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# Information technology — Open Connectivity Foundation (OCF) Specification —

## Part 6: Resource to AllJoyn interface mapping specification

*Technologies de l'information — Spécification de la Fondation pour la connectivité ouverte (Fondation OCF) —*

*Partie 6: Spécification du mapping entre les ressources et l'interface AllJoyn*

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This document was prepared by the Open Connectivity Foundation (OCF) (as the OCF Resource to AllJoyn Interface Mapping, Version 1.0.0) and drafted in accordance with its editorial rules. It was adopted, under the JTC 1 PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

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## 1 Scope

The OCF Resource to AllJoyn Interface Mapping specification ("this specification") provides detailed mapping information to provide equivalency between AllJoyn defined Interfaces and OCF defined Resources,

This specification 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.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

OCF Core Specification, *Open Interconnect Consortium Core Specification*, Version 1.0.

OCF Resource Type Specification, *Open Interconnect Consortium Resource Type Specification*, Version 1.0

OCF Smart Home Device Specification, *Open Interconnect Consortium Smart Home Device Specification*, Version 1.0

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

https://www.iab.org/wp-content/IAB-uploads/2016/03/OCF-Derived-Models-for-Interoperability-Between-IoT-Ecosystems_v2-examples.pdf

IETF RFC 7159, *The JavaScript Object Notation (JSON) Data Interchange Format*, March 2014 http://www.ietf.org/rfc/rfc7159.txt

RAML, *Restful API modelling language,* Version 0.8.
https://github.com/raml-org/raml-spec/blob/master/versions/raml-08/raml-08.md

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

Swagger2.0, *Swagger RESTful API Documentation Specification*, Version 2.0
http://swagger.io/specification/

OCF Resource Type Definitions, *API Definition Language for OCF Resource Type Definitions,* Release OCF-v1.0.0
https://github.com/openconnectivityfoundation/derivedmodels



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# 3 Terms, definitions symbols and abbreviations

## 3.1 Terms and definitions

## 3.2 Symbols and abbreviations

### 3.2.1

**OCF**
Open Connectivity Foundation
The organization that created these specifications

### 3.2.2

**RAML**
RESTful API Modelling Language
RAML is a simple and succinct way of describing practically-RESTful APIs. See RAML.

## 3.3 Conventions

In this specification 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.

# 4 Document conventions and organization

For the purposes of this document, the terms and definitions given in OCF Core Specification and OCF Resource Type Specification apply.

## 4.1 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 behavior 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 behavior 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)



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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 specification, they should not be implemented except for backward compatibility. The occurrence of a deprecated feature during operation of an implementation compliant with the current specification 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 specification.

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

Words that are emphasized are printed in *italic*.

### 4.2 Data types

See OCF Core Specification.

## 5 Theory of Operation

### 5.1 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 . 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.

### 5.2 Mapping Syntax

Within the defined syntax for derived modelling used by this Specification 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 does not define a rigid syntax for these blocks; they are free form string arrays that contain pseudo-coded mapping logic. Within this specification we apply the rules in the following sub-sections to these blocks to ensure consistency and re-usability and extensibility of the mapping logic that is defined.

#### 5.2.1 General

All statements are terminated with a carriage return.

#### 5.2.2 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.

#### 5.2.3 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')

#### 5.2.4 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[].



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### 5.2.5 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')

### 5.2.6 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.

### 5.2.7 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]]

### 5.2.8 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 if 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().

# 6 Device Type Mapping

## 6.1 Introduction

This Section contains the mappings to/from Device Types.

## 6.2 AllJoyn Device Types to OCF Device Types

The following table 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 OCF Smart Home Device Specification). 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 OCF Smart Home Device Specification.



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**Table 6-1 AllJoyn to OCF Device Type Mapping.**

