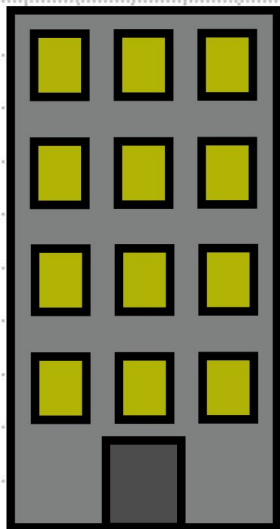


BACnet & Lighting in 2020



The Lighting Applications working group was formed in 2001 to improve BACnet's use as a native network lighting control protocol.

Since then, new BACnet objects, services, properties, and other standard values have been added to the BACnet standard to support lighting control.

Object Reliability Property

New standard values were added to Reliability property of objects:

- **TRIPPED**

- The end device, such as an actuator, is not responding to commands, prevented by a tripped condition or by being mechanically held open.

- **LAMP_FAILURE**

- Indicates that the lamp has failed in a physical lighting device.

- **COMMUNICATION_FAILURE**

- Proper operation of the object is dependent on communication with a remote sensor or device and communication with the remote sensor or device has been lost.

Lighting Output Object

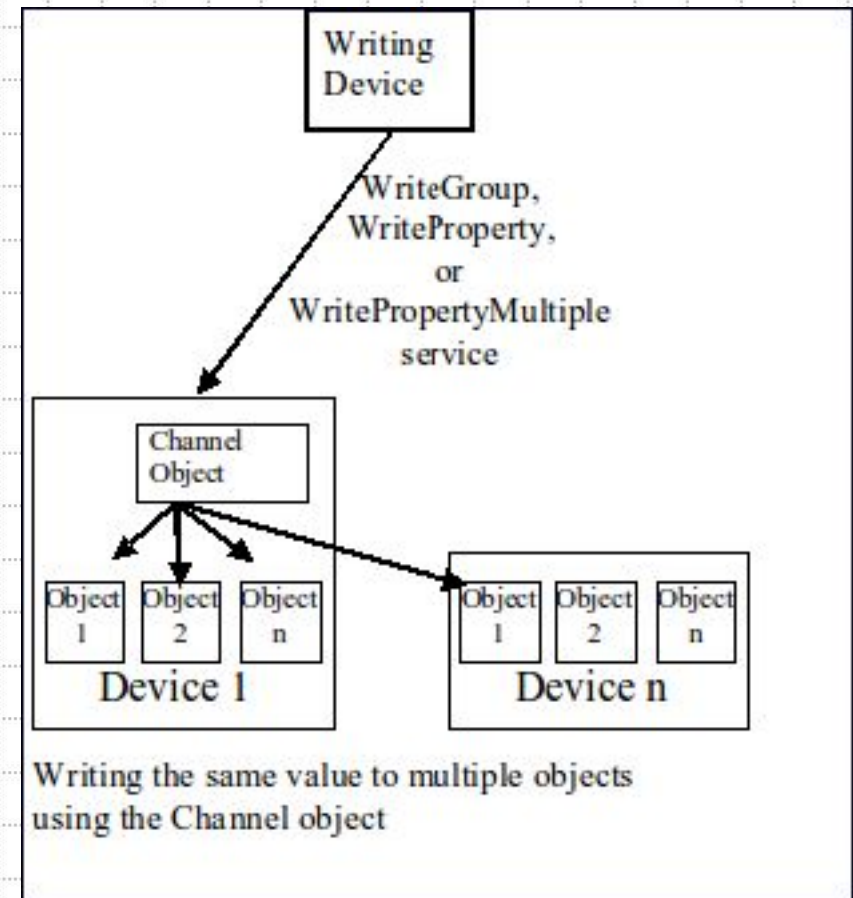
- Present_Value in Percent of Normalized Range
 - 0.0%=Off
 - 1.0-100% =On
 - -1.0 = Warn
 - -2.0 = Warn Relinquish
 - -3.0 = Warn Off
- Lighting_Command for dimming control
 - operation, target level, ramp rate, fade time, step, priority
 - Operations include:
 - fade-to, ramp-to
 - step-up, step-down, step-off
 - warn, warn-relinquish, warn-off
 - stop
- Internal dimming engine drives Tracking_Value
- Internal Egress_Time timer for automatic relinquish
- Low and High trim to clamp the Present_Value

Binary Lighting Output Object

- Present_Value is Enumerated for lighting control
 - Off
 - On
 - Warn
 - Warn-relinquish
 - Warn-off
 - Stop
 - + vendor specific if needed
- Internal Egress_Time timer for automatic relinquish
- Strike and Hour counting properties
- Power property
- Optional event notification parameters

