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1 Scope

This document provides detailed mapping information to provide equivalency between AllJoyn defined Interfaces and OCF defined Resources.

This document provides mapping for Device Types (AllJoyn to/from OCF), identifies equivalent OCF Resources for both mandatory and optional AllJoyn interfaces and for each interface defines the detailed Property by Property mapping using OCF defined extensions to JSON schema to programmatically define the mappings.

1 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

https://www.iso.org/standard/53238.html
Latest version available at: https://openconnectivity.org/specs/OCF_Core_Specification.pdf

https://www.iso.org/standard/74241.html
Latest version available at:
https://openconnectivity.org/specs/OCF_Resource_Type_Specification.pdf

https://www.iso.org/standard/74242.html

Derived Models for Interoperability between IoT Ecosystems, Stevens & Merriam, March 2016

AllJoyn Common Data Model Interface Definitions
https://wiki.alljoyn.org/cdm

2 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 30118-1:2018 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:
– ISO Online browsing platform: available at https://www.iso.org/obp

3 Document conventions and organization

3.1 Conventions

In this document a number of terms, conditions, mechanisms, sequences, parameters, events, states, or similar terms are printed with the first letter of each word in uppercase and the rest
lowercase (e.g., Network Architecture). Any lowercase uses of these words have the normal technical English meaning.

### 3.2 Notation

In this document, features are described as required, recommended, allowed or DEPRECATED as follows:

**Required (or shall or mandatory).**

These basic features shall be implemented to comply with the Mapping Specification. The phrases "shall not", and "PROHIBITED" indicate behaviour that is prohibited, i.e. that if performed means the implementation is not in compliance.

**Recommended (or should).**

These features add functionality supported by the Mapping Specification and should be implemented. Recommended features take advantage of the capabilities the Mapping Specification, usually without imposing major increase of complexity. Notice that for compliance testing, if a recommended feature is implemented, it shall meet the specified requirements to be in compliance with these guidelines. Some recommended features could become requirements in the future. The phrase "should not" indicates behaviour that is permitted but not recommended.

**Allowed (or allowed).**

These features are neither required nor recommended by the Mapping Specification, but if the feature is implemented, it shall meet the specified requirements to be in compliance with these guidelines.

**Conditionally allowed (CA)**

The definition or behaviour depends on a condition. If the specified condition is met, then the definition or behaviour is allowed, otherwise it is not allowed.

**Conditionally required (CR)**

The definition or behaviour depends on a condition. If the specified condition is met, then the definition or behaviour is required. Otherwise the definition or behaviour is allowed as default unless specifically defined as not allowed.

**DEPRECATED**

Although these features are still described in this document, they should not be implemented except for backward compatibility. The occurrence of a deprecated feature during operation of an implementation compliant with the current document has no effect on the implementation’s operation and does not produce any error conditions. Backward compatibility may require that a feature is implemented and functions as specified but it shall never be used by implementations compliant with this document.

Strings that are to be taken literally are enclosed in "double quotes".

Words that are emphasized are printed in italic.

### 4 Theory of operation

#### 4.1 Interworking approach

The interworking between AllJoyn defined interfaces and OCF defined Resource Types is modelled using the derived model syntax described in Derived Models for Interoperability between IoT Ecosystems. Determination of the minimum set of AllJoyn interfaces for which equivalency is required within the OCF data model was done by listing the set of interfaces required for each of
the device types defined by the CDM Project inside of AllJoyn. Where the AllJoyn interface supports methods then an actuation design pattern is applied.

4.2 Mapping syntax

4.2.1 Introduction

Within the defined syntax for derived modelling used by this document there are two blocks that define the actual Property-Property equivalence or mapping. These blocks are identified by the keywords "x-to-ocf" and "x-from-ocf". Derived Models for Interoperability between IoT Ecosystems does not define a rigid syntax for these blocks; they are free form string arrays that contain pseudo-coded mapping logic.

Within this document we apply the rules defined in clause 5.2 to these blocks to ensure consistency and re-usability and extensibility of the mapping logic that is defined.

4.2.2 General

All statements are terminated with a carriage return.

4.2.3 Value assignment

The equals sign (=) is used to assign one value to another. The assignee is on the left of the operator; the value being assigned on the right.

4.2.4 Property naming

All Property names are identical to the name used by the original model; for example, from the OCF Temperature Resource the Property name "temperature" is used whereas when referred to the derived ecosystem then the semantically equivalent Property name is used.

When the same name is used by both OCF and the derived ecosystem for semantically equivalent values then the name of the OCF defined Property is prepended by the ecosystem designator "ocf" to avoid ambiguity (e.g. "ocf.step").

4.2.5 Arrays

An array element is indicated by the use of square brackets "[]" with the index of the element contained therein, e.g. range[1]. All arrays start at an index of 0. If an entire array is being referenced then no index is included, e.g. selectablehumiditylevels[].

4.2.6 Default mapping

There are cases where the specified mapping is not possible as one or more of the Properties being mapped is optional in the source model. In all such instances a default mapping is provided. The default map is indicated by the prepending of an "otherwise:" modifier to the assignment. (e.g. "otherwise: step = 1").

4.2.7 Conditional mapping

When a mapping is dependent on the meeting of other conditions then the syntax:

if "condition", "mapping".

Is applied.

E.g. if step >0, ocf.step = step.

4.2.8 Loops

When a mapping can be represented by a repeated loop governed by some condition then the syntax:
for "initialize", "condition", "increment": "mapping"

Where:

"initialize" is an initial local loop control variable setting.

"condition" is the loop controller, the loop repeats until the condition evaluates to "false".

"increment" allows for update of the control variable, if omitted an increment of "1" is assumed.

Is applied.

E.g. for x=0, x < sizeof(supportedmodes): ocf.supportedmodes[x] = modearray[supportedmodes[x]]

4.2.9 Method invocation

The invocation of a method or remote procedure call (RPC) from the derived ecosystem as part of the mapping from an OCF Resource is indicated by the use of a double colon "::" delimiter between the applicable resource, service, interface or other construct identifier and the method or RPC name. The method name always includes trailing parentheses which would include any parameters should they be passed.

For example, when dealing with the switchon() method from AllJoyn this gives a complete method invocation as: operation.oncontrol::switchon().

5 Device type mapping

5.1 AllJoyn device types to OCF device types

Table 1 captures the equivalency mapping between AllJoyn defined Device Types (see AllJoyn Common Data Model Interface Definitions) and OCF defined Device Types (see Table 10-1 in ISO/IEC 30118-5:2019). The minimum interface set for the AllJoyn definitions is provided in the HAE Theory of Operation; the minimum Resource sets for each OCF Device is provided in ISO/IEC 30118-5:2019.

Table 1 – AllJoyn to OCF device type mapping

<table>
<thead>
<tr>
<th>Classification</th>
<th>AllJoyn Device Type</th>
<th>AllJoyn ID</th>
<th>OCF Device Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Care</td>
<td>Air Conditioner</td>
<td>5</td>
<td>oic.d.airconditioner</td>
</tr>
<tr>
<td></td>
<td>Air Purifier</td>
<td>9</td>
<td>oic.d.airpurifier</td>
</tr>
<tr>
<td></td>
<td>Air Quality Monitor</td>
<td>11</td>
<td>oic.d.airqualitymonitor</td>
</tr>
<tr>
<td></td>
<td>Dehumidifier</td>
<td>8</td>
<td>oic.d.dehumidifier</td>
</tr>
<tr>
<td></td>
<td>Humidifier</td>
<td>7</td>
<td>oic.d.humidifier</td>
</tr>
<tr>
<td></td>
<td>Electric Fan</td>
<td>10</td>
<td>oic.d.fan</td>
</tr>
<tr>
<td></td>
<td>Thermostat</td>
<td>6</td>
<td>oic.d.thermostat</td>
</tr>
<tr>
<td>Fabric Care</td>
<td>Clothes Washer</td>
<td>12</td>
<td>oic.d.washer</td>
</tr>
<tr>
<td></td>
<td>Clothes Dryer</td>
<td>13</td>
<td>oic.d.dryer</td>
</tr>
<tr>
<td></td>
<td>Clothes Washer-Dryer</td>
<td>14</td>
<td>oic.d.washerdrayer</td>
</tr>
<tr>
<td>Food Preservation</td>
<td>Refrigerator</td>
<td>2</td>
<td>oic.d.refrigerator</td>
</tr>
<tr>
<td></td>
<td>Ice-Maker</td>
<td>4</td>
<td>oic.r.icemaker (maps to Resource)</td>
</tr>
<tr>
<td></td>
<td>Freezer</td>
<td>3</td>
<td>oic.d.freezer</td>
</tr>
<tr>
<td>Food Preparation</td>
<td>Oven</td>
<td>17</td>
<td>oic.d.oven</td>
</tr>
</tbody>
</table>
Table 2 captures the Device Types defined by OCF have no direct equivalent in AllJoyn, they shall all be mapped to an AllJoyn Device Type of "Other" (Id of "1").

