

OCF “Hollywood” – Group Management (Rules Phase I) – Smart Home WG CR 1968

Legal Disclaimer

THIS IS A DRAFT SPECIFICATION DOCUMENT ONLY AND HAS NOT BEEN ADOPTED BY THE OPEN CONNECTIVITY FOUNDATION. THIS DRAFT DOCUMENT MAY NOT BE RELIED UPON FOR ANY PURPOSE OTHER THAN REVIEW OF THE CURRENT STATE OF THE DEVELOPMENT OF THIS DRAFT DOCUMENT. THE OPEN CONNECTIVITY FOUNDATION AND ITS MEMBERS RESERVE THE RIGHT WITHOUT NOTICE TO YOU TO CHANGE ANY OR ALL PORTIONS HEREOF, DELETE PORTIONS HEREOF, MAKE ADDITIONS HERETO, DISCARD THIS DRAFT DOCUMENT IN ITS ENTIRETY OR OTHERWISE MODIFY THIS DRAFT DOCUMENT AT ANY TIME. YOU SHOULD NOT AND MAY NOT RELY UPON THIS DRAFT DOCUMENT IN ANY WAY, INCLUDING BUT NOT LIMITED TO THE DEVELOPMENT OF ANY PRODUCTS OR SERVICES. IMPLEMENTATION OF THIS DRAFT DOCUMENT IS DONE AT YOUR OWN RISK AMEND AND IT IS NOT SUBJECT TO ANY LICENSING GRANTS OR COMMITMENTS UNDER THE OPEN CONNECTIVITY FOUNDATION INTELLECTUAL PROPERTY RIGHTS POLICY OR OTHERWISE. IN CONSIDERATION OF THE OPEN CONNECTIVITY FOUNDATION GRANTING YOU ACCESS TO THIS DRAFT DOCUMENT, YOU DO HEREBY WAIVE ANY AND ALL CLAIMS ASSOCIATED HEREWITH INCLUDING BUT NOT LIMITED TO THOSE CLAIMS DISCUSSED BELOW, AS WELL AS CLAIMS OF DETRIMENTAL RELIANCE.

The OCF logo is a trademark of Open Connectivity Foundation, Inc. in the United States or other countries. *Other names and brands may be claimed as the property of others.

Copyright © 2020 Open Connectivity Foundation, Inc. All rights reserved.

Copying or other form of reproduction and/or distribution of these works are strictly prohibited.

***** First Change

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.

IETF RFC 5234, *Augmented BNF for Syntax Specifications: ABNF*, January 2008
<https://tools.ietf.org/html/rfc5234>

***** Second Change

3.1 Terms and definitions

3.1.1

Rule

Resource that implements autonomous decision logic according to a condition-action pattern

3.1.2

Rule Action

Resource that is actuated with a defined value when the Rule Result (3.1.5) holds "true"

3.1.3

Rule Expression

definition of the Rule (3.1.1) logic in terms of the defined Rule Inputs, and which evaluates to a boolean Rule Result (3.1.5), for which "true" means that the Rule (3.1.1) has been triggered

3.1.4

Rule Input

Resources that contain the Properties whose values are evaluated as part of the Rule Expression (3.1.2)

3.1.5

Rule Result

Property which reflects the result of the evaluation of the Rule Expression (3.1.2)

***** Third Change

11.10 Rules

11.10.1 Overview

Rules are Resources that implement autonomous decision logic according to a condition-action pattern. The Rule is evaluated based on the Property values of selected Resource instances. Rule Actions are triggered when a Rule Expression evaluates to "true" and consist of defined UPDATE operations that act upon Scene Collections by updating the "lastScene" Property to a defined value.

A Rule has the following components:

- A Collection of Links to the Resources (i.e., Rule Inputs) that contain the Properties whose values are evaluated as part of the Rule Expression.

- One Rule Expression that defines the Rule logic in terms of the defined Rule Inputs, and which evaluates to a boolean Rule Result, for which "true" means that the Rule has been triggered.
- A Collection of Links to one or more Rule Actions, which are processed when the Rule Result is evaluated to "true"; the Rule Action provides a specific value for the "lastScene" Property that is updated in the Linked Scene Collection.

Figure 1 shows how these components are organized with respect to the Rule Resource.

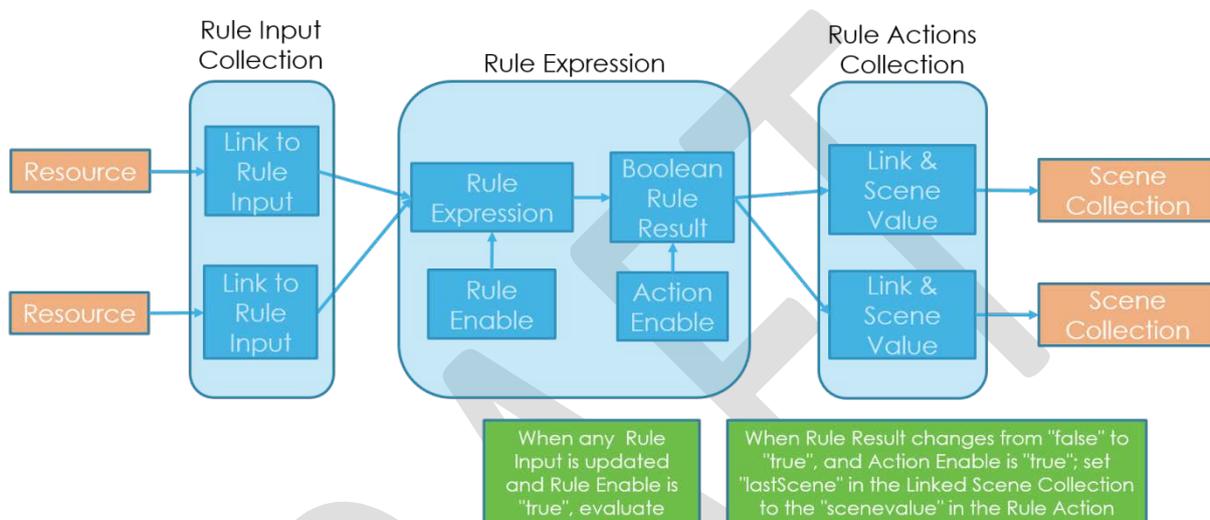


Figure 1 – Components of a Rule

11.10.2 Rule Structure

11.10.2.1 Introduction and Rule Resource

A Rule is a Resource with a Resource Type of "oic.r.rule" that is a Collection. A Rule instance shall contain the following:

- A single Link to a Rule Input Collection (see clause 11.10.2.2).
- A single Link to a Rule Expression Resource (see clause 11.10.2.3) which contains:
 - One Rule Expression Property.
 - One boolean Rule Enable Property, which controls whether the Rule is or is not active
 - One boolean Action Enable Property, which controls whether the Rule actions are or are not triggered when the Rule Result evaluates to "true"
 - One boolean Rule Result Property, which reflects the result of the evaluation of the Rule Expression
- A single Link to a Rule Action Collection (see clause 11.10.2.4)

A summary for the Rule, Rule Input Collection, Rule Expression, Rule Action, and Rule Action Collection Resource Types is provided in Table 1.

