

# OCF Core - Optional Specification

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273

## 274 **1 Scope**

275 The OCF Core specifications are divided into a series of documents:

- 276 – Core specification: The Core specification document specifies the Framework, i.e., the OCF  
277 core architecture, interfaces, protocols and services to enable OCF profiles implementation for  
278 Internet of Things (IoT) usages and ecosystems. This document is mandatory for all Devices to  
279 implement.
- 280 – Core optional specification (this document): The Core optional specification document specifies  
281 the Framework, i.e., the OCF core architecture, interfaces, protocols and services to enable  
282 OCF profiles implementation for Internet of Things (IoT) usages and ecosystems that can  
283 optionally be implemented by any Device.
- 284 – Core extension specification(s): The Core extension specification(s) document(s) specifies  
285 optional OCF Core functionality that are significant in scope (e.g., Wi-Fi easy setup, Cloud).

286

## 287 **2 Normative references**

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

291 ISO/IEC DIS 20924, *Information Technology – Internet of Things – Vocabulary*, June 2018  
292 <https://www.iso.org/standard/69470.html>

293 ISO/IEC 30118-1:2018, Information technology – Open Connectivity Foundation (OCF)  
294 Specification – Part 1: Core specification  
295 <https://www.iso.org/standard/53238.html>  
296 Latest version available at: [https://openconnectivity.org/specs/OCF\\_Core\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Core_Specification.pdf)

297 ISO/IEC 30118-2:2018, Information technology – Open Connectivity Foundation (OCF)  
298 Specification – Part 2: Security specification  
299 <https://www.iso.org/standard/74239.html>  
300 Latest version available at: [https://openconnectivity.org/specs/OCF\\_Security\\_Specification.pdf](https://openconnectivity.org/specs/OCF_Security_Specification.pdf)

301 IETF RFC 3339, *Date and Time on the Internet: Timestamps*, July 2002  
302 <https://www.rfc-editor.org/info/rfc3339>

303 IETF RFC 5234, *Augmented BNF for Syntax Specifications: ABNF*, January 2008  
304 <https://www.rfc-editor.org/info/rfc5234>

305 IETF RFC 5424, *The Syslog Protocol*, March 2009  
306 <https://tools.ietf.org/html/rfc5424>

307 IETF RFC 5646, *Tags for Identifying Languages*, September 2009  
308 <https://www.rfc-editor.org/info/rfc5646>

309 IANA ifType-MIB Definitions  
310 <https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib>

311 IANA Media Types Assignment, March 2017  
312 <http://www.iana.org/assignments/media-types/media-types.xhtml>

313 OpenAPI specification, *fka Swagger RESTful API Documentation Specification*, Version 2.0  
314 <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/2.0.md>

## 315 **3 Terms, definitions, and abbreviated terms**

### 316 **3.1 Terms and definitions**

317 For the purposes of this document, the terms and definitions given in ISO/IEC 30118-1:2018.  
318 ISO/IEC 30118-2:2018, and the following apply.

319 ISO and IEC maintain terminological databases for use in standardization at the following  
320 addresses:

321 – ISO Online browsing platform: available at <https://www.iso.org/obp>.

322 – IEC Electropedia: available at <http://www.electropedia.org/>.

#### 323 **3.1.1**

##### 324 **Alert**

325 information provided by the Device by means of a specialised Resource Type that provides details  
326 with regard to potential problems, issues, or Device status of interest on which action can be taken

#### 327 **3.1.2**

##### 328 **Rule**

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

#### 330 **3.1.3**

##### 331 **Rule Action**

332 Resource that is actuated with a defined value when the Rule Result (3.1.6) holds "true"

#### 333 **3.1.4**

##### 334 **Rule Expression**

335 definition of the Rule (3.1.1) logic in terms of the defined Rule Inputs (3.1.5), and which evaluates  
336 to a boolean Rule Result (3.1.6), for which "true" means that the Rule (3.1.1) has been triggered

#### 337 **3.1.5**

##### 338 **Rule Input**

339 Resources that contain the Properties whose values are evaluated as part of the Rule Expression  
340 (3.1.4)

#### 341 **3.1.6**

##### 342 **Rule Result**

343 Property which reflects the result of the evaluation of the Rule Expression (3.1.4)

#### 344 **3.1.7**

##### 345 **Scene**

346 a static entity that stores a set of defined Property values for a Collection of Resources

347 Note 1 to entry: A Scene (3.1.3) is a prescribed setting of a set of Resources with each having a predetermined value  
348 for the Property that has to change.

#### 349 **3.1.8**

##### 350 **Scene Collection**

351 a Collection that contains an enumeration of possible Scene Values (3.1.10) and the current Scene  
352 Value (3.1.10)

353 Note 1 to entry: The member values of the Scene Collection (3.1.8) are Scene Members (3.1.9).

#### 354 **3.1.9**

##### 355 **Scene Member**

356 a Resource that contains mappings of Scene Values (3.1.10) to values of a Property in the  
357 Resource

358 **3.1.10**  
359 **Scene Value**  
360 a Scene (3.1.3) enumerator representing the state in which a Resource can be

## 361 **4 Document conventions and organization**

### 362 **4.1 Conventions**

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

### 367 **4.2 Notation**

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

370 Required (or shall or mandatory)(M).

371 – These basic features shall be implemented to comply with Core Architecture. The phrases "shall  
372 not", and "PROHIBITED" indicate behaviour that is prohibited, i.e. that if performed means the  
373 implementation is not in compliance.

374 Recommended (or should)(S).

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

381 Allowed (may or allowed)(O).

382 – These features are neither required nor recommended by Core Architecture, but if the feature  
383 is implemented, it shall meet the specified requirements to be in compliance with these  
384 guidelines.

385 DEPRECATED.

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

392 Conditionally allowed (CA).

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

395 Conditionally required (CR).

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

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

400 Words that are emphasized are printed in italic.

401 In all of the Property and Resource definition tables that are included throughout this document the  
 402 "Mandatory" column indicates that the item detailed is mandatory to implement; the mandating of  
 403 inclusion of the item in a Resource Payload associated with a CRUDN action is dependent on the  
 404 applicable schema for that action.

405 **4.3 Data types**

406 Resources are defined using data types derived from JSON values as defined in clause 4.3 in  
 407 ISO/IEC 30118-1:2018.

408 **5 Functional interactions**

409 **5.1 Introduction**

410 The functional interactions between a Client and a Server are described in 5.2 through 5.7  
 411 respectively. The functional interactions use CRUDN messages (clause 8 in ISO/IEC 30118-1:2018)  
 412 and include Discovery, Notification, and Device management. These functions require support of  
 413 core defined Resources as defined in Table 1.

414 **Table 1 – List of optional Core Resources**

Pre-defined URI	Resource Name	Resource Type	Related Functional Interaction	Mandatory
(none)	Configuration	"oic.wk.con"	Device management	No
(none)	Configuration	"oic.wk.con.p"	Device management	No
"/oic/mnt"	Maintenance	"oic.wk.mnt"	Device management	No
(none)	Network monitoring	"oic.wk.nmon"	Device management	No
(none)	Software update	"oic.wk.softwareupdate"	Device management	No
(none)	Icon	"oic.r.icon"	Icons	No
(none)	Scene List	"oic.wk.scenelist"	Scenes	No
(none)	Scene Collection	"oic.wk.scenecollection"	Scenes	No
(none)	Scene Member	"oic.wk.scenemember"	Scenes	No
(none)	Alerts	"oic.r.alert"	Alerts	No
(none)	Alerts Collection	"oic.r.alertcollection"	Alerts	No

415

416 **5.2 Onboarding, provisioning and configuration**

417 Onboarding and provisioning are fully defined by the ISO/IEC 30118-2:2018.

418 Should a Device support Client update of configurable information it shall do so via exposing an  
 419 "oic.wk.con" Core Resource (Table 2) in "/oic/res".

420

**Table 2 – Configuration Resource**

Example URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/example/oic/con"	Device configuration	"oic.wk.con"	"oic.if.rw"	The Resource Type through which configurable information specific to the Device is exposed. The Resource Properties exposed in "oic.wk.con" are listed in Table 3.	Configuration

"/example/oic/con"	Platform configuration	"oic.wk.con.p"	"oic.if.rw"	The optional Resource Type through which configurable information specific to the Platform is exposed. The Properties exposed in "oic.wk.con.p" are listed in Table 4.	Configuration
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421

422 Table 3 defines the "oic.wk.con" Resource Type.

423

**Table 3 – "oic.wk.con" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
(Device) Name	"n" (Common Property of "/example/oic/con")	"string"	N/A	N/A	R, W	Yes	Human friendly name configurable by the end user (e.g. Bob's thermostat). The "n" Common Property of the oic.wk.con Core Resource and the "n" Common Property of the "/oic/d" Core Resource shall have the same Value. When the "n" Common Property Value of the oic.wk.con Core Resource is modified, it shall be reflected to the "n" Common Property of "/oic/d" Core Resource.
Location	"loc"	array of float (has two elements, the first is latitude, the second is longitude)	N/A	Deg rees	R, W	No	Provides location information where available.
Location Name	"locn"	"string"	N/A	N/A	R, W	no	Human friendly name for location For example, "Living Room".
Currency	"c"	"string"	N/A	N/A	R,W	no	Indicates the currency that is used for any monetary transactions
Region	"r"	"string"	N/A	N/A	R,W	no	Free form text Indicating the current region in which the Device is located geographically.
Localized Names	"ln"	"array"	N/A	N/A	R,W	no	Human-friendly name of the Device, in one or more languages. This Property is an array of objects where each object has a "language" field (containing an IETF RFC 5646 language tag) and a "value" field containing the Device name in the indicated language. If this Property and the Device Name (n) Property are both supported, the Device Name (n) value shall be included in this array.
Default Language	"dl"	"language-tag"	N/A	N/A	R,W	no	The default language supported by the Device, specified as an IETF RFC 5646 language tag. By default, clients can treat any string Property as being in this

							language unless the Property specifies otherwise.
--	--	--	--	--	--	--	---

424

425 Table 4 defines the "oic.wk.con.p" Resource Type.

426

**Table 4 – "oic.wk.con.p" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Platform Names	"mnpn"	"array"	N/A	N/A	R,W	No	<p>Friendly name of the Platform. This Property is an array of objects where each object has a "language" field (containing an IETF RFC 5646 language tag) and a "value" field containing the platform friendly name in the indicated language.</p> <p>For example, [{"language": "en", "value": "Dave's Laptop"}]</p>

427

### 428 5.3 Device management

#### 429 5.3.1 Overview

430 Device management includes the following functions:

- 431 – Diagnostics and maintenance
- 432 – Network monitoring

#### 433 5.3.2 Diagnostics and maintenance Resource Type

434 The Diagnostics and Maintenance Resource Type is intended to enable the resolution of issues  
 435 encountered with the Devices while operating in the field. If diagnostics and maintenance is  
 436 supported by a Device, the Core Resource "/oic/mnt" shall be supported as described in Table 5.

437 **Table 5 – Optional diagnostics and maintenance Device management Core Resources**

Pre-defined URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/oic/mnt"	Maintenance	"oic.wk.mnt"	"oic.if.rw"	<p>The Resource through which the Device is maintained and can be used for diagnostic purposes.</p> <p>The Properties exposed by "/oic/mnt" are listed in Table 6.</p>	Device management

438 Table 6 defines the "oic.wk.mnt" Resource Type. At least one of the Factory\_Reset, Reboot, or last  
 439 error Properties shall be implemented.

Table 6 – "oic.wk.mnt" Resource Type definition

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
<b>Factory_Reset</b>	"fr"	"boolean"	N/A	N/A	R, W	No	When writing to this Property: false – No action (Default*) true – Start Factory Reset When reading this Property, a value of true indicates a pending factory reset. Once the factory reset has been completed, the Device shall set the value back to false. This Property is functionally equivalent to a transition to a state of Hard Reset as defined in ISO/IEC 30118-2:2018, clause 8.1
<b>Reboot</b>	"rb"	"boolean"	N/A	N/A	R, W	No	When writing to this Property: false – No action (Default) true – Start Reboot After Reboot, this value shall be changed back to the default value (i.e., false)
<b>Last error</b>	"err"	"integer"	HTTP error code	N/A	R	No	Last occurred error code, shall be cleared to 503 (service unavailable), when doing a Factory Reset or Reboot. All HTTP errors outside the 100, 200 or 300 range shall be stored.

441

442 NOTE Default indicates the value of this Property as soon as the Device is rebooted or factory reset.

443 **5.3.3 Core behaviours on Device maintenance state changes**444 **5.3.3.1 Overview**445 As defined in ISO/IEC 30118-2:2018 a Device has a state machine through which it transitions  
446 during its operational lifetime.447 ISO/IEC 30118-2:2018 details actions on such state transitions for the Resources defined therein.  
448 This clause defines the actions to be taken on such state transitions for the Resources and  
449 functionality defined within this document.

450 The state transitions to be considered are:

- 451 – RFNOP to Soft Reset
- 452 – RFNOP to Hard Reset
- 453 – RFNOP to RFPRO
- 454 – RFPRO to RFNOP



455 Table 7 provides a summary of the actions to be taken in each case for functions defined in the  
 456 ISO/IEC 30118-2:2018 and this document, other extensions to these documents may define further  
 457 behaviours.

458 **Table 7 – Actions on Device state change**

	Soft reset	Hard reset	RFNOP -> RFPRO	RFPRO -> RFNOP
<b>SVR</b>	As per ISO/IEC 30118-2:2018 clause 8.5	As per ISO/IEC 30118-2:2018 clause 8.1	As per ISO/IEC 30118-2:2018 clause 8.3	As per ISO/IEC 30118-2:2018 clause 8.4
<b>Mandatory Core Resources</b>	No change	Reset to defined defaults, see clause 5.3.3.3.3	No change	No change
<b>Optional Core Resources</b>	No change	Reset to defined defaults, see clause 5.3.3.3.4	No change	No change
<b>Vertical Resources</b>	No change	Reset to defined defaults; see clause 5.3.3.3	No change	No change
<b>Created Resources</b>	No change	Deleted	No change	No change
<b>Observe Transactions</b>	No change	Canceled; see clause 5.3.3.2	No change	Re-evaluate ACL; see clause 5.3.3.2
<b>OCF Cloud</b>	No change	See clause 5.3.3.4	No change	No change

459

460 **5.3.3.2 Handling of Observe transactions**

461 On a transition to hard reset all active Observe transactions shall be cancelled by the Server by  
 462 sending a "Service Unavailable" response on each active Observe transaction.

463 On a state transition that allows for modification of the access controls that exist against a Resource  
 464 (such as from RFPRO to RFNOP) it is possible that the access controls themselves as defined  
 465 within the ISO/IEC 30118-2:2018 are changed such that the original RETRIEVE operation that  
 466 established the Observe would not have been allowed. In such instances the Server shall cancel  
 467 the Observe by sending a "Service Unavailable" response on the Observe transaction.

468 **5.3.3.3 Reset of Resource Properties to defined defaults**

469 **5.3.3.3.1 Overview**

470 On a hard or factory reset Resource Properties are reset to default values. These are commonly  
 471 referred to as *manufacturer defaults* however it is not possible in all instances to revert to such  
 472 values as they may not be known or be practicable.

473 The default values to be applied for the mandatory and optional Core Resources, plus any Vertical  
 474 Resources are defined in clauses 5.3.3.3.2 through 5.3.3.3.4 respectively.

475 **5.3.3.3.2 Defaults for Vertical Resources**

476 Default values for any Vertical Resources exposed by a Device are up to the implementation.

477 **5.3.3.3.3 Defaults for mandatory Core Resources**

478 Table 8 and

479 Table 9 capture default values that shall be set for mandatory Properties of the mandatory Core  
 480 Resources where those Resources contain Properties that can be changed by a Client. This  
 481 excludes "/oic/res" as that has no mutable Properties.

482 **Table 8 – Default values for "/oic/d"**

Property	Default	Notes
"n"	""	Empty string if "/oic/con" is also exposed, otherwise not mutable.
"di"	See ISO/IEC 30118-2:2018 requirements	.
"icv"	Unchanged	Not mutable
"dmv"	Unchanged	Not mutable
"piid"	See ISO/IEC 30118-2:2018 requirements.	

483

484 **Table 9 – Default values for "/oic/p"**

Property	Default	Notes
"pi"	See ISO/IEC 30118-2:2018 requirements.	
"mnmn"	Unchanged	Not mutable

485

486 **5.3.3.3.4 Defaults for optional Core Resources**

487 This clause details the actions to be taken with respect to the optional Core Resources.

488 The icon Resource ("oic.r.icon") has no mutable Properties, so no action is to be taken.

489 The network monitoring Resource ("oic.wk.nmon") shall have all Properties reset (i.e. behaviour as  
 490 if an UPDATE with the "reset" Property set to "true" had been received). The "col" Property shall  
 491 be set to "false".

492 Any Resources that were added to an instance of a Collection or a specialisation of a Collection  
 493 (e.g. Scene List ("oic.wk.scenelist") or Scene Collection ("oic.wk.scenecollection")) by a Client shall  
 494 be deleted.

495 The Device configuration Resource ("oic.wk.con") shall be modified in accordance with Table 10  
 496 for those Properties that are implemented.

497

498 **Table 10 – Default values for Device configuration Resource**

Property	Default	Notes
"loc"	[0.0,0.0]	
"locn"	""	Empty string
"c"	""	Empty string
"r"	""	Empty string
"ln"	[{}]	One item array with an empty object.

"dl"	Defined by the manufacturer	Recommend the primary language tag for the region into which the Device is marketed (e.g. "en" for primarily English speaking countries).
------	-----------------------------	---

500 The platform configuration Resource ("oic.wk.con.p") shall be modified in accordance with Table 11

501 **Table 11 – Default values for Platform configuration Resource**

Property	Default	Notes
"mnpn"	[[{}]]	One item array with an empty object

502

### 5.3.3.4 Handling of OCF Cloud

503 On a hard reset the Device if registered to an OCF Cloud shall de-register from the OCF Cloud in  
504 accordance with the procedures in the ISO/IEC 30118-2:2018, clause 13.10.

505 Further, on a hard reset the CoAPCloudConf Resource ("oic.r.coapcloudconf") shall be modified in  
506 accordance with Table 12 for those Properties that are implemented.

507 **Table 12 – Default values for CoAPCloudConf Resource**

Property	Default	Notes
"apn"	""	Empty string, only if no manufacturer default exists, in which case it reverts to that default or is unchanged.
"cis"	"coaps+tcp://127.0.0.1"	Or other valid but non-resolving URI.
"at"	""	Empty string, only if no manufacturer default exists, in which case it reverts to that default or is unchanged.
"sid"	Temporary not repeated value or "00000000-0000-0000-0000-000000000000"	
"clec"	0	No error.

508

### 5.3.4 Network monitoring Resource Type

509 Network monitoring is used for monitoring the current network state of the Device.

511 The network monitoring Resource Type is "oic.wk.nmon" and is described in Table 13. The  
512 Resource Type may occur multiple times if more than 1 network interface is implemented. The  
513 Common Property "n" may be used to distinguish the different network interfaces, like distinguish  
514 the 2.4 and 5G Wi-Fi network interfaces.