| Classification | AllJoyn Device Type | AllJoyn ID | OCF Device Type |
|---|---|---|---|
| **Air Care** | Air Conditioner | 5 | oic.d.airconditioner |
| | Air Purifier | 9 | oic.d.airpurifier |
| | Air Quality Monitor | 11 | oic.d.aqm |
| | Dehumidifier | 8 | oic.d.dehumidifier |
| | Humidifier | 7 | oic.d.humidifier |
| | Electric Fan | 10 | oic.d.fan |
| | Thermostat | 6 | oic.d.thermostat |
| **Fabric Care** | Clothes Washer | 12 | oic.d.washer |
| | Clothes Dryer | 13 | oic.d.dryer |
| | Clothes Washer-Dryer | 14 | oic.d.washerdryer |
| **Food Preservation** | Refrigerator | 2 | oic.d.refrigerator |
| | Ice-Maker | 4 | oic.r.icemaker (maps to Resource) |
| | Freezer | 3 | oic.d.freezer |
| **Food Preparation** | Oven | 17 | oic.d.oven |
| | Cooktop | 18 | oic.d.cooktop |
| | Cookerhood | 19 | oic.d.cookerhood |
| | Food probe | 20 | oic.d.foodprobe |
| **Dish Care** | Dishwasher | 15 | oic.d.dishwasher |
| **Floor Care** | Robot Cleaner | 16 | oic.d.robotcleaner |
| **Entertainment** | Television | 21 | oic.d.tv |
| | Set Top Box (STB) | 22 | oic.d.stb |



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### 6.3 OCF Device Types with no AllJoyn Equivalent

The following table 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 6-2 OCF Device Types with no AllJoyn EquivalentOCF Device Name | OCF Device Type |
|---|---|
| **Receiver** | oic.d.receiver |
| **Blind** | oic.d.blind |
| **Door** | oic.d.door |
| **Garage Door** | oic.d.garagedoor |
| **Generic Sensor** | oic.d.sensor |
| **Light** | oic.d.light |
| **Smart Plug** | oic.d.smartplug |
| **Switch** | oic.d.switch |
| **Water Valve** | oic.d.watervalve |
| **Printer** | oic.d.printer |
| **Multi-Function Printer** | oic.d.multifunctionprinter |
| **Scanner** | oic.r.scanner |
| **Camera** | oic.d.camera |
| **Security Panel** | oic.d.securitypanel |
| **Smart Lock** | oic.d.smartlock |



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# 7 Resource to Interface Equivalence

## 7.1 Introduction

This Section lists the complete set of applicable AllJoyn Interfaces and provides the equivalent OCF Resource Type(s) to which the Interfaces map.

## 7.2 AllJoyn Interfaces to OCF Resources

The following tables capture the equivalency mapping between AllJoyn defined Interfaces (see AllJoyn Common Data Model Interface Definitions) and OCF defined Resource Types (see OCF Resource Type Specification). Detailed Property by Property mappings are provided in Section 8.

Table 7-1 AllJoyn Interface to OCF Resource Type Mapping – Minimum Interface Set captures the mappings for Interfaces that are part of the minimum set for an AllJoyn Device.

Table 7-2 AllJoyn Interface to OCF Resource Type Mapping – Optional Interface Set 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 specification.

**Table 7-1 AllJoyn Interface to OCF Resource Type Mapping – Minimum Interface Set**

| AllJoyn Interface | OCF Resource Type Name | OCF Resource Type ID | OCF Interface(s) |
|---|---|---|---|
| **Environment.CurrentAirQuality** | Air Quality Collection | oic.r.airqualitycollection | oic.if.s |
| **Environment.CurrentAirQualityLevel** | Air Quality Collection | oic.r.airqualitycollection | oic.if.s |
| **Environment.CurrentHumidity** | Humidity | oic.r.humidity | oic.if.s |
| **Environment.CurrentTemperature** | Temperature | oic.r.temperature | oic.if.s |
| **Environment.TargetHumidity** | Humidity | oic.r.humidity, oic.r.selectablelevels | oic.if.a |
| **Environment.TargetTemperature** | Temperature | oic.r.temperature | oic.if.a |
| **Operation.AudioVolume** | Audio Controls | oic.r.audio | oic.if.a |
| **Operation.Channel** | Not mapped | | |
| **Operation.ClimateControlMode** | Mode | oic.r.mode | oic.if.a |
| | Operational State | oic.r.operational.state | oic.if.s |
| **Operation.ClosedStatus** | Door | oic.r.door | oic.if.s |



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| | | | |
|---|---|---|---|
| **Operation.CycleControl** | Operational State | oic.r.operational.state | oic.if.s |
| **Operation.FanSpeedLevel** | Air Flow | oic.r.airflow | oic.if.a |
| **Operation.HeatingZone** | Heating Zone Collection | oic.r.heatingzonecollection | oic.if.s |
| **Operation.HvacFanMode** | Mode | oic.r.mode | oic.if.a |
| **Operation.OnOffStatus** | Binary Switch | oic.r.switch.binary | oic.if.s |
| **Operation.OvenCyclePhase** | Operational State | oic.r.operationalstate | oic.if.s |