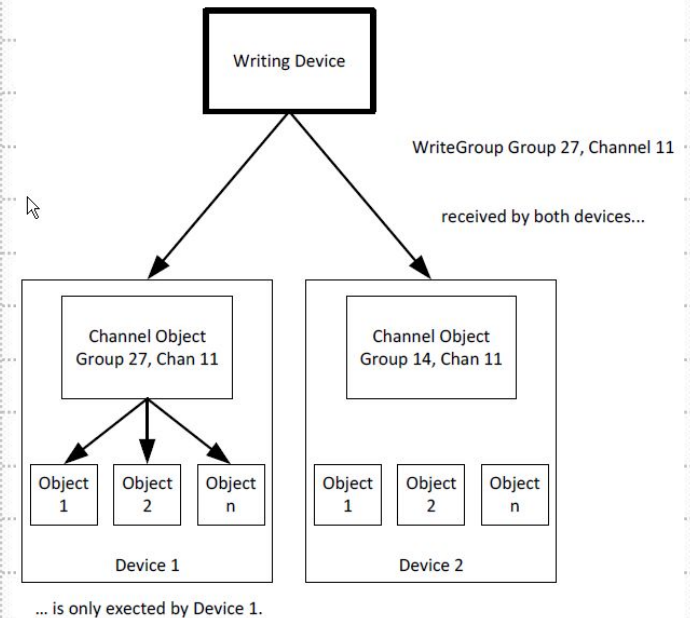
Channel Object

- Present_Value is Channel Value (pseudo Commandable)
 - similar to Any - primitives
 - includes Lighting Command
- Propagated value to List of Object Property References
 - Object Property Reference can be another device
 - Execution Delay + Inhibit
 - Channel Number
 - Group membership
- Defined data coercion



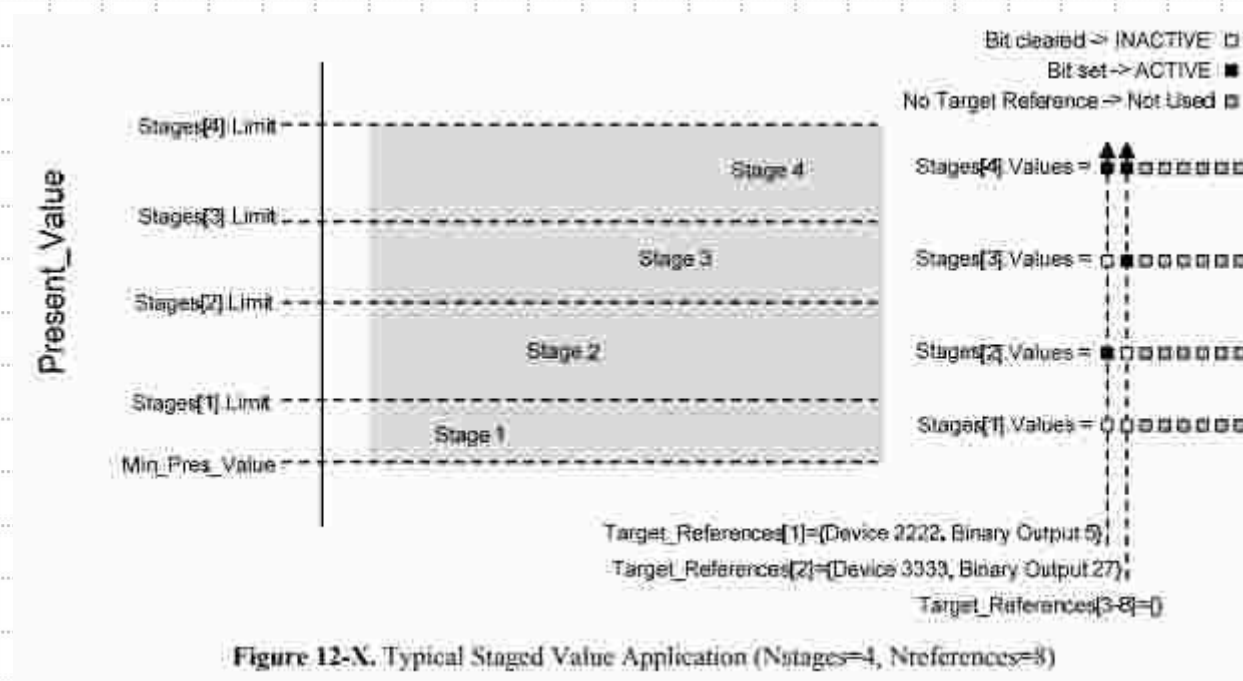
WriteGroup Service

- Broadcast Write to Channel Objects in a Single Group
- Group number is meant to limit
 - 0=reserved
 - 1=min
 - 4,294,967,295=max
- Priority - used if not specified
- Change List - Tuples
 - Channel Number = property of Channel object 1-65535
 - Overriding Priority - specific priority if needed
 - Value - may be coerced if not exact datatype
- Inhibit Delay - if allowed by Channel object