515 **Table 13 – Optional monitoring Device management Core Resources**

Example URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/example/oic/nmon"	Network Monitoring	"oic.wk.nmon"	"oic.if.rw", "oic.if.baseline"	The Resource through which the Device is monitored. The Resource exposes Properties relevant to aspects that may be monitored. The Resource Properties exposed by Resource Type "oic.wk.nmon" are listed in Table 14	Device management

516

517 Table 14 defines "oic.wk.nmon" Resource Type.

518

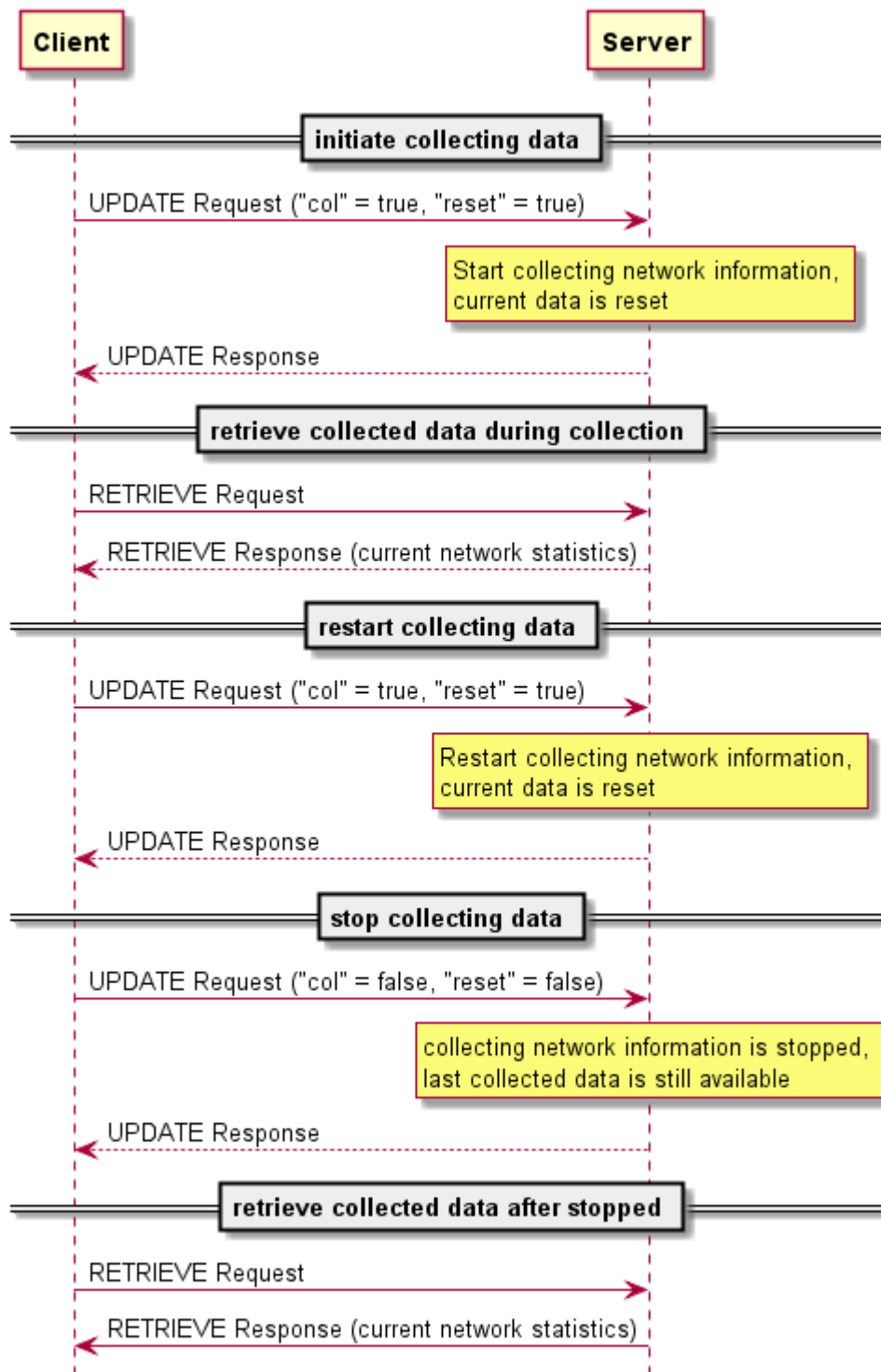
**Table 14 – "oic.wk.nmon" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Network indicator	"ianaifType"	"integer"	The integer value of the ianaifType	N/A	R	Yes	The network type this Resource is collecting information from as defined by IANA ifType-MIB Definitions.
reset	"reset"	"boolean"	True, all collected values should be reset. The server should reset the value automatically to false after the reset occurred.	N/A	RW	Yes	Reset of the collected values
Collecting status indication	"col"	"boolean"	True: collecting data. False: not collecting data	N/A	RW	Yes	Boolean to start/stop collecting data.
Transmission bytes	"tx"	"integer"	N/A	kilo bytes	R	No	Amount of transmitted kilo bytes from the collection
Reception bytes	"rx"	"integer"	N/A	kilo bytes	R	No	Amount of received kilo bytes from the collection.
Maximum message size tx	"mmstx"	"integer"	bytes	bytes	R	No	Maximum transmitted message, e.g. Max(tx) in the collection period
Maximum message size rx	"mmsrx"	"integer"	bytes	bytes	R	No	Maximum received message, e.g. Max(rx) in the collection period
Average message size -tx	"amstx"	"integer"	bytes	bytes	R	No	Average transmitted message size, e.g AVG(tx) in the collection period.
Average message size -rx	"amsrx"	"integer"	bytes	bytes	R	No	Average received message size e.g AVT( rx) in the collection period.

519

520 Examples of typical used values for ianaifType are 71 (ieee80211) for Wi-Fi and 6 (ethernetCsmacd)  
 521 for Ethernet.

522 A Device should start collecting network monitoring data when receiving an UPDATE operation  
523 with the parameter "col" = true. A Device should stop collecting network data when receiving an  
524 UPDATE operation with parameter "col" = false. The collected network data should be reset when  
525 an UPDATE operation with parameter "reset" = true is received, if the parameter "reset" is false  
526 then the values should not be reset. Figure 1 illustrates the interactions with the network monitoring  
527 Resource.

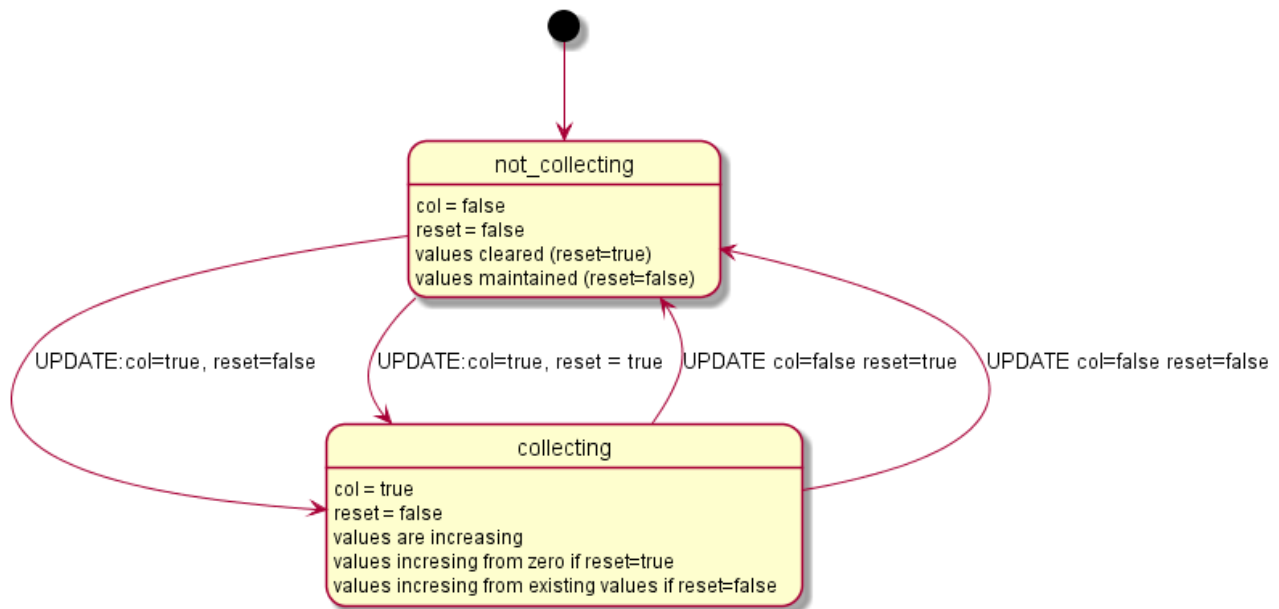


528

529

**Figure 1 – Interactions with the network monitoring Resource**

530 The state transition diagram for collecting or not collecting network information is described by  
 531 Figure 2.



532

533

**Figure 2 – State transition diagram of collecting network information**

534 **5.3.5 Software update Resource Type**

535 The software update Resource is used to control software updates of the Device.

536 In ISO/IEC 30118-2:2018 there is already a manual triggered software update mechanism available.  
 537 The triggering of the Client (manual) software update is achieved via the security Resource Type  
 538 "oic.r.pstat" by using the appropriate bits in the "tm" Property. The software update triggering  
 539 results in updates of the "cm" Property in the "oic.r.pstat" Resource Type (see ISO/IEC 30118-  
 540 2:2018 clause 13.8). The software update Resource adds additional features to the security  
 541 specified mechanism, like:

- 542 – Specify the source to obtain the software package.
- 543 – Time scheduled software update actions.
- 544 – Status information, especially more info about various error situations.

545 If the Device implements the software update Resource, it is required to implement the software  
 546 update behaviour to actually update the software of the Device as indicated by the "oic.r.pstat"  
 547 "cm" bits as defined in ISO/IEC 30118-2:2018 clause 13.8. Also the security defined software  
 548 update process shall use the data that is set on the software update Resource like the "purl"  
 549 Property.

550 The software update Resource Type is "oic.r.softwareupdate" and is described in Table 15.

551

**Table 15 – Optional software update Resources**

Example URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/example/oic/swupd"	Software Update	"oic.r.softwareupdate"	"oic.if.rw", "oic.if.baseline"	The Resource exposes Properties to control and monitor the software update mechanism. The Properties exposed by Resource Type	Device management

				"oic.r.softwareupdate" are listed in Table 16.	
--	--	--	--	--	--

552

553 Table 16 defines the Properties of the "oic.r.softwareupdate" Resource Type.

554

**Table 16 – "oic.r.softwareupdate" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
New version	"nv"	"string"	N/A	N/A	R	No	New available software version.
Package url	"purl"	"string"	URL	N/A	RW	Yes	Source of the software package, might be an HTTPS or a CoAPs URL.
Action	"swupdateaction"	"string"	enum (see Table 18)	N/A	RW	Yes	Scheduled action to do a software update.
State	"swupdatestate"	"string"	enum (see Table 17)	N/A	R	Yes	State of the software update.
Result	"swupdateresult"	"integer"	N/A	N/A	R	Yes	Result of the software update. List of error codes are as defined in Table 19.
Lastupdate	"lastupdate"	"string"	date-time	N/A	R	No	Time of the last software update according to IETF RFC 3339. Initial set on date of manufacturing.
Signage	"signed"	"string"	enum	N/A	R	No	Signage method of the software package, currently the only allowed value is "vendor".
Update time	"update time"	"string"	date-time	N/A	RW	Yes	Scheduled time, according to IETF RFC 3339, to do action which is specified in the "swupdateaction" Property.

555

556 The values of the "swupdatestate" Property are described in Table 17.

557

**Table 17 State definitions and state transitions of software update Resource**

Description	Value of Property "swupdatestate"	equivalent "cm" bit values in "pstat".	Transition allowed from state
Idle, waiting for updates	"idle"	Bit 64 = 0 Bit 128 = 0 Bit 256 = 0	"nsa", "svv", "sva", "upgrading"
New software available (after checking for new software being available on the url indicated by "purl"). This step does not download the new software	"nsa"	Bit 64 = 0 Bit 128 = 0 Bit 256 = 1	"idle", "svv", "sva", "upgrading"
Software version validation (during downloading and checking the software integrity)	"svv"	Bit 64 = 0 Bit 128 = 0 Bit 256 = 1	"idle", "nsa", "sva", "upgrading"



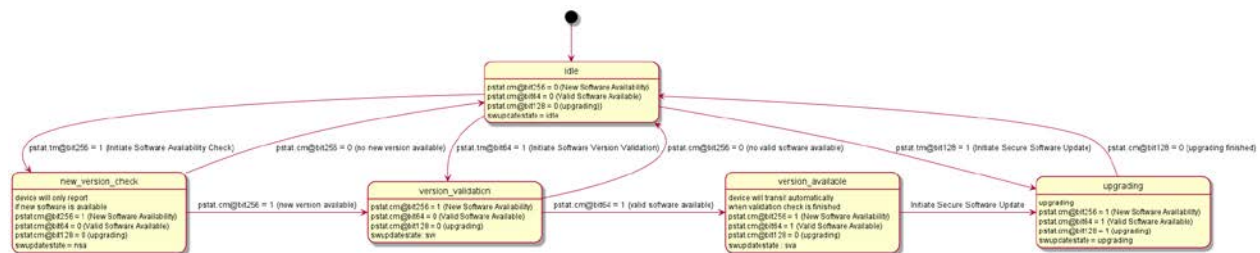
Software version available (The software is downloaded and deemed to be valid)	"sva"	Bit 64 = 1 Bit 128 = 0 Bit 256 = 1	"idle", "nsa", "svv", "upgrading"
Upgrading	"upgrading"	Bit 64 = 1 Bit 128 = 1 Bit 256 = 1	"idle", "nsa", "svv", "sva"

558 The typical state transitions are described Figure 3. The state transitions can be triggered manually  
559 or by a timed action. The manual state triggers (i.e., "tm" Property of "oic.r.pstat") are described in  
560 ISO/IEC 30118-2:2018 clause 13.8. The timed state triggers are managed using the  
561 "swupdateaction" and "updatetime" Properties of the software update Resource to trigger software  
562 update actions at some future date and time. The action names for scheduled actions are listed in  
563 Table 18. When the "updatetime" for the timed action is in the past then the update shall not take  
564 place, it is implementation dependent if the UPDATE with an "updatetime" value in the past will  
565 give an error on the UPDATE operation.

566 **Table 18 Value definitions for the Property "swupdateaction"**

Description	Value of Property "swupdateaction", for scheduled update actions.	Action taken	Equivalent "pstat" "tm" bits.
Nothing scheduled (not applicable).	"idle"	No action	
Initiate software availability check.	"isac"	Check on remote end point if a newer software version is available.	"tm" bit 256.
Initiate software version validation.	"isvv"	Downloads and verifies if the software version is valid.	"tm" bit 64.
Initiate secure software update.	"upgrade"	Upgrades the software in the Device. It uses the downloaded and validated software package. If no validated software package is available on the Device, the Device takes the necessary steps to obtain a validated software package, by downloading and verifying the software from the external source.	"tm" bit 128.

567



568

569

**Figure 3 – Typical state transitioning diagram for software update**

570 The "purl" Property indicates the URL to obtain the software package from. This URL shall be a  
571 fully qualified URL. If the value is an empty string ("") then the Device will use the built in vendor  
572 defined URL (see ISO/IEC 30118-2:2018). If a built in URL is not implemented, setting the "purl"  
573 Property value to an empty string will result in an error code value of 6 as defined in Table 19.

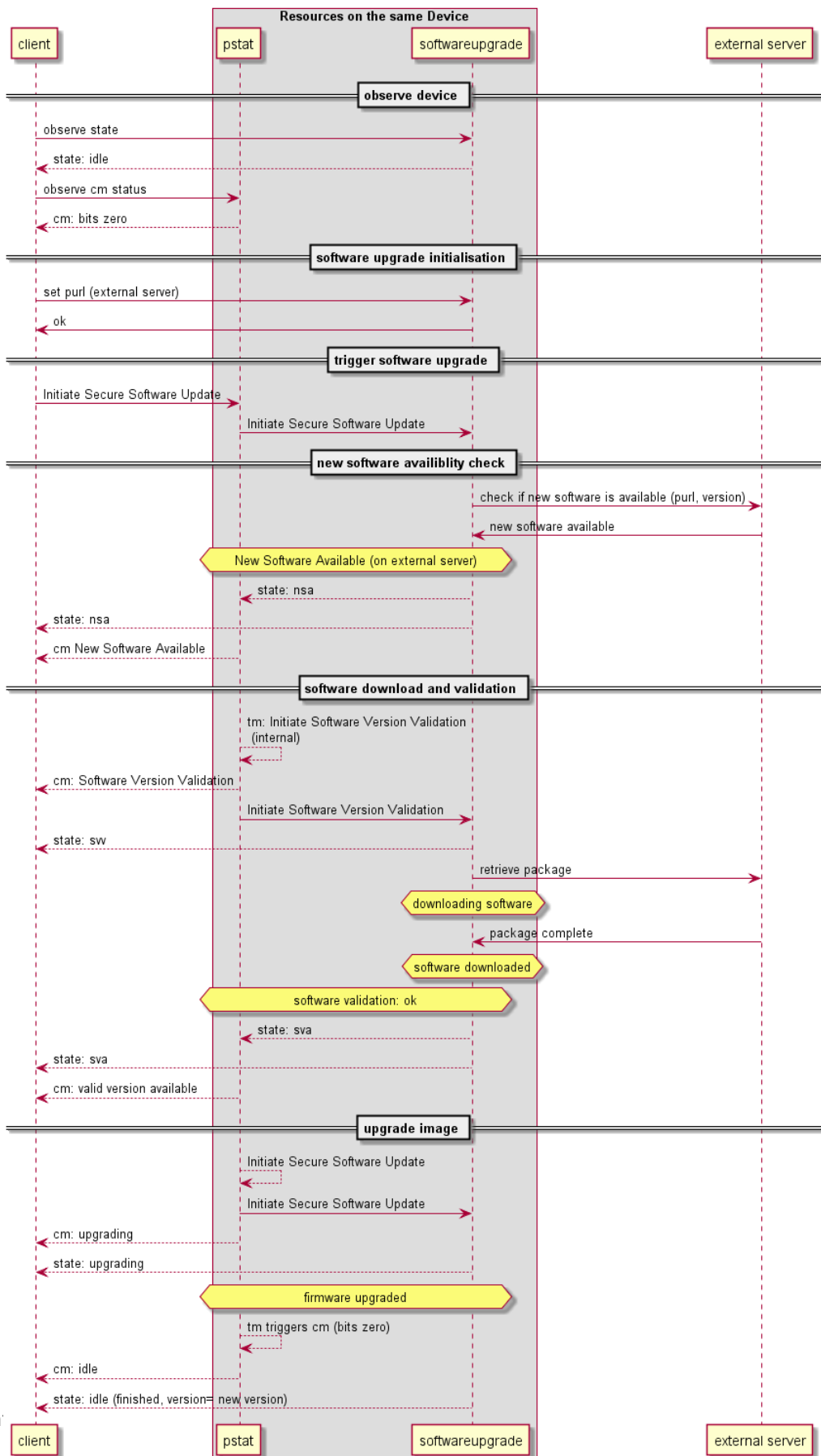
574

**Table 19 List of codes of the "swupdateresult" Property.**

Description	code
Idle.	0
Success, everything went well.	1
Not enough RAM.	2
Not enough Flash.	3
Connection lost.	4
Software validation failure.	5
Invalid URL to receive the software package.	6
Unsupported protocol for download URL.	7
Firmware update failed.	8
Software transport error codes. HTTP result codes when accessing the URL to download the software package.	400-600

575

576 Figure 4 depicts a typical update scenario. This scenario is using the observability of "pstat", so  
577 that the Client is informed on the changes of the "cm" bit value to track the progress.



579

## Figure 4 – Typical sequence for none scheduled upgrading software

### 580 5.4 Scenes

#### 581 5.4.1 Introduction

582 Scenes are a mechanism for automating certain operations.

583 A Scene is a static entity that stores a set of defined Property values for a Collection of Resources.  
584 Scenes provide a mechanism to store a setting over multiple Resources that may be hosted by  
585 multiple separate Servers. Scenes, once set up, can be used by multiple Clients to recall a setup.