**Table 7-2 AllJoyn Interface to OCF Resource Type Mapping – Optional Interface Set**

| AllJoyn Interface | OCF Resource Type Name | OCF Resource Type ID | OCF Interface(s) |
|---|---|---|---|
| **Environment.TargetTemperatureLevel** | Mode | oic.r.mode | oic.if.a |
| **Environment.WaterLevel** | New Resource | TBD | oic.if.s |
| **Environment.WindDirection** | Air Flow | oic.r.airflow | oic.if.a |
| **Operation.AirRecirculationMode** | Mode | oic.r.mode | oic.if.a |
| **Operation.Alerts** | TBD | TBD | TBD |
| **Operation.AudioVideoInput** | Media Source List | oic.r.media.input | oic.if.a |
| **Operation.BatteryStatus** | Battery | oic.r.energy.battery | oic.if.s |
| **Operation.CurrentPower** | Energy Usage | oic.r.energy.usage | oic.if.s |
| **Operation.DishWashingCyclePhase** | Operational State | oic.r.operationalstate | oic.if.s |
| **Operation.EnergyUsage** | Energy Usage | oic.r.energy.usage | oic.if.s |



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| | | | |
|---|---|---|---|
| **Operation.FilterStatus** | New Resource | TBD | TBD |
| **Operation.LaundryCyclePhase** | Mode | oic.r.mode | oic.if.s |
| **Operation.MoistureOutputLevel** | Mode | oic.r.mode | oic.if.a |
| **Operation.PlugInUnits** | TBD | TBD | TBD |
| **Operation.RapidMode** | Refrigeration | oic.r.refrigeration | oic.if.a |
| **Operation.RemoteControllability** | TBD | TBD | TBD |
| **Operation.RepeatMode** | Ecomode | oic.r.ecomode | oic.if.a |
| **Operation.ResourceSaving** | New Resource | TBD | TBD |
| **Operation.RobotCleaningCyclePhase** | Mode | oic.r.mode | oic.if.s |
| **Operation.SoilLevel** | Mode | oic.r.mode | oic.if.a |
| **Operation.SpinSpeedLevel** | Mode | oic.r.mode | oic.if.a |
| **Operation.Timer** | Time Period | oic.r.time.period | oic.if.s |

# 8 Detailed Mapping APIs

## 8.1 Introduction

This section provides an API (using RAML) and a mapping description (using JSON that aligns with the Derived Modelling syntax described in [Derived Model White Paper]) for all Interfaces and Resources that are within scope.

Annex A provides definitions for all mappings making use of Swagger2.0 instead of RAML and JSON.

All the sub-clauses in clause 8 and Annex A describe the Resource Types with a restful API definition language. The Resource Type definitions presented in clause 8 and Annex A are formatted for readability, and so may appear to have extra line breaks. The contents of the Resource Types without the extra line breaks are available in OCF Resource Type Definitions.

Table 8-1 Interface to Resource Summary provides a reference and link to the per Interface sub-sections.

**Table 8-1 Interface to Resource Summary**



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

## 8.2 Air Quality Mapping

### 8.2.1 Introduction

This API defines the mapping between the AllJoyn AirQuality interface and the OCF AirQuality Resource. 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 the schema 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'



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### 8.2.2 Example URI

/CurrentAirQualityResURI

### 8.2.3 Resource Type

The resource type (rt) is defined as: oic.r.airqualitycollection.

### 8.2.4 RAML Definition

```
#%RAML 0.8

title: CurrentAirQualityInterfaceMapping
version: OCFv1.0.0-20170317

traits:
 - interface-sensor :
     queryParameters:

       if:
         enum: ["oic.if.s", "oic.if.baseline"]


/CurrentAirQualityResURI:

  description: |
    This API defines the mapping between the AllJoyn AirQuality interface and the OCF AirQuality
Resource.
    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 the schema 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'


  is : ['interface-sensor']

  get:
    responses :

      200:

        body:
          application/json:

            schema: |

              {
                "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": [
                            "valuetype = Measured",
                            "contaminanttypearray = [CH2O,CO2,CO,PM2_5,PM10,VOC]",
                            "ocf.contaminanttype = contaminanttypearray[contaminanttype]"
                          ],
                          "x-from-ocf": [
                            "contaminanttype = indexof contaminanttypearray[ocf.contaminanttype]"
                          ]
                        }
```



