dateTimeRegistered attribute (TimeType)

Contains the time at which this registration was created, by which clients MAY prioritize information providers with the most recent registrations, when no additional direction from the consumer is available.

pIN attribute (PINType)

Contains the registration personal identification number (PIN) associated with the device, including the checksum digit.

pollRate attribute (UInt32) [0..1] «XSDattribute»

The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

SelfDevice object (AbstractDevice)

The EndDevice providing the resources available within the DeviceCapabilities.

pollRate attribute (UInt32) [0..1] «XSDattribute»

The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

Temperature object ()

Specification of a temperature.

multiplier attribute (PowerOfTenMultiplierType)

Multiplier for "unit."

subject attribute (UInt8)

The subject of the temperature measurement:

0 = Enclosure

1 = Transformer

2 = HeatSink

value attribute (Int16)

Value in degrees Celsius (uom 23).
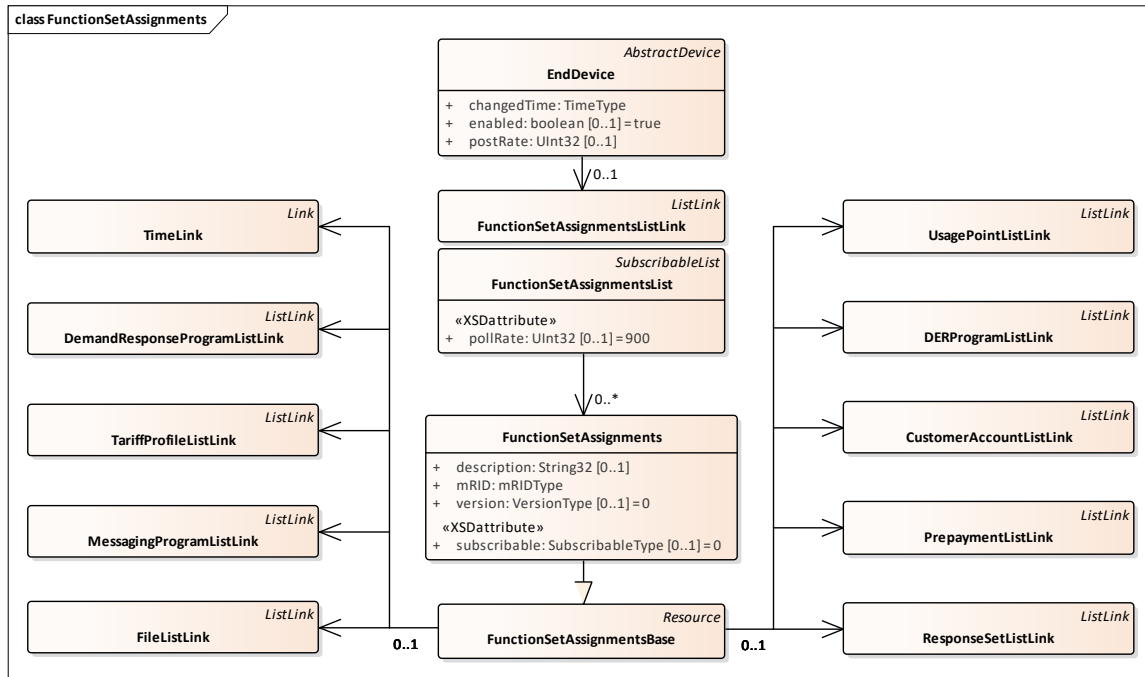
B.2.5 FunctionSetAssignments package

Figure B.11—FunctionSetAssignments

FunctionSetAssignmentsBase object (Resource)
Defines a collection of function set instances that are to be used by one or more devices as indicated by the EndDevice object(s) of the server.

FunctionSetAssignments object (FunctionSetAssignmentsBase)
Provides an identifiable, subscribable collection of resources for a particular device to consume.

description attribute (String32) [0..1]
The description is a human-readable text describing or naming the object.

mRID attribute (mRIDType)
The global identifier of the object.

subscribable attribute (SubscribableType) [0..1] «XSDattribute»
Indicates whether or not subscriptions are supported for this resource, and whether or not conditional (thresholds) are supported. If not specified, is "not subscribable" (0).

version attribute (VersionType) [0..1]
Contains the version number of the object. See the type definition for details.