586 Scenes can be grouped and reused, a group of Scenes is also a Scene.

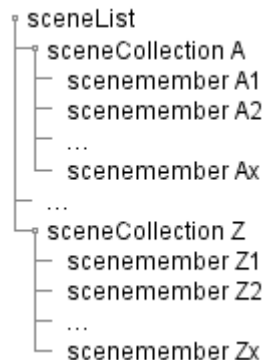
587 In short, Scenes are bundled user settings.

#### 588 5.4.2 Scenes Resource model

##### 589 5.4.2.1 Introduction

590 Scenes are described by means of Resources. The Scene Resources are hosted by a Server and  
591 the top level Resource is listed in "/oic/res". This means that a Client can determine if the Scene  
592 functionality is hosted on a Server via Resource discovery as defined in clause 11.2 in  
593 ISO/IEC 30118-1:2018. The setup of Scenes is driven by Client interactions. This includes creating  
594 new Scenes, and mappings of Server Properties that are part of a Scene.

595 The Scene functionality is created by multiple Resources and has the structure depicted in Figure 5.  
596 The sceneList and sceneCollection Resources are overloaded Collection Resources. The  
597 sceneCollection Resource contains a list of Scenes. This list contains zero or more Scenes. The  
598 sceneMember Resource contains the mapping between a Scene and what needs to happen  
599 according to that Scene on an indicated Resource.



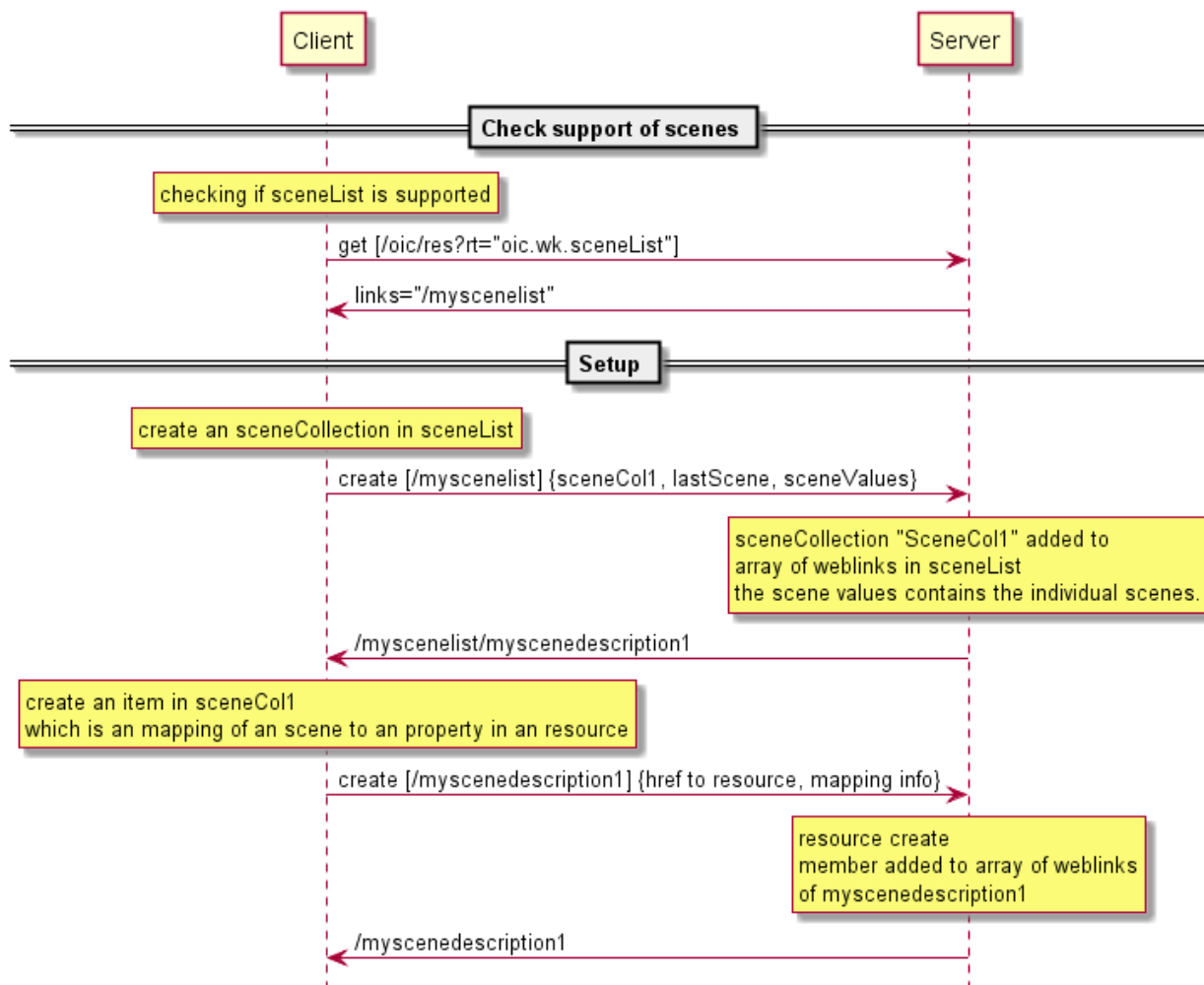
600

601 **Figure 5 – Generic Scene Resource structure**

##### 602 5.4.2.2 Scene creation

603 A Client desiring to interact with Scenes needs to first determine if the Server supports the Scene  
604 feature; the sceneMembers of a Scene that are Resources of end Device being updated by the  
605 Scene change do not have to be co-located on the Server supporting the Scene feature. This can  
606 be done by checking if "/oic/res" contains the "rt" of the sceneList Resource. This is depicted in  
607 first steps of Figure 6. The sceneCollection Resource is created by the Server using some out of  
608 bound mechanism, Client creation of Scenes is not supported at this time. This will entail defining  
609 the Scene with an applicable list of Scene Values and the mappings for each Resource being part  
610 of the Scene. The mapping for each Resource being part of the sceneCollection Resource is  
611 described by a Resource called sceneMember. The sceneMember Resource contains the link to a

612 Resource and the mapping between the Scene listed in the "sceneValues" Property and the actual  
 613 Property value of the Resource indicated by the Link.



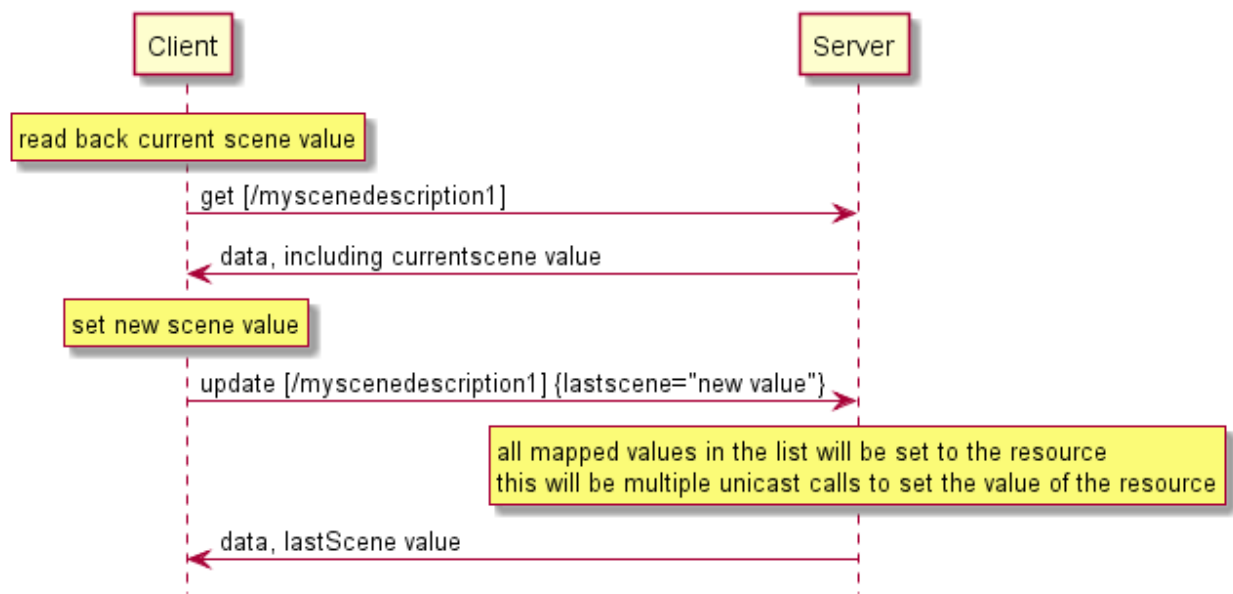
614

615 **Figure 6 – Interactions to check Scene support and setup of specific Scenes**

616 **5.4.2.3 Interacting with Scenes**

617 All capable Clients can interact with Scenes. The allowed Scene Values and the last applied Scene  
 618 Value can be retrieved from the Server hosting the Scene. The Scene Value shall be changed by  
 619 issuing an UPDATE operation with a payload that sets the "lastScene" Property to one of the listed  
 620 allowed Scene Values. These steps are depicted in Figure 7. Note that the "lastScene" Property  
 621 value does not imply that the current state of all Resources that are part of the Scene will be at the  
 622 mapped value. This is due to that the setting the Scene Values are not modelled as actual states  
 623 of the system. This means that another Client can change just one Resource being part of the  
 624 Scene without having feedback that the state of the Scene is changed.

625

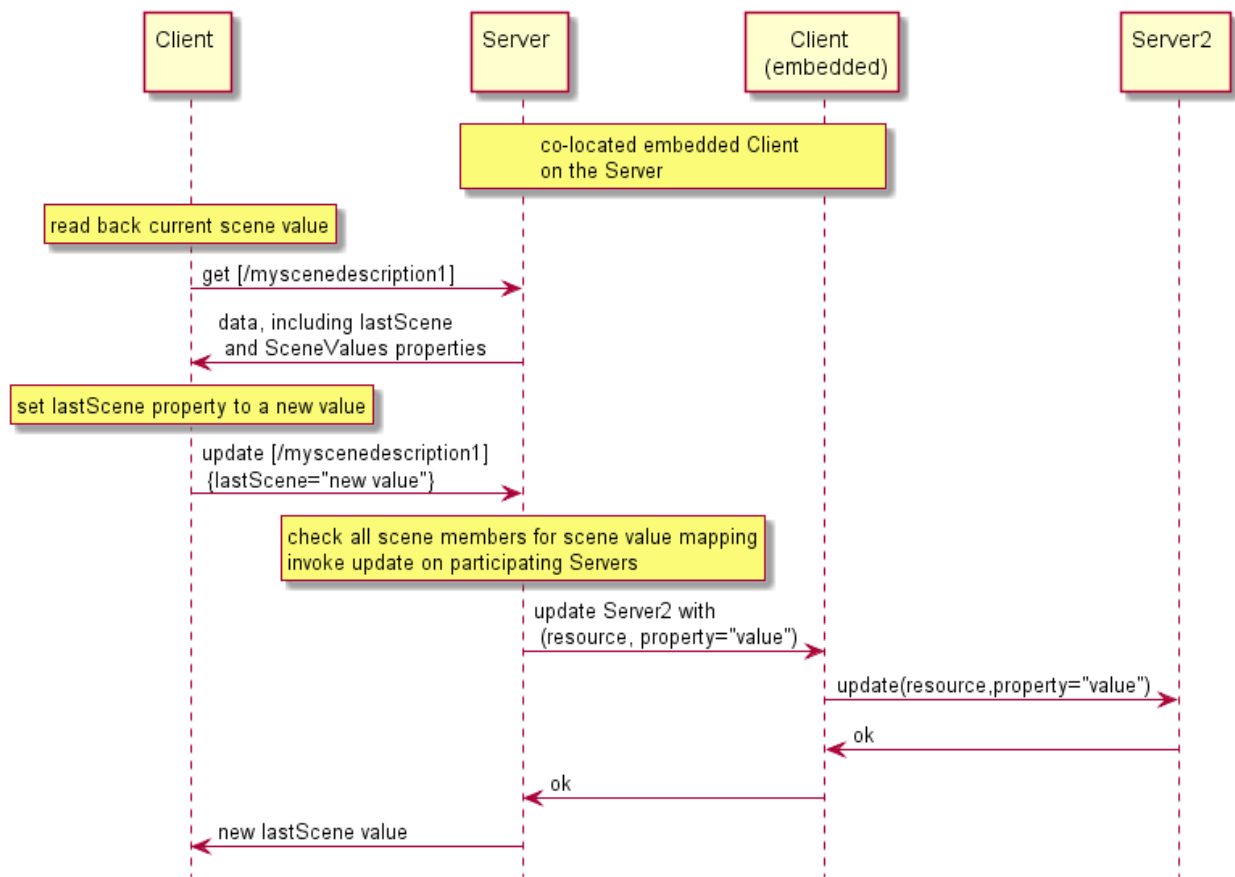


626

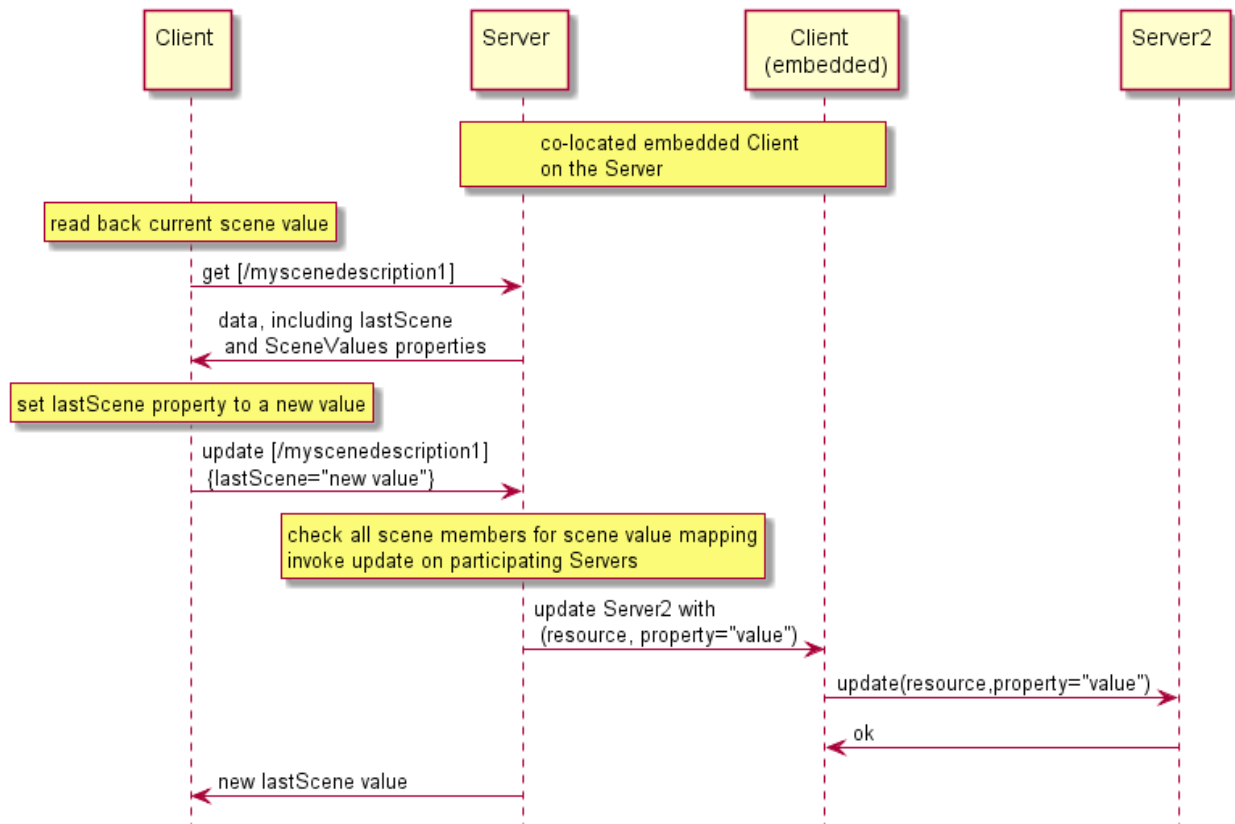
627

**Figure 7 – Client interactions on a specific Scene**

628 As described previously, a Scene can reference one or more Resources (i.e., sceneMembers) that  
 629 are present on one or more Servers. The Scene Members are re-evaluated each time a Scene  
 630 change takes place. This evaluation is triggered by a Client that is either embedded as part of the  
 631 Server hosting the Scene, or separate to the Server having knowledge of the Scene via a  
 632 RETRIEVE operation, Observing the referenced Resources using the mechanism described in  
 633 clause 11.3.2 in ISO/IEC 30118-1:2018. The embedded Client located in the same Device with the  
 634 Server is a general Client but interacts only with Scene functionalities. During the evaluation the  
 635 mappings for the new Scene Value will be applied to the Servers which contain sceneMembers  
 636 from the Scene that is being updated. This behaviour is depicted in Figure 8.



637



638

639

**Figure 8 – Interaction overview due to a Scene change**

640

**5.4.2.4 Summary of Resource Types defined for Scene functionality**

641

Table 20 summarizes the list of Resource Types that are part of Scenes.

642

**Table 20 – list of Resource Types for Scenes**

Friendly Name (informative)	Resource Type (rt)	Short Description	Clause
sceneList	"oic.wk.scenelist"	Top Level Collection containing sceneCollections	N/A
sceneCollection	"oic.wk.scenecollection"	Description of zero or more scenes	N/A
sceneMember	"oic.wk.scenemember"	Description of mappings for each specific Resource part of the sceneCollection	N/A

643

644

**5.4.3 Security considerations**

645

Creation of Scenes on a Server that is capable of this functionality is dependent on the ACLs applied to the Resources and the Client having the appropriate permissions. Interaction between a Client (embedded or separate) and a Server that hosts the Resource that is referenced as a Scene Member is contingent on the Client having appropriate permissions to access the Resource on the host Server.

646

647

648

649



650 See ISO/IEC 30118-2:2018 for details on the use of ACLs and also the mechanisms around Device  
 651 Authentication that are necessary to ensure that the correct permissions exist for the Client to  
 652 access the Scene Member Resource(s) on the Server.