Table 2 – OCF device types with no AllJoyn equivalent

<table>
<thead>
<tr>
<th>OCF Device Name</th>
<th>OCF Device Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver</td>
<td>oic.d.receiver</td>
</tr>
<tr>
<td>Blind</td>
<td>oic.d.blind</td>
</tr>
<tr>
<td>Door</td>
<td>oic.d.door</td>
</tr>
<tr>
<td>Garage Door</td>
<td>oic.d.garagedoor</td>
</tr>
<tr>
<td>Generic Sensor</td>
<td>oic.d.sensor</td>
</tr>
<tr>
<td>Light</td>
<td>oic.d.light</td>
</tr>
<tr>
<td>Smart Plug</td>
<td>oic.d.smartplug</td>
</tr>
<tr>
<td>Switch</td>
<td>oic.d.switch</td>
</tr>
<tr>
<td>Water Valve</td>
<td>oic.d.watervalve</td>
</tr>
<tr>
<td>Printer</td>
<td>oic.d.printer</td>
</tr>
<tr>
<td>Multi-Function Printer</td>
<td>oic.d.multifunctionprinter</td>
</tr>
<tr>
<td>Scanner</td>
<td>oic.r.scanner</td>
</tr>
<tr>
<td>Camera</td>
<td>oic.d.camera</td>
</tr>
<tr>
<td>Security Panel</td>
<td>oic.d.securitypanel</td>
</tr>
<tr>
<td>Smart Lock</td>
<td>oic.d.smartlock</td>
</tr>
</tbody>
</table>

6 Resource to interface equivalence

6.1 Introduction

Clause 7 captures the equivalency mapping between AllJoyn defined Interfaces (see AllJoyn Common Data Model Interface Definitions) and OCF defined Resource Types (see ISO/IEC 30118-4:2018). Detailed Property by Property mappings are provided in clause 8.

Table 3 captures the mappings for Interfaces that are part of the minimum set for an AllJoyn Device.

Table 4 captures the mappings for Interfaces that are optional for an AllJoyn Device; deep translation for these interfaces via derived modelling is not within the scope of this release of the document.
### Table 3 – AllJoyn interface to OCF resource type mapping – minimum interface set

<table>
<thead>
<tr>
<th>AllJoyn Interface</th>
<th>OCF Resource Type Name</th>
<th>OCF Resource Type ID</th>
<th>OCF Interface(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment.CurrentAirQuality</td>
<td>Air Quality Collection</td>
<td>oic.r.airqualitycollection</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Environment.CurrentAirQualityLevel</td>
<td>Air Quality Collection</td>
<td>oic.r.airqualitycollection</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Environment.CurrentHumidity</td>
<td>Humidity</td>
<td>oic.r.humidity</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Environment.CurrentTemperature</td>
<td>Temperature</td>
<td>oic.r.temperature</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Environment.TargetHumidity</td>
<td>Humidity</td>
<td>oic.r.humidity,</td>
<td>oic.if.a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>oic.r.selectablelevels</td>
<td></td>
</tr>
<tr>
<td>Environment.TargetTemperature</td>
<td>Temperature</td>
<td>oic.r.temperature</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.AudioVolume</td>
<td>Audio Controls</td>
<td>oic.r.audio</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.Channel</td>
<td></td>
<td>Not mapped</td>
<td></td>
</tr>
<tr>
<td>Operation.ClimateControlMode</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.ClosedStatus</td>
<td>Operational State</td>
<td>oic.r.operational.state</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.CycleControl</td>
<td>Door</td>
<td>oic.r.door</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.FanSpeedLevel</td>
<td>Air Flow</td>
<td>oic.r.airflow</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.HeatingZone</td>
<td>Heating Zone Collection</td>
<td>oic.r.heatingzonecollection</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.HvacFanMode</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.OnOffStatus</td>
<td>Binary Switch</td>
<td>oic.r.switch.binary</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.OvenCyclePhase</td>
<td>Operational State</td>
<td>oic.r.operationalstate</td>
<td>oic.if.s</td>
</tr>
</tbody>
</table>

### Table 4 – AllJoyn interface to OCF resource type mapping – optional interface set

<table>
<thead>
<tr>
<th>AllJoyn Interface</th>
<th>OCF Resource Type Name</th>
<th>OCF Resource Type ID</th>
<th>OCF Interface(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment.TargetTemperatureLevel</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Environment.WaterLevel</td>
<td>TBD</td>
<td>TBD</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Environment.WindDirection</td>
<td>Air Flow</td>
<td>oic.r.airflow</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.AirRecirculationMode</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.Alerts</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Operation.AudioVideoInput</td>
<td>Media Source List</td>
<td>oic.r.media.input</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.BatteryStatus</td>
<td>Battery</td>
<td>oic.r.energy.battery</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.CurrentPower</td>
<td>Energy Usage</td>
<td>oic.r.energy.usage</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.DishWashingCyclePhase</td>
<td>Operational State</td>
<td>oic.r.operationalstate</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.EnergyUsage</td>
<td>Energy Usage</td>
<td>oic.r.energy.usage</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.FilterStatus</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Operation.LaundryCyclePhase</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.s</td>
</tr>
<tr>
<td>Operation.MoistureOutputLevel</td>
<td>Mode</td>
<td>oic.r.mode</td>
<td>oic.if.a</td>
</tr>
<tr>
<td>Operation.PlugInUnits</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>
6.2 Environment.CurrentAirQuality mapping

If more than one instance of the AirQuality interface is exposed, then each instance maps to an instance of the OCF AirQuality Resource. The mapping defined in clause 8.2 describes the population of the OCF AirQuality Resource. Even if there is only a single instance of an OCF AirQuality Resource this shall be included in an instance of an OCF AirQualityCollection. The number of links in the collection equates to the number of instances of the AllJoyn CurrentAirQuality interface that are exposed. When mapping from OCF the valueType of the Resource shall be introspected, this API is invoked only if this is set to "Measured".

6.3 Environment.CurrentAirQualityLevel mapping

If more than one instance of the AirQualityLevel interface is exposed, then each instance maps to an instance of the OCF AirQuality Resource. The mapping defined in clause 8.2 describes the population of the OCF AirQuality Resource. Even if there is only a single instance of an OCF AirQuality Resource then this shall be included in an instance of an OCF AirQualityCollection. The number of links in the collection equates to the number of instances of the AllJoyn CurrentAirQuality interface that are exposed. When mapping from OCF the valueType of the Resource shall be introspected, this API is invoked only if this is set to "Qualitative".

6.4 Operation.ClimateControlMode mapping

ClimateControlMode has three Properties; these map as follows: mode and supportedmodes maps to the Mode Resource, operationalstate maps to the OperationalState Resource. This can be represented in OCF either as two distinct Resource instances or a single instance with two Resource Types (oic.r.mode, oic.r.operationalstate).

6.5 Operation.FanSpeedLevel mapping

The setting of the FanSpeedLevel to "0x00" (off) is handled via the "OffControl" interface rather than writing directly to this interface. In such a case an instance of Binary Switch shall be exposed on the OCF side; this can be modelled as AirFlowControl which is then a collection of Binary Switch and AirFlow.

6.6 Operation.HeatingZone mapping

Each element in the array of heating zones within the AllJoyn HeatingZone interface maps to an instance of OCF HeatingZone, itself a link in an instance of an OCF HeatingZoneCollection. The mapping defined clause 8.13 describes the population of the OCF HeatingZone Resource that constitutes the Resources that are contained in the collection.

6.7 Operation.OnOffStatus, Operation.OnControl, and Operation.OffControl mapping

A discovered instance of a Binary Switch is always mapped to an Operation.OnOffStatus interface. A RETRIEVE on a Binary Switch maps to an action on an instance of an Operation.OnOffStatus Interface. An UPDATE on a Binary Switch maps to a method invocation on either Operation.OnControl or OffControl. value = true maps to Operation.OnControl value = false maps to Operation.OffControl.
6.8 Operation.OvenCyclePhase

OvenCyclePhase cyclephase Property pre-defines values 0x00-0x7F, 0x80-0xFF is for vendor specific values. The mapping defined in clause 8 covers only specification defined values. Any vendor defined value shall be represented in OCF using the x.<organization> syntax for a vendor defined Property.