Table 1 – Optional Rule Resources

Example URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/example/ruleURI"	Rule	"oic.r.rule"	"oic.if.ll", "oic.if.baseline"	The Resource through which the Device exposes Rules. The Properties exposed by "oic.r.rule" are listed in Table 2.	Rules
"/example/ruleinputcollectionURI"	Rule Input Collection	"oic.r.rule.inputcollection"	"oic.if.ll", "oic.if.baseline"	A specialisation of a Collection that contains Links to the locally hosted Resources that provide input to the Rule Expression. The Properties exposed by "oic.r.rule.inputcollection" are listed in Table 3.	Rules
"/example/ruleexpressionURI"	Rule Expression	"oic.r.rule.expression"	"oic.if.rw", "oic.if.baseline"	The Resource that contains the Rule Expression and Rule Result. The Properties exposed by "oic.r.rule.expression" are listed in Table 5.	Rules
"/example/ruleactionURI"	Rule Action	"oic.r.rule.action"	"oic.if.rw", "oic.if.baseline"	The Resource that contains the action to be taken on evaluation of the Rule Result to true. The Properties exposed by "oic.r.rule.action" are listed in Table 7.	Rules
"/example/ruleactioncollectionURI"	Rule Action Collection	"oic.r.rule.actioncollection"	"oic.if.ll", "oic.if.baseline"	A specialisation of a Collection that contains only instances of "oic.r.rule.ruleaction". The Properties exposed by "oic.r.rule.actioncollection" are listed in Table 6.	Rules

The Rule ("oic.r.rule") Resource is described in Table 2. Complete details are provided in Annex A.

Table 2 – "oic.r.rule" Resource Type definition

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Links	"links"	"array"	See Table 13 in [Bookmark to Core Spec]		R	Yes	See Table 13 in [Bookmark to Core Spec].
Resource Type	"rt"	"array"	["oic.r.rule"]		R	Yes	See Table 4 in [Bookmark to Core Spec]
Resource Types	"rts"	"array"	Resource Types that may be linked from the Rule		R	Yes	See Table 11 in [Bookmark to Core Spec]

11.10.2.2 Rule Inputs

Rule Inputs are Links in a Collection ("oic.r.rule.inputcollection") that is itself Linked from the Rule. Each Link in the Collection corresponds to a different input variable in the Rule Expression. Each Link therefore corresponds to a Resource defined by the Rule. For example, a Rule that evaluates a temperature input will include a Link to a Resource with a Resource Type of "oic.r.temperature". Resource Types for Rule Inputs shall be identical to the Resources to which they are linked. The Link has an "if" Link Parameter, which shall be a single element array containing the OCF Interface used for the internal observe of the input Resource.

The Rule Input Collection ("oic.r.rule.inputcollection") Resource is described in Table 1. Complete details are provided in Annex A.

Table 3 – "oic.r.rule.inputcollection" Resource Type definition

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Links	"links"	"array"	See Table 13 in [Bookmark to Core Spec]		R	Yes	See Table 13 in [Bookmark to Core Spec].
Resource Type	"rt"	"array"	["oic.r.rule.inputcollection"]		R	Yes	See Table 4 in [Bookmark to Core Spec]
Resource Types	"rts"	"array"	Resource Types that may be linked from the Rule Input Collection		R	Yes	See Table 11 in [Bookmark to Core Spec]

Rule Inputs shall be indicated by the Link relation type "ruleinput" in the Link (i.e., "rel" Parameter), thus semantically describing the relationship between the "href" and the "anchor" Parameters contained in the Link. The "href" Parameter of the Link shall correspond to the input Resource and shall be a relative URI to a Resource that is hosted on the same Device as the Rule. The "anchor" Parameter of the Link corresponds to the variable name in the Rule Expression, the variable name (and thus the content of "anchor") is defined by the Rule Expression and shall be unique within the context of the Rule Expression. For example a Rule Expression with a variable of "mytemperature:temperature" has an associated Link within the Rule Input Collection with the "anchor" set to "mytemperature". For example:

```
{
  "anchor": "mytemperature",
  "href": "/mylocaltemperaturesensor",
  "rel": ["ruleinput"],
  "rt": ["oic.r.temperature"],
  "if": ["oic.if.s"]
}
```

11.10.2.3 Rule Expression

The Rule Expression is a Resource ("oic.r.rule.expression") that contains a "rule" Property, which is defined as a string that contains a logical expression over the Rule Inputs, and which evaluates to a boolean value. This value is exposed in the "ruleresult" Property, which shall have a default value of "false". The expression shall conform to the ABNF syntax defined in clause 11.10.4.

Rule Inputs within the "rule" Property are specified by including the "anchor" Link Parameter from the associated Rule Input, including the desired Property Name from the linked Resource. Figure 2 shows an example for a Rule Input with an "anchor" named "mytemperature" following

on from the example Rule Input shown in clause 11.10.2.2, and the Property Name of "temperature", thus the name "mytemperature:temperature" is used in the Rule Expression to refer to this Rule Input. Specifically, that is the value of the "temperature" Property of the Resource at the "href" of "/mylocaltemperaturesensor".

```
mytemperature:temperature >= "25"
```

Figure 2 – Example "rule" Property with single Rule Input

There are no restrictions on the number of Rule Inputs that may be part of a Rule Expression. Consider an additional example where the Rule Result evaluates to "true" if the temperature is greater than or equal to "25" and a door is open ("openState" Property of an instance of "oic.r.door"). Thus, given a Rule Input for "mydoor" as shown in Figure 3 we can construct the Rule Expression shown in Figure 4.

```
{  
  "anchor": "mydoor",  
  "href": "/mylocaldoor",  
  "rel": ["ruleinput"],  
  "rt": ["oic.r.door"],  
  "if": ["oic.if.a"]  
}
```

Figure 3 – Example Link to Rule Input Resource for "mydoor"

```
mytemperature:temperature >= "25" and mydoor:openState contains  
"Open"
```

Figure 4 – Example "rule" Property with more than one Rule Input

The Rule Expression also contains two Properties that allow the enabling of the Rule and the actuating of any Rule Actions to be controlled by a Client.

The "ruleenable" Property controls whether the "ruleresult" Property is updated upon processing of the Rule Expression. If the "ruleenable" Property is set to "true", then the "ruleresult" Property shall be set according to evaluation of the Rule Expression each time any Rule Input changes, in effect the Rule observes the Rule Inputs. An initial evaluation of the Rule Expression shall occur when "ruleenable" is set to "true"; subsequent re-evaluation shall only take place when any of the Rule Input values change. If the "ruleenable" Property is set to "false", the Rule Expression shall not be re-evaluated irrespective of the state of the Rule Inputs. If the "ruleenable" Property is set to "false", the Server shall not change the values of any of the other Properties in the instance of Rule Expression; this simply means that the Rule is no longer re-evaluated whenever a Rule Input changes. The "ruleenable" Property shall have a default value of "false". A Server shall only expose a "ruleenable" Property set to "true" (or allow it to be set to "true" by a Client, such an attempt shall be rejected with an appropriate failure reason, e.g. "bad request") if there exists a Rule Input Link for each variable within the Rule Expression.