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```
                    },
                    "currentvalue": {
                      "type": "number",
                      "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]"
                        ]
                      }
                    },
                    "maxvalue": {
                      "type": "number",
                      "x-ocf-conversion": {
                        "x-ocf-alias": "oic.r.airquality",
                        "x-to-ocf": [
                          "range[1] = maxvalue"
                        ],
                        "x-from-ocf": [
                          "maxvalue = range[1]"
                        ]
                      }
                    },
                    "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"
                        ]
                      }
                    }
                  }
                }
              },
              "type": "object",
              "allOf": [
                {"$ref": "#/definitions/asa.environment.currentairquality"}
              ],
              "required":
["contaminanttype","currentvalue","minvalue","maxvalue","precision","updatemintime"]
```



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```
  }

example: |
  {
    "rt":     ["oic.r.airqualitycollection"]
  }
```

### 8.2.5 Property Definition

| ['AllJoyn'] Property name | OCF Resource | To OCF | From OCF | Description |
|---|---|---|---|---|
| currentvalue | oic.r.airquality | contaminantvalue = currentvalue | currentvalue = contaminantvalue | |
| updatemintime | oic.r.value.conditional | ocf.minnotifyperiod = updatemintime | updatemintime = ocf.minnotifyperiod | |
| maxvalue | oic.r.airquality | range[1] = maxvalue | maxvalue = range[1] | |
| precision | oic.r.airquality | ocf.precision = precision | precision = ocf.precision | |
| minvalue | oic.r.airquality | range[0] = minvalue | minvalue = range[0] | |
| contaminanttype | oic.r.airquality | valuetype = Measuredcontaminanttypearray = [CH2O,CO2,CO,PM2_5,PM10,VOC]ocf.contaminanttype = contaminanttypearray[contaminanttype] | contaminanttype = indexof contaminanttypearray[ocf.contaminanttype] | The contaminant type |

### 8.2.6 CRUDN behavior

| Resource | Create | Read | Update | Delete | Notify |
|---|---|---|---|---|---|
| /CurrentAirQualityResURI | | get | | | |

## 8.3 Air Quality Level Mapping

### 8.3.1 Introduction

This API defines the mapping between the AllJoyn AirQualityLevel interface and the OCF AirQuality Resource. 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 the schema 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'

### 8.3.2 Example URI

/CurrentAirQualityLevelResURI

### 8.3.3 Resource Type

The resource type (rt) is defined as: oic.r.airqualitycollection.

### 8.3.4 RAML Definition

```
#%RAML 0.8

title: CurrentAirQualityLevelInterfaceMapping
version: OCFv1.0.0-20170317
```



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```
traits:
 - interface-sensor :
     queryParameters:
       if:
         enum: ["oic.if.s", "oic.if.baseline"]


/CurrentAirQualityLevelResURI:
  description: |
    This API defines the mapping between the AllJoyn AirQualityLevel interface and the OCF
AirQuality Resource.
    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 the schema 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'

  is : ['interface-sensor']
  get:
    responses :
      200:
        body:
          application/json:
            schema: |
              {
                "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": [
                            "valuetype = Qualitative",
                            "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"
```



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```
                ]
              }
            },
            "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]"
                ]
              }
            }
          }
        }
      },
      "type": "object",
      "allOf": [
        {"$ref": "#/definitions/asa.environment.currentairqualitylevel"}
      ],
      "required": ["contaminanttype","currentlevel","maxlevel"]
    }

  example: |
    {
      "rt":     ["oic.r.airqualitycollection"]
    }
```

### 8.3.5 Property Definition

| ['AllJoyn'] Property name | OCF Resource | To OCF | From OCF | Description |
|---|---|---|---|---|
| currentlevel | oic.r.airquality | contaminantvalue = currentlevel | currentlevel = contaminantvalue | |
| maxlevel | oic.r.airquality | range[0] = 0range[1] = maxvalue | maxvalue = range[1] | |
| contaminanttype | oic.r.airquality | valuetype = Qualitativeif contaminanttype = 0, ocf.contaminanttype = CH2Oif contaminanttype = 1, ocf.contaminanttype = CO2if contaminanttype = 2, ocf.contaminanttype | if ocf.contaminanttype = CH2O, contaminanttype = 0if ocf.contaminanttype = CO2, contaminanttype = 1if ocf.contaminanttype = CO, contaminanttype = 2if | The contaminant type |