7 Detailed mapping APIs

7.1 Introduction

This clause provides a mapping description (using JSON that aligns with the Derived Modelling syntax described in Derived Models for Interoperability between IoT Ecosystems for all Interfaces and Resources that are within scope.

The derived model definitions presented in clause 8 are formatted for readability, and so may appear to have extra line breaks.

Table 5 provides a reference and link to the per Interface clauses.

<table>
<thead>
<tr>
<th>AllJoyn Interface Name</th>
<th>Equivalent Resource(s)</th>
<th>Clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment.CurrentAirQuality</td>
<td>oic.r.airqualitycollection</td>
<td>8.2</td>
</tr>
<tr>
<td>Environment.CurrentAirQualityLevel</td>
<td>oic.r.airqualitycollection</td>
<td>8.3</td>
</tr>
<tr>
<td>Environment.CurrentHumidity</td>
<td>oic.r.humidity</td>
<td>8.4</td>
</tr>
<tr>
<td>Environment.CurrentTemperature</td>
<td>oic.r.temperature</td>
<td>8.5</td>
</tr>
<tr>
<td>Environment.TargetHumidity</td>
<td>oic.r.humidity, oic.r.selectablelevels</td>
<td>8.6</td>
</tr>
<tr>
<td>Environment.TargetTemperature</td>
<td>oic.r.temperature</td>
<td>8.7</td>
</tr>
<tr>
<td>Operation.AudioVolume</td>
<td>oic.r.audio</td>
<td>8.8</td>
</tr>
<tr>
<td>Operation.ClimateControlMode</td>
<td>oic.r.mode, oic.r.operationalstate</td>
<td>8.9</td>
</tr>
<tr>
<td>Operation.ClosedStatus</td>
<td>oic.r.door</td>
<td>8.10</td>
</tr>
<tr>
<td>Operation.CycleControl</td>
<td>oic.r.operational.state</td>
<td>8.11</td>
</tr>
<tr>
<td>Operation.FanSpeedLevel</td>
<td>oic.r.airflow</td>
<td>8.12</td>
</tr>
<tr>
<td>Operation.HeatingZone</td>
<td>oic.r.heatingzonecollection</td>
<td>8.13</td>
</tr>
<tr>
<td>Operation.HvacFanMode</td>
<td>oic.r.mode</td>
<td>8.14</td>
</tr>
<tr>
<td>Operation.OnControl,</td>
<td>oic.r.switch.binary</td>
<td>8.15</td>
</tr>
<tr>
<td>Operation.OffControl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation.OnOffStatus,</td>
<td>oic.r.switch.binary</td>
<td>8.16</td>
</tr>
<tr>
<td>Operation.OvenCyclePhase</td>
<td>oic.r.operationalstate</td>
<td>8.17</td>
</tr>
</tbody>
</table>

7.2 Current Air Quality

7.2.1 Derived model

The derived model: "asa.environment.currentairquality".

7.2.2 Property definition

Table 6 provides the detailed per Property mapping for "asa.environment.currentairquality".
Table 6 – The property mapping for "asa.environment.currentairquality".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td>oic.r.airquality</td>
<td><code>range[0] = minvalue</code></td>
<td><code>minvalue = range[0]</code></td>
</tr>
<tr>
<td>maxvalue</td>
<td>oic.r.airquality</td>
<td><code>range[1] = maxvalue</code></td>
<td><code>maxvalue = range[1]</code></td>
</tr>
<tr>
<td>contaminanttype</td>
<td>oic.r.airquality</td>
<td><code>valueuetype = Measuredcontaminanttypearray = [CH2O, CO2, CO, PM2_5, PM10, VOC]</code></td>
<td><code>contaminanttype = indexof contaminanttypearray[ocf.contaminanttype]</code></td>
</tr>
<tr>
<td>currentvalue</td>
<td>oic.r.airquality</td>
<td><code>contaminantvalue = currentvalue</code></td>
<td><code>currentvalue = contaminantvalue</code></td>
</tr>
<tr>
<td>updatemintime</td>
<td>oic.r.valueconditional</td>
<td><code>ocf.minnotifyperiod = updatemintime</code></td>
<td><code>updatemintime = ocf.minnotifyperiod</code></td>
</tr>
<tr>
<td>precision</td>
<td>oic.r.airquality</td>
<td><code>ocf.precision = precision</code></td>
<td><code>precision = ocf.precision</code></td>
</tr>
</tbody>
</table>

Table 7 provides the details of the Properties that are part of "asa.environment.currentairquality".

Table 7 – The properties of "asa.environment.currentairquality".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>maxvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>contaminanttype</td>
<td>integer</td>
<td>yes</td>
<td>The contaminant type</td>
</tr>
<tr>
<td>currentvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>updatemintime</td>
<td>integer</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>precision</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

7.2.3 Derived model definition

```json
{
  "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.currentairquality.json#",
  "$schema": "http://json-schema.org/draft-04/schema#",
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
  "title": "Current Air Quality",
  "definitions": {
    "asa.environment.currentairquality": {
      "type": "object",
      "properties": {
        "contaminanttype": {
          "type": "integer",
          "description": "The contaminant type",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.airquality",
            "x-to-ocf": ["valueuetype = Measured",
                         "contaminanttypearray = [CH2O, CO2, CO, PM2_5, PM10, VOC]",
                         "ocf.contaminanttype = contaminanttypearray[contaminanttype]"
                       ],
            "x-from-ocf": ["contaminanttype = indexof contaminanttypearray[ocf.contaminanttype]"
                           ]
          },
          "currentvalue": {
            "type": "number",
            "description": "The current value of the contaminant type",
            "x-ocf-conversion": {
              "x-ocf-alias": "oic.r.airquality",
              "x-to-ocf": ["valueuetype = Measured",
                            "contaminanttypearray = [CH2O, CO2, CO, PM2_5, PM10, VOC]",
                            "ocf.contaminanttype = contaminanttypearray[contaminanttype]"
                          ],
              "x-from-ocf": ["contaminanttype = indexof contaminanttypearray[ocf.contaminanttype]"
                             ]
            },
            "required": ["contaminanttype"]
          }
        }
      }
    }
  }
}```
"x-ocf-conversion": {
  "x-ocf-alias": "oic.r.airquality",
  "x-to-ocf": [
    "contaminantvalue = currentvalue"
  ],
  "x-from-ocf": [
    "currentvalue = contaminantvalue"
  ]
},
"minvalue": {
  "type": "number",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.airquality",
    "x-to-ocf": [
      "range[0] = minvalue"
    ],
    "x-from-ocf": [
      "minvalue = range[0]"
    ]
  },
  "precision": {
    "type": "number",
    "x-ocf-conversion": {
      "x-ocf-alias": "oic.r.airquality",
      "x-to-ocf": [
        "ocf.precision = precision"
      ],
      "x-from-ocf": [
        "precision = ocf.precision"
      ]
    }
  },
  "updatemintime": {
    "type": "integer",
    "x-ocf-conversion": {
      "x-ocf-alias": "oic.r.value.conditional",
      "x-to-ocf": [
        "ocf.minnotifyperiod = updatemintime"
      ],
      "x-from-ocf": [
        "updatemintime = ocf.minnotifyperiod"
      ]
    }
  }
},
"allOf": ["#/definitions/asa.environment.currentairquality"]
}
7.3 Current Air Quality Level

7.3.1 Derived model
The derived model: "asa.environment.currentairqualitylevel".

7.3.2 Property definition
Table 8 provides the detailed per Property mapping for "asa.environment.currentairqualitylevel".

Table 8 – The property mapping for "asa.environment.currentairqualitylevel".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>contaminanttype</td>
<td>oic.r.airquality</td>
<td>valueype = Qualitativeif contaminanttype = 0, ocf.contaminanttype = CH2Oif contaminanttype = 1, ocf.contaminanttype = CO2if contaminanttype = 2, ocf.contaminanttype = COif contaminanttype = 3, ocf.contaminanttype = PM2_5if contaminanttype = 4, ocf.contaminanttype = PM10if contaminanttype = 5, ocf.contaminanttype = VOCif contaminanttype = 253, ocf.contaminanttype = Smokeif contaminanttype = 254, ocf.contaminanttype = Odorf contaminanttype = 255, ocf.contaminanttype = AirPollution</td>
<td></td>
</tr>
<tr>
<td>maxlevel</td>
<td>oic.r.airquality</td>
<td>range[0] = 0range[1] = maxvalue</td>
<td>maxvalue = range[1]</td>
</tr>
<tr>
<td>currentlevel</td>
<td>oic.r.airquality</td>
<td>contaminantvalue = currentlevel</td>
<td>currentlevel = contaminantvalue</td>
</tr>
</tbody>
</table>

Table 9 provides the details of the Properties that are part of "asa.environment.currentairqualitylevel".

Table 9 – The properties of "asa.environment.currentairqualitylevel".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contaminanttype</td>
<td>integer</td>
<td>yes</td>
<td>The contaminant type</td>
<td></td>
</tr>
</tbody>
</table>
7.3.3 Derived model definition