653 **5.5 Rules**

654 **5.5.1 Overview**

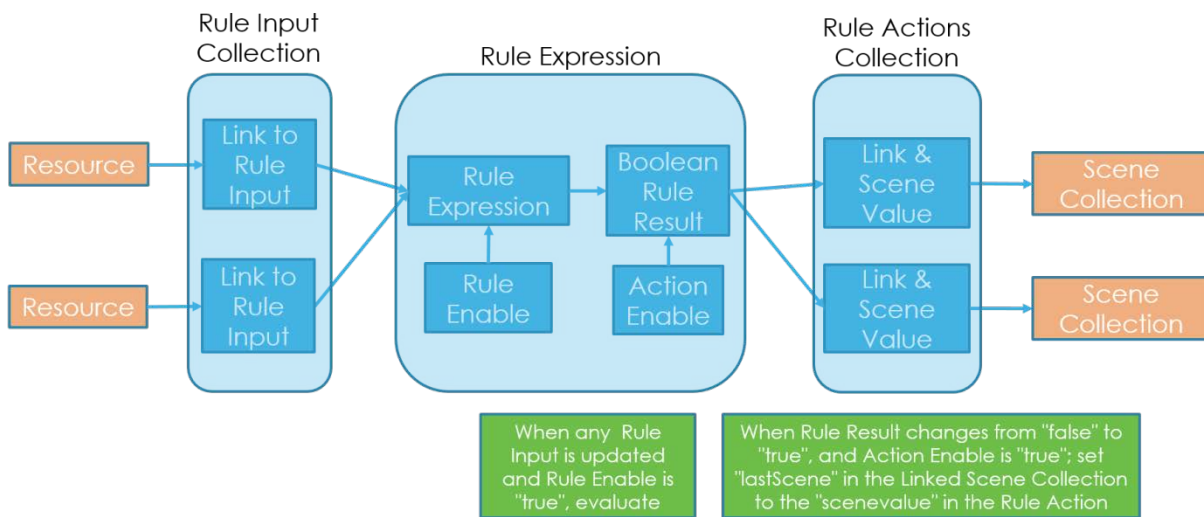
655 Rules are Resources that implement autonomous decision logic according to a condition-action  
 656 pattern. The Rule is evaluated based on the Property values of selected Resource instances. Rule  
 657 Actions are triggered when a Rule Expression evaluates to "true" and consist of defined UPDATE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

659 A Rule has the following components:

- 660 – A Collection of Links to the Resources (i.e., Rule Inputs) that contain the Properties whose  
 661 values are evaluated as part of the Rule Expression.
- 662 – One Rule Expression that defines the Rule logic in terms of the defined Rule Inputs, and which  
 663 evaluates to a boolean Rule Result, for which "true" means that the Rule has been triggered.
- 664 – A Collection of Links to one or more Rule Actions, which are processed when the Rule Result  
 665 is evaluated to "true"; the Rule Action provides a specific value for the "lastScene" Property  
 666 that is updated in the Linked Scene Collection.

667 Figure 9 shows how these components are organized with respect to the Rule Resource.

668



669

670

**Figure 9 – Components of a Rule**

671 **5.5.2 Rule Structure**

672 **5.5.2.1 Introduction and Rule Resource**

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

- 675 – A single Link to a Rule Input Collection (see clause 5.5.2.2).
- 676 – A single Link to a Rule Expression Resource (see clause 5.5.2.3) which contains:  
 677 – One Rule Expression Property.

- 678 – One boolean Rule Enable Property, which controls whether the Rule is or is not active.
- 679 – One boolean Action Enable Property, which controls whether the Rule actions are or are
- 680 not triggered when the Rule Result evaluates to "true"
- 681 – One boolean Rule Result Property, which reflects the result of the evaluation of the Rule
- 682 Expression.
- 683 – A single Link to a Rule Action Collection (see clause 5.5.2.4).

684 A summary for the Rule, Rule Input Collection, Rule Expression, Rule Action, and Rule Action  
 685 Collection Resource Types is provided in Table 21.

686 **Table 21 – 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 22.	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 23	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 25.	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 27.	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.action". The Properties exposed by "oic.r.rule.actioncollection" are listed in Table 26.	Rules

687  
 688 The Rule ("oic.r.rule") Resource is described in Table 22. Complete details are provided in Annex  
 689 A.

690 **Table 22 – "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 ISO/IEC 30118-1:2018		R	Yes	See Table 13 in ISO/IEC 30118-1:2018.

Resource Type	"rt"	"array"	["oic.r.rule"]		R	Yes	See Table 4 in ISO/IEC 30118-1:2018
Resource Types	"rts"	"array"	Resource Types that may be linked from the Rule		R	Yes	See Table 11 in [Bookmark to Core Spec]

691

### 692 5.5.2.2 Rule Input

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

700 The Rule Input Collection ("oic.r.rule.inputcollection") Resource is described in Table 23. Complete  
701 details are provided in Annex A.

702

**Table 23 – "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 ISO/IEC 30118-1:2018		R	Yes	See Table 13 in ISO/IEC 30118-1:2018.
Resource Type	"rt"	"array"	["oic.r.rule.inputcollection"]		R	Yes	See Table 4 in ISO/IEC 30118-1:2018.
Resource Types	"rts"	"array"	Resource Types that may be linked from the Rule Input Collection		R	Yes	See Table 11 in ISO/IEC 30118-1:2018.

703

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

```

713 {
714   "anchor": "mytemperature",
715   "href": "/mylocaltemperaturesensor",
716   "rel": ["ruleinput"],
717   "rt": ["oic.r.temperature"],
718   "if": ["oic.if.s"]
719 }
```

### 720 5.5.2.3 Rule Expression

721 The Rule Expression is a Resource ("oic.r.rule.expression") that contains a "rule" Property, which  
722 is defined as a string that contains a logical expression over the Rule Inputs, and which evaluates  
723 to a boolean value. This value is exposed in the "ruleresult" Property, which shall have a default  
724 value of "false". The expression shall conform to the ABNF syntax defined in clause 5.5.5.

725 Rule Inputs within the "rule" Property are specified by including the "anchor" Link Parameter from  
726 the associated Rule Input, including the desired Property Name from the linked Resource. Figure  
727 10 shows an example for a Rule Input with an "anchor" named "mytemperature" following on from  
728 the example Rule Input shown in clause 5.5.2.2, and the Property Name of "temperature", thus the  
729 name "mytemperature:temperature" is used in the Rule Expression to refer to this Rule Input.  
730 Specifically, that is the value of the "temperature" Property of the Resource at the "href" of  
731 "/mylocaltemperaturesensor".

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

732 **Figure 10 – Example "rule" Property with single Rule Input**

733 There are no restrictions on the number of Rule Inputs that may be part of a Rule Expression.  
734 Consider an additional example where the Rule Result evaluates to "true" if the temperature is  
735 greater than or equal to "25" and a door is open ("openState" Property of an instance of "oic.r.door").  
736 Thus, given a Rule Input for "mydoor" as shown in Figure 11 we can construct the Rule Expression  
737 shown in Figure 12.

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

738 **Figure 11 – Example Link to Rule Input Resource for "mydoor"**

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

739 **Figure 12 – Example "rule" Property with more than one Rule Input**

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

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

755 The "actionenable" Property controls whether the Rule Actions (see clause 5.5.2.4) are processed  
 756 when the "ruleresult" Property is set to "true". If the "actionenable" Property is set to "true", all Rule  
 757 Actions shall be processed when the "ruleresult" Property is set to "true" as a result of Rule  
 758 Expression evaluation. No action shall be taken if the result of Rule Expression evaluation is "false",  
 759 that is, the "ruleresult" Property changes from "true" to "false". If the "actionenable" Property is set  
 760 to "false", the Rule Actions shall not be processed. The "actionenable" Property shall have a default  
 761 value of "false"

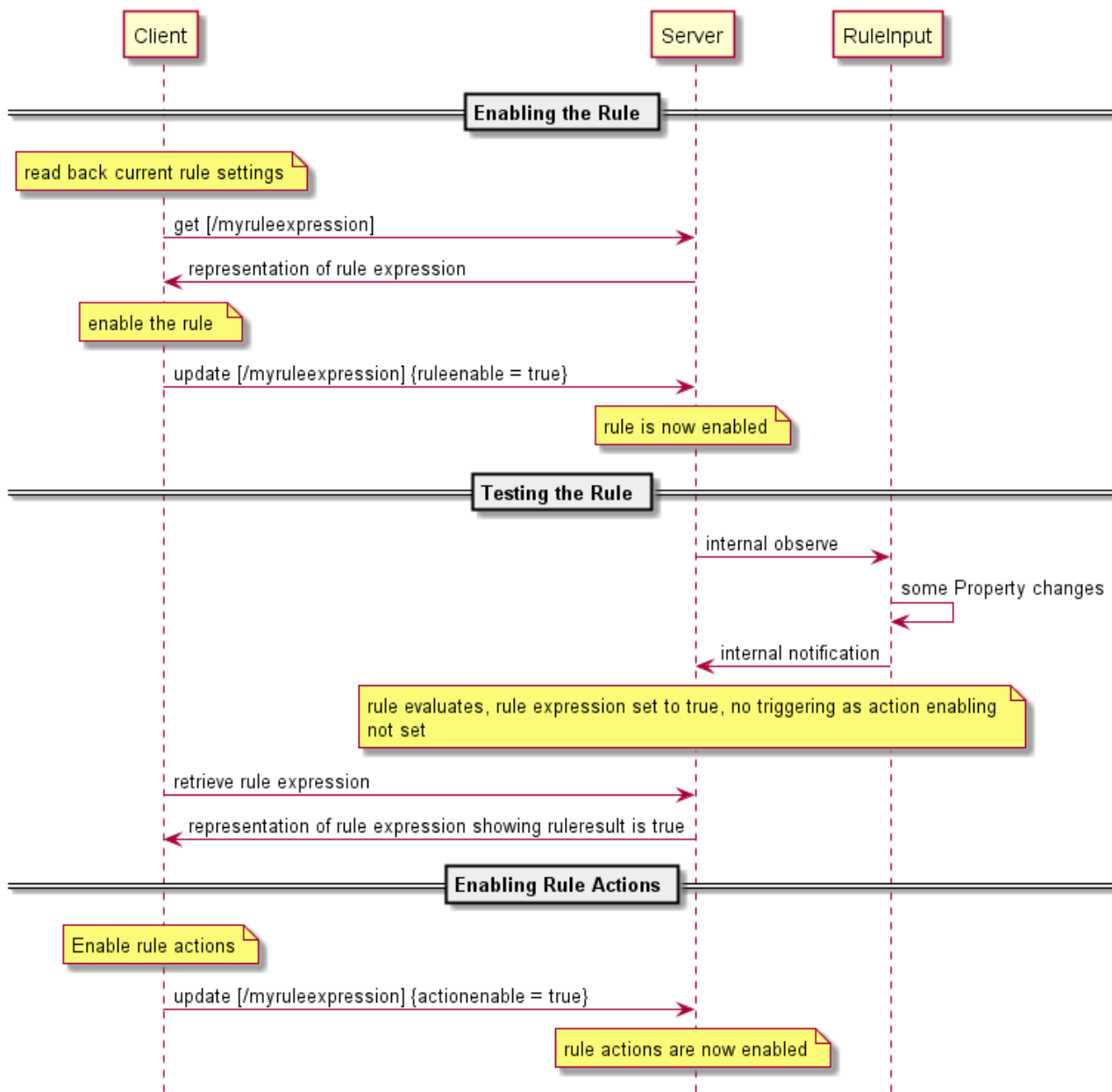
762 Setting the "ruleenable" and "actionenable" Properties places the Rule into one of four modes that  
 763 are summarized in Table 24.

764 **Table 24 – 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"

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

768 The Properties of the Rule Expression Resource are summarized in Table 25. Complete details are  
 769 provided in Annex A. An example flow showing use of the Rule Enable and Action Enable Properties  
 770 is shown in Figure 13.



771  
772 **Figure 13 – Example use of Rule Enable and Action Enable**

773 **Table 25 – 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 5.5.5		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
-------------	--------------	---------	--	--	----	-----	---

774 **5.5.2.4 Rule Actions**

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

780 A single Rule Action is a Resource Type ("oic.r.rule.action") with two Properties as described in  
781 Table 27. The Rule Action Collection is described in Table 26. Complete details are provided in  
782 Annex A.

783 – "link" Property, an instance of a Link (single element array) to a locally-hosted Scene Collection  
784 ("oic.wk.scenecollection")

785 – "scenevalue" Property, value of the "lastScene" Property to be set.

786 Rule Actions are processed when the result of evaluating the Rule Expression is "true", if the  
787 "actionenable" Property is set to "true" as described in clause 5.5.2.3.

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

792 **Table 26 – "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 ISO/IEC 30118-1:2018		R	Yes	See Table 13 in ISO/IEC 30118-1:2018.
Resource Type	"rt"	"array"	["oic.r.rule.actioncollection"]		R	Yes	See Table 4 in ISO/IEC 30118-1:2018.
Resource Types	"rts"	"array"	["oic.r.rule.action"]		R	Yes	See Table 11 in ISO/IEC 30118-1:2018.

793

794 **Table 27 – Properties of the Rule Action Resource.**

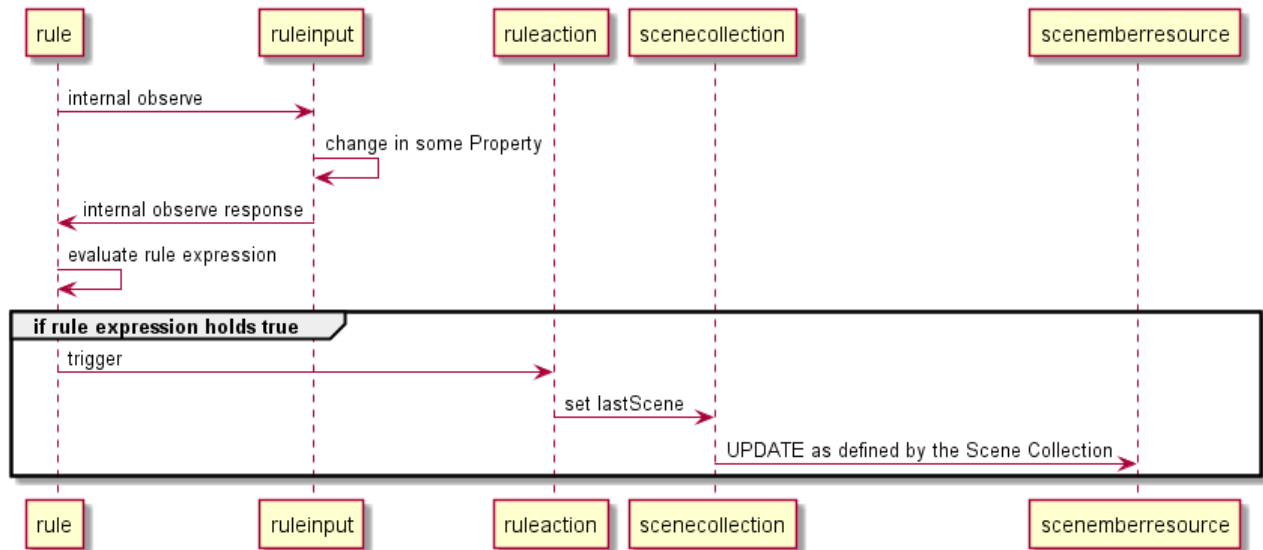
Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Link	"link"	Link	See clause 7.8.2 in ISO/IEC 30118-1:2018		R	Yes	Link to an instance of a Scene Collection
Last Scene Value	"scenevalue"	string			RW	Yes	Value to be set on the "lastScene" Property in the linked Scene Collection.

795 **5.5.3 Rule Behaviour**

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

801 See Figure 14 for an example of how a Rule is triggered and the action then taken.

802



803

804 **Figure 14 – Example operation of a Rule when "ruleenable" and "actionenable" Properties**  
805 **are both "true"**

806 **5.5.4 Rule configuration guidance**

807 **5.5.4.1 Pre-configured Rule**

808 A Device that is capable of hosting a Rule may have as part of its configuration or implementation  
809 all the elements of the Rule pre-defined, i.e. there exists an instance of "oic.r.rule" with a Rule  
810 Input Collection of Links to pre-existing Resources acting as input variables, and a Rule Action  
811 Collection of Links to pre-existing Scene Collections. A Client may manipulate the Rule Expression  
812 Resource (see clause 5.5.2.3) or the linked Rule Input Resources or the linked Scene Collections  
813 as supported by the exposed Resource instances.

814 **5.5.5 Rule Expression syntax**

815 **5.5.5.1 Overview**

816 A Rule Expression consists of a string that conforms to the syntax in clause 5.5.5.2 using  
817 augmented BNF defined in IETF RFC 5424.

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

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

- 823 – relOp: left and right operands are equal, and of type [ string, number, integer]



824 – stringOp: left and right operands are of type [ string ]  
825 – existsOp : left operands are of type [string, boolean, number, integer, array, object]  
826 Operator precedence shall be as defined within IETF RFC 5424, but in short, expressions in  
827 parentheses are evaluated first, then expressions using relOp, stringOp, and existsOp, and finally  
828 expressions using logOp. For example, given:  
829 someresource:prop1 > "5" and someotherresource:prop2 contains "idle" and (someseresource:prop3 =  
830 "blue")  
831 Then the expression in parentheses is evaluated first, then the relOp expression, the stringOp  
832 expression, and finally the logOp expressions scanning from left to right.

833 **5.5.5.2 Augmented BNF for Rule Expression syntax**

834  
835 rule ::= ruleExp  
836 ruleExp ::= relExp | ruleExp wChar+ logOp wChar+ ruleExp | '(' wChar\* ruleExp wChar\* ')'  
837 logOp ::= 'and' | 'or'  
838 resourceproperty ::= ruletag:propname  
839 ruletag ::= ;anchor Link Parameter value from a Rule Input Resource  
840 propname ::= ;Property name contained in a Rule Input Resource  
841 relExp ::= resourceproperty wChar+ binOp wChar+ quotedVal | resourceproperty wChar+  
842 existsOp wChar+ boolVal  
843 binOp ::= relOp | stringOp  
844 relOp ::= '=' | '!=' | '<' | '<=' | '>' | '>='  
845 stringOp ::= 'contains' | 'doesNotContain' | 'startsWith'  
846 existsOp ::= 'exists'  
847 boolVal ::= 'true' | 'false'  
848 quotedVal ::= dQuote string dQuote  
849 wChar ::= space | hTab | lineFeed | vTab | formFeed | return  
850 hTab ::= ;UTF-8 code 0x09, horizontal tab character  
851 lineFeed ::= ;UTF-8 code 0x0A, line feed character  
852 vTab ::= ;UTF-8 code 0x0B, vertical tab character  
853 formFeed ::= ;UTF-8 code 0x0C, form feed character  
854 return ::= ;UTF-8 code 0x0D, carriage return character  
855 space ::= ' ' ;UTF-8 code 0x20, space character  
856 dQuote ::= '"' ;UTF-8 code 0x22, double quote character  
857 path-rootless ::= (see RFC3986)

858  
859 **5.6 Icons**

860 **5.6.1 Overview**

861 Icons are a primitive that are needed by various OCF subsystems, such as bridging. An optional  
862 Resource Type of "oic.r.icon" has been defined to provide a common representation of an icon  
863 Resource that can be used by Devices.

864 **5.6.2 Resource**

865 The icon Resource is as defined in Table 28.

866 **Table 28 – Optional Icon Core Resource**

Example URI	Resource Type Title	Resource Type ID ("rt" value)	OCF Interfaces	Description	Related Functional Interaction
"/example/oic/icon"	Icon	"oic.r.icon"	"oic.if.r"	The Resource through which the Device can obtain icon images. The Properties exposed by "/example/oic/mnt" are listed in Table 29.	Icon

867

868 Table 29 defines the details for the "oic.r.icon" Resource Type.

869

**Table 29 – "oic.r.icon" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
<b>Mime Type</b>	"mimetype"	"string"	N/A	N/A	R	Yes	Specifies the format (media type) of the icon. It should be a template string as specified in IANA Media Types Assignment
<b>Width</b>	"width"	"integer"	>= 1	pixels	R	Yes	Width of the icon in pixels greater than or equal to 1.
<b>Height</b>	"height"	"integer"	>= 1	pixels	R	Yes	Height of the icon in pixels greater than or equal to 1.
<b>Icon</b>	"media"	"uri"	N/A	N/A	R	Yes	URI to the location of the icon image.

870

## 871 5.7 Alerts

### 872 5.7.1 Overview

873 Alerts provide a means by which a Device provides information to an interested party with regard  
874 to error or other conditions that the Device is experiencing. An Alert contains human readable text  
875 that is dependent on the Device itself and the condition being reported. A Device may expose  
876 discrete instances of an Alert Resource Type ("oic.r.alert") or may also expose Alerts within an  
877 Alert Collection ("oic.r.alertcollection"). If the instance of "oic.r.alertcollection" is Observable (see  
878 clause 7.8.2.2.2 in ISO/IEC 30118-1:2018) then a Client may Observe the Collection using the  
879 mechanisms defined in clause 11.3 in ISO/IEC 30118-1:2018. As the Device adds and removes  
880 Alerts from the Collection notifications may be generated for any registered Observers, the format  
881 of which is dependent upon the OCF Interface used for the initial Observe, see clause 7.6.3 in  
882 ISO/IEC 30118-1:2018.