FunctionSetAssignmentsList object (SubscribableList)
A List element to hold FunctionSetAssignments objects.

pollRate attribute (UInt32) [0..1] «XSDattribute»
The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

B.2.6 Pub-Sub package

Contains resource definitions used to allow subscriptions and notifications of publications.
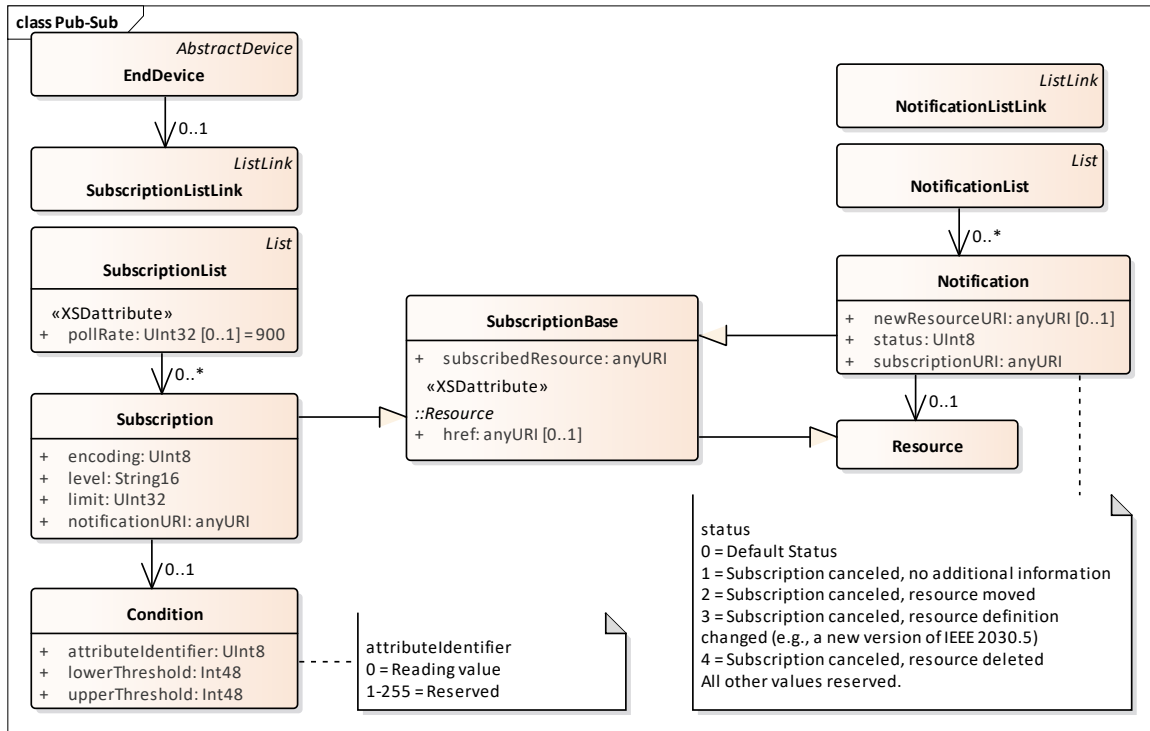

Figure B.12—Pub-Sub

Condition object ()
Indicates a condition that must be satisfied for the Notification to be triggered.

attributeIdentifier attribute (UInt8)
0 = Reading value

1 to 255 = Reserved

lowerThreshold attribute (Int48)
The value of the lower threshold.

upperThreshold attribute (Int48)
The value of the upper threshold.

SubscriptionBase object (Resource)
Holds the information related to a client Subscription to receive updates to a resource automatically. The actual resources may be passed in the Notification by specifying a specific xsi:type for the Resource and passing the full representation.

subscribedResource attribute (anyURI)
The resource for which the Subscription applies. Query string parameters SHALL NOT be specified when subscribing to list resources. Should a query string parameter be specified, servers SHALL ignore them.