```json
{
  "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.currentairqualitylevel.json#",
  "schema": "http://json-schema.org/draft-04/schema#",
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
  "title": "Current Air Quality Level",
  "definitions": {
    "asa.environment.currentairqualitylevel": {
      "type": "object",
      "properties": {
        "contaminanttype": {
          "type": "integer",
          "description": "The contaminant type",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.airquality",
            "x-to-ocf": [
              "if contaminanttype = 0, ocf.contaminanttype = CH2O",
              "if contaminanttype = 1, ocf.contaminanttype = CO2",
              "if contaminanttype = 2, ocf.contaminanttype = CO",
              "if contaminanttype = 3, ocf.contaminanttype = PM2_5",
              "if contaminanttype = 4, ocf.contaminanttype = PM10",
              "if contaminanttype = 5, ocf.contaminanttype = VOC",
              "if contaminanttype = 253, ocf.contaminanttype = Smoke",
              "if contaminanttype = 254, ocf.contaminanttype = Odor",
              "if contaminanttype = 255, ocf.contaminanttype = AirPollution"
            ],
            "x-from-ocf": [
              "if ocf.contaminanttype = CH2O, contaminanttype = 0",
              "if ocf.contaminanttype = CO2, contaminanttype = 1",
              "if ocf.contaminanttype = CO, contaminanttype = 2",
              "if ocf.contaminanttype = PM2_5, contaminanttype = 3",
              "if ocf.contaminanttype = PM10, contaminanttype = 4",
              "if ocf.contaminanttype = VOC, contaminanttype = 5",
              "if ocf.contaminanttype = Smoke, contaminanttype = 253",
              "if ocf.contaminanttype = Odor, contaminanttype = 254",
              "if ocf.contaminanttype = AirPollution, contaminanttype = 255"
            ]
          }
        },
        "currentlevel": {
          "type": "integer",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.airquality",
            "x-to-ocf": {
              "contaminantvalue = currentlevel"
            },
            "x-from-ocf": {
              "currentlevel = contaminantvalue"
            }
          }
        },
        "maxlevel": {
          "type": "integer",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.airquality",
            "x-to-ocf": {
              "range[0] = 0",
              "range[1] = maxvalue"
            },
            "x-from-ocf": {
              "maxvalue = range[1]"
            }
          }
        }
      }
    }
  }
}
```
7.4 Current Humidity

7.4.1 Derived model

The derived model: "asa.environment.currenthumidity".

7.4.2 Property definition

Table 10 provides the detailed per Property mapping for "asa.environment.currenthumidity".

<table>
<thead>
<tr>
<th>AllJoyn Property</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxvalue</td>
<td>oic.r.humidity</td>
<td>range[0] = 0 range[1] = maxvalue</td>
<td>maxvalue = range[1]</td>
</tr>
<tr>
<td>currentvalue</td>
<td>oic.r.humidity</td>
<td>humidity currentValue = currentvalue</td>
<td>= humidity</td>
</tr>
</tbody>
</table>

Table 11 provides the details of the Properties that are part of "asa.environment.currenthumidity".

<table>
<thead>
<tr>
<th>AllJoyn Property</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxvalue</td>
<td>number</td>
<td>yes</td>
<td>Max measured value for humidity</td>
</tr>
<tr>
<td>currentvalue</td>
<td>number</td>
<td>yes</td>
<td>Measured value</td>
</tr>
</tbody>
</table>

7.4.3 Derived model definition

```json
{
  "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.currenthumidity.json#",
  "schema": "http://json-schema.org/draft-04/schema#",
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
  "title": "Current Humidity",
  "definitions": {
    "asa.environment.currenthumidity": {
      "type": "object",
      "properties": {
        "currentvalue": {
          "type": "number",
          "description": "Measured value",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.humidity",
            "x-to-ocf": [
              "humidity = currentValue"
            ],
            "x-from-ocf": [
              "currentvalue = humidity"
            ]
          }
        },
        "maxvalue": {
          "type": "number",
          "description": "Max measured value for humidity",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.humidity"
          }
        }
      }
    }
  }
}
```
7.5 Current Temperature

7.5.1 Derived model

The derived model: "asa.environment.currenttemperature".

7.5.2 Property definition

Table 12 provides the detailed per Property mapping for "asa.environment.currenttemperature".

Table 12 – The property mapping for "asa.environment.currenttemperature".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>precision</td>
<td>oic.r.temperature</td>
<td>ocf.precision = precision</td>
<td>precision = ocf.precision</td>
</tr>
<tr>
<td>currentvalue</td>
<td>oic.r.temperature</td>
<td>temperature = precision</td>
<td>oneOf</td>
</tr>
<tr>
<td>updatemintime</td>
<td>oic.r.value.conditional</td>
<td>ocf.minnotifyperiod = updatemintime</td>
<td>updatemintime = ocf.minnotifyperiod</td>
</tr>
</tbody>
</table>

Table 13 provides the details of the Properties that are part of "asa.environment.currenttemperature".

Table 13 – The properties of "asa.environment.currenttemperature".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>precision</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>currentvalue</td>
<td>number</td>
<td>yes</td>
<td>Measured value</td>
</tr>
<tr>
<td>updatemintime</td>
<td>integer</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

7.5.3 Derived model definition

```
{  
  "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.currenttemperature.json#",  
  "$schema": "http://json-schema.org/draft-04/schema#",  
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved. ",  
  "title": "Current Temperature",  
  "definitions": {  
    "asa.environment.currenttemperature": {  
      "type": "object",  
      "properties": {  
        "currentvalue": {  
          "type": "number",  
          "description": "Measured value",  
          "x-ocf-conversion": {  
```

"x-ocf-alias": "oic.r.temperature",
"x-to-ocf": [
  "temperature = currentValue",
  "units = C"
],
"x-from-ocf": {
  "oneOf": [
    {
      "properties": {
        "units": "string",
        "enum": ["C"]
      },
      "x-from-ocf": [
        "currentvalue = temperature"
      ]
    },
    {
      "properties": {
        "units": "string",
        "enum": ["F"]
      },
      "x-from-ocf": [
        "currentvalue = (temperature-32)*5/9"
      ]
    },
    {
      "properties": {
        "units": "string",
        "enum": ["K"]
      },
      "x-from-ocf": [
        "currentvalue = temperature-273.15"
      ]
    }
  ]
},
"precision": {
  "type": "number",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.temperature",
    "x-to-ocf": [
      "ocf.precision = precision"
    ],
    "x-from-ocf": [
      "precision = ocf.precision"
    ]
  }
},
"updatemintime": {
  "type": "integer",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.value.conditional",
    "x-to-ocf": [
      "ocf.minnotifyperiod = updatemintime"
    ],
    "x-from-ocf": [
      "updatemintime = ocf.minnotifyperiod"
    ]
  }
},
"type": "object",
"allOf": [
  {"$ref": 
  "#/definitions/asa.environment.currenttemperature"
},
  {"required": ["currentvalue","precision","updatemintime"]}]}
7.6 Target Humidity

7.6.1 Derived model
The derived model: "asa.environment.targethumidity".

7.6.2 Property definition
Table 14 provides the detailed per Property mapping for "asa.environment.targethumidity".

Table 14 – The property mapping for "asa.environment.targethumidity".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td>oic.r.humidity</td>
<td>range[0] = minvalue</td>
<td>minvalue = range[0]otherwise: minvalue = 0</td>
</tr>
<tr>
<td>targetvalue</td>
<td>oic.r.humidity,oic.r.selectablelevels</td>
<td>if minvalue != maxvalue,</td>
<td>if x-ocf-alias == oic.r.humidity,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ocf.desiredhumidity = targetvalue;ocf.targetlevel = selectablehumiditylevels[0].if minvalue == maxvalue,</td>
<td>targetvalue = desiredhumidity.if x-ocf-alias == oic.r.selectablelevels, targetvalue = targetlevel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ocf.targetlevel = selectablehumiditylevels[0].if minvalue == maxvalue,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ocf.targetlevel = targetvalue.</td>
<td></td>
</tr>
<tr>
<td>maxvalue</td>
<td>oic.r.humidity</td>
<td>range[1] = maxvalue</td>
<td>maxvalue = range[1]otherwise: maxvalue = 100</td>
</tr>
<tr>
<td>stepvalue</td>
<td>oic.r.humidity</td>
<td>step = stepvalue</td>
<td>stepvalue = stepvalue: stepvalue = 1</td>
</tr>
<tr>
<td>selectablehumiditylevels</td>
<td>oic.r.selectablelevels</td>
<td>availablelevels[] = selectablehumiditylevels[]</td>
<td>selectablehumiditylevels[] = availablelevels[]</td>
</tr>
</tbody>
</table>

Table 15 provides the details of the Properties that are part of "asa.environment.targethumidity".

Table 15 – The properties of "asa.environment.targethumidity".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>targetvalue</td>
<td>number</td>
<td>yes</td>
<td>Measured value</td>
</tr>
<tr>
<td>maxvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>stepvalue</td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>selectablehumiditylevels</td>
<td>array</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

7.6.3 Derived model definition