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| | | | | |
|---|---|---|---|---|
| | | = 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 = Odorif contaminanttype = 255, ocf.contaminanttype = AirPollution | ocf.contaminanttype = PM2_5, contaminanttype = 3if ocf.contaminanttype = PM10, contaminanttype = 4if ocf.contaminanttype = VOC, contaminanttype = 5if ocf.contaminanttype = Smoke, contaminanttype = 253if ocf.contaminanttype = Odor, contaminanttype = 254if ocf.contaminanttype = AirPollution, contaminanttype = 255 | |

### 8.3.6 CRUDN behavior

| Resource | Create | Read | Update | Delete | Notify |
|---|---|---|---|---|---|
| /CurrentAirQualityLevelResURI | | get | | | |

## 8.4 Current Humidity Mapping

### 8.4.1 Introduction

This API defines the mapping between an instance of an OCF Humidity which exposes only a sensor interface and the AllJoyn Current Humidity interface. A RETRIEVE on a Temperature Sensor maps to an action on an instance of an Environment.CurrentTemperature Interface.

### 8.4.2 Example URI

/CurrentHumidityResURI

### 8.4.3 Resource Type

The resource type (rt) is defined as: oic.r.humidity.

### 8.4.4 RAML Definition

```
#%RAML 0.8

title: CurrentHumidityInterfaceMapping
version: OCFv1.0.0-20170317

traits:
 - interface-sensor :
     queryParameters:

       if:
         enum: ["oic.if.s", "oic.if.baseline"]


/CurrentHumidityResURI:

  description: |
    This API defines the mapping between an instance of an OCF Humidity which exposes only a sensor
interface
```



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```
    and the AllJoyn Current Humidity interface.
    A RETRIEVE on a Temperature Sensor maps to an action on an instance of an
Environment.CurrentTemperature Interface.

  is : ['interface-sensor']
  get:
    responses :
      200:
        body:
          application/json:
            schema: |
              {
                "id":
"http://openinterconnect.org/asamapping/schemas/asa.environment.currenthumidity.json#",
                "$schema": "http://json-schema.org/draft-04/schema#",
                "description" : "Copyright (c) 2017 Open Connectivity Foundation, Inc. All rights
reserved.",
                "title": "Current Humidity",
                "definitions": {
                  "asa.environment.currenthumidity": {
                    "type": "object",
                    "properties": {
                      "currentvalue": {
                        "type": "number",
                        "description": "Measured value",
                        "x-ocf-conversion": {
                          "x-ocf-alias": "oic.r.humidity",
                          "x-to-ocf": [
                            "humidity = currentValue"
                          ],
                          "x-from-ocf": [
                            "currentvalue = humidity"
                          ]
                        }
                      },
                      "maxvalue": {
                        "type": "number",
                        "description": "Max measured value for humidty",
                        "x-ocf-conversion": {
                          "x-ocf-alias": "oic.r.humidity",
                          "x-to-ocf": [
                            "range[0] = 0",
                            "range[1] = maxvalue"
                          ],
                          "x-from-ocf": [
                            "maxvalue = range[1]"
                          ]
                        }
                      }
                    }
                  }
                },
                "type": "object",
                "allOf": [
                  {"$ref": "#/definitions/asa.environment.currenthumidity"}
                ],
                "required": [ "currentvalue","maxvalue"]
              }

            example: |
              {
                "rt":     ["oic.r.humidity"]
              }
```



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### 8.4.5 Property Definition

| ['AllJoyn'] Property name | OCF Resource | To OCF | From OCF | Description |
|---|---|---|---|---|
| currentvalue | oic.r.humidity | humidity = currentValue | currentvalue = humidity | Measured value |
| maxvalue | oic.r.humidity | range[0] = 0range[1] = maxvalue | maxvalue = range[1] | Max measured value for humidty |

### 8.4.6 CRUDN behavior

| Resource | Create | Read | Update | Delete | Notify |
|---|---|---|---|---|---|
| /CurrentHumidityResURI | | get | | | |

## 8.5 Current Temperature Mapping

### 8.5.1 Introduction

This API defines the mapping between an instance of an OCF Temperature which exposes only a sensor interface and the AllJoyn Current Temperature interface. A RETRIEVE on a Temperature Sensor maps to an action on an instance of an Environment.CurrentTemperature Interface.

### 8.5.2 Example URI

/CurrentTemperatureResURI

### 8.5.3 Resource Type

The resource type (rt) is defined as: oic.r.temperature.

### 8.5.4 RAML Definition