Subscription object (SubscriptionBase)

Holds the information related to a client Subscription to receive updates to a resource automatically.

encoding attribute (UInt8)

0 = application/sep+xml

1 = application/sep-exi

2 to 255 = Reserved

level attribute (String16)

Contains the preferred schema and extensibility level indication such as "+S1".

limit attribute (UInt32)

This element is used to indicate the maximum number of list items that should be included in a Notification when the subscribed resource changes. This limit is meant to be functionally equivalent to the "limit" query string parameter, but applies to both list resources as well as other resources. For list resources, if a limit of 0 is specified, then Notifications SHALL contain a list resource with results = 0 (equivalent to a simple change Notification). For list resources, if a limit greater than 0 is specified, then Notifications SHALL contain a list resource with results equal to the limit specified (or less, should the list contain fewer items than the limit specified or should the server be unable to provide the requested number of items for any reason) and follow the same rules for list resources (e.g., ordering). For non-list resources, if a limit of 0 is specified, then Notifications SHALL NOT contain a resource representation (equivalent to a simple change Notification). For non-list resources, if a limit greater than 0 is specified, then Notifications SHALL contain the representation of the changed resource.

notificationURI attribute (anyURI)

The resource to which to post the Notifications about the requested subscribed resource. Because this URI will exist on a server other than the one being POSTed to, this attribute SHALL be a fully-qualified absolute URI, not a relative reference.

SubscriptionList object (List)

A List element to hold Subscription objects.

pollRate attribute (UInt32) [0..1] «XSDattribute»

The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

Notification object (SubscriptionBase)

Holds the information related to a client Subscription to receive updates to a resource automatically. The actual resources may be passed in the Notification by specifying a specific xsi:type for the Resource and passing the full representation.

newResourceURI attribute (anyURI) [0..1]

The new location of the resource, if moved. This attribute SHALL be a fully-qualified absolute URI, not a relative reference.

status attribute (UInt8)

0 = Default status

1 = Subscription canceled, no additional information

2 = Subscription canceled, resource moved

This is a preview. Click here to purchase the full publication.

3 = Subscription canceled, resource definition changed (e.g., a new version of IEEE Std 2030.5)

4 = Subscription canceled, resource deleted

All other values reserved.

subscriptionURI attribute (anyURI)
The Subscription from which this Notification was triggered. This attribute SHALL be a fully-qualified absolute URI, not a relative reference.

NotificationList object (List)
A List element to hold Notification objects.

B.2.7 Response package

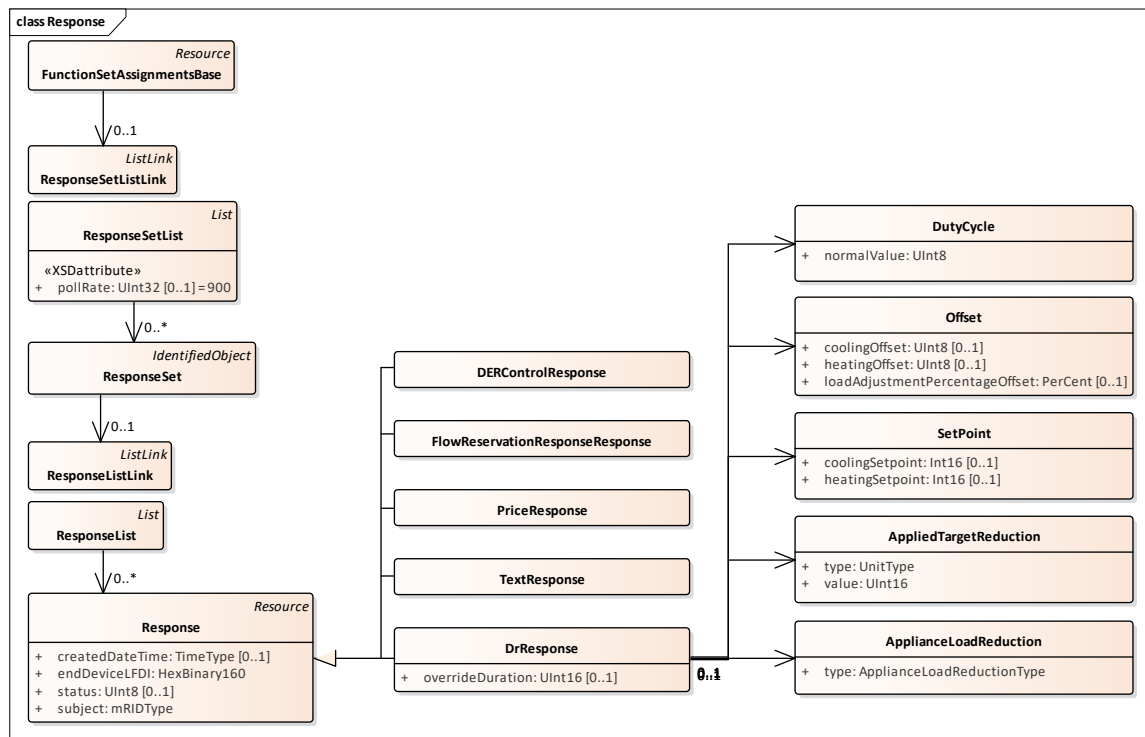Contains definitions of objects enabling responses to be sent back to suppliers and providers.