```json
{
    "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.targethumidity.json#",
    "$schema": "http://json-schema.org/draft-04/schema#",
    "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
    "title": "Target Humidity",
    "definitions": {
        "asa.environment.targethumidity": {
            "type": "object",
            "properties": {
                "targetvalue": {
```


"type": "number",
"description": "Measured value",
"x-ocf-conversion": {
  "x-ocf-alias": "oic.r.humidity,oic.r.selectablelevels",
  "x-to-ocf": [
    "if minvalue != maxvalue, ocf.desiredhumidity = targetvalue; ocf.targetlevel = selectablehumiditylevels[0].",
    "if minvalue == maxvalue, ocf.targetlevel = targetvalue."
  ],
  "x-from-ocf": {
    "if x-ocf-alias == oic.r.humidity, targetvalue = desiredhumidity."
  }
},
"minvalue": {
  "type": "number",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.humidity",
    "x-to-ocf": {
      "range[0] = minvalue"
    },
    "x-from-ocf": {
      "minvalue = range[0]",
      "otherwise: minvalue = 0"
    }
  }
},
"maxvalue": {
  "type": "number",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.humidity",
    "x-to-ocf": {
      "range[1] = maxvalue"
    },
    "x-from-ocf": {
      "maxvalue = range[1]",
      "otherwise: maxvalue = 100"
    }
  }
},
"stepvalue": {
  "type": "number",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.humidity",
    "x-to-ocf": {
      "step = stepvalue"
    },
    "x-from-ocf": {
      "stepvalue = step",
      "otherwise: stepvalue = 1"
    }
  }
},
"selectablehumiditylevels": {
  "type": "array",
  "items": {
    "type": "number"
  }
},
"x-ocf-conversion": {
  "x-ocf-alias": "oic.r.selectablelevels",
  "x-to-ocf": {
    "availablelevels[] = selectablehumiditylevels[]"
  },
  "x-from-ocf": {
    "selectablehumiditylevels[] = availablelevels[]"
  }
}
7.7 Target Temperature

7.7.1 Derived model

The derived model: "asa.environment.targettemperature".

7.7.2 Property definition

Table 16 provides the detailed per Property mapping for "asa.environment.targettemperature".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td></td>
<td>oic.r.temperature</td>
<td>range[0] = minvalue</td>
<td>minvalue = range[0]; otherwise: maxvalue = MAXINT</td>
</tr>
<tr>
<td>targetvalue</td>
<td></td>
<td>oic.r.temperature</td>
<td>temperature = targetvalue, units = C</td>
<td>oneOf</td>
</tr>
<tr>
<td>maxvalue</td>
<td></td>
<td>oic.r.temperature</td>
<td>range[1] = maxvalue</td>
<td>maxvalue = range[1]; otherwise: maxvalue = MAXINT</td>
</tr>
<tr>
<td>step</td>
<td></td>
<td>oic.r.temperature</td>
<td>ocf.step = step</td>
<td>step = undefined (0x00)</td>
</tr>
</tbody>
</table>

Table 17 provides the details of the Properties that are part of "asa.environment.targettemperature".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>minvalue</td>
<td></td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>targetvalue</td>
<td></td>
<td>number</td>
<td>yes</td>
<td>Measured value</td>
</tr>
<tr>
<td>maxvalue</td>
<td></td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>step</td>
<td></td>
<td>number</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

7.7.3 Derived model definition

```json
{
   "id": "http://openinterconnect.org/asamapping/schemas/asa.environment.targettemperature.json#",
   "Schema": "http://json-schema.org/draft-04/schema#",
   "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
   "title": "Target Temperature",
   "definitions": {
     "asa.environment.targettemperature": {
       "type": "object",
       "properties": {
         "targetvalue": {
           "type": "number",
           "description": "Measured value",
           "x-ocf-conversion": {
             "x-ocf-alias": "oic.r.temperature",
             "x-to-ocf": {
               "temperature = targetvalue",
               "units = C"
             }
           }
         }
       }
     }
   }
}
```
"x-from-ocf": {
  "oneOf": [
    {
      "properties": {
        "units": "string",
        "enum": ["C"]
      },
      "x-from-ocf": {
        "targetvalue = temperature"
      }
    },
    {
      "properties": {
        "units": "string",
        "enum": ["F"]
      },
      "x-from-ocf": {
        "targetvalue = (temperature-32)*5/9"
      }
    },
    {
      "properties": {
        "units": "string",
        "enum": ["K"]
      },
      "x-from-ocf": {
        "targetvalue = temperature-273.15"
      }
    }
  ],
  "minvalue": {
    "type": "number",
    "x-ocf-conversion": {
      "x-ocf-alias": "oic.r.temperature",
      "x-to-ocf": {
        "range[0] = minvalue"
      },
      "x-from-ocf": {
        "minvalue = range[0]",
        "otherwise: minvalue = -MAXINT"
      }
    }
  },
  "maxvalue": {
    "type": "number",
    "x-ocf-conversion": {
      "x-ocf-alias": "oic.r.temperature",
      "x-to-ocf": {
        "range[1] = maxvalue"
      },
      "x-from-ocf": {
        "maxvalue = range[1]",
        "otherwise: maxvalue = MAXINT"
      }
    }
  },
  "step": {
    "type": "number",
    "x-ocf-conversion": {
      "x-ocf-alias": "oic.r.temperature",
      "x-to-ocf": {
        "ocf.step = step"
      },
      "x-from-ocf": {
        "step = ocf.step",
        "otherwise: step = undefined (0x00)"
      }
    }
  }
}
7.8 Audio Volume

7.8.1 Derived model

The derived model: "asa.operation.audiovolume".

7.8.2 Property definition

Table 18 provides the detailed per Property mapping for "asa.operation.audiovolume".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>mute</td>
<td>oic.r.audio</td>
<td>ocf.mute = mute</td>
<td>mute = ocf.mute</td>
<td></td>
</tr>
<tr>
<td>maxvolume</td>
<td>oic.r.audio</td>
<td>range[0] = 0 range[1] = maxvolume</td>
<td>maxvolume = range[1] otherwise: maxvalue = 100</td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>oic.r.audio</td>
<td>ocf.volume = volume</td>
<td>volume = ocf.volume</td>
<td></td>
</tr>
</tbody>
</table>

Table 19 provides the details of the Properties that are part of "asa.operation.audiovolume".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mute</td>
<td>boolean</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>maxvolume</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Speaker volume index</td>
</tr>
</tbody>
</table>

7.8.3 Derived model definition