The "actionenable" Property controls whether the Rule Actions (see clause 11.10.2.4) are processed when the "ruleresult" Property is set to "true". If the "actionenable" Property is set to "true", all Rule Actions shall be processed when the "ruleresult" Property is set to "true" as a result of Rule Expression evaluation. No action shall be taken if the result of Rule Expression evaluation is "false", that is, the "ruleresult" Property changes from "true" to "false". If the "actionenable" Property is set to "false", the Rule Actions shall not be processed. The "actionenable" Property shall have a default value of "false"

Setting the "ruleenable" and "actionenable" Properties places the Rule into one of four modes that are summarized in Table 2.

Table 4 – Summary of "ruleenable" and "actionenable" Property Behaviours

"ruleenable" Value	"actionenable" Value	Rule Expression Processed	Rule Action Processed	Notes
false	false	No	No	These are the default initial settings for a Rule
false	true	No	Yes if the "ruleresult" Property is set to "true" by a Client	The "ruleresult" Property may be updated from "false" to "true" in order to manually trigger the processing of any Rule Actions.
true	false	Yes	No	Rule Inputs may be updated and the "ruleresult" Property may be observed to test the logic and processing of the Rule Expression
true	true	Yes	Yes	The Rule Expression is processed and the "ruleresult" Property is updated when Rule Inputs are updated. Rule Actions are processed when the "ruleresult" Property value is set to "true"

As noted in Table 4; the "ruleresult" may be set to "true" by a Client. A Client shall only be able to set "ruleresult" in the mode that is noted, that is when "ruleenable" is "false" and "actionenable" is "true".

The Properties of the Rule Expression Resource are summarized in Table 3. Complete details are provided in Annex A. An example flow showing use of the Rule Enable and Action Enable Properties is shown in Figure 5.

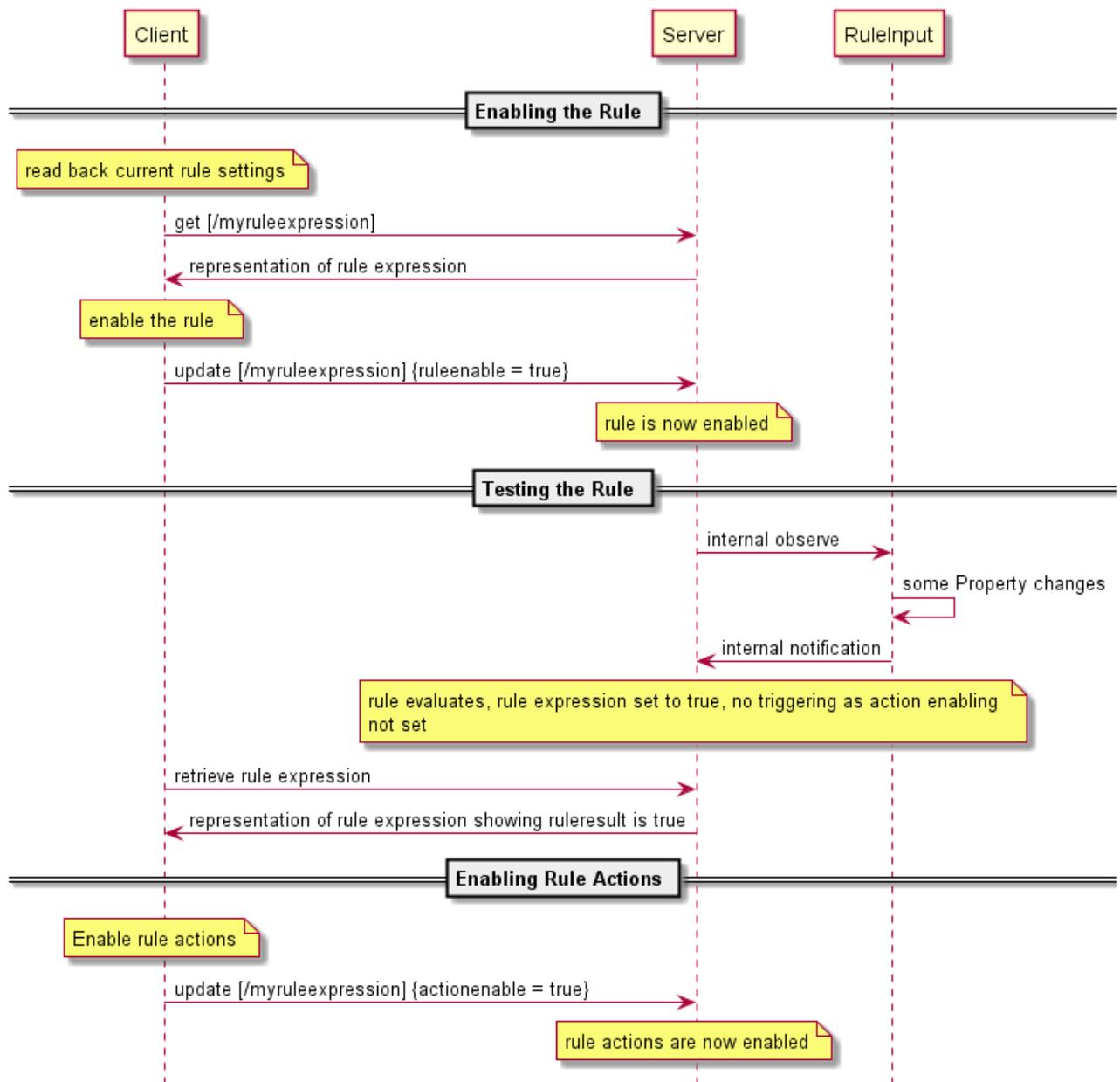


Figure 5 – Example use of Rule Enable and Action Enable

Table 5 – Properties of the Rule Expression Resource

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Rule Expression	"rule"	string	ABNF Clause 11.10.5		RW	Yes	Property that contains the logical expression that implements the Rule logic
Rule Enable	"ruleenable"	boolean			RW	Yes	Determines whether the Rule Result is updated from the Rule Expression

Action Enable	"actionenable"	boolean			RW	Yes	Determines whether Rule Actions are processed
Rule Result	"ruleresult"	boolean			RW	Yes	The boolean result of the most recent evaluation of the Rule Expression

11.10.2.4 Rule Actions

Rule Actions (one or more) are Links in a Collection ("oic.r.rule.actioncollection") to instances of a Rule Action Resource ("oic.r.rule.action"). Each instance of "oic.r.rule.action" contains two Properties; a Link to a locally hosted instance of a Scene Collection, and an associated value of a "lastScene" Property from the allowed set provided by the "sceneValues" Property in the target Scene Collection.

A single Rule Action is a Resource Type ("oic.r.rule.action") with two Properties as described in Table 7. The Rule Action Collection is described in Table 6. Complete details are provided in Annex A.

- "link" Property, an instance of a Link (single element array) to a locally-hosted Scene Collection ("oic.wk.scenecollection")
- "scenevalue" Property, value of the "lastScene" Property to be set.

Rule Actions are processed when the result of evaluating the Rule Expression is "true", if the "actionenable" Property is set to "true" as described in clause 11.10.2.3.