Figure B.13—Response

DERControlResponse object (Response)
A response to a DERControl.

FlowReservationResponseResponse object (Response)
A response to a FlowReservationResponse.

AppliedTargetReduction object ()
Specifies the value of the TargetReduction applied by the device.

type attribute (UnitType)

Enumerated field representing the type of reduction requested.

value attribute (UInt16)

Indicates the requested amount of the relevant commodity to be reduced.

DrResponse object (Response)

A response to a Demand Response Load Control (EndDeviceControl) message.

overrideDuration attribute (UInt16) [0..1]

Indicates the amount of time, in seconds, that the client partially opts-out during the demand response event. When overriding within the allowed override duration, the client SHALL send a partial opt-out (response status code 8) for partial opt-out upon completion, with the total time the event was overridden (this attribute) populated. The client SHALL send a no participation status response (status type 10) if the user partially opts-out for longer than EndDeviceControl.overrideDuration.

PriceResponse object (Response)

A response related to a price message.

Response object (Resource)

The Response object is the generic response data repository which is extended for specific function sets.

createdDateTime attribute (TimeType) [0..1]

The createdDateTime field contains the date and time when the acknowledgement/status occurred in the client. The client will provide the timestamp to ensure the proper time is captured in case the response is delayed in reaching the server (server receipt time would not be the same as the actual confirmation time). The time reported from the client should be relative to the time server indicated by the FunctionSetAssignment that also indicated the event resource; if no FunctionSetAssignment exists, the time of the server where the event resource was hosted.

endDeviceLFDI attribute (HexBinary160)

Contains the long-form device identifier (LFDI) of the device providing the response.

status attribute (UInt8) [0..1]

The status field contains the acknowledgement or status. Each event type (DRLC, DER, Price, or Text) can return different status information (e.g., an Acknowledge will be returned for a Price event where a Demand Response Load Control (DRLC) event can return Event Received, Event Started, and Event Completed). The status field value definitions are defined in Table 27.

subject attribute (mRIDType)

The subject field provides a method to match the response with the originating event. It is populated with the mRID of the original object.

ResponseList object (List)

A List element to hold Response objects.

ResponseSet object (IdentifiedObject)

A container for a ResponseList.

ResponseSetList object (List)

A List element to hold ResponseSet objects.

pollRate attribute (UInt32) [0..1] «XSDattribute»