```json
{
    "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.audiovolume.json#",
    "$schema": "http://json-schema.org/draft-04/schema#",
    "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved. ",
    "title": "Audio Volume",
    "definitions": {
        "asa.operation.audiovolume": {
            "type": "object",
            "properties": {
                "volume": {
                    "type": "integer",
                    "description": "Speaker volume index",
                    "x-ocf-conversion": {
                        "x-ocf-alias": "oic.r.audio",
                        "x-to-ocf": ["ocf.volume = volume"
                    ],
                    "x-from-ocf": [
                        "volume = ocf.volume"
                    ]
                };
                "maxvolume": {
```
7.9 Climate Control Mode

7.9.1 Derived model

The derived model: "asa.operation.climatecontrolmode".

7.9.2 Property definition

Table 20 provides the detailed per Property mapping for "asa.operation.climatecontrolmode".

<table>
<thead>
<tr>
<th>AllJoy Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
</table>
| mode                 | oic.r.mode | modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat, D | modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat,
Table 21 provides the details of the Properties that are part of "asa.operation.climatecontrolmode".

Table 21 – The properties of "asa.operation.climatecontrolmode".

<table>
<thead>
<tr>
<th>AllJoyn Name</th>
<th>Property</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>operationalstate</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Current status of device</td>
</tr>
<tr>
<td>supportedmodes</td>
<td>array</td>
<td>yes</td>
<td></td>
<td>Array of supported modes</td>
</tr>
<tr>
<td>mode</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Current mode of device</td>
</tr>
</tbody>
</table>

7.9.3 Derived model definition

```json
{
  "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.climatecontrolmode.json",
  "schema": "http://json-schema.org/draft-04/schema#",
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
  "title": "Climate Control Mode",
  "definitions": {
    "asa.operation.climatecontrolmode": {
      "type": "object",
      "properties": {
        "mode": {
          "type": "integer",
          "description": "Current mode of device.",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.mode",
            "x-to-ocf": [
              "modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat, Dry, ContinuousDry]",
              "ocf.mode[0] = modearray[mode]
            ],
            "x-from-ocf": [
              "modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat, Dry, ContinuousDry]",
              "mode = indexof modeArray[ocf.mode[0]]"
            ]
          }
        },
        "supportedmodes": {
          "type": "array",
          "items": {
            "type": "integer"
          }
        },
        "operationalstate": {
          "type": "integer",
          "description": "Current status of device",
          "x-ocf-conversion": {
            "x-ocf-alias": "oic.r.operationalstate",
            "x-to-ocf": [
              "modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat, Dry, ContinuousDry]",
              "for x=0, x < sizeof(supportedmodes): ocfsupportedmodes[x] = modearray[supportedmodes[x]]"
            ],
            "x-from-ocf": [
              "modearray = [Off, Heat, Cool, Auto, AuxiliaryHeat, Dry, ContinuousDry]",
              "for x=0, x < sizeof(supportedmodes): supportedmodes[x] = indexof modearray[ocfsupportedmodes[x]]"
            ]
          }
        }
      }
    }
  }
}
```
"machinestates = [Idle, Heating, Cooling, PendingHeat, PendingCool, AuxiliaryHeat]",
"currentmachinestate = machinestates[operationalstate]"
],
"x-from-ocf": {
"statearray = [Idle, Heating, Cooling, PendingHeat, PendingCool, AuxiliaryHeat]",
"operationalstate = indexof statearray[currentmachinestate[0]]"
}
}
}
}
}
}

7.10 Closed Status

7.10.1 Derived model

The derived model: "asa.operation.closedstatus".

7.10.2 Property definition

Table 22 provides the detailed per Property mapping for "asa.operation.closedstatus".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>isclosed</td>
<td>oic.r.door</td>
<td>if isClosed ocf.openState = Closed.</td>
<td>isClosed = (openState == Closed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>if !isClosed ocf.openState = Open.</td>
<td></td>
</tr>
</tbody>
</table>

Table 23 provides the details of the Properties that are part of "asa.operation.closedstatus".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isclosed</td>
<td>boolean</td>
<td>yes</td>
<td>Open/Closed status Indicator</td>
</tr>
</tbody>
</table>

7.10.3 Derived model definition

```
"id": "http://openinterconnect.org/asamapping/schemas/asa.operation.closedstatus.json#",
"schema": "http://json-schema.org/draft-04/schema#",
"description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
"title": "Closed Status",
"definitions": {
"asa.operation.closedstatus": {
"type": "object",
"properties": {
"isclosed": {
"type": "boolean",
"description": "Open/Closed status Indicator",
"x-ocf-conversion": {
"x-ocf-alias": "oic.r.door",
"x-to-ocf": {
"if isClosed ocf.openState = Closed.",
"if !isclosed ocf.openState = Open."
```

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"x-from-ocf": { "isclosed = (openState == Closed)"
}

7.11 Cycle Control

7.11.1 Derived model

The derived model: "asa.operation.cyclecontrol".

7.11.2 Property definition

Table 24 provides the detailed per Property mapping for "asa.operation.cyclecontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>executeoperationalcommand</td>
<td>oic.r.action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SupportedOperationalcommands</td>
<td>oic.r.action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>supportedoperationalstatess</td>
<td>oic.r.operationalsate</td>
<td>statearray = [Idle, Working, ReadyToStart, DelayedStart, Pause, EndOfCycle]for x=0, x &lt; sizeof(supportedoperationalstates): supportedoperationalstates[x] = statearray[supportedoperationalstates[x]]</td>
<td>statearray = [Idle, Working, ReadyToStart, DelayedStart, Pause, EndOfCycle]for x=0, x &lt; sizeof(machinestates): machinestates[x] = indexof statearray[machinestates[x]]</td>
</tr>
</tbody>
</table>

Table 25 provides the details of the Properties that are part of "asa.operation.cyclecontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>operationalstate</td>
<td>integer</td>
<td>yes</td>
<td>Current operational state of the appliance</td>
</tr>
<tr>
<td>executeoperationalcommand</td>
<td></td>
<td>no</td>
<td>Execute an operational command</td>
</tr>
</tbody>
</table>
Supported Operational Commands | Array | Supported Operational States | Array of operational commands supported by the appliance
---|---|---|---
supportedoperationalstates | Array | yes | Array of operational states supported by the appliance

### 7.11.3 Derived model definition

