-GW BACnet Gateway
- B-BBMD Other BACnet Broadcast Management Device

The BACnet standard is well documented – other examples and information are freely available on the web.

BACnet Certification

In 2012 ICONICS achieved the BACnet Advanced Workstation (B-AWS) certification for BACnet/IP communication. There is only one certification authority performing specified tests – BACnet Testing Laboratories (BTL). This certification ensures 99.9% reliability by guaranteeing that all communication and processes on all BACnet-related levels between certified devices are in compliance with BACnet specification.

ICONICS is certified for following BIBBs:
Data Sharing

- DS-RP-A - Read Property - A
- DS-RP-B - Read Property - B
- DS-RPM-A - Read Property Multiple - A
- DS-WP-A - Write Property – A
- DS-WP-B - Write Property – B
- DS-WPM-A– Write Property Multiple - A
- DS-COV-A– COV – A
- DS-AV-A – Advanced View – A
- DS-AM-A – Advanced Modify - A

Alarm and Event Management

- AE-N-A – Notification – A
- AE-ACK-A – ACK – A
- AE-ELV-A – Event Log View – A
- AE-ELVM-A – Event Log View and Modify – A
- AE-VN-A – View Notification – A
- AE-AVN-A – Advanced View Notification – A
- AE-AVM-A – Advanced View Modify – A
- AE-ASV-A – Alarm Summary View – A

Scheduling

- SCHED-AVM-A – Advanced View Modify – A
- SCHED-VM-A – View Modify – A

Trending

- T-V-A – Viewing – A
- T-AVM-A – Advanced View and Modify – A
- T-ATR-A – Automated Trend Retrieval – A
- T-AMVR-A – Automated Multiple Value Retrieval – A

Device & Network Management

- DM-DDB-A – Dynamic Device Binding – A
- DM-DDB-B – Dynamic Device Binding – B
- DM-DOB-A – Dynamic Object Binding – A
- DM-DOB-B – Dynamic Object Binding – B
- DM-ADM-A – Automatic Device Mapping – A
- DM-ANM-A – Automatic Network Mapping – A
- DM-MTS-A – Manual Time Synchronization – A

- DM-ATS-A – Automated Time Synchronization – A
- DM-DCC-A – Device Communication Control – A
- DM-RD-A – Reinitialize Device – A
- DM-BR-A – Backup and Restore – A
- DM-OCD-A – Object Creation and Deletion – A
- DM-LM-A – List Manipulation – A
- DM-LM-B – List Manipulation – B

Good to know

- BACnet/IP communication uses User Datagram Protocol (UDP)
- By default all communication goes through port 47808 (make sure that your firewall is properly set to let BACnet packets flow through)
- All operations are being processed in BACnet devices themselves, workstations act only as clients which are setting values of properties and devices are acting accordingly

Application Notes for more information

Please find the following application notes on your GENESIS64 DVD or on the ICONICS Customer Connection Portal. https://partners.iconics.com/Home/Support/AppNotes.aspx

- Platform Services – BACnet Network and Device Discovery
- Platform Services – BACnet Alarms Management
- Platform Services – BACnet Schedules
- Platform Services – Debugging BACnet Communication
- BACnet – Trends Management
- BACnet – Connecting to BBMD Device
- BACnet – Fast Browsing BACnet Devices
- BACnet – Quick Start