Processing a Rule Action shall result in an UPDATE operation being performed to set the "lastScene" Property in the linked instance of "oic.wk.scenecollection" to the value of the "scenevalue" Property in the Rule Action itself. All Rule Actions resulting from a Rule Expression evaluation shall be processed before any subsequent Rule Input changes are processed.

Table 6 – "oic.r.rule.actioncollection" Resource Type definition

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Links	"links"	"array"	See Table 13 in [Bookmark to Core Spec]		R	Yes	See Table 13 in [Bookmark to Core Spec]
Resource Type	"rt"	"array"	["oic.r.rule.actioncollection"]		R	Yes	See Table 4 in [Bookmark to Core Spec]
Resource Types	"rts"	"array"	["oic.r.rule.action"]		R	Yes	See Table 11 in [Bookmark to Core Spec]

Table 7 – Properties of the Rule Action Resource.

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Link	"link"	Link	See clause XXX		R	Yes	Link to an instance of a Scene Collection
Last Scene Value	"scenevalue"	string			RW	Yes	Value to be set on the "lastScene" Property in the linked Scene Collection.

11.10.3 Rule Behaviour

Resources that are linked via a Rule Input are internally observed by the Rule (the Rule and the Linked Resource are all hosted on the same Device). For example, a thermostat Rule may observe a temperature sensor Resource, and may include additional Rule Inputs, e.g. for set-point and mode, that are additionally observed. The expression is re-evaluated whenever any one of the Rule Inputs changes.

See Figure 6 for an example of how a Rule is triggered and the action then taken.

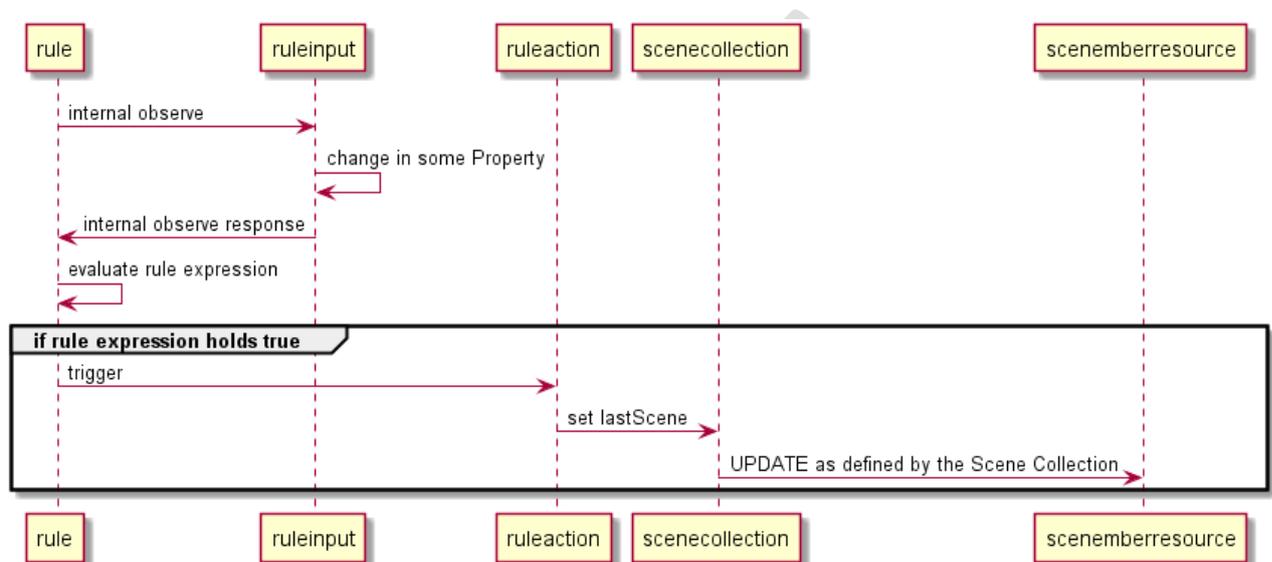


Figure 6 – Example operation of a Rule when "ruleenable" and "actionenable" Properties are both "true"

11.10.4 Rule configuration guidance

11.10.4.1 Pre-configured Rule

A Device that is capable of hosting a Rule may have as part of its configuration or implementation all the elements of the Rule pre-defined, i.e. there exists an instance of "oic.r.rule" with a Rule Input Collection of Links to pre-existing Resources acting as input variables, and a Rule Action Collection of Links to pre-existing Scene Collections. A Client may manipulate the Rule Expression Resource (see clause 11.10.2.3) or the linked Rule Input Resources or the linked Scene Collections as supported by the exposed Resource instances.

11.10.5 Rule Expression syntax

11.10.5.1 Overview

A Rule Expression consists of a string that conforms to the syntax in clause 11.10.5.2 using augmented BNF defined in IETF RFC 5234.

In the augmented BNF, "resourceproperty" is a colon separated string which takes the general form of "ruletag":"propname", where the "ruletag" corresponds to the "anchor" Link Parameter in a Rule Input Link and "propname" corresponds to the Property Name in the Linked Resource.

Additionally, the following syntax conditions apply to operators that may be part of a Rule Expression:

- relOp: left and right operands are equal, and of type [string, number, integer]
- stringOp: left and right operands are of type [string]
- existsOp : left operands are of type [string, boolean, number, integer, array, object]

Operator precedence shall be as defined within IETF RFC 5234, but in short, expressions in parentheses are evaluated first, then expressions using relOp, stringOp, and existsOp, and finally expressions using logOp. For example, given:

```
someresource:prop1 > "5" and someotherresource:prop2 contains "idle" and (someresource:prop3 = "blue")
```

Then the expression in parentheses is evaluated first, then the relOp expression, the stringOp expression, and finally the logOp expressions scanning from left to right.

11.10.5.2 Augmented BNF for Rule Expression syntax

```
rule ::= ruleExp
ruleExp ::= relExp | ruleExp wChar+ logOp wChar+ ruleExp | '(' wChar* ruleExp wChar* ')'
logOp ::= 'and' | 'or'
resourceproperty ::= ruletag:propname
ruletag ::= ;anchor Link Parameter value from a Rule Input Resource
propname ::= ;Property name contained in a Rule Input Resource
relExp ::= resourceproperty wChar+ binOp wChar+ quotedVal | resourceproperty wChar+ existsOp wChar+ boolVal
binOp ::= relOp | stringOp
relOp ::= '=' | '!=' | '<' | '<=' | '>' | '>='
stringOp ::= 'contains' | 'doesNotContain' | 'startsWith'
existsOp ::= 'exists'
boolVal ::= 'true' | 'false'
quotedVal ::= dQuote string dQuote
wChar ::= space | hTab | lineFeed | vTab | formFeed | return
hTab ::= ;UTF-8 code 0x09, horizontal tab character
lineFeed ::= ;UTF-8 code 0x0A, line feed character
vTab ::= ;UTF-8 code 0x0B, vertical tab character
formFeed ::= ;UTF-8 code 0x0C, form feed character
return ::= ;UTF-8 code 0x0D, carriage return character
space ::= ' ' ;UTF-8 code 0x20, space character
dQuote ::= '"' ;UTF-8 code 0x22, double quote character
path-rootless ::= (see RFC3986)
```

**** Fourth Change

A.1 OCF Rule

A.1.1 Introduction

A Rule is a Collection made up of 3 Links:

- A Link to an instance of a Collection of Rule Inputs.
- A Link to a Rule Expression (the logic of the Rule).
- A Link to a Collection of Rule Actions.