```
{  
  "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.cyclecontrol.json#",  
  "schema": "http://json-schema.org/draft-04/schema#",  
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",  
  "title": "Cycle Control",  
  "definitions": {  
    "asa.operation.cyclecontrol": {  
      "type": "object",  
      "properties": {  
        "operationalstate": {  
          "type": "integer",  
          "description": "Current operational state of the appliance",  
          "x-ocf-conversion": {  
            "x-ocf-alias": "oic.r.operationalstate",  
            "x-to-ocf": [  
              "statearray = [Idle, Working, ReadyToStart, DelayedStart, Pause, EndOfCycle]",  
              "currentmachinestate = statearray[operationalstate]"
            ],  
            "x-from-ocf": [  
              "statearray = [Idle,Working,ReadyToStart,DelayedStart,Pause,EndOfCycle]",  
              "operationalstate = indexof statearray[currentmachinestate[0]]"
            ]  
          }  
        }  
      },  
      "supportedoperationalstates": {  
        "type": "array",  
        "items": {  
          "type": "integer"
        },  
        "description": "Array of operational states supported by the Appliance.",  
        "x-ocf-conversion": {  
          "x-ocf-alias": "oic.r.operationalstate",  
          "x-to-ocf": [  
            "statearray = [Idle, Working, ReadyToStart, DelayedStart, Pause, EndOfCycle]",  
            "for x=0, x < sizeof(supportedoperationalstates): machinestates[x] = statearray[supportedoperationalstates[x]]"
          ],  
          "x-from-ocf": [  
            "statearray = [Idle, Working, ReadyToStart, DelayedStart, Pause, EndOfCycle]",  
            "for x=0, x < sizeof(machinestates): supportedoperationalstates[x] = indexof statearray[machinestates[x]]"
          ]  
        }  
      },  
      "SupportedOperationalCommands": {  
        "type": "array",  
        "items": {  
          "type": "integer"
        },  
        "description": "Array of operational commands supported by the appliance",  
        "x-ocf-conversion": {  
          "x-ocf-alias": "oic.r.action"
        }  
      },  
      "executeoperationalcomand": {  
        "x-ocf-type": "method",  
        "description": "Execute an operational command",  
        "x-ocf-conversion": {  
          "x-ocf-alias": "oic.r.executecommand"
        }  
      }  
    }  
  }  
}
```
7.12 Fan Speed Level

7.12.1 Derived model

The derived model: "asa.operation.fanspeedlevel".

7.12.2 Property definition

Table 26 provides the detailed per Property mapping for "asa.operation.fanspeedlevel".

Table 26 – The property mapping for "asa.operation.fanspeedlevel".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>fanspeedlevel</td>
<td>oic.r.airflow</td>
<td>speed</td>
<td>fanspeedlevel=</td>
<td>fanspeedlevel = speed</td>
</tr>
<tr>
<td>maxfanspeedlevel</td>
<td>oic.r.airflow</td>
<td>range[0] = 0</td>
<td>maxfanspeedlevel =</td>
<td>range[1] otherwise: maxfanspeedlevel = 100</td>
</tr>
<tr>
<td>automode</td>
<td>oic.r.airflow</td>
<td>if not automode !=</td>
<td>automode =</td>
<td>ocf.automode otherwise: automode =</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NotSupported(0xFF)</td>
<td></td>
<td>NotSupported(0xFF)</td>
</tr>
</tbody>
</table>

Table 27 provides the details of the Properties that are part of "asa.operation.fanspeedlevel".

Table 27 – The properties of "asa.operation.fanspeedlevel".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fanspeedlevel</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Fan speed level. 0 = off.</td>
</tr>
<tr>
<td>maxfanspeedlevel</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Max level allowed for fan speed</td>
</tr>
<tr>
<td>automode</td>
<td>integer</td>
<td>yes</td>
<td></td>
<td>Auto mode status.</td>
</tr>
</tbody>
</table>
"x-ocf-conversion": {
  "x-ocf-alias": "oic.r.airflow",
  "x-to-ocf": [
    "speed = fanspeedlevel"
  ],
  "x-from-ocf": [
    "fanspeedlevel = speed"
  ]
},
"maxfanspeedlevel": {
  "type": "integer",
  "description": "Max level allowed for fan speed",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.airflow",
    "x-to-ocf": [
      "range[0] = 0",
      "range[1] = maxfanspeedlevel"
    ],
    "x-from-ocf": [
      "maxfanspeedlevel = range[1]",
      "otherwise: maxfanspeedlevel = 100"
    ]
  }
},
"automode": {
  "type": "integer",
  "description": "Auto mode status.",
  "x-ocf-conversion": {
    "x-ocf-alias": "oic.r.airflow",
    "x-to-ocf": [
      "if automode != NotSupported(0xFF)",
      " ocf.automode = automode",
      "else no mapping"
    ],
    "x-from-ocf": [
      "automode = ocf.automode",
      "otherwise: automode = NotSupported(0xFF)"
    ]
  }
}
}

7.13 Heating Zone

7.13.1 Derived model

The derived model: "asa.operation.heatingzone".

7.13.2 Property definition

Table 28 provides the detailed per Property mapping for "asa.operation.heatingzone".

Table 28 – The property mapping for "asa.operation.heatingzone".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>numberofheatingzones</td>
<td>oic.r.heatingzonecollection</td>
<td>number of links in the collection = numberofheatingzones</td>
<td>numberofheatingzones = number of links in the collection</td>
</tr>
</tbody>
</table>

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heatinglevels | oic.r.heatingzone | Instance of oic.r.heatingzone per array item for x=0, x<sizeof(heatinglevels):
| | | ocf.heatinglevel = maxheatinglevels[x] for x=0; x<numlinks(oic.r.heatingzonecollection): heatinglevels[x] = ocf.heatinglevel

maxheatinglevels | oic.r.heatingzone | Instance of oic.r.heatingzone per array item for x=0, x<sizeof(maxheatinglevels):
| | | ocf.maxheatinglevel = maxheatinglevels[x] for x=0; x<numlinks(oic.r.heatingzonecollection):
maxheatinglevels[x] = ocf.maxheatinglevel

Table 29 provides the details of the Properties that are part of "asa.operation.heatingzone".

Table 29 – The properties of "asa.operation.heatingzone".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numberofheatingzones</td>
<td>integer</td>
<td>yes</td>
<td>Number of heating zones.</td>
<td></td>
</tr>
<tr>
<td>heatinglevels</td>
<td>array</td>
<td>yes</td>
<td>Current heating levels for each zone.</td>
<td></td>
</tr>
<tr>
<td>maxheatinglevels</td>
<td>array</td>
<td>yes</td>
<td>Max heating levels for each zone</td>
<td></td>
</tr>
</tbody>
</table>

7.13.3 Derived model definition

```json
{
    "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.heatingzone.json#",
    "$schema": "http://json-schema.org/draft-04/schema#",
    "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
    "title": "Heating Zone",
    "definitions": {
        "asa.operation.heatingzone": {
            "type": "object",
            "properties": {
                "numberofheatingzones": {
                    "type": "integer",
                    "description": "Number of heating zones."
                },
                "heatinglevels": {
                    "type": "array",
                    "items": {
                        "type": "integer"
                    },
                    "description": "Max heating levels for each zone"
                },
                "maxheatinglevels": {
                    "type": "array",
                    "items": {
                        "type": "integer"
                    },
                    "description": "Max heating levels for each zone"
                }
            }
        }
    }
}
```
"Instance of oic.r.heatingzone per array item ",
"for x=0, x<sizeof(maxheatinglevels): ocf.maxheatinglevel = maxheatinglevels[x]"
}

"x-from-ocf": [ 
  "for x=0;x<numlinks(oic.r.heatingzonecollection): maxheatinglevels[x] = 
  ocf.maxheatinglevel"
]

"heatinglevels": { 
  "type": "array",
  "items": { 
    "type": "integer"
  } 
},

"description": "Current heating levels for each zone.",
"x-ocf-conversion": { 
  "x-ocf-alias": "oic.r.heatingzone",
  "x-to-ocf": [ 
    "Instance of oic.r.heatingzone per array item ",
    "for x=0, x<sizeof(heatinglevels): ocf.heatinglevel = maxheatinglevels[x]"
  ],
  "x-from-ocf": [ 
    "for x=0;x<numlinks(oic.r.heatingzonecollection): heatinglevels[x] = ocf.heatinglevel"
  ]
}

"type": "object",
"allOf": [ 
  {"$ref": "#/definitions/asa.operation.heatingzone"}
],

"required": [ "numberofheatingzones","maxheatinglevels","heatinglevels" ]
}

7.14 HVAC Fan Mode
7.14.1 Derived model
The derived model: "asa.operation.hvacfanmode".
7.14.2 Property definition
Table 30 provides the detailed per Property mapping for "asa.operation.hvacfanmode".

Table 30 – The property mapping for "asa.operation.hvacfanmode".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>mode</td>
<td>oic.r.mode</td>
<td>modearray = [Auto,Circulation,Continuous]ocf.mode[0] = modearray[mode]</td>
<td>modearray = [Auto,Circulation,Continuous]mode = indexof modeArray[ocf.mode[0]]</td>
</tr>
<tr>
<td>supportedmodes</td>
<td>oic.r.mode</td>
<td>modearray = [Auto,Circulation,Continuous]for x=0, x &lt; sizeof(supportedmodes): ocf.supportedmodes[x] = modearray[supportedmodes[x]]</td>
<td>modearray = [Auto,Circulation,Continuous]for x=0, x &lt; sizeof(supportedmodes): supportedmodes[x] = indexof modearray[ocf.supportedmodes[x]]</td>
</tr>
</tbody>
</table>

Table 31 provides the details of the Properties that are part of "asa.operation.hvacfanmode".
Table 31 – The properties of "asa.operation.hvacfanmode".

<table>
<thead>
<tr>
<th>AllJoyn name</th>
<th>Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mode</td>
<td>integer</td>
<td>yes</td>
<td>Current mode of device.</td>
</tr>
<tr>
<td></td>
<td>supportedmodes</td>
<td>array</td>
<td>yes</td>
<td>Array of supported modes</td>
</tr>
</tbody>
</table>

7.14.3 Derived model definition