The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

TextResponse object (Response)
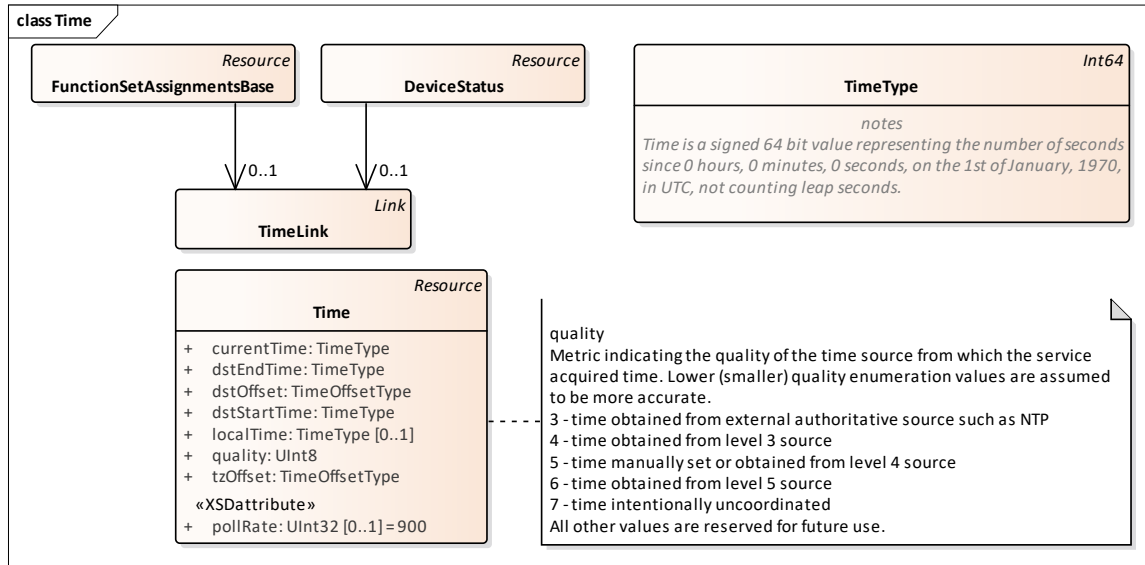
A response to a text message.

B.2.8 Time package

Figure B.14—Time

Time object (Resource)

Contains the representation of time, constantly updated.

currentTime attribute (TimeType)

The current time, in the format defined by TimeType.

dstEndTime attribute (TimeType)

Time at which daylight savings ends (dstOffset no longer applied). Result of dstEndRule calculation.

dstOffset attribute (TimeOffsetType)

Daylight savings time offset from local standard time. A typical practice is advancing clocks one hour when daylight savings time is in effect, which would result in a positive dstOffset.

dstStartTime attribute (TimeType)

Time at which daylight savings begins (apply dstOffset). Result of dstStartRule calculation.

localTime attribute (TimeType) [0..1]

Local time: localTime = currentTime + tzOffset (+ dstOffset when in effect).

pollRate attribute (UInt32) [0..1] «XSDattribute»

The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

quality attribute (UInt8)

Metric indicating the quality of the time source from which the service acquired time. Lower (smaller) quality enumeration values are assumed to be more accurate.

3 = Time obtained from external authoritative source such as NTP

4 = Time obtained from level 3 source

5 = Time manually set or obtained from level 4 source

6 = Time obtained from level 5 source

7 = Time intentionally uncoordinated

All other values are reserved for future use.

tzOffset attribute (TimeOffsetType)

Local time zone offset from currentTime. Does not include any daylight savings time offsets. For American time zones, a negative tzOffset SHALL be used (e.g., EST = GMT −5 which is −18 000).