```
#%RAML 0.8

title: CurrentTemperatureInterfaceMapping
version: OCFv1.0.0-20170317

traits:
 - interface-sensor :
     queryParameters:

       if:
         enum: ["oic.if.s", "oic.if.baseline"]


/CurrentTemperatureResURI:

  description: |
    This API defines the mapping between an instance of an OCF Temperature which exposes only a
sensor interface
    and the AllJoyn Current Temperature interface.
    A RETRIEVE on a Temperature Sensor maps to an action on an instance of an
Environment.CurrentTemperature Interface.


  is : ['interface-sensor']

  get:
    responses :

      200:

        body:
          application/json:

            schema: |

              {
                "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.",
```



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```
"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"
          ]
        }
      }
```



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```
            }
          }
        },
        "type": "object",
        "allOf": [
          {"$ref": "#/definitions/asa.environment.currenttemperature"}
        ],
        "required": [ "currentvalue","precision","updatemintime" ]
      }

    example: |
      {
        "rt":     ["oic.r.temperature"]
      }
```

### 8.5.5 Property Definition

| ['AllJoyn'] Property name | OCF Resource | To OCF | From OCF | Description |
|---|---|---|---|---|
| currentvalue | oic.r.temperature | temperature = currentValueunits = C | oneOf | Measured value |
| updatemintime | oic.r.value.conditional | ocf.minnotifyperiod = updatemintime | updatemintime = ocf.minnotifyperiod | |
| precision | oic.r.temperature | ocf.precision = precision | precision = ocf.precision | |

### 8.5.6 CRUDN behavior

| Resource | Create | Read | Update | Delete | Notify |
|---|---|---|---|---|---|
| /CurrentTemperatureResURI | | get | | | |

## 8.6 Target Humidity Mapping

### 8.6.1 Introduction

This API defines the mapping between an instance of an AllJoyn TargetHumidity Interface and the OCF Resource Equivalent. A POST on a Humidity Sensor maps to an action on an instance of an Environment.TargetHumidity Interface.

### 8.6.2 Example URI

/TargetHumidityResURI

### 8.6.3 Resource Type

The resource type (rt) is defined as: oic.r.humidity.

### 8.6.4 RAML Definition

```
#%RAML 0.8

title: TargetHumidityInterfaceMapping
version: OCFv1.0.0-20170317

traits:
 - interface-actuator :
     queryParameters:

       if:
         enum: ["oic.if.a", "oic.if.baseline"]


/TargetHumidityResURI:

  description: |
```



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```
    This API defines the mapping between an instance of an AllJoyn TargetHumidity Interface and the
OCF Resource Equivalent.
    A POST on a Humidity Sensor maps to an action on an instance of an Environment.TargetHumidity
Interface.

  is : ['interface-actuator']

  get:
    responses :

      200:

        body:
          application/json:

            schema: |

              {
                "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.",
                            "if x-ocf-alias == oic.r.selectablelevels, targetvalue = targetlevel."
                          ]
                        }
                      },
                      "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": {
```



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```
                          "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[]"
                          ]
                        }
                      }
                    }
                  }
                },
                "type": "object",
                "allOf": [
                  {"$ref": "#/definitions/asa.environment.targethumidity"}
                ],
                "required":
[ "targetvalue","minvalue","maxvalue","stepvalue","selectablehumiditylevels" ]
              }


            example: |
              {
                "rt":     ["oic.r.humidity","oic.r.selectablelevels"]
              }


  post:
    body:
      application/json:

        schema: |

          {
            "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.",
```



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```
                "if x-ocf-alias == oic.r.selectablelevels, targetvalue = targetlevel."
              ]
            }
          },
          "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[]"
              ]
            }
          }
        }
      }
    },
    "type": "object",
    "allOf": [
      {"$ref": "#/definitions/asa.environment.targethumidity"}
    ],
    "required":
[ "targetvalue","minvalue","maxvalue","stepvalue","selectablehumiditylevels" ]
  }

  responses :
```



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```
      200:
        body:
          application/json:
            schema: |
              {
                "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.",
                            "if x-ocf-alias == oic.r.selectablelevels, targetvalue = targetlevel."
                          ]
                        }
                      },
                      "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"
                          ]
                        }
```



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