```json
{
    "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.hvacfanmode.json#",
    "$schema": "http://json-schema.org/draft-04/schema#",
    "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
    "title": "HVAC Fan Mode",
    "definitions": {
        "asa.operation.hvacfanmode": {
            "type": "object",
            "properties": {
                "mode": {
                    "type": "integer",
                    "description": "Current mode of device."
                },
                "x-ocf-conversion": {
                    "x-ocf-alias": "oic.r.mode",
                    "x-to-ocf": [
                        "modearray = [Auto,Circulation,Continuous]",
                        "ocf.mode[0] = modearray[mode]"
                    ],
                    "x-from-ocf": [
                        "modearray = [Auto,Circulation,Continuous]",
                        "mode = indexof modeArray[ocf.mode[0]]"
                    ]
                },
                "supportedmodes": {
                    "type": "array",
                    "items": {
                        "type": "integer"
                    }
                },
                "description": "Array of supported modes",
                "x-ocf-conversion": {
                    "x-ocf-alias": "oic.r.mode",
                    "x-to-ocf": [
                        "modearray = [Auto,Circulation,Continuous]",
                        "for x=0, x < sizeof(supportedmodes): ocf.supportedmodes[x] = modearray[supportedmodes[x]]"
                    ],
                    "x-from-ocf": [
                        "modearray = [Auto,Circulation,Continuous]",
                        "for x=0, x < sizeof(supportedmodes): supportedmodes[x] = indexof modearray[ocf.supportedmodes[x]]"
                    ]
                },
                "type": "object",
                "allOf": [
                    {
                        "$ref": "#/definitions/asa.operation.hvacfanmode"
                    }
                ]
            },
            "required": [ "mode","supportedmodes" ]
        }
    }
}
```

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7.15 On/Off Control

7.15.1 Derived model

The derived model: "asa.operation.offcontrol".
The derived model: "asa.operation.oncontrol".

7.15.2 Property definition

Table 32 provides the detailed per Property mapping for "asa.operation.offcontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>switchon</td>
<td>oic.r.switch.binary</td>
<td>value = false</td>
<td>if ocf.value = false, asa.operation.offcontrol::switchoff().</td>
</tr>
</tbody>
</table>

Table 33 provides the details of the Properties that are part of "asa.operation.offcontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>switchon</td>
<td>oic.r.switch.binary</td>
<td>value = true</td>
<td>if ocf.value = true, asa.operation.oncontrol::switchon().</td>
</tr>
</tbody>
</table>

Table 34 provides the detailed per Property mapping for "asa.operation.oncontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>switchon</td>
<td>oic.r.switch.binary</td>
<td>value = true</td>
<td>if ocf.value = true, asa.operation.oncontrol::switchon().</td>
</tr>
</tbody>
</table>

Table 35 provides the details of the Properties that are part of "asa.operation.oncontrol".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>switchon</td>
<td>oic.r.switch.binary</td>
<td>value = true</td>
<td>if ocf.value = true, asa.operation.oncontrol::switchon().</td>
</tr>
</tbody>
</table>

7.15.3 Derived model definition

```json
{
    "id": "http://openinterconnect.org/asamapping/schemas/asa.operation.oncontrol.json#",
    "$schema": "http://json-schema.org/draft-04/schema#",
    "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.,
    "title": "On/Off Control",
    "definitions": {
        "asa.operation.oncontrol": {
            "type": "object",
            "properties": {
                "switchon": {
                    "type": "string",
                    "format": "method",
                    "description": "Turn on the device",
                    "x-ocf-conversion": {
                        "x-ocf-alias": "oic.r.switch.binary",
                        "x-to-ocf": ["value = true"]
                    }
                }
            }
        }
    }
}
```

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"asa.operation.offcontrol": {
  "type": "object",
  "properties": {
    "switchon": {
      "type": "string",
      "format": "method",
      "description": "Turn off the device",
      "x-ocf-conversion": {
        "x-ocf-alias": "oic.r.switch.binary",
        "x-to-ocf": [
          "value = false"
        ],
        "x-from-ocf": {
          "if ocf.value = false, asa.operation.offcontrol::switchoff()."
        }
      }
    }
  }
},

"asa.operation.oncontrol": {
  "type": "object",
  "oneOf": [
    {
      "$ref": "#/definitions/asa.operation.onoffstatus"
    },
    {
      "$ref": "#/definitions/asa.operation.offcontrol"
    }
  ]
}

7.16  On Off Mapping

7.16.1  Derived model

The derived model: "asa.operation.onoffstatus".

7.16.2  Property definition

Table 36 provides the detailed per Property mapping for "asa.operation.onoffstatus".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>onoff</td>
<td>oic.r.switch.binary</td>
<td>value = onoff</td>
<td>onoff = value</td>
</tr>
</tbody>
</table>

Table 37 provides the details of the Properties that are part of "asa.operation.onoffstatus".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>onoff</td>
<td>boolean</td>
<td>yes</td>
<td>On/Off status of the device</td>
</tr>
</tbody>
</table>

7.16.3  Derived model definition

```json
"id": "http://openinterconnect.org/asamapping/schemas/asa.operation.onoffstatus.json#",
"schema": "http://json-schema.org/draft-04/schema#",
"description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",
"title": "On Off Mapping",
"definitions": {
  "asa.operation.onoffstatus": {
    "type": "object",
    "properties": {
      "onoff": {
        "type": "boolean",
      }
    }
  }
}
```
"description": "On/Off status of the device",
"x-ocf-conversion": {
  "x-ocf-alias": "oic.r.switch.binary",
  "x-to-ocf": [ "value = onoff"
    ],
  "x-from-ocf": [ "onoff = value"
    ]
}

7.17 Oven Cycle Phase

7.17.1 Derived model

The derived model: "asa.operation.ovencyclephase".

7.17.2 Property definition

Table 38 provides the detailed per Property mapping for "asa.operation.ovencyclephase".

Table 38 – The property mapping for "asa.operation.ovencyclephase".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>OCF Resource</th>
<th>To OCF</th>
<th>From OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>getvendorphasedescription</td>
<td>oic.r.action</td>
<td>phasearray = [Unavailable,Preheating,Cooking,Cleaning]for x=0, x &lt; sizeof(supportedcyclephases): machinestates[x] = phasearray[supportedcyclephases[x]]</td>
<td>phasearray = [Unavailable,Preheating,Cooking, Cleaning]for x=0, x &lt; sizeof(machinestates): supportedcyclephases[x] = indexof phasearray[machinestates[x]]</td>
</tr>
</tbody>
</table>

Table 39 provides the details of the Properties that are part of "asa.operation.ovencyclephase".

Table 39 – The properties of "asa.operation.ovencyclephase".

<table>
<thead>
<tr>
<th>AllJoyn Property name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>getvendorphasedescription</td>
<td>no</td>
<td>Get cycle phases description</td>
<td></td>
</tr>
<tr>
<td>supportedcyclephases</td>
<td>array</td>
<td>yes</td>
<td>Array of cycle phases supported by the Appliance.</td>
</tr>
</tbody>
</table>
### Derived model definition

```json
{  
  "id": "http://openinterconnect.org/asamappingschemas/asa.operation.ovencyclephase.json#",  
  "$schema": "http://json-schema.org/draft-04/schema#",  
  "description": "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights reserved.",  
  "title": "Oven Cycle Phase",  
  "definitions": {  
    "asa.operation.ovencyclephase": {  
      "type": "object",  
      "properties": {  
        "cyclephase": {  
          "type": "integer",  
          "description": "Current phase of the operational cycle",  
          "x-ocf-conversion": {  
            "x-ocf-alias": "oic.r.operationalstate",  
            "x-to-ocf": [  
              "phasearray = [Unavailable,Preheating,Cooking,Cleaning]",  
              "currentmachinestate = phasearray[cyclephase]"  
            ],  
            "x-from-ocf": [  
              "phasearray = [Unavailable,Preheating,Cooking,Cleaning]",  
              "cyclephase = indexof statearray[currentmachinestate[0]]"  
            ]  
          }  
        },  
        "supportedcyclephases": {  
          "type": "array",  
          "items": {  
            "type": "integer"  
          },  
          "description": "Array of cycle phases supported by the Appliance.",  
          "x-ocf-conversion": {  
            "x-ocf-alias": "oic.r.operationalstate",  
            "x-to-ocf": [  
              "phasearray = [Unavailable,Preheating,Cooking,Cleaning]",  
              "for x=0, x < sizeof(supportedcyclephases): machinestates[x] = phasearray[supportedcyclephases[x]]"  
            ],  
            "x-from-ocf": [  
              "phasearray = [Unavailable,Preheating,Cooking,Cleaning]",  
              "for x=0, x < sizeof(machinestates): supportedcyclephases[x] = indexof phasearray[machinestates[x]]"  
            ]  
          }  
        },  
        "getvendorphasedescription": {  
          "x-ocf-type": "method",  
          "description": "Get cycle phases description",  
          "x-ocf-conversion": {  
            "x-ocf-alias": "oic.r.action"  
          }  
        }  
      }  
    }  
  },  
  "type": "object",  
  "allOf": [  
    {"$ref": "#/definitions/asa.operation.ovencyclephase"}  
  ],  
  "required": [  
    "cyclephase",  
    "supportedcyclephases"  
  ]
}
```