A.1.2 Example URI

/RuleResURI

A.1.3 Resource type

The Resource Type is defined as: "oic.r.rule".

A.1.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "OCF Rule",
    "version": "20190910",
    "license": {
      "name": "OCF Data Model License",
      "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4b
a/LICENSE.md",
      "x-copyright": "copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/RuleResURI?if=oic.if.ll": {
      "get": {
        "description": "A Rule is a Collection made up of 3 Links. \n A Link to an instance of a
Collection of Rule Inputs. \n A Link to a Rule Expression (the logic of the Rule). \n A Link to
a Collection of Rule Actions.",
        "parameters": [
          {"$ref": "#/parameters/interface-all"}
        ],
        "responses": {
          "200": {
            "description": "Retrieves the rule as Links List.",
            "x-example":
[
  {
    "href": "/ruleinputcollection",
    "rt": ["oic.r.rule.inputcollection"],
    "if": ["oic.if.ll", "oic.if.baseline"],
    "p": {"bm": 3},
    "eps": [
      {"ep": "coaps://[fe80::b1d6]:1111"}
    ]
  },
  {
    "href": "/ruleexpression",
    "rt": ["oic.r.rule.expression"],
    "if": ["oic.if.rw", "oic.if.baseline"],
    "p": {"bm": 3},
    "eps": [
      {"ep": "coaps://[fe80::b1d6]:1111"}
    ]
  },
  {
    "href": "/ruleactioncollection",
    "rt": ["oic.r.rule.actioncollection"],
    "if": ["oic.if.ll", "oic.if.baseline"],
    "p": {"bm": 3},
    "eps": [
      {"ep": "coap://[fe80::b1d6]:1111"}
    ]
  }
],
            "schema": { "$ref": "#/definitions/slinklist" }
          }
        }
      }
    },
    "/RuleResURI?if=oic.if.baseline": {
      "get": {
        "description": "A Rule is a Collection made up of 3 Links: \n- A Link to an instance of
a Collection of Rule Inputs. \n- A Link to a Rule Expression (the logic of the Rule). \n- A Link
```

```

to a Collection of Rule Actions.",
  "parameters": [
    { "$ref": "#/parameters/interface-all" }
  ],
  "responses": {
    "200": {
      "description": "Retrieves the baseline response for the rule.",
      "x-example": {
        "rt": ["oic.r.rule"],
        "if": ["oic.if.ll", "oic.if.baseline"],
        "rts":
["oic.r.rule.inputcollection", "oic.r.rule.expression", "oic.r.rule.actioncollection"],
        "links": [
          {
            "href": "/ruleinputcollection",
            "rt": ["oic.r.rule.inputcollection"],
            "if": ["oic.if.ll", "oic.if.baseline"],
            "p": {"bm": 3},
            "eps": [
              {"ep": "coaps://[fe80::b1d6]:1111"}
            ]
          },
          {
            "href": "/ruleexpression",
            "rt": ["oic.r.rule.expression"],
            "if": ["oic.if.rw", "oic.if.baseline"],
            "p": {"bm": 3},
            "eps": [
              {"ep": "coaps://[fe80::b1d6]:1111"}
            ]
          },
          {
            "href": "/ruleactioncollection",
            "rt": ["oic.r.rule.actioncollection"],
            "if": ["oic.if.ll", "oic.if.baseline"],
            "p": {"bm": 3},
            "eps": [
              {"ep": "coap://[fe80::b1d6]:1111"}
            ]
          }
        ]
      },
      "schema": { "$ref": "#/definitions/sbaseline" }
    }
  }
},
"parameters": {
  "interface-all": {
    "in": "query",
    "name": "if",
    "type": "string",
    "enum": ["oic.if.ll", "oic.if.baseline"]
  }
},
"definitions": {
  "oic.oic-link": {
    "type": "object",
    "properties": {
      "anchor": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/anchor"
      },
      "di": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/di"
      }
    }
  }
}

```

```
    },
    "eps": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/eps"
    },
    "href": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/href"
    },
    "if": {
      "description": "The OCF Interfaces supported by the Linked Resource",
      "items": {
        "enum": [
          "oic.if.baseline",
          "oic.if.ll",
          "oic.if.rw"
        ],
        "type": "string",
        "maxLength": 64
      },
      "minItems": 1,
      "uniqueItems": true,
      "type": "array"
    },
    "ins": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/ins"
    },
    "p": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/p"
    },
    "rel": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/rel_array"
    },
    "rt": {
      "description": "Resource Type of the Linked Resource",
      "items": {
        "maxLength": 64,
        "type": "string",
        "enum":
["oic.r.rule.inputcollection", "oic.r.rule.expression", "oic.r.rule.actioncollection"]
      },
      "minItems": 1,
      "uniqueItems": true,
      "type": "array"
    },
    "title": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/title"
    },
    "type": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/type"
    }
  },
  "required": [
    "href",
    "rt",
    "if"
  ]
},
```

```
"slinklist": {
  "type": "array",
  "readOnly": true,
  "items": {
    "$ref": "#/definitions/oic.oic-link"
  },
  "minItems": 3,
  "maxItems": 3
},
"sbaseline": {
  "properties": {
    "links": {
      "description": "A set of simple or individual Links.",
      "items": {
        "$ref": "#/definitions/oic.oic-link"
      },
      "type": "array",
      "minItems": 3,
      "maxItems": 3
    },
    "n": {
      "$ref": "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-schema.json#/definitions/n"
    },
    "id": {
      "$ref": "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-schema.json#/definitions/id"
    },
    "rt": {
      "description": "The Resource Type.",
      "items": {
        "enum": ["oic.r.rule"],
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "rts": {
      "description": "The Linked Resource Types.",
      "items": {
        "enum": ["oic.r.rule.inputcollection",
          "oic.r.rule.expression",
          "oic.r.rule.actioncollection"],
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 3,
      "maxItems": 3,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "if": {
      "description": "The OCF Interfaces supported by this Resource",
      "items": {
        "enum": [
          "oic.if.ll",
          "oic.if.baseline"
        ],
        "type": "string",
        "maxLength": 64
      },
      "minItems": 2,
      "uniqueItems": true,
      "readOnly": true,

```