### 883 5.7.2 Resource Types

884 The Alert and Alert Collection Resource Types are as defined in Table 30.

885

**Table 30 – Optional Alert Core Resources**

Example URI	Resource Type Title	Resource Type ID ("rt" value)	Interfaces	Description	Related Functional Interaction
"/example/alertURI"	Alert	"oic.r.alert"	"oic.if.r", "oic.if.baseline"	The Resource through which the Device exposes Alerts. The Properties exposed by "oic.r.alert" are listed in Table 31.	Alerts
"/example/alertcollectionURI"	Alert Collection	"oic.r.alertcollection"	"oic.if.ll", "oic.if.b", "oic.if.baseline"	A specialisation of a Collection that contains only instances of "oic.r.alert" that may be Observed by a Client in order to consume Alerts as they are created by the Device.	Alerts

886

887 Table 31 defines the details for the "oic.r.alert" Resource Type.

**Table 31 – "oic.r.alert" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Category	"category"	"string"			R	Yes	Device defined category for the Alert (e.g. "System", "I/O")
Generated Time	"generatedtime"	"date-time"			R	Yes	IETF RFC 3339 formatted time at which the Alert was generated.
Originator ID	"originatorid"	"string"			R	Yes	Identity of the originator of the Alert. May be the Device ID of the Device or some other Device defined identity.
Severity	"severity"	"integer"	[0,7]		R	Yes	IETF RFC 5424 defined severity value
Subject	"subject"	"array"			R	No	Human-friendly subject of the Alert in one or more languages. This Property is an array of objects where each object has a "language" field (containing an IETF RFC 5646 language tag) and a "value" field containing the subject of the Alert name in the indicated language.
Account ID	"accounted"	"string"			R	No	Identity of the account with which the Device generating this Alert is associated.

889

890 The Alert Collection ("oic.r.alertcollection") Resource Type defines no Properties additional to  
 891 those defined for all instances of a Collection in Table 13 of ISO/IEC 30118-1:2018. However the  
 892 Alert Collection does impose restrictions of the values that shall be populated in the "rt" and "rts"  
 893 Properties. These are described in Table 32.

894

**Table 32 – "oic.r.alertcollection" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Links	"links"	"array"	See Table 13 in ISO/IEC 30118-1:2018		R	Yes	See Table 13 in ISO/IEC 30118-1:2018.
Resource Type	"rt"	"array"	["oic.r.alertcollection"]		R	Yes	See Table 4 in ISO/IEC 30118-1:2018.
Resource Types	"rts"	"array"	["oic.r.alert"] or ["oic.r.alert", "oic.r.value.conditional"]		R	Yes	See Table 11 in ISO/IEC 30118-1:2018.

895

896 **5.7.3 Example of Use**

897 Consider a Device that is capable of generating Alerts; it exposes an empty instance of an Alert  
898 Collection ("oic.r.alertcollection"); that is the array of Links (the "links" Property) contains no items.

899 As the Device under whatever conditions generates Alerts, the Device adds a Link to the Alert  
900 Resource in the instance of an Alert Collection. A Client that has discovered the Device and is  
901 Observing the Alert Collection using the links list OCF Interface ("oic.if.ll") will receive a notification  
902 containing the complete Alert Collection (not just any Links that were added). It is the responsibility  
903 of the Client to determine which Links were added (or removed if the Alert was removed); noting  
904 that the "generatedtime" Property may be used to determine the generated order. The Client then  
905 retrieves the Alert itself via a RETRIEVE to the "href" Link Parameter in the newly added Link to  
906 the Collection.

907 See A.10 for an example of an Alert Resource and the applicable schema.

908 Annex A  
909 (normative)

910 Resource Type definitions

912 A.1 List of Resource Type definitions

913 All the clauses in Annex A describe the Resource Types with a RESTful API definition language.  
914 The Resource Type definitions presented in Annex A are formatted for readability, and so may  
915 appear to have extra line breaks. Table A.1 contains the list of defined Core Common Resources  
916 in this document.

917 Table A.1 – Alphabetized list of Core Resources

Friendly Name (informative)	Resource Type (rt)	Clause
Alerts	"oic.r.alert"	A.10
Alerts Collection	"oic.r.alertcollection"	A.11
Device Configuration	"oic.wk.con"	A.2
Platform Configuration	"oic.wk.con.p"	A.3
Icon	"oic.r.icon"	A.4
Maintenance	"oic.wk.mnt"	A.5
Network Monitoring	"oic.wk.nmon"	A.6
OCF Rule	"oic.r.rule"	A.13
OCF Rule Input Collection	"oic.r.rule.inputcollection"	A.14
OCF Rule Expression	"oic.r.rule.expression"	A.15
OCF Rule Action Collection	"oic.r.rule.actioncollection"	A.16
OCF Rule Action	"oic.r.rule.action"	A.17
Scenes (Top Level)	"oic.wk.scenelist"	A.7
Scenes Collections	"oic.wk.scenecollection"	A.8
Scene Member	"oic.wk.scenemember"	A.9
Software Update	"oic.r.softwareupdate"	A.12

918  
919 A.2 Device Configuration

920 A.2.1 Introduction

921 Resource that allows for Device specific information to be configured.  
922

923 A.2.2 Example URI

924 /exampleDeviceConfigurationResURI

925 A.2.3 Resource type

926 The Resource Type is defined as: "oic.wk.con".

927 A.2.4 OpenAPI 2.0 definition

928 {  
929 "swagger": "2.0",

```

930 "info": {
931   "title": "Device Configuration",
932   "version": "2019-02-28",
933   "license": {
934     "name": "OCF Data Model License",
935     "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
936     "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
937   },
938   "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
939 },
940 "schemes": [
941   "http"
942 ],
943 "consumes": [
944   "application/json"
945 ],
946 "produces": [
947   "application/json"
948 ],
949 "paths": {
950   "/exampleDeviceConfigurationResURI" : {
951     "get": {
952       "description": "Resource that allows for Device specific information to be configured.\n",
953       "parameters": [
954         {
955           "$ref": "#/parameters/interface-all"
956         }
957       ],
958       "responses": {
959         "200": {
960           "description": "",
961           "x-example": {
962             "n": "My Friendly Device Name",
963             "rt": ["oic.wk.con"],
964             "loc": [32.777,-96.797],
965             "locn": "My Location Name",
966             "c": "USD",
967             "r": "MyRegion",
968             "dl": "en"
969           },
970           "schema": {
971             "$ref": "#/definitions/Configuration"
972           }
973         }
974       }
975     },
976     "post": {
977       "description": "Update the information about the Device\n",
978       "parameters": [
979         {
980           "$ref": "#/parameters/interface-rw"
981         },
982         {
983           "name": "body",
984           "in": "body",
985           "required": true,
986           "schema": {
987             "$ref": "#/definitions/Update"
988           },
989           "x-example": {
990             "n": "Nuevo Nombre Amistoso",
991             "r": "MyNewRegion",
992             "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
993             "dl": "es"
994           }
995         }
996       ],
997       "responses": {
998         "200": {
999           "description": "",
1000           "x-example": {

```

```

1001         "n": "Nuevo Nombre Amistoso",
1002         "r": "MyNewRegion",
1003         "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
1004         "dl": "es"
1005     },
1006     "schema": {
1007         "$ref": "#/definitions/Update"
1008     }
1009 }
1010 }
1011 }
1012 }
1013 },
1014 "parameters": {
1015     "interface-rw" : {
1016         "in" : "query",
1017         "name" : "if",
1018         "type" : "string",
1019         "enum" : ["oic.if.rw"]
1020     },
1021     "interface-all" : {
1022         "in" : "query",
1023         "name" : "if",
1024         "type" : "string",
1025         "enum" : ["oic.if.rw", "oic.if.baseline"]
1026     }
1027 },
1028 "definitions": {
1029     "Configuration": {
1030         "properties": {
1031             "rt": {
1032                 "description": "Resource Type of the Resource",
1033                 "items": {
1034                     "enum": ["oic.wk.con"],
1035                     "type": "string",
1036                     "maxLength": 64
1037                 },
1038                 "minItems": 1,
1039                 "uniqueItems": true,
1040                 "readOnly": true,
1041                 "type": "array"
1042             },
1043             "loc": {
1044                 "description": "Location information (lat, long)",
1045                 "items": {
1046                     "type": "number"
1047                 },
1048                 "maxItems": 2,
1049                 "minItems": 2,
1050                 "type": "array"
1051             },
1052             "c": {
1053                 "description": "Currency",
1054                 "maxLength": 64,
1055                 "type": "string"
1056             },
1057             "ln": {
1058                 "description": "Localized names",
1059                 "items": {
1060                     "properties": {
1061                         "language": {
1062                             "allOf": [
1063                                 {
1064                                     "description": "Format pattern according to IETF RFC 5646 (language tag).",
1065                                     "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
1066                                     "type": "string"
1067                                 },
1068                                 {
1069                                     "description": "An RFC 5646 language tag."
1070                                 }
1071                             ]
1072                         }
1073                     }
1074                 }
1075             }
1076         }
1077     }
1078 }

```

```

1072         },
1073         "value": {
1074             "description": "The Device name in the indicated language.",
1075             "maxLength": 64,
1076             "type": "string"
1077         }
1078     },
1079     "type": "object"
1080 },
1081 "minItems": 1,
1082 "type": "array"
1083 },
1084 "locn": {
1085     "description": "Human Friendly Name for location",
1086     "maxLength": 64,
1087     "type": "string"
1088 },
1089 "dl": {
1090     "allOf": [
1091         {
1092             "description": "Format pattern according to IETF RFC 5646 (language tag).",
1093             "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
1094             "type": "string"
1095         },
1096         {
1097             "description": "Default Language as an RFC 5646 language tag."
1098         }
1099     ]
1100 },
1101 "n": {
1102     "$ref" :
1103     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1104     schema.json#/definitions/n"
1105 },
1106 "id": {
1107     "$ref" :
1108     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1109     schema.json#/definitions/id"
1110 },
1111 "r": {
1112     "description": "Region",
1113     "maxLength": 64,
1114     "type": "string"
1115 },
1116 "if" : {
1117     "description": "The OCF Interfaces supported by this Resource",
1118     "items": {
1119         "enum": [
1120             "oic.if.baseline",
1121             "oic.if.rw"
1122         ],
1123         "type": "string",
1124         "maxLength": 64
1125     },
1126     "minItems": 1,
1127     "uniqueItems": true,
1128     "readOnly": true,
1129     "type": "array"
1130 }
1131 },
1132 "type" : "object",
1133 "required": ["n"]
1134 },
1135 "Update" : {
1136     "properties": {
1137         "loc": {
1138             "description": "Location information (lat, long)",
1139             "items": {
1140                 "type": "number"
1141             },
1142             "maxItems": 2,

```



```

1143         "minItems": 2,
1144         "type": "array"
1145     },
1146     "c": {
1147         "description": "Currency",
1148         "maxLength": 64,
1149         "type": "string"
1150     },
1151     "ln": {
1152         "description": "Localized names",
1153         "items": {
1154             "properties": {
1155                 "language": {
1156                     "allOf": [
1157                         {
1158                             "description": "Format pattern according to IETF RFC 5646 (language tag).",
1159                             "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
1160                             "type": "string"
1161                         },
1162                         {
1163                             "description": "An RFC 5646 language tag."
1164                         }
1165                     ]
1166                 },
1167                 "value": {
1168                     "description": "The Device name in the indicated language.",
1169                     "maxLength": 64,
1170                     "type": "string"
1171                 }
1172             },
1173             "type": "object"
1174         },
1175         "minItems": 1,
1176         "type": "array"
1177     },
1178     "locn": {
1179         "description": "Human Friendly Name for location",
1180         "maxLength": 64,
1181         "type": "string"
1182     },
1183     "dl": {
1184         "allOf": [
1185             {
1186                 "description": "Format pattern according to IETF RFC 5646 (language tag).",
1187                 "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
1188                 "type": "string"
1189             },
1190             {
1191                 "description": "Default Language as an RFC 5646 language tag."
1192             }
1193         ]
1194     },
1195     "n": {
1196         "description": "The human friendly name to be set on the Resource, this is also reflected
1197 in the same Property in oic.wk.d",
1198         "maxLength": 64,
1199         "type": "string"
1200     },
1201     "r": {
1202         "description": "Region",
1203         "maxLength": 64,
1204         "type": "string"
1205     }
1206 },
1207 "anyOf": [
1208     {
1209         "required": ["loc"]
1210     },
1211     {
1212         "required": ["locn"]
1213     }

```

```

1214     {
1215         "required": ["c"]
1216     },
1217     {
1218         "required": ["r"]
1219     },
1220     {
1221         "required": ["ln"]
1222     },
1223     {
1224         "required": ["dl"]
1225     },
1226     {
1227         "required": ["n"]
1228     }
1229 ],
1230 "type" : "object"
1231 }
1232 }
1233 }
1234

```

### 1235 A.2.5 Property definition

1236 Table A.2 defines the Properties that are part of the "oic.wk.con" Resource Type.

1237 **Table A.2 – The Property definitions of the Resource with type "rt" = "oic.wk.con".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	Resource Type of the Resource
loc	array: see schema	No	Read Write	Location information (lat, long)
c	string	No	Read Write	Currency
ln	array: see schema	No	Read Write	Localized names
locn	string	No	Read Write	Human Friendly Name for location
dl	multiple types: see schema	No	Read Write	
n	multiple types: see schema	Yes	Read Write	
id	multiple types: see schema	No	Read Write	
r	string	No	Read Write	Region
if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource
loc	array: see schema	No	Read Write	Location information (lat, long)
c	string	No	Read Write	Currency
ln	array: see schema	No	Read Write	Localized names
locn	string	No	Read Write	Human Friendly Name for location
dl	multiple types: see schema	No	Read Write	
n	string	Yes	Read Write	The human friendly name to be set on the Resource, this is

				also reflected in the same Property in oic.wk.d
r	string	No	Read Write	Region

1238 **A.2.6 CRUDN behaviour**

1239 Table A.3 defines the CRUDN operations that are supported on the "oic.wk.con" Resource Type.

1240 **Table A.3 – The CRUDN operations of the Resource with type "rt" = "oic.wk.con".**

Create	Read	Update	Delete	Notify
	get	post		observe

1241 **A.3 Platform Configuration**

1242 **A.3.1 Introduction**

1243 Resource that allows for Platform specific information to be configured.

1244

1245 **A.3.2 Example URI**

1246 /examplePlatformConfigurationResURI

1247 **A.3.3 Resource type**

1248 The Resource Type is defined as: "oic.wk.con.p".

1249 **A.3.4 OpenAPI 2.0 definition**

```

1250 {
1251   "swagger": "2.0",
1252   "info": {
1253     "title": "Platform Configuration",
1254     "version": "2019-03-04",
1255     "license": {
1256       "name": "OCF Data Model License",
1257       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
1258       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1259     },
1260     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1261   },
1262   "schemes": [
1263     "http"
1264   ],
1265   "consumes": [
1266     "application/json"
1267   ],
1268   "produces": [
1269     "application/json"
1270   ],
1271   "paths": {
1272     "/examplePlatformConfigurationResURI": {
1273       "get": {
1274         "description": "Resource that allows for Platform specific information to be configured.\n",
1275         "parameters": [
1276           {
1277             "$ref": "#/parameters/interface-all"
1278           }
1279         ],
1280         "responses": {
1281           "200": {
1282             "description": "",
1283             "x-example": {
1284               "rt": ["oic.wk.con.p"],
1285               "mnpn": [ { "language": "en", "value": "My Friendly Device Name" } ]

```

```

1286         },
1287         "schema": { "$ref": "#/definitions/Conf_Platform" }
1288     }
1289 }
1290 },
1291 "post": {
1292     "description": "Update the information about the Platform\n",
1293     "parameters": [
1294         {
1295             "$ref": "#/parameters/interface-rw"
1296         },
1297         {
1298             "name": "body",
1299             "in": "body",
1300             "required": true,
1301             "schema": { "$ref": "#/definitions/Update_Platform" },
1302             "x-example": {
1303                 "n": "Nuevo nombre",
1304                 "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
1305             }
1306         }
1307     ],
1308     "responses": {
1309         "200": {
1310             "description": "",
1311             "x-example": {
1312                 "n": "Nuevo nombre",
1313                 "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
1314             },
1315             "schema": { "$ref": "#/definitions/Update_Platform" }
1316         }
1317     }
1318 }
1319 },
1320 },
1321 "parameters": {
1322     "interface-rw": {
1323         "in": "query",
1324         "name": "if",
1325         "type": "string",
1326         "enum": ["oic.if.rw"]
1327     },
1328     "interface-all": {
1329         "in": "query",
1330         "name": "if",
1331         "type": "string",
1332         "enum": ["oic.if.rw", "oic.if.baseline"]
1333     }
1334 },
1335 "definitions": {
1336     "Conf_Platform": {
1337         "properties": {
1338             "rt": {
1339                 "description": "Resource Type of the Resource",
1340                 "items": {
1341                     "enum": ["oic.wk.con.p"],
1342                     "type": "string",
1343                     "maxLength": 64
1344                 },
1345                 "minItems": 1,
1346                 "uniqueItems": true,
1347                 "readOnly": true,
1348                 "type": "array"
1349             },
1350             "n": {
1351                 "$ref":
1352 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1353 schema.json#/definitions/n"
1354             },
1355             "mnpn": {
1356                 "description": "Platform names",

```

```

1357         "items": {
1358             "properties": {
1359                 "language": {
1360                     "allOf": [
1361                         {
1362                             "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1363 schema.json#/definitions/language-tag"
1364                         },
1365                         {
1366                             "description": "An RFC 5646 language tag."
1367                         }
1368                     ]
1369                 },
1370                 "value": {
1371                     "description": "The Platform description in the indicated language.",
1372                     "maxLength": 64,
1373                     "type": "string"
1374                 }
1375             },
1376             "type": "object"
1377         },
1378         "minItems": 1,
1379         "type": "array"
1380     },
1381     "id": {
1382         "$ref":
1383 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1384 schema.json#/definitions/id"
1385     },
1386     "if": {
1387         "description": "The OCF Interfaces supported by this Resource",
1388         "items": {
1389             "enum": [
1390                 "oic.if.rw",
1391                 "oic.if.baseline"
1392             ],
1393             "type": "string",
1394             "maxLength": 64
1395         },
1396         "minItems": 1,
1397         "readOnly": true,
1398         "uniqueItems": true,
1399         "type": "array"
1400     }
1401 },
1402 "type" : "object"
1403 },
1404 "Update_Platform": {
1405     "properties": {
1406         "n": {
1407             "description": "The human friendly name to be set on the Resource, this is also reflected
1408 in the same Property in oic.wk.p",
1409             "maxLength": 64,
1410             "type": "string"
1411         },
1412         "mnpn" : {
1413             "description": "Platform names",
1414             "items": {
1415                 "properties": {
1416                     "language": {
1417                         "allOf": [
1418                             {
1419                                 "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1420 schema.json#/definitions/language-tag"
1421                             },
1422                             {
1423                                 "description": "An RFC 5646 language tag."
1424                             }
1425                         ]
1426                     },
1427                     "value": {