Staging object

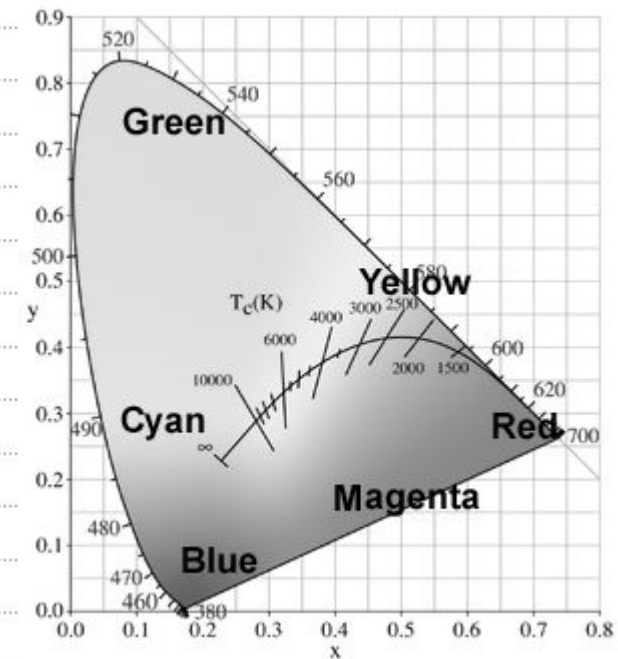
The Staging object type provides a way for BACnet devices to map analog values onto multiple Binary Value, Binary Output, or Binary Lighting Output objects.



Color object

The Color object type provides a way for BACnet devices to interact with X,Y color, directly or with control commands:

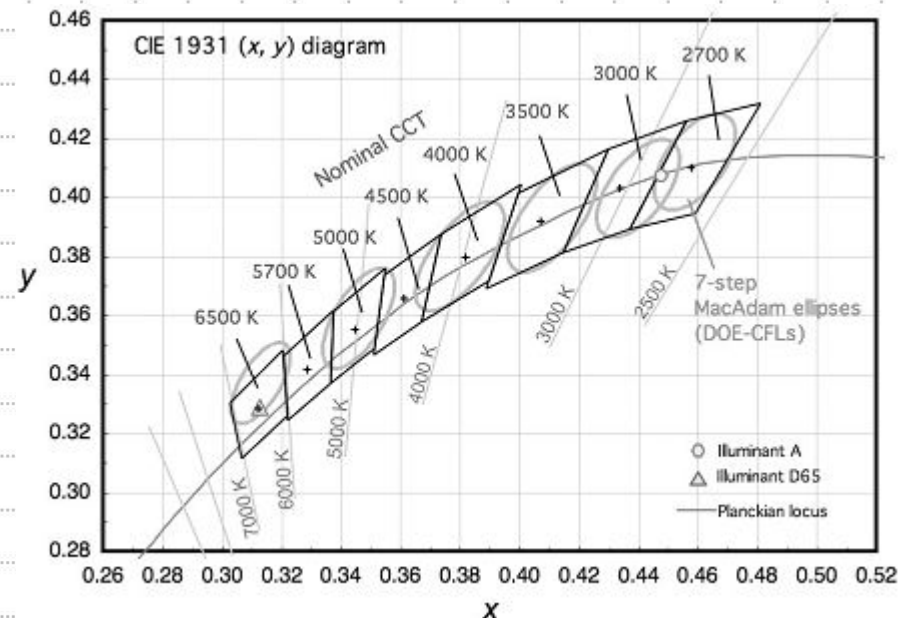
- None
- Fade To
- Stop
- Override



Color Temperature object

The Color Temperature object type provides a way for BACnet devices to interact with closest coordinated color temperature (CCT), directly or with control commands:

- None
- Fade To
- Stop
- Override



Lighting BIBBs

With the addition of the Lighting object types and new services, lighting specific BIBBs and device profiles were defined.

- Lighting Operator Interfaces.
 - This family is composed of B-XAWS, B-ALWS, and B-LOD.
- Lighting Control Stations.
 - This family is composed of B-ALCS and B-LCS.
- Lighting Controllers.
 - This family is composed of B-LS and B-LD.

Data Sharing

B-ALWS	B-LOD
DS-RP-A,B	DS-RP-A,B
DS-RPM-A	DS-RPM-A
DS-WP-A	DS-WP-A
DS-WPM-A	DS-WPM-A
DS-LAV-A	DS-LV-A
DS-LAM-A	DS-LM-A
DS-WG-A	DS-WG-A
DS-ALO-A	DS-ALO-A

Alarm & Event Management

B-ALWS	B-LOD
AE-N-A	
AE-ACK-A	
AE-AS-A	
AE-AVM-A	
AE-AVN-A	
AE-ELVM-A	

Scheduling

B-ALWS	B-LOD
SCHEM-AVM-A	

Trending

B-ALWS	B-LOD
T-AVM-A	

Device & Network Management

B-ALWS	B-LOD
DM-DDB-A,B	DM-DDB-A,B
DM-ANM-A	
DM-ADM-A	
DM-DOB-B	DM-DOB-B
DM-DCC-A	
DM-MTS-A	
DM-OCD-A	
DM-RD-A	
DM-BR-A	