```

    "type": "array"
  }
},
"additionalProperties": true,
"type" : "object",
"required": [
  "rt",
  "if",
  "links",
  "rts"
]
}
}
}

```

A.1.5 Property definition

<Table Reference Here> defines the Properties that are part of the "oic.r.rule" Resource Type.

Table 1 – The Property definitions of the Resource with type "rt" = "oic.r.rule".

Property name	Value type	Mandatory	Access mode	Description
anchor	multiple types: see schema	No	Read Write	
di	multiple types: see schema	No	Read Write	
eps	multiple types: see schema	No	Read Write	
href	multiple types: see schema	Yes	Read Write	
if	array: see schema	Yes	Read Write	The OCF Interfaces supported by the Linked Resource
ins	multiple types: see schema	No	Read Write	
p	multiple types: see schema	No	Read Write	
rel	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Write	Resource Type of the Linked Resource
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	
links	array: see schema	Yes	Read Write	A set of simple or individual Links.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Only	The Resource Type.
rts	array: see schema	Yes	Read Only	The Linked Resource Types.

if	array: see schema	Yes	Read Only	The OCF Interfaces supported by this Resource
----	-------------------	-----	-----------	---

A.1.6 CRUDN behaviour

<Table Reference Here> defines the CRUDN operations that are supported on the "oic.r.rule" Resource Type.

Table 2 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule".

Create	Read	Update	Delete	Notify
	get			observe

A.2 OCF Rule Input Collection

A.2.1 Introduction

Collection of Links to the Resources (i.e., Rule Inputs) that contain the Properties whose values are evaluated as part of the Rule Expression.

A.2.2 Example URI

/RuleInputCollectionResURI

A.2.3 Resource type

The Resource Type is defined as: "oic.r.rule.inputcollection".

A.2.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "OCF Rule Input Collection",
    "version": "20200114",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LICENSE.md",
      "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/RuleInputCollectionResURI?if=oic.if.ll": {
      "get": {
        "description": "Collection of Links to the Resources (i.e., Rule Inputs) that contain the Properties whose values are evaluated as part of the Rule Expression.",
        "parameters": [
          { "$ref": "#/parameters/interface-all" }
        ],
        "responses": {
          "200": {
            "description": "Retrieves the Rule Input Links.",
            "x-example": [
              {
                "anchor": "mytemperature",
                "href": "/mylocaltemperaturesensor",
                "rel": ["ruleinput"],
                "rt": ["oic.r.temperature"],

```

```

        "if": ["oic.if.s"],
        "p": {"bm": 3},
        "eps": [
          {"ep": "coaps://[fe80::b1d6]:1111"}
        ]
      },
    ],
    "schema": { "$ref": "#/definitions/slinklist" }
  }
},
"/RuleInputCollectionResURI?if=oic.if.baseline": {
  "get": {
    "description": "Collection of Links to the Resources (i.e., Rule Inputs) that contain
the Properties whose values are evaluated as part of the Rule Expression.",
    "parameters": [
      {"$ref": "#/parameters/interface-all"}
    ],
    "responses": {
      "200": {
        "description": "Retrieves the rule input Links.",
        "x-example": {
          "rt": ["oic.r.rule.inputcollection"],
          "if": ["oic.if.ll", "oic.if.baseline"],
          "rts": ["oic.r.temperature"],
          "n": "My Rule Inputs",
          "links": [
            {
              "anchor": "mytemperature",
              "href": "/mylocaltemperaturesensor",
              "rel": ["ruleinput"],
              "rt": ["oic.r.temperature"],
              "if": ["oic.if.s"],
              "p": {"bm": 3},
              "eps": [
                {"ep": "coaps://[fe80::b1d6]:1111"}
              ]
            }
          ]
        }
      }
    ]
  },
  "schema": { "$ref": "#/definitions/sbaseline" }
}
},
"parameters": {
  "interface-all": {
    "in": "query",
    "name": "if",
    "type": "string",
    "enum": ["oic.if.ll", "oic.if.baseline"]
  }
},
"definitions": {
  "oic.oic-link": {
    "type": "object",
    "properties": {
      "anchor": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/anchor"
      },
      "di": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/di"
      }
    }
  }
}

```

```
    "eps": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/eps"
    },
    "href": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/href"
    },
    "if": {
      "description": "The OCF Interfaces supported by the Linked Resource",
      "items": {
        "enum": [
          "oic.if.baseline",
          "oic.if.ll",
          "oic.if.b",
          "oic.if.rw",
          "oic.if.r",
          "oic.if.a",
          "oic.if.s"
        ],
        "type": "string",
        "maxLength": 64
      },
      "minItems": 1,
      "maxItems": 1,
      "uniqueItems": true,
      "type": "array"
    },
    "ins": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/ins"
    },
    "p": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/p"
    },
    "rel": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/rel_array"
    },
    "rt": {
      "description": "Resource Type of the Linked Resource",
      "items": {
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "type": "array"
    },
    "title": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/title"
    },
    "type": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/type"
    }
  },
  "required": [
    "href",
    "rt",
    "if",
```

```

    "rel"
  ]
},
"slinklist": {
  "type" : "array",
  "readOnly": true,
  "items": {
    "$ref": "#/definitions/oic.oic-link"
  }
},
"sbaseline" : {
  "properties": {
    "links" : {
      "description": "A set of simple or individual Links.",
      "items": {
        "$ref": "#/definitions/oic.oic-link"
      },
      "type": "array"
    },
    "n": {
      "$ref" :
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-schema.json#/definitions/n"
    },
    "id": {
      "$ref" :
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-schema.json#/definitions/id"
    },
    "rt": {
      "description": "The Resource Type.",
      "items": {
        "enum": ["oic.r.rule.inputcollection"],
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "rts": {
      "description": "The Resource Types that can be in the Collection.",
      "items": {
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "if": {
      "description": "The OCF Interfaces supported by this Resource",
      "items": {
        "enum": [
          "oic.if.ll",
          "oic.if.baseline"
        ],
        "type": "string",
        "maxLength": 64
      },
      "minItems": 2,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    }
  }
},
"additionalProperties": true,
"type" : "object",

```

```

    "required": [
      "rt",
      "if",
      "links",
      "rts"
    ]
  }
}
}

```

A.2.5 Property definition

<Table Reference Here> defines the Properties that are part of the "oic.r.rule.inputcollection" Resource Type.

Table 3 – The Property definitions of the Resource with type "rt" = "oic.r.rule.inputcollection".

Property name	Value type	Mandatory	Access mode	Description
anchor	multiple types: see schema	No	Read Write	
di	multiple types: see schema	No	Read Write	
eps	multiple types: see schema	No	Read Write	
href	multiple types: see schema	Yes	Read Write	
if	array: see schema	Yes	Read Write	The OCF Interfaces supported by the Linked Resource
ins	multiple types: see schema	No	Read Write	
p	multiple types: see schema	No	Read Write	
rel	multiple types: see schema	Yes	Read Write	
rt	array: see schema	Yes	Read Write	Resource Type of the Linked Resource
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	
links	array: see schema	Yes	Read Write	A set of simple or individual Links.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Only	The Resource Type.
rts	array: see schema	Yes	Read Only	The Resource Types that can be in the Collection.

if	array: see schema	Yes	Read Only	The OCF Interfaces supported by this Resource
----	-------------------	-----	-----------	---

A.2.6 CRUDN behaviour

<Table Reference Here> defines the CRUDN operations that are supported on the "oic.r.rule.inputcollection" Resource Type.

Table 4 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule.inputcollection".

Create	Read	Update	Delete	Notify
	get			observe

A.3 OCF Rule Expression

A.3.1 Introduction

Expression for the Rule that defines the Rule logic in terms of the defined Rule Inputs, and which evaluates to a boolean value, for which "true" means that the Rule has been triggered.