```

```

1428         "description": "The Platform description in the indicated language.",
1429         "maxLength": 64,
1430         "type": "string"
1431     }
1432 },
1433     "type": "object"
1434 },
1435     "minItems": 1,
1436     "type": "array"
1437 }
1438 },
1439 "type": "object",
1440 "anyOf": [
1441     {
1442         "required": ["mnpn"]
1443     },
1444     {
1445         "required": ["n"]
1446     }
1447 ]
1448 }
1449 }
1450 }
1451

```

### 1452 A.3.5 Property definition

1453 Table A.4 defines the Properties that are part of the "oic.wk.con.p" Resource Type.

1454 **Table A.4 – The Property definitions of the Resource with type "rt" = "oic.wk.con.p".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema		Read Only	Resource Type of the Resource
n	multiple types: see schema		Read Write	
mnpn	array: see schema		Read Write	Platform names
id	multiple types: see schema		Read Write	
if	array: see schema		Read Only	The OCF Interfaces supported by this Resource
n	string	Yes	Read Write	The human friendly name to be set on the Resource, this is also reflected in the same Property in oic.wk.p
mnpn	array: see schema	No	Read Write	Platform names

### 1455 A.3.6 CRUDN behaviour

1456 Table A.5 defines the CRUDN operations that are supported on the "oic.wk.con.p" Resource Type.

1457 **Table A.5 – The CRUDN operations of the Resource with type "rt" = "oic.wk.con.p".**

Create	Read	Update	Delete	Notify
	get	post		observe

## 1458 **A.4 Icon**

### 1459 **A.4.1 Introduction**

1460 This Resource describes the attributes associated with an Icon.

1461

### 1462 **A.4.2 Example URI**

1463 /IconResURI

### 1464 **A.4.3 Resource type**

1465 The Resource Type is defined as: "oic.r.icon".

### 1466 **A.4.4 OpenAPI 2.0 definition**

```
1467 {
1468   "swagger": "2.0",
1469   "info": {
1470     "title": "Icon",
1471     "version": "2019-02-26",
1472     "license": {
1473       "name": "OCF Data Model License",
1474       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
1475       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1476     },
1477     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1478   },
1479   "schemes": [
1480     "http"
1481   ],
1482   "consumes": [
1483     "application/json"
1484   ],
1485   "produces": [
1486     "application/json"
1487   ],
1488   "paths": {
1489     "/IconResURI" : {
1490       "get": {
1491         "description": "This Resource describes the attributes associated with an Icon.\n",
1492         "parameters": [
1493           {
1494             "$ref": "#/parameters/interface"
1495           }
1496         ],
1497         "responses": {
1498           "200": {
1499             "description": "",
1500             "x-example": {
1501               "rt": ["oic.r.icon"],
1502               "mimetype": "image/png",
1503               "width": 256,
1504               "height": 256,
1505               "media": "http://findbetter.ru/public/uploads/1481662800/2043.png"
1506             },
1507             "schema": {
1508               "$ref": "#/definitions/Icon"
1509             }
1510           }
1511         }
1512       }
1513     }
1514   },
1515   "parameters": {
1516     "interface" : {
1517       "in" : "query",
1518       "name" : "if",
1519       "type" : "string",
```

```

1520     "enum" : ["oic.if.r", "oic.if.baseline"]
1521   }
1522 },
1523 "definitions": {
1524   "Icon" : {
1525     "properties": {
1526       "mimetype": {
1527         "description": "The Media Type of the icon",
1528         "maxLength": 64,
1529         "readOnly": true,
1530         "type": "string"
1531       },
1532       "rt": {
1533         "description": "Resource Type of the Resource",
1534         "items": {
1535           "enum": ["oic.r.icon"],
1536           "type": "string",
1537           "maxLength": 64
1538         },
1539         "minItems": 1,
1540         "uniqueItems": true,
1541         "readOnly": true,
1542         "type": "array"
1543       },
1544       "media": {
1545         "description": "Specifies the URI to the icon",
1546         "format": "uri",
1547         "maxLength": 256,
1548         "readOnly": true,
1549         "type": "string"
1550       },
1551       "n": {
1552         "$ref" :
1553 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1554 schema.json#/definitions/n"
1555       },
1556       "id": {
1557         "$ref" :
1558 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1559 schema.json#/definitions/id"
1560       },
1561       "width": {
1562         "description": "The width in pixels",
1563         "minimum": 1,
1564         "readOnly": true,
1565         "type": "integer"
1566       },
1567       "height": {
1568         "description": "The height in pixels",
1569         "minimum": 1,
1570         "readOnly": true,
1571         "type": "integer"
1572       },
1573       "if": {
1574         "description": "The OCF Interfaces supported by this Resource",
1575         "items": {
1576           "enum": [
1577             "oic.if.r",
1578             "oic.if.baseline"
1579           ],
1580           "maxLength": 64,
1581           "type": "string"
1582         },
1583         "minItems": 2,
1584         "uniqueItems": true,
1585         "readOnly": true,
1586         "type": "array"
1587       }
1588     },
1589     "type" : "object",
1590     "required": ["mimetype", "width", "height", "media"]

```



1591 }  
 1592 }  
 1593 }  
 1594 }

1595 **A.4.5 Property definition**

1596 Table A.6 defines the Properties that are part of the "oic.r.icon" Resource Type.

1597 **Table A.6 – The Property definitions of the Resource with type "rt" = "oic.r.icon".**

Property name	Value type	Mandatory	Access mode	Description
mimetype	string	Yes	Read Only	The Media Type of the icon
rt	array: see schema	No	Read Only	Resource Type of the Resource
media	string	Yes	Read Only	Specifies the URI to the icon
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
width	integer	Yes	Read Only	The width in pixels
height	integer	Yes	Read Only	The height in pixels
if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource

1598 **A.4.6 CRUDN behaviour**

1599 Table A.7 defines the CRUDN operations that are supported on the "oic.r.icon" Resource Type.

1600 **Table A.7 – The CRUDN operations of the Resource with type "rt" = "oic.r.icon".**

Create	Read	Update	Delete	Notify
	get			observe

1601 **A.5 Maintenance**

1602 **A.5.1 Introduction**

1603 The Resource through which a Device is maintained and can be used for diagnostic purposes.

1604 fr (Factory Reset) is a boolean.

1605 The value 0 means No action (Default), the value 1 means Start Factory Reset

1606 After factory reset, this value shall be changed back to the default value

1607 rb (Reboot) is a boolean.

1608 The value 0 means No action (Default), the value 1 means Start Reboot

1609 After Reboot, this value shall be changed back to the default value

1610

1611 **A.5.2 Well-known URI**

1612 /oic/mnt

1613 **A.5.3 Resource type**

1614 The Resource Type is defined as: "oic.wk.mnt".

#### 1615 A.5.4 OpenAPI 2.0 definition

```
1616 {
1617   "swagger": "2.0",
1618   "info": {
1619     "title": "Maintenance",
1620     "version": "2019-03-04",
1621     "license": {
1622       "name": "OCF Data Model License",
1623       "url":
1624         "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1625 CENSE.md",
1626       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1627     },
1628     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1629   },
1630   "schemes": ["http"],
1631   "consumes": ["application/json"],
1632   "produces": ["application/json"],
1633   "paths": {
1634     "/oic/mnt" : {
1635       "get": {
1636         "description": "The Resource through which a Device is maintained and can be used for
1637 diagnostic purposes.\nfr (Factory Reset) is a boolean.\n The value 0 means No action (Default), the
1638 value 1 means Start Factory Reset\nAfter factory reset, this value shall be changed back to the
1639 default value\nrb (Reboot) is a boolean.\n The value 0 means No action (Default), the value 1 means
1640 Start Reboot\nAfter Reboot, this value shall be changed back to the default value\n",
1641         "parameters": [
1642           {"$ref": "#/parameters/interface-all"}
1643         ],
1644         "responses": {
1645           "200": {
1646             "description": "",
1647             "x-example": {
1648               "rt": ["oic.wk.mnt"],
1649               "fr": false,
1650               "rb": false,
1651               "err" : 503
1652             },
1653             "schema": { "$ref": "#/definitions/mnt" }
1654           }
1655         }
1656       },
1657       "post": {
1658         "description": "Set the maintenance action(s)\n",
1659         "parameters": [
1660           {"$ref": "#/parameters/interface-rw"},
1661           {
1662             "name": "body",
1663             "in": "body",
1664             "required": true,
1665             "schema": { "$ref": "#/definitions/mnt-update" },
1666             "x-example": {
1667               "fr": false,
1668               "rb": false
1669             }
1670           }
1671         ],
1672         "responses": {
1673           "200": {
1674             "description": "",
1675             "x-example": {
1676               "fr": false,
1677               "rb": false
1678             },
1679             "schema": { "$ref": "#/definitions/mnt" }
1680           }
1681         }
1682       }
1683     }
1684   },

```

```

1685 "parameters": {
1686   "interface-all" : {
1687     "in" : "query",
1688     "name" : "if",
1689     "type" : "string",
1690     "enum" : ["oic.if.rw", "oic.if.baseline"]
1691   },
1692   "interface-rw" : {
1693     "in" : "query",
1694     "name" : "if",
1695     "type" : "string",
1696     "enum" : ["oic.if.rw"]
1697   }
1698 },
1699 "definitions": {
1700   "mnt" : {
1701     "properties": {
1702       "rt" : {
1703         "description": "Resource Type of the Resource",
1704         "items": {
1705           "enum": ["oic.wk.mnt"],
1706           "type": "string",
1707           "maxLength": 64
1708         },
1709         "minItems": 1,
1710         "uniqueItems": true,
1711         "readOnly": true,
1712         "type": "array"
1713       },
1714       "fr" : {
1715         "description": "Factory Reset",
1716         "type": "boolean"
1717       },
1718       "err" : {
1719         "description": "Last HTTP occurred error",
1720         "maximum": 599,
1721         "minimum": 399,
1722         "readOnly": true,
1723         "type": "integer"
1724       },
1725       "n" : {
1726         "$ref":
1727 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1728 schema.json#/definitions/n"
1729       },
1730       "rb" : {
1731         "description": "Reboot Action",
1732         "type": "boolean"
1733       },
1734       "id" : {
1735         "$ref":
1736 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1737 schema.json#/definitions/id"
1738       },
1739       "if" : {
1740         "description": "The OCF Interfaces supported by this Resource",
1741         "items": {
1742           "enum": [
1743             "oic.if.rw",
1744             "oic.if.baseline"
1745           ],
1746           "type": "string",
1747           "maxLength": 64
1748         },
1749         "minItems": 1,
1750         "readOnly": true,
1751         "uniqueItems": true,
1752         "type": "array"
1753       }
1754     },
1755     "anyOf" : [

```

```

1756     {
1757         "required": [ "fr" ]
1758     },
1759     {
1760         "required": [ "rb" ]
1761     },
1762     {
1763         "required": [ "err" ]
1764     }
1765 ],
1766 "type" : "object"
1767 },
1768 "mnt-update" : {
1769     "properties": {
1770         "fr" : {
1771             "description": "Factory Reset",
1772             "type": "boolean"
1773         },
1774         "n" : {
1775             "$ref":
1776 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1777 schema.json#/definitions/n"
1778         },
1779         "rb" : {
1780             "description": "Reboot Action",
1781             "type": "boolean"
1782         }
1783     },
1784     "anyOf" : [
1785         {
1786             "required": [
1787                 "fr"
1788             ]
1789         },
1790         {
1791             "required": [
1792                 "rb"
1793             ]
1794         }
1795     ],
1796     "type" : "object"
1797 }
1798 }
1799 }
1800

```

### 1801 A.5.5 Property definition

1802 Table A.8 defines the Properties that are part of the "oic.wk.mnt" Resource Type.

1803 **Table A.8 – The Property definitions of the Resource with type "rt" = "oic.wk.mnt".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	Resource Type of the Resource
fr	boolean	No	Read Write	Factory Reset
err	integer	Yes	Read Only	Last HTTP occurred error
n	multiple types: see schema	No	Read Write	
rb	boolean	No	Read Write	Reboot Action
id	multiple types: see schema	No	Read Write	

if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource
fr	boolean	No	Read Write	Factory Reset
n	multiple types: see schema	No	Read Write	
rb	boolean	Yes	Read Write	Reboot Action

1804 **A.5.6 CRUDN behaviour**

1805 Table A.9 defines the CRUDN operations that are supported on the "oic.wk.mnt" Resource Type.

1806 **Table A.9 – The CRUDN operations of the Resource with type "rt" = "oic.wk.mnt".**

Create	Read	Update	Delete	Notify
	get	post		observe

1807 **A.6 Network Monitoring**

1808 **A.6.1 Introduction**

1809 The Resource through which a Device can monitor network traffic.

1810

1811 **A.6.2 Example URI**

1812 /nmonResURI

1813 **A.6.3 Resource type**

1814 The Resource Type is defined as: "oic.wk.nmon".

1815 **A.6.4 OpenAPI 2.0 definition**

```

1816 {
1817   "swagger": "2.0",
1818   "info": {
1819     "title": "Network Monitoring",
1820     "version": "2019-03-27",
1821     "license": {
1822       "name": "OCF Data Model License",
1823       "url":
1824         "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1825         CENSE.md",
1826       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1827     },
1828     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1829   },
1830   "schemes": ["http"],
1831   "consumes": ["application/json"],
1832   "produces": ["application/json"],
1833   "paths": {
1834     "/nmonResURI" : {
1835       "get": {
1836         "description": "The Resource through which a Device can monitor network traffic.\n",
1837         "parameters": [
1838           {"$ref": "#/parameters/interface-all"}
1839         ],
1840         "responses": {
1841           "200": {
1842             "description": "",
1843             "x-example": {
1844               "rt": ["oic.wk.nmon"],
1845               "ianaifType": 71,
1846               "reset": false,

```

```

1847         "col" : false,
1848         "tx" : 10,
1849         "rx" : 15,
1850         "mmstx" : 50,
1851         "amstx" : 35,
1852         "mmsrx" : 35,
1853         "amsrx" : 20
1854     },
1855     "schema": { "$ref": "#/definitions/nmon" }
1856 }
1857 },
1858 },
1859 "post": {
1860     "description": "Start/Stop collecting and reset the networking monitor Resource\n",
1861     "parameters": [
1862         {"$ref": "#/parameters/interface-rw"},
1863         {
1864             "name": "body",
1865             "in": "body",
1866             "required": true,
1867             "schema": { "$ref": "#/definitions/nmon-update" },
1868             "x-example": {
1869                 "col": true,
1870                 "reset": true
1871             }
1872         }
1873     ],
1874     "responses": {
1875         "200": {
1876             "description": "",
1877             "x-example": {
1878                 "rt": ["oic.wk.nmon"],
1879                 "ianaifType": 71,
1880                 "reset": false,
1881                 "col": true,
1882                 "tx": 0,
1883                 "rx": 0,
1884                 "mmstx": 0,
1885                 "amstx": 0,
1886                 "mmsrx": 0,
1887                 "amsrx": 0
1888             },
1889             "schema": { "$ref": "#/definitions/nmon" }
1890         }
1891     }
1892 },
1893 },
1894 },
1895 "parameters": {
1896     "interface-rw" : {
1897         "in" : "query",
1898         "name" : "if",
1899         "type" : "string",
1900         "enum" : ["oic.if.rw"]
1901     },
1902     "interface-all" : {
1903         "in" : "query",
1904         "name" : "if",
1905         "type" : "string",
1906         "enum" : ["oic.if.rw", "oic.if.baseline"]
1907     }
1908 },
1909 "definitions": {
1910     "nmon" : {
1911         "properties": {
1912             "amstx" : {
1913                 "description": "Average transmitted message size in bytes (tx) in the collection period",
1914                 "readOnly": true,
1915                 "type": "integer"
1916             },
1917             "reset" : {

```

```

1918         "description": "True: reset the collected values",
1919         "readOnly": false,
1920         "type": "boolean"
1921     },
1922     "mmsrx" : {
1923         "description": "Maximum received message size in bytes (rx) in the collection period",
1924         "readOnly": true,
1925         "type": "integer"
1926     },
1927     "mmstx" : {
1928         "description": "Maximum transmitted message size in bytes (tx) in the collection period",
1929         "readOnly": true,
1930         "type": "integer"
1931     },
1932     "tx" : {
1933         "description": "Amount of transmitted kilo bytes from the collection",
1934         "readOnly": true,
1935         "type": "integer"
1936     },
1937     "rt" : {
1938         "description": "Resource Type of the Resource",
1939         "items": {
1940             "enum": ["oic.wk.nmon"],
1941             "type": "string",
1942             "maxLength": 64
1943         },
1944         "minItems": 1,
1945         "uniqueItems": true,
1946         "readOnly": true,
1947         "type": "array"
1948     },
1949     "ianaifType" : {
1950         "description": "The type of the network connection, as defined by iana
1951 https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib",
1952         "readOnly": true,
1953         "type": "integer"
1954     },
1955     "rx" : {
1956         "description": "Amount of received kilobytes from the collection",
1957         "readOnly": true,
1958         "type": "integer"
1959     },
1960     "id" : {
1961         "$ref":
1962 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1963 schema.json#/definitions/id"
1964     },
1965     "amsrx" : {
1966         "description": "Average received message size in bytes (rx) in the collection period",
1967         "readOnly": true,
1968         "type": "integer"
1969     },
1970     "n" : {
1971         "$ref":
1972 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1973 schema.json#/definitions/n"
1974     },
1975     "col" : {
1976         "description": "True: Device is collecting values",
1977         "readOnly": false,
1978         "type": "boolean"
1979     },
1980     "if" : {
1981         "description": "The OCF Interfaces supported by this Resource",
1982         "items": {
1983             "enum": [
1984                 "oic.if.rw",
1985                 "oic.if.baseline"
1986             ],
1987             "type": "string",
1988             "maxLength": 64

```

```

1989     },
1990     "minItems": 1,
1991     "readOnly": true,
1992     "uniqueItems": true,
1993     "type": "array"
1994   }
1995 },
1996 "type" : "object",
1997 "required": ["reset", "col", "ianaifType"]
1998 },
1999 "nmon-update" : {
2000   "properties": {
2001     "reset" : {
2002       "description": "True: reset the collected values",
2003       "readOnly": false,
2004       "type": "boolean"
2005     },
2006     "n" : {
2007       "$ref":
2008 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2009 schema.json#/definitions/n"
2010     },
2011     "col" : {
2012       "description": "True: Device is collecting values",
2013       "readOnly": false,
2014       "type": "boolean"
2015     }
2016   },
2017   "type" : "object",
2018   "required": ["reset", "col"]
2019 }
2020 }
2021 }
2022

```

### 2023 A.6.5 Property definition

2024 Table A.10 defines the Properties that are part of the "oic.wk.nmon" Resource Type.

2025 **Table A.10 – The Property definitions of the Resource with type "rt" = "oic.wk.nmon".**

Property name	Value type	Mandatory	Access mode	Description
amstx	integer	No	Read Only	Average transmitted message size in bytes (tx) in the collection period
reset	boolean	Yes	Read Write	True: reset the collected values
mmsrx	integer	No	Read Only	Maximum received message size in bytes (rx) in the collection period
mmstx	integer	No	Read Only	Maximum transmitted message size in bytes (tx) in the collection period
tx	integer	No	Read Only	Amount of transmitted kilo bytes from the collection
rt	array: see schema	No	Read Only	Resource Type of the Resource
ianaifType	integer	Yes	Read Only	The type of the network connection, as defined by iana <a href="https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib">https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib</a>
rx	integer	No	Read Only	Amount of received kilobytes from the collection
id	multiple types: see schema	No	Read Write	
amsrx	integer	No	Read Only	Average received message size in bytes (rx) in the collection period



n	multiple types: see schema	No	Read Write	
col	boolean	Yes	Read Write	True: Device is collecting values
if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource
reset	boolean	Yes	Read Write	True: reset the collected values
n	multiple types: see schema	No	Read Write	
col	boolean	Yes	Read Write	True: Device is collecting values