B.2.9 DeviceInformation package

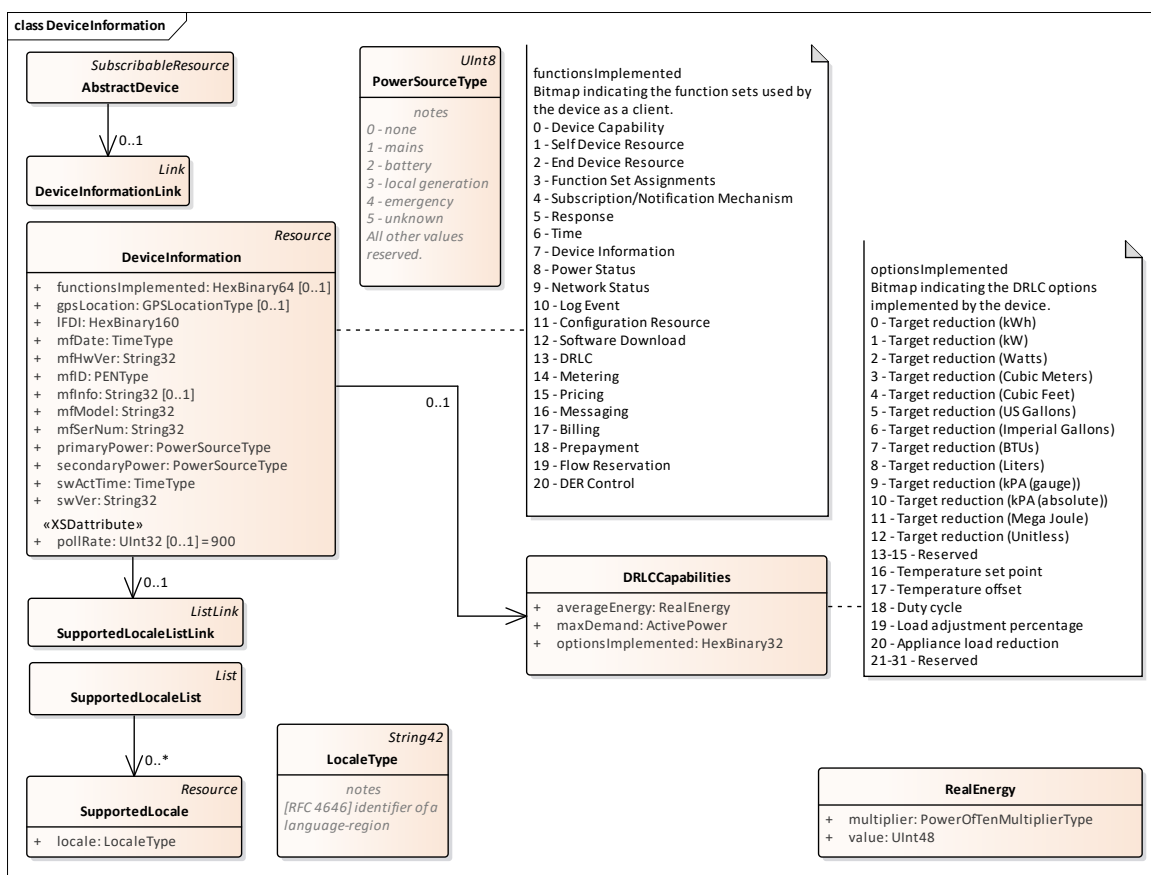Contains general information about devices.

Figure B.15—DeviceInformation

DeviceInformation object (Resource)

Contains identification and other information about the device that changes very infrequently, typically only when updates are applied, if ever.

functionsImplemented attribute (HexBinary64) [0..1]

Bitmap indicating the function sets used by the device as a client.

0 = Device capability

1 = SelfDevice resource

2 = EndDevice resource

3 = Function set assignments

4 = Subscription/Notification mechanism

5 = Response

6 = Time

7 = Device information

8 = Power status

9 = Network status

10 = Log event

11 = Configuration resource

12 = Software download

13 = DRLC

14 = Metering

15 = Pricing

16 = Messaging

17 = Billing

18 = Prepayment

19 = Flow reservation

20 = DER control

gpsLocation attribute (GPSLocationType) [0..1]
GPS location of this device.

lFDI attribute (HexBinary160)
Long form device identifier. See Clause 6 (security) for full details.

mfDate attribute (TimeType)
Date/time of manufacture.

mfHwVer attribute (String32)
Manufacturer hardware version.

mfID attribute (PENType)
The manufacturer's IANA Enterprise Number.

mfInfo attribute (String32) [0..1]
Manufacturer dependent information related to the manufacture of this device.

mfModel attribute (String32)
Manufacturer's model number.

mfSerNum attribute (String32)
Manufacturer assigned serial number.

pollRate attribute (UInt32) [0..1] «XSDattribute»
The default polling rate for this function set (this resource and all resources below), in seconds. If not specified, a default of 900 seconds (15 minutes) is used. It is RECOMMENDED that a client poll the resources of this function set every pollRate seconds.

primaryPower attribute (PowerSourceType)
Primary source of power.