A.3.2 Example URI

/RuleExpressionResURI

A.3.3 Resource type

The Resource Type is defined as: "oic.r.rule.expression".

A.3.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "OCF Rule Expression",
    "version": "20200114",
    "license": {
      "name": "OCF Data Model License",
      "url":
        "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4b
        a/LICENSE.md",
      "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/RuleExpressionResURI": {
      "get": {
        "description": "Expression for the Rule that defines the Rule logic in terms of the
        defined Rule Inputs, and which evaluates to a boolean value, for which \"true\" means that the
        Rule has been triggered.",
        "parameters": [
          {"$ref": "#/parameters/interface-all"}
        ],
        "responses": {
          "200": {
            "description": "Retrieves the Rule expression.",
            "x-example": {
              "rt": ["oic.r.rule.expression"],
              "if": ["oic.if.rw", "oic.if.baseline"],
            }
          }
        }
      }
    }
  }
}
```

```

        "rule": "(mytemperature:temperature >= \"25\")",
        "ruleresult": false,
        "ruleenable": true,
        "actionenable": true
    },
    "schema": { "$ref": "#/definitions/ruleexpression" }
}
},
"post": {
    "description": "",
    "parameters": [
        { "$ref": "#/parameters/interface-rw",
        {
            "name": "body",
            "in": "body",
            "required": true,
            "schema": { "$ref": "#/definitions/ruleexpression-update" },
            "x-example":
            {
                "ruleenable": true,
                "actionenable": false,
                "ruleresult": false
            }
        }
    ],
    "responses": {
        "200": {
            "description": "",
            "x-example": {
                "rule": "(mytemperature:temperature >= 25)",
                "ruleresult": false,
                "ruleenable": true,
                "actionenable": false
            },
            "schema": { "$ref": "#/definitions/ruleexpression" }
        }
    }
}
},
"parameters": {
    "interface-rw": {
        "in": "query",
        "name": "if",
        "type": "string",
        "enum": ["oic.if.rw"]
    },
    "interface-all": {
        "in": "query",
        "name": "if",
        "type": "string",
        "enum": ["oic.if.rw", "oic.if.baseline"]
    }
},
"definitions": {
    "ruleexpression": {
        "properties": {
            "rt": {
                "description": "The Resource Type.",
                "items": {
                    "enum": ["oic.r.rule.expression"],
                    "maxLength": 64,
                    "type": "string"
                },
                "minItems": 1,
                "uniqueItems": true,
                "readOnly": true,
                "type": "array"
            }
        }
    }
},

```

```

    "rule": {
      "description": "The logical expression to be evaluated, see BNF",
      "type": "string"
    },
    "ruleresult": {
      "type": "boolean"
    },
    "ruleenable": {
      "type": "boolean"
    },
    "actionenable": {
      "type": "boolean"
    },
    "n": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/n"
    },
    "id": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/id"
    },
    "if": {
      "description": "The OCF Interface set supported by this Resource.",
      "items": {
        "enum": [
          "oic.if.rw",
          "oic.if.baseline"
        ],
        "type": "string"
      },
      "minItems": 2,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
  },
  "type": "object",
  "required": ["rule", "ruleresult", "actionenable", "ruleenable"]
},
"ruleexpression-update" : {
  "properties": {
    "rule": {
      "description": "The logical expression to be evaluated, see BNF",
      "type": "string"
    },
    "ruleenable": {
      "type": "boolean"
    },
    "actionenable": {
      "type": "boolean"
    },
    "ruleresult": {
      "type": "boolean"
    }
  },
  "type": "object"
}
}
}
}

```

A.3.5 Property definition

<Table Reference Here> defines the Properties that are part of the "oic.r.rule.expression" Resource Type.

Table 5 – The Property definitions of the Resource with type "rt" = "oic.r.rule.expression".

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	The Resource Type.
rule	string	Yes	Read Write	The logical expression to be evaluated, see BNF
ruleresult	boolean	Yes	Read Write	
ruleenable	boolean	Yes	Read Write	
actionenable	boolean	Yes	Read Write	
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
if	array: see schema	No	Read Only	The OCF Interface set supported by this Resource.
rule	string		Read Write	The logical expression to be evaluated, see BNF
ruleenable	boolean		Read Write	
actionenable	boolean		Read Write	
ruleresult	boolean		Read Write	

A.3.6 CRUDN behaviour

<Table Reference Here> defines the CRUDN operations that are supported on the "oic.r.rule.expression" Resource Type.

Table 6 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule.expression".

Create	Read	Update	Delete	Notify
	get	post		observe

A.4 OCF Rule Action Collection

A.4.1 Introduction

A Collection of Links to one or more Rule Actions, which are processed when the Rule Expression evaluates to "true".

A.4.2 Example URI

/RuleActionCollectionResURI

A.4.3 Resource type

The Resource Type is defined as: "oic.r.rule.actioncollection".

A.4.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
```

```

    "title": "OCF Rule Action Collection",
    "version": "20200122",
    "license": {
      "name": "OCF Data Model License",
      "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4b
a/LICENSE.md",
      "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/RuleActionCollectionResURI?if=oic.if.ll": {
      "get": {
        "description": "A Collection of Links to one or more Rule Actions, which are processed
when the Rule Expression evaluates to \"true\".",
        "parameters": [
          { "$ref": "#/parameters/interface-all" }
        ],
        "responses": {
          "200": {
            "description": "Retrieves the rule action Links.",
            "x-example":
            [
              {
                "href": "/myruleaction",
                "rt": ["oic.r.rule.action"],
                "if": ["oic.if.rw", "oic.if.baseline"],
                "p": {"bm": 3},
                "eps": [
                  {"ep": "coaps://[fe80::bld6]:1111"}
                ]
              }
            ]
          }
        ],
        "schema": { "$ref": "#/definitions/slinklist" }
      }
    }
  },
  "/RuleActionCollectionResURI?if=oic.if.baseline": {
    "get": {
      "description": "A Collection of Links to one or more Rule Actions, which are processed
when the Rule Expression evaluates to \"true\".",
      "parameters": [
        { "$ref": "#/parameters/interface-all" }
      ],
      "responses": {
        "200": {
          "description": "Retrieves the rule action Links.",
          "x-example":
          {
            "rt": ["oic.r.rule.actioncollection"],
            "if":
["oic.if.ll", "oic.if.baseline", "oic.if.create", "oic.if.linkadd", "oic.if.linkremove"],
            "rts": ["oic.r.rule.action"],
            "n": "My collection of Rule Actions",
            "links": [
              {
                "href": "/myruleaction",
                "rt": ["oic.r.rule.action"],
                "if": ["oic.if.rw", "oic.if.baseline"],
                "p": {"bm": 3},
                "eps": [
                  {"ep": "coaps://[fe80::bld6]:1111"}
                ]
              }
            ]
          }
        }
      }
    }
  }
}
]