2026 **A.6.6 CRUDN behaviour**

2027 Table A.11 defines the CRUDN operations that are supported on the "oic.wk.nmon" Resource Type.

2028 **Table A.11 – The CRUDN operations of the Resource with "rt" = "oic.wk.nmon".**

Create	Read	Update	Delete	Notify
	get	post		observe

2029 **A.7 Scene List**

2030 **A.7.1 Introduction**

2031 Toplevel Scene Resource.

2032 This Resource is a generic Collection Resource.

2033 The rts value contains oic.wk.scenecollection Resource Types.

2034

2035 **A.7.2 Example URI**

2036 /SceneListResURI

2037 **A.7.3 Resource type**

2038 The Resource Type is defined as: "oic.wk.scenelist".

2039 **A.7.4 OpenAPI 2.0 definition**

```

2040 {
2041   "swagger": "2.0",
2042   "info": {
2043     "title": "Scene List",
2044     "version": "2019-03-04",
2045     "license": {
2046       "name": "OCF Data Model License",
2047       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2048       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2049     },
2050     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2051   },
2052   "schemes": [
2053     "http"
2054   ],
2055   "consumes": [
2056     "application/json"
2057   ],
2058   "produces": [
2059     "application/json"
2060   ],
2061   "paths": {
2062     "/SceneListResURI?if=oic.if.ll": {
2063       "get": {
2064         "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection

```

```

2065 Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
2066     "parameters": [
2067         {
2068             "$ref": "#/parameters/interface-all"
2069         }
2070     ],
2071     "responses": {
2072         "200": {
2073             "description" : "",
2074             "x-example": [
2075                 {"href": "/scenecollection1", "rt": ["oic.wk.scenecollection"], "if":["oic.if.ll",
2076 "oic.if.baseline"]},
2077                 {"href": "/scenecollection2", "rt": ["oic.wk.scenecollection"], "if":["oic.if.ll",
2078 "oic.if.baseline"]}
2079             ],
2080             "schema": {
2081                 "$ref": "#/definitions/slinks"
2082             }
2083         }
2084     }
2085 },
2086 },
2087 "/SceneListResURI?if=oic.if.baseline": {
2088     "get": {
2089         "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection
2090 Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
2091         "parameters": [
2092             {
2093                 "$ref": "#/parameters/interface-all"
2094             }
2095         ],
2096         "responses": {
2097             "200": {
2098                 "description" : "",
2099                 "x-example": {
2100                     "rt": ["oic.wk.scenelist"],
2101                     "if": ["oic.if.ll", "oic.if.baseline"],
2102                     "n": "list of scene collections",
2103                     "rts": ["oic.wk.scenecollection"],
2104                     "links": [
2105                         {"href": "/scenecollection1", "rt": ["oic.wk.scenecollection"], "if":["oic.if.ll",
2106 "oic.if.baseline"]},
2107                         {"href": "/scenecollection2", "rt": ["oic.wk.scenecollection"], "if":["oic.if.ll",
2108 "oic.if.baseline"]}
2109                     ]
2110                 },
2111                 "schema": { "$ref": "#/definitions/Collection" }
2112             }
2113         }
2114     }
2115 },
2116 },
2117 "parameters": {
2118     "interface-all" : {
2119         "in" : "query",
2120         "name" : "if",
2121         "type" : "string",
2122         "enum" : ["oic.if.ll", "oic.if.baseline"]
2123     }
2124 },
2125 "definitions": {
2126     "Collection": {
2127         "properties": {
2128             "links": {
2129                 "description": "A set of simple or individual OCF Links.",
2130                 "items": {
2131                     "$ref": "#/definitions/oic.oic-link"
2132                 },
2133                 "type": "array"
2134             },
2135             "n": {

```

```

2136         "$ref" :
2137         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2138         schema.json#/definitions/n"
2139     },
2140     "id": {
2141         "$ref" :
2142         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2143         schema.json#/definitions/id"
2144     },
2145     "if": {
2146         "type": "array",
2147         "description": "The OCF Interfaces supported by this Resource",
2148         "items": {
2149             "enum": [
2150                 "oic.if.ll",
2151                 "oic.if.baseline"
2152             ],
2153             "type": "string",
2154             "maxLength": 64
2155         },
2156         "minItems": 2,
2157         "uniqueItems": true,
2158         "readOnly": true
2159     },
2160     "rts": {
2161         "description": "The list of allowable Resource Types in Links included in the Collection",
2162         "items": {
2163             "enum": ["oic.wk.scenecollection"],
2164             "type": "string",
2165             "maxLength": 64
2166         },
2167         "minItems": 1,
2168         "uniqueItems": true,
2169         "readOnly": true,
2170         "type": "array"
2171     },
2172     "rt": {
2173         "description": "Resource Type of the Resource",
2174         "items": {
2175             "enum": ["oic.wk.scenelist"],
2176             "type": "string",
2177             "maxLength": 64
2178         },
2179         "minItems": 1,
2180         "readOnly": true,
2181         "uniqueItems": true,
2182         "type": "array"
2183     }
2184 },
2185 "type": "object",
2186 "required": [
2187     "rt",
2188     "if",
2189     "links"
2190 ]
2191 },
2192 "slinks" : {
2193     "type" : "array",
2194     "items" : {
2195         "$ref": "#/definitions/oic.oic-link"
2196     }
2197 },
2198 "oic.oic-link": {
2199     "properties": {
2200         "if": {
2201             "description": "The OCF Interfaces supported by the Linked Resource",
2202             "items": {
2203                 "enum": [
2204                     "oic.if.ll",
2205                     "oic.if.baseline"
2206                 ],

```

```

2207         "type": "string",
2208         "maxLength": 64
2209     },
2210     "minItems": 1,
2211     "uniqueItems": true,
2212     "readOnly": true,
2213     "type": "array"
2214 },
2215 "rt": {
2216     "description": "The Resource Type of the Linked Resource",
2217     "items": {
2218         "enum": ["oic.wk.scenecollection"],
2219         "type": "string",
2220         "maxLength": 64
2221     },
2222     "minItems": 1,
2223     "uniqueItems": true,
2224     "readOnly": true,
2225     "type": "array"
2226 },
2227 "anchor": {
2228     "$ref":
2229 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2230 schema.json#/definitions/anchor"
2231 },
2232 "di": {
2233     "$ref":
2234 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2235 schema.json#/definitions/di"
2236 },
2237 "eps": {
2238     "$ref":
2239 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2240 schema.json#/definitions/eps"
2241 },
2242 "href": {
2243     "$ref":
2244 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2245 schema.json#/definitions/href"
2246 },
2247 "ins": {
2248     "$ref":
2249 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2250 schema.json#/definitions/ins"
2251 },
2252 "p": {
2253     "$ref":
2254 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2255 schema.json#/definitions/p"
2256 },
2257 "rel": {
2258     "$ref":
2259 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2260 schema.json#/definitions/rel_array"
2261 },
2262 "title": {
2263     "$ref":
2264 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2265 schema.json#/definitions/title"
2266 },
2267 "type": {
2268     "$ref":
2269 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2270 schema.json#/definitions/type"
2271 }
2272 },
2273 "required": [
2274     "href",
2275     "rt",
2276     "if"
2277 ],

```

```

2278     "type": "object"
2279     }
2280   }
2281 }
2282

```

2283 **A.7.5 Property definition**

2284 Table A.12 defines the Properties that are part of the "oic.wk.scenelist" Resource Type.

2285 **Table A.12 – The Property definitions of the Resource with type "rt" = "oic.wk.scenelist".**

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

2286 **A.7.6 CRUDN behaviour**

2287 Table A.13 defines the CRUDN operations that are supported on the "oic.wk.scenelist" Resource  
2288 Type.

2289 **Table A.13 – The CRUDN operations of the Resource with type "rt" = "oic.wk.scenelist".**

Create	Read	Update	Delete	Notify
	get			observe

2290 **A.8 Scene Collection**

2291 **A.8.1 Introduction**

2292 Collection that models a set of Scenes.

2293 This Resource is a generic Collection Resource with additional Properties.

2294 The rts value contains oic.scenemember Resource Types.

2295 The additional Properties are

2296 lastScene, this is the Scene Value last set by any Client

2297 sceneValues, this is the list of available Scenes

2298 lastScene shall be listed in sceneValues.

2299

2300 **A.8.2 Example URI**

2301 /SceneCollectionResURI

2302 **A.8.3 Resource type**

2303 The Resource Type is defined as: "oic.wk.scenecollection".

2304 **A.8.4 OpenAPI 2.0 definition**

```

2305 {
2306   "swagger": "2.0",
2307   "info": {
2308     "title": "Scene Collection",
2309     "version": "2019-03-04",
2310     "license": {
2311       "name": "OCF Data Model License",
2312       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2313       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2314     },
2315     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2316   },
2317   "schemes": [
2318     "http"
2319   ],
2320   "consumes": [
2321     "application/json"
2322   ],
2323   "produces": [
2324     "application/json"
2325   ],
2326   "paths": {
2327     "/SceneCollectionResURI?if=oic.if.ll" : {
2328       "get": {
2329         "description": "Collection that models a set of Scenes.\nThis Resource is a generic
2330 Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
2331 Types.\nThe additional Properties are\n lastScene, this is the Scene Value last set by any Client\n
2332 sceneValues, this is the list of available Scenes\n lastScene shall be listed in sceneValues.\n",
2333         "parameters": [
2334           {
2335             "$ref": "#/parameters/interface-all"
2336           }
2337         ],

```

```

2338     "responses": {
2339       "200": {
2340         "description" : "",
2341         "x-example": [
2342           {"href": "/scenemember1", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]},
2343           {"href": "/scenemember2", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]}
2344         ],
2345         "schema": {
2346           "$ref": "#/definitions/slinks"
2347         }
2348       }
2349     },
2350   },
2351 },
2352 "/SceneCollectionResURI?if=oic.if.baseline" : {
2353   "get": {
2354     "description": "Collection that models a set of Scenes.\nThis Resource is a generic
2355 Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
2356 Types.\nThe additional Properties are\n lastScene, this is the Scene Value last set by any Client\n
2357 sceneValues, this is the list of available Scenes\n lastScene shall be listed in sceneValues.\n",
2358     "parameters": [
2359       {
2360         "$ref": "#/parameters/interface-all"
2361       }
2362     ],
2363     "responses": {
2364       "200": {
2365         "description" : "",
2366         "x-example": {
2367           "lastScene": "off",
2368           "sceneValues": ["off", "Reading", "TVWatching"],
2369           "rt": ["oic.wk.sceneCollection"],
2370           "n": "My Scenes for my living room",
2371           "rts": ["oic.wk.scenemember"],
2372           "links": [
2373             {"href": "/scenemember1", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]},
2374             {"href": "/scenemember2", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]}
2375           ]
2376         },
2377         "schema": {
2378           "$ref": "#/definitions/SceneCollection"
2379         }
2380       }
2381     },
2382   },
2383   "post": {
2384     "description": "Provides the action to change the last set Scene selection.\nCalling this
2385 method shall update all Scene Members to the prescribed membervalue.\nWhen this method is called
2386 with the same value as the current lastScene value\nthen all Scene Members shall be updated.\n",
2387     "parameters": [
2388       {
2389         "$ref": "#/parameters/interface-update"
2390       },
2391       {
2392         "name": "body",
2393         "in": "body",
2394         "required": true,
2395         "schema": {
2396           "$ref": "#/definitions/SceneCollectionUpdate"
2397         },
2398         "x-example": {
2399           "lastScene": "Reading"
2400         }
2401       }
2402     ],
2403     "responses": {
2404       "200": {
2405         "description" : "Indicates that the value is changed.\nThe changed Properties are
2406 provided in the response.\n",
2407         "x-example": {
2408           "lastScene": "Reading"

```

```

2409         },
2410         "schema": {
2411             "$ref": "#/definitions/SceneCollectionUpdate"
2412         }
2413     }
2414 }
2415 }
2416 },
2417 },
2418 "parameters": {
2419     "interface-update" : {
2420         "in" : "query",
2421         "name" : "if",
2422         "type" : "string",
2423         "enum" : ["oic.if.a"]
2424     },
2425     "interface-all" : {
2426         "in" : "query",
2427         "name" : "if",
2428         "type" : "string",
2429         "enum" : ["oic.if.ll", "oic.if.baseline"]
2430     }
2431 },
2432 "definitions": {
2433     "SceneCollection": {
2434         "properties": {
2435             "rt": {
2436                 "description": "Resource Type of the Resource",
2437                 "items": {
2438                     "enum": ["oic.wk.scenecollection"],
2439                     "type": "string",
2440                     "maxLength": 64
2441                 },
2442                 "minItems": 1,
2443                 "readOnly": true,
2444                 "uniqueItems": true,
2445                 "type": "array"
2446             },
2447             "lastScene": {
2448                 "description": "Last selected Scene from the set of sceneValues",
2449                 "type": "string"
2450             },
2451             "links": {
2452                 "description": "A set of simple or individual OCF Links.",
2453                 "items": {
2454                     "$ref": "#/definitions/oic.oic-link"
2455                 },
2456                 "type": "array"
2457             },
2458             "sceneValues": {
2459                 "description": "All available Scene Values",
2460                 "items": {
2461                     "type": "string"
2462                 },
2463                 "readOnly": true,
2464                 "type": "array"
2465             },
2466             "n": {
2467                 "$ref" :
2468                 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2469                 schema.json#/definitions/n"
2470             },
2471             "id": {
2472                 "$ref" :
2473                 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2474                 schema.json#/definitions/id"
2475             },
2476             "rts": {
2477                 "description": "Resource Type of the Resources within the Collection",
2478                 "items": {
2479                     "enum": ["oic.wk.scenemember"],

```



```

2480         "type": "string",
2481         "maxLength": 64
2482     },
2483     "minItems": 1,
2484     "readOnly": true,
2485     "uniqueItems": true,
2486     "type": "array"
2487 },
2488 "if" : {
2489     "description": "The OCF Interfaces supported by this Resource",
2490     "items": {
2491         "enum": [
2492             "oic.if.ll",
2493             "oic.if.baseline",
2494             "oic.if.a"
2495         ],
2496         "type": "string",
2497         "maxLength": 64
2498     },
2499     "minItems": 1,
2500     "uniqueItems": true,
2501     "readOnly": true,
2502     "type": "array"
2503 }
2504 },
2505 "type" : "object"
2506 },
2507 "SceneCollectionUpdate": {
2508     "properties": {
2509         "lastScene": {
2510             "description": "Last selected Scene from the set of sceneValues",
2511             "type": "string"
2512         }
2513     },
2514     "type" : "object"
2515 },
2516 "slinks" : {
2517     "type" : "array",
2518     "items" : {
2519         "$ref": "#/definitions/oic.oic-link"
2520     }
2521 },
2522 "oic.oic-link": {
2523     "type": "object",
2524     "properties": {
2525         "if": {
2526             "description": "The OCF Interfaces supported by the Linked Resource",
2527             "items": {
2528                 "enum": [
2529                     "oic.if.baseline"
2530                 ],
2531                 "type": "string",
2532                 "maxLength": 64
2533             },
2534             "minItems": 1,
2535             "uniqueItems": true,
2536             "readOnly": true,
2537             "type": "array"
2538         },
2539         "rt": {
2540             "description": "Resource Type of the Linked Resource",
2541             "items": {
2542                 "enum": ["oic.wk.scenemember"],
2543                 "type": "string",
2544                 "maxLength": 64
2545             },
2546             "minItems": 1,
2547             "uniqueItems": true,
2548             "readOnly": true,
2549             "type": "array"
2550         },

```

```

2551         "anchor": {
2552             "$ref":
2553 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2554 schema.json#/definitions/anchor"
2555         },
2556         "di": {
2557             "$ref":
2558 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2559 schema.json#/definitions/di"
2560         },
2561         "eps": {
2562             "$ref":
2563 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2564 schema.json#/definitions/eps"
2565         },
2566         "href": {
2567             "$ref":
2568 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2569 schema.json#/definitions/href"
2570         },
2571         "ins": {
2572             "$ref":
2573 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2574 schema.json#/definitions/ins"
2575         },
2576         "p": {
2577             "$ref":
2578 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2579 schema.json#/definitions/p"
2580         },
2581         "rel": {
2582             "$ref":
2583 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2584 schema.json#/definitions/rel_array"
2585         },
2586         "title": {
2587             "$ref":
2588 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2589 schema.json#/definitions/title"
2590         },
2591         "type": {
2592             "$ref":
2593 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2594 schema.json#/definitions/type"
2595         }
2596     },
2597     "required": [
2598         "href",
2599         "rt",
2600         "if"
2601     ]
2602 }
2603 }
2604 }
2605

```

### 2606 A.8.5 Property definition

2607 Table A.14 defines the Properties that are part of the "oic.wk.scenecollection" Resource Type.

2608 **Table A.14 – The Property definitions of the Resource with type "rt" =**  
2609 **"oic.wk.scenecollection".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema		Read Only	Resource Type of the Resource

lastScene	string		Read Write	Last selected Scene from the set of sceneValues
links	array: see schema		Read Write	A set of simple or individual OCF Links.
sceneValues	array: see schema		Read Only	All available Scene Values
n	multiple types: see schema		Read Write	
id	multiple types: see schema		Read Write	
rts	array: see schema		Read Only	Resource Type of the Resources within the Collection
if	array: see schema		Read Only	The OCF Interfaces supported by this Resource
lastScene	string		Read Write	Last selected Scene from the set of sceneValues
if	array: see schema	Yes	Read Only	The OCF Interfaces supported by the Linked Resource
rt	array: see schema	Yes	Read Only	Resource Type of the Linked Resource
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	
ins	multiple types: see schema	No	Read Write	
p	multiple types: see schema	No	Read Write	
rel	multiple types: see schema	No	Read Write	
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	

2610 **A.8.6 CRUDN behaviour**

2611 Table A.15 defines the CRUDN operations that are supported on the "oic.wk.scenecollection"  
2612 Resource Type.

2613  
2614

**Table A.15 – The CRUDN operations of the Resource with type "rt" = "oic.wk.scenecollection".**

Create	Read	Update	Delete	Notify
	get	post		observe

2615 **A.9 Scene Member**

2616 **A.9.1 Introduction**

2617 Single Link that models a Scene Member.  
2618

2619 **A.9.2 Example URI**

2620 /SceneMemberResURI

2621 **A.9.3 Resource type**

2622 The Resource Type is defined as: "oic.wk.scenemember".

2623 **A.9.4 OpenAPI 2.0 definition**

```

2624 {
2625   "swagger": "2.0",
2626   "info": {
2627     "title": "Scene Member",
2628     "version": "2019-03-04",
2629     "license": {
2630       "name": "OCF Data Model License",
2631       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2632       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2633     },
2634     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2635   },
2636   "schemes": [
2637     "http"
2638   ],
2639   "consumes": [
2640     "application/json"
2641   ],
2642   "produces": [
2643     "application/json"
2644   ],
2645   "paths": {
2646     "/SceneMemberResURI" : {
2647       "get": {
2648         "description": "Single Link that models a Scene Member.\n",
2649         "parameters": [
2650           {
2651             "$ref": "#/parameters/interface-baseline"
2652           }
2653         ],
2654         "responses": {
2655           "200": {
2656             "description": "",
2657             "x-example": {
2658               "rt": ["oic.wk.scenemember"],
2659               "id": "0685B960-FFFF-46F7-BEC0-9E6234671ADC1",
2660               "n": "my binary switch (for light bulb) mappings",
2661               "if": ["oic.if.baseline"],
2662               "link": {
2663                 "href": "binarySwitch",
2664                 "rt": ["oic.r.switch.binary"],
2665                 "if": ["oic.if.a", "oic.if.baseline"],
2666                 "eps": [
2667                   {"ep": "coap://[fe80::b1d6]:1111", "pri": 2},
2668                   {"ep": "coaps://[fe80::b1d6]:1122"},