```



```
    "items": {
      "maxLength": 64,
      "type": "string",
      "enum": ["oic.r.rule.action"]
    },
    "minItems": 1,
    "uniqueItems": true,
    "type": "array"
  },
  "title": {
    "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/title"
  },
  "type": {
    "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/type"
  }
},
"required": [
  "href",
  "rt",
  "if"
]
},
"slinklist": {
  "type": "array",
  "readOnly": true,
  "items": {
    "$ref": "#/definitions/oic.oic-link"
  }
},
"sbaseline": {
  "properties": {
    "links": {
      "description": "A set of simple or individual Links.",
      "items": {
        "$ref": "#/definitions/oic.oic-link"
      },
      "type": "array"
    },
    "n": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/n"
    },
    "id": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/id"
    },
    "rt": {
      "description": "The Resource Type.",
      "items": {
        "enum": ["oic.r.rule.actioncollection"],
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "rts": {
      "description": "The Resource Types contained within the Collection.",
      "items": {
        "enum": ["oic.r.rule.action"],
        "maxLength": 64,
        "type": "string"
      }
    }
  }
}
```


rel	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Write	Resource Type of the Linked Resource
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	
links	array: see schema	Yes	Read Write	A set of simple or individual Links.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Only	The Resource Type.
rts	array: see schema	Yes	Read Only	The Resource Types contained within the Collection.
if	array: see schema	Yes	Read Only	The OCF Interfaces supported by this Resource

A.4.6 CRUDN behaviour

<Table Reference Here> defines the CRUDN operations that are supported on the "oic.r.rule.actioncollection" Resource Type.

Table 8 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule.actioncollection".

Create	Read	Update	Delete	Notify
	get			observe

A.5 OCF Rule Action

A.5.1 Introduction

Rule Action contains a link to Scene Collection and a value to be set for the "lastScene" Property within that Collection.

A.5.2 Example URI

/RuleActionResURI

A.5.3 Resource type

The Resource Type is defined as: "oic.r.rule.action".

A.5.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "OCF Rule Action",
    "version": "20190910",
    "license": {
      "name": "OCF Data Model License",
```

```

    "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4b
a/LICENSE.md",
    "x-copyright": "copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
  },
  "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
},
"schemes": ["http"],
"consumes": ["application/json"],
"produces": ["application/json"],
"paths": {
  "/RuleActionResURI": {
    "get": {
      "description": "Rule Action contains a link to Scene Collection and a value to be set
for the \"lastScene\" Property within that Collection.",
      "parameters": [
        { "$ref": "#/parameters/interface-all" }
      ],
      "responses": {
        "200": {
          "description": "Retrieves the Rule action.",
          "x-example":
            {
              "rt": ["oic.r.rule.action"],
              "if": ["oic.if.rw", "oic.if.baseline"],
              "link": { "href":
"/myscene", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.a", "oic.if.ll", "oic.if.baseline"] },
              "scenevalue": "desiredlastscenevalue"
            },
          "schema": { "$ref": "#/definitions/ruleaction" }
        }
      }
    },
    "post": {
      "description": "",
      "parameters": [
        { "$ref": "#/parameters/interface-rw" },
        {
          "name": "body",
          "in": "body",
          "required": true,
          "schema": { "$ref": "#/definitions/ruleaction-update" },
          "x-example":
            {
              "scenevalue": "somedifferentlastscenevalue"
            }
        }
      ],
      "responses": {
        "200": {
          "description": "",
          "x-example": {
            "link": { "href":
"/myscene", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.a", "oic.if.ll", "oic.if.baseline"] },
            "scenevalue": "somedifferentlastscenevalue"
          },
          "schema": { "$ref": "#/definitions/ruleaction" }
        }
      }
    }
  }
},
"parameters": {
  "interface-rw": {
    "in": "query",
    "name": "if",
    "type": "string",
    "enum": ["oic.if.rw"]
  },
  "interface-all": {

```

```
    "in": "query",
    "name": "if",
    "type": "string",
    "enum": ["oic.if.rw", "oic.if.baseline"]
  }
},
"definitions": {
  "oic.oic-link": {
    "type": "object",
    "properties": {
      "anchor": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/anchor"
      },
      "di": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/di"
      },
      "eps": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/eps"
      },
      "href": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/href"
      },
      "if": {
        "description": "The OCF Interfaces supported by the Linked Resource",
        "items": {
          "enum": [
            "oic.if.baseline",
            "oic.if.ll",
            "oic.if.a"
          ],
          "type": "string",
          "maxLength": 64
        },
        "minItems": 1,
        "uniqueItems": true,
        "type": "array"
      },
      "ins": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/ins"
      },
      "p": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/p"
      },
      "rel": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/rel_array"
      },
      "rt": {
        "description": "Resource Type of the Linked Resource",
        "items": {
          "enum": ["oic.wk.scenecollection"],
          "maxLength": 64,
          "type": "string"
        },
        "minItems": 1,
        "uniqueItems": true,
        "type": "array"
      }
    }
  }
}
```

```

    },
    "title": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/title"
    },
    "type": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
schema.json#/definitions/type"
    }
  },
  "required": [
    "href",
    "rt",
    "if"
  ]
},
"ruleaction" : {
  "properties": {
    "rt" : {
      "description": "The Resource Type.",
      "items": {
        "enum": ["oic.r.rule.action"],
        "maxLength": 64,
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "link": {
      "$ref": "#/definitions/oic.oic-link"
    },
    "scenevalue": {
      "type": "string"
    },
    "n": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/n"
    },
    "id": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/id"
    },
    "if" : {
      "description": "The OCF Interface set supported by this Resource.",
      "items": {
        "enum": [
          "oic.if.rw",
          "oic.if.baseline"
        ],
        "type": "string"
      },
      "minItems": 2,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    }
  },
  "type": "object",
  "required": ["link", "scenevalue"]
},
"ruleaction-update" : {
  "properties": {
    "scenevalue": {
      "type": "string"
    }
  }
}

```

```

    }
  },
  "type": "object",
  "required": ["scenevalue"]
}
}
}

```

A.5.5 Property definition

<Table Reference Here> defines the Properties that are part of the "oic.r.rule.action" Resource Type.

Table 9 – The Property definitions of the Resource with type "rt" = "oic.r.rule.action".

Property name	Value type	Mandatory	Access mode	Description
anchor	multiple types: see schema	No	Read Write	
di	multiple types: see schema	No	Read Write	
eps	multiple types: see schema	No	Read Write	
href	multiple types: see schema	Yes	Read Write	
if	array: see schema	Yes	Read Write	The OCF Interfaces supported by the Linked Resource
ins	multiple types: see schema	No	Read Write	
p	multiple types: see schema	No	Read Write	
rel	multiple types: see schema	No	Read Write	
rt	array: see schema	Yes	Read Write	Resource Type of the Linked Resource
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	
rt	array: see schema	No	Read Only	The Resource Type.
link	multiple types: see schema	Yes	Read Write	
scenevalue	string	Yes	Read Write	
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
if	array: see schema	No	Read Only	The OCF Interface set supported by this Resource.
scenevalue	string	Yes	Read Write	

A.5.6 CRUDN behaviour

<Table Reference Here> defines the CRUDN operations that are supported on the "oic.r.rule.action" Resource Type.

Table 10 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule.action".

Create	Read	Update	Delete	Notify
	get	post		observe

DRAFT