```

```

2669         {"ep": "coap+tcp://[2001:db8:a::123]:2222", "pri": 3}
2670     ]
2671 },
2672     "SceneMappings": [
2673     {
2674         "scene": "off",
2675         "memberProperty": "value",
2676         "memberValue": "true"
2677     },
2678     {
2679         "scene": "Reading",
2680         "memberProperty": "value",
2681         "memberValue": "false"
2682     },
2683     {
2684         "scene": "TVWatching",
2685         "memberProperty": "value",
2686         "memberValue": "true"
2687     }
2688     ]
2689 },
2690     "schema": {
2691         "$ref": "#/definitions/SceneMember"
2692     }
2693 }
2694 }
2695 }
2696 }
2697 },
2698     "parameters": {
2699         "interface-baseline" : {
2700             "in" : "query",
2701             "name" : "if",
2702             "type" : "string",
2703             "enum" : ["oic.if.baseline"]
2704         }
2705     },
2706     "definitions": {
2707         "SceneMember": {
2708             "properties": {
2709                 "rt": {
2710                     "description": "Resource Type of the Resource",
2711                     "items": {
2712                         "enum": ["oic.wk.scenemember"],
2713                         "type": "string",
2714                         "maxLength": 64
2715                     },
2716                     "minItems": 1,
2717                     "readOnly": true,
2718                     "uniqueItems": true,
2719                     "type": "array"
2720                 },
2721                 "SceneMappings": {
2722                     "description": "Array of mappings per Scene, can be one(1)",
2723                     "items": {
2724                         "properties": {
2725                             "memberProperty": {
2726                                 "description": "Property name that will be mapped",
2727                                 "readOnly": true,
2728                                 "type": "string"
2729                             },
2730                             "memberValue": {
2731                                 "description": "Value of the Member Property",
2732                                 "readOnly": true,
2733                                 "type": "string"
2734                             },
2735                             "scene": {
2736                                 "description": "Specifies a Scene Value that will be acted upon",
2737                                 "type": "string"
2738                             }
2739                         }

```

```

2740         "required": [
2741             "scene",
2742             "memberProperty",
2743             "memberValue"
2744         ],
2745         "type": "object"
2746     },
2747     "type": "array"
2748 },
2749 "n": {
2750     "$ref" :
2751     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2752     schema.json#/definitions/n"
2753 },
2754 "id": {
2755     "$ref" :
2756     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2757     schema.json#/definitions/id"
2758 },
2759 "link": {
2760     "$ref": "#/definitions/oic.oic-link"
2761 },
2762 "if": {
2763     "description": "The OCF Interfaces supported by this Resource",
2764     "items": {
2765         "enum": [
2766             "oic.if.baseline"
2767         ],
2768         "type": "string",
2769         "maxLength": 64
2770     },
2771     "minItems": 1,
2772     "readOnly": true,
2773     "uniqueItems": true,
2774     "type": "array"
2775 }
2776 },
2777 "type" : "object",
2778 "required": [
2779     "rt",
2780     "if",
2781     "SceneMappings"
2782 ]
2783 },
2784 "oic.oic-link": {
2785     "properties": {
2786         "if": {
2787             "description": "The OCF Interfaces supported by the target Resource",
2788             "items": {
2789                 "enum": [
2790                     "oic.if.baseline",
2791                     "oic.if.ll",
2792                     "oic.if.b",
2793                     "oic.if.lb",
2794                     "oic.if.rw",
2795                     "oic.if.r",
2796                     "oic.if.a",
2797                     "oic.if.s"
2798                 ],
2799                 "type": "string",
2800                 "maxLength": 64
2801             },
2802             "minItems": 1,
2803             "uniqueItems": true,
2804             "readOnly": true,
2805             "type": "array"
2806         },
2807         "rt": {
2808             "description": "Resource Type of the target Resource",
2809             "items": {
2810                 "type": "string",

```

```

2811         "maxLength": 64
2812     },
2813     "minItems": 1,
2814     "readOnly": true,
2815     "uniqueItems": true,
2816     "type": "array"
2817 },
2818 "anchor": {
2819     "$ref":
2820 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2821 schema.json#/definitions/anchor"
2822 },
2823 "di": {
2824     "$ref":
2825 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2826 schema.json#/definitions/di"
2827 },
2828 "eps": {
2829     "$ref":
2830 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2831 schema.json#/definitions/eps"
2832 },
2833 "href": {
2834     "$ref":
2835 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2836 schema.json#/definitions/href"
2837 },
2838 "ins": {
2839     "$ref":
2840 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2841 schema.json#/definitions/ins"
2842 },
2843 "p": {
2844     "$ref":
2845 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2846 schema.json#/definitions/p"
2847 },
2848 "rel": {
2849     "$ref":
2850 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2851 schema.json#/definitions/rel_array"
2852 },
2853 "title": {
2854     "$ref":
2855 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2856 schema.json#/definitions/title"
2857 },
2858 "type": {
2859     "$ref":
2860 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2861 schema.json#/definitions/type"
2862 }
2863 },
2864 "required": [
2865     "href",
2866     "rt",
2867     "if"
2868 ],
2869 "type": "object"
2870 }
2871 }
2872 }
2873

```

## 2874 **A.9.5 Property definition**

2875 Table A.16 defines the Properties that are part of the "oic.wk.scenemember" Resource Type.

2876  
2877

**Table A.16 – The Property definitions of the Resource with type "rt" = "oic.wk.scenemember".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	Yes	Read Only	Resource Type of the Resource
SceneMappings	array: see schema	Yes	Read Write	Array of mappings per Scene, can be one(1)
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
link	multiple types: see schema	No	Read Write	
if	array: see schema	Yes	Read Only	The OCF Interfaces supported by this Resource
if	array: see schema	Yes	Read Only	The OCF Interfaces supported by the target Resource
rt	array: see schema	Yes	Read Only	Resource Type of the target Resource
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	
ins	multiple types: see schema	No	Read Write	
p	multiple types: see schema	No	Read Write	
rel	multiple types: see schema	No	Read Write	
title	multiple types: see schema	No	Read Write	
type	multiple types: see schema	No	Read Write	

2878 **A.9.6 CRUDN behaviour**

2879 Table A.17 defines the CRUDN operations that are supported on the "oic.wk.scenemember"  
2880 Resource Type.

**Table A.17 – The CRUDN operations of the Resource with type "rt" = "oic.wk.scenemember".**

Create	Read	Update	Delete	Notify
	get			observe

2881  
2882



## 2883 **A.10 Alert**

### 2884 **A.10.1 Introduction**

2885 This Resource provides a mechanism for a Server to expose information to an  
2886 interested party with regard to error or other conditions that the Device is experiencing (Alerts).  
2887 category is a string that contains the Device defined category for the Alert.  
2888 timestamp is an RFC3339 formatted time at which the Alert was generated.  
2889 originatorid is a string that contains the identity of the originator of the Alert.  
2890 severity is an integer that contains the RFC5424 defined severity of the Alert.  
2891 subject is an array containing human readable text in one or more languages.  
2892 accountid is a string containing the identity of the account with which the Device is associated.  
2893

### 2894 **A.10.2 Example URI**

2895 /AlertResURI

### 2896 **A.10.3 Resource type**

2897 The Resource Type is defined as: "oic.r.alert".

### 2898 **A.10.4 OpenAPI 2.0 definition**

```
2899 {
2900   "swagger": "2.0",
2901   "info": {
2902     "title": "Alert",
2903     "version": "2019-02-28",
2904     "license": {
2905       "name": "OCF Data Model License",
2906       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2907       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
2908     },
2909     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2910   },
2911   "schemes": ["http"],
2912   "consumes": ["application/json"],
2913   "produces": ["application/json"],
2914   "paths": {
2915     "/AlertResURI" : {
2916       "get": {
2917         "description": "This Resource provides a mechanism for a Server to expose information to
2918 an\ninterested party with regard to error or other conditions that the Device is experiencing
2919 (Alerts).\nncategory is a string that contains the Device defined category for the Alert.\nntimestamp
2920 is an RFC3339 formatted time at which the Alert was generated.\noriginatorid is a string that
2921 contains the identity of the originator of the Alert.\nseverity is an integer that contains the
2922 RFC5424 defined severity of the Alert.\nsubject is an array containing human readable text in one or
2923 more languages.\naccountid is a string containing the identity of the account with which the Device
2924 is associated.\n",
2925         "parameters": [
2926           {"$ref": "#/parameters/interface"}
2927         ],
2928         "responses": {
2929           "200": {
2930             "description": "",
2931             "x-example":
2932             {
2933               "rt": ["oic.r.alert"],
2934               "accountid": "MyAccountID",
2935               "category": "MyCategory",
2936               "timestamp": "2018-02-28T08:00:00Z",
2937               "originatorid": "MyOriginatorID",
2938               "severity": 3,
2939               "subject": [{"language": "en-US", "value": "System error"}]
2940             },
2941             "schema": {"$ref": "#/definitions/Alert"}
2942           }
2943         }
2944       }
2945     }
2946   }
2947 }
```

```

2943     }
2944   }
2945 }
2946 },
2947 "parameters": {
2948   "interface": {
2949     "in": "query",
2950     "name": "if",
2951     "type": "string",
2952     "enum": ["oic.if.r", "oic.if.baseline"]
2953   }
2954 },
2955 "definitions": {
2956   "Alert": {
2957     "properties": {
2958       "category": {
2959         "description": "Category into which the notification is classified",
2960         "maxLength": 64,
2961         "readOnly": true,
2962         "type": "string"
2963       },
2964       "rt": {
2965         "description": "Resource Type",
2966         "items": {
2967           "maxLength": 64,
2968           "type": "string",
2969           "enum": ["oic.r.alert"]
2970         },
2971         "minItems": 1,
2972         "readOnly": true,
2973         "uniqueItems": true,
2974         "type": "array"
2975       },
2976       "severity": {
2977         "description": "RFC 5424 severity of the alert",
2978         "maximum": 7,
2979         "minimum": 0,
2980         "readOnly": true,
2981         "type": "integer"
2982       },
2983       "timestamp": {
2984         "description": "An RFC3339 formatted time indicating when the data was observed (e.g.:
2985 2016-02-15T09:19Z, 1996-12-19T16:39:57-08:00)",
2986         "format": "date-time",
2987         "readOnly": true,
2988         "type": "string"
2989       },
2990       "subject": {
2991         "description": "Alert subject matter.",
2992         "items": {
2993           "properties": {
2994             "language": {
2995               "allOf": [
2996                 {
2997                   "description": "An identifier formatted according to IETF RFC 5646 (language
2998 tag).",
2999                   "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
3000                   "type": "string"
3001                 },
3002                 {
3003                   "description": "An RFC 5646 language tag.",
3004                   "readOnly": true
3005                 }
3006               ]
3007             },
3008             "value": {
3009               "description": "Alert subject matter in the indicated language.",
3010               "maxLength": 255,
3011               "readOnly": true,
3012               "type": "string"
3013             }
3014           }
3015         }
3016       }
3017     }
3018   }
3019 }

```

```

3014     },
3015     "type": "object"
3016   },
3017   "minItems": 1,
3018   "readOnly": true,
3019   "type": "array"
3020 },
3021 "originatorid": {
3022   "description": "ID of the creator of the event",
3023   "maxLength": 64,
3024   "readOnly": true,
3025   "type": "string"
3026 },
3027 "n": {
3028   "$ref" :
3029 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3030 schema.json#/definitions/n"
3031 },
3032 "id": {
3033   "$ref" :
3034 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3035 schema.json#/definitions/id"
3036 },
3037 "accountid": {
3038   "description": "ID of the account",
3039   "maxLength": 64,
3040   "readOnly": true,
3041   "type": "string"
3042 },
3043 "if": {
3044   "description": "The OCF Interfaces supported by this Resource",
3045   "items": {
3046     "enum": [
3047       "oic.if.r",
3048       "oic.if.baseline"
3049     ],
3050     "type": "string",
3051     "maxLength": 64
3052   },
3053   "minItems": 2,
3054   "readOnly": true,
3055   "uniqueItems": true,
3056   "type": "array"
3057 },
3058 },
3059 "type" : "object",
3060 "required": ["category", "timestamp", "originatorid", "severity"]
3061 }
3062 }
3063 }
3064

```

### 3065 A.10.5 Property definition

3066 Table A.18 defines the Properties that are part of the "oic.r.alert" Resource Type.

3067 **Table A.18 – The Property definitions of the Resource with type "rt" = "oic.r.alert".**

Property name	Value type	Mandatory	Access mode	Description
category	string	Yes	Read Only	Category into which the notification is classified
rt	array: see schema	No	Read Only	Resource Type
severity	integer	Yes	Read Only	RFC 5424 severity of the alert
timestamp	string	Yes	Read Only	An RFC3339 formatted time

				indicating when the data was observed (e.g.: 2016-02-15T09:19Z, 1996-12-19T16:39:57-08:00)
subject	array: see schema	No	Read Only	Alert subject matter.
originatorid	string	Yes	Read Only	ID of the creator of the event
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
accountid	string	No	Read Only	ID of the account
if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource

3068 **A.10.6 CRUDN behaviour**

3069 Table A.19 defines the CRUDN operations that are supported on the "oic.r.alert" Resource Type.

3070 **Table A.19 – The CRUDN operations of the Resource with type "rt" = "oic.r.alert".**

Create	Read	Update	Delete	Notify
	get			observe

3071 **A.11 Alert Collection**

3072 **A.11.1 Introduction**

3073 This Resource is a Collection containing instances of Alerts (oic.r.alert).

3074 This is the response using the baseline interface.

3075

3076 **A.11.2 Example URI**

3077 /AlertCollectionResURI

3078 **A.11.3 Resource type**

3079 The Resource Type is defined as: "oic.r.alertcollection".

3080 **A.11.4 OpenAPI 2.0 definition**

```

3081 {
3082   "swagger": "2.0",
3083   "info": {
3084     "title": "Alert Collection",
3085     "version": "2019-03-04",
3086     "license": {
3087       "name": "OCF Data Model License",
3088       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
3089       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
3090     },
3091     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
3092   },
3093   "schemes": ["http"],
3094   "consumes": ["application/json"],
3095   "produces": ["application/json"],
3096   "paths": {
3097     "/AlertCollectionResURI?if=oic.if.ll" : {
3098       "get": {
3099         "description": "This Resource is a Collection containing instances of Alerts

```

```

3100 (oic.r.alert).\nThis is the response using the links list OCF Interface.\n",
3101     "parameters": [
3102       {"$ref": "#/parameters/interface-all"}
3103     ],
3104     "responses": {
3105       "200": {
3106         "description": "",
3107         "x-example": [
3108           {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
3109 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
3110           {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
3111 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
3112           {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
3113 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
3114           {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
3115 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]}
3116         ],
3117         "schema": { "$ref": "#/definitions/AlertCollection-11" }
3118       }
3119     }
3120   },
3121 },
3122 "/AlertCollectionResURI?if=oic.if.b" : {
3123   "get": {
3124     "description": "This Resource is a Collection containing instances of Alerts
3125 (oic.r.alert).\nThis is the response using the Batch interface.\n",
3126     "parameters": [
3127       {"$ref": "#/parameters/interface-all"}
3128     ],
3129     "responses": {
3130       "200": {
3131         "description": "",
3132         "x-example": [
3133           {
3134             "href": "/Alert1ResURI",
3135             "rep": {
3136               "rt": ["oic.r.alert"],
3137               "accountid": "MyAccountID",
3138               "category": "MyCategory",
3139               "timestamp": "2018-02-28T08:00:00Z",
3140               "originatorid": "MyOriginatorID",
3141               "severity": 3,
3142               "subject": [{"language": "en-US", "value": "System error"}]}
3143           },
3144           {
3145             "href": "/Alert2ResURI",
3146             "rep": {
3147               "rt": ["oic.r.alert"],
3148               "accountid": "MyAccountID",
3149               "category": "MyCategory",
3150               "timestamp": "2018-02-28T08:15:00Z",
3151               "originatorid": "MyOriginatorID",
3152               "severity": 4,
3153               "subject": [{"language": "en-US", "value": "Network error"}]}
3154           }
3155         ]
3156       }
3157     },
3158     "schema": { "$ref": "#/definitions/AlertCollection-b" }
3159   }
3160 },
3161 },
3162 },
3163 "/AlertCollectionResURI?if=oic.if.baseline" : {
3164   "get": {
3165     "description": "This Resource is a Collection containing instances of Alerts
3166 (oic.r.alert).\nThis is the response using the baseline interface.\n",
3167     "parameters": [
3168       {"$ref": "#/parameters/interface-all"}
3169     ],
3170     "responses": {

```

```

3171         "200": {
3172             "description" : "",
3173             "x-example": {
3174                 "rt": ["oic.r.alertcollection"],
3175                 "rts": ["oic.r.alert"],
3176                 "if": ["oic.if.ll", "oic.if.b", "oic.if.baseline"],
3177                 "links": [
3178                     {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
3179 ["oic.if.r", "oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::bld6]:1122"}]},
3180                     {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
3181 ["oic.if.r", "oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::bld6]:1122"}]},
3182                     {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
3183 ["oic.if.r", "oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::bld6]:1122"}]},
3184                     {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
3185 ["oic.if.r", "oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::bld6]:1122"}]}
3186                 ]
3187             },
3188             "schema": { "$ref": "#/definitions/AlertCollection-baseline" }
3189         }
3190     }
3191 }
3192 },
3193 },
3194 "parameters": {
3195     "interface-all" : {
3196         "in" : "query",
3197         "name" : "if",
3198         "type" : "string",
3199         "enum" : ["oic.if.ll", "oic.if.b", "oic.if.baseline"]
3200     }
3201 },
3202 "definitions": {
3203     "AlertCollection-b" : {
3204         "type": "array",
3205         "minItems": 0,
3206         "uniqueItems": true,
3207         "items": {
3208             "type": "object",
3209             "additionalProperties": true,
3210             "properties": {
3211                 "href": {
3212                     "$ref":
3213 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3214 schema.json#/definitions/href"
3215                 },
3216                 "rep": {
3217                     "$ref":
3218 "http://openconnectivityfoundation.github.io/core/swagger2.0/oic.r.alert.swagger.json#/definitions/A
3219 lert"
3220                 }
3221             },
3222             "required": [
3223                 "href",
3224                 "rep"
3225             ]
3226         }
3227     },
3228     "AlertCollection-baseline" : {
3229         "properties": {
3230             "n": {
3231                 "$ref" :
3232 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3233 schema.json#/definitions/n"
3234             },
3235             "id": {
3236                 "$ref" :
3237 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3238 schema.json#/definitions/id"
3239             },
3240             "rt": {
3241                 "items": {

```

```

3242         "type": "string",
3243         "enum": ["oic.r.alertcollection"],
3244         "maxLength": 64
3245     },
3246     "minItems": 1,
3247     "type": "array",
3248     "uniqueItems": true,
3249     "readOnly": true
3250 },
3251 "rts": {
3252     "items": {
3253         "type": "string",
3254         "enum": ["oic.r.alert"],
3255         "maxLength": 64
3256     },
3257     "minItems": 1,
3258     "type": "array",
3259     "uniqueItems": true,
3260     "readOnly": true
3261 },
3262 "if": {
3263     "description": "The OCF Interfaces supported by this Resource",
3264     "items": {
3265         "enum": [
3266             "oic.if.ll",
3267             "oic.if.b",
3268             "oic.if.baseline"
3269         ],
3270         "type": "string",
3271         "maxLength": 64
3272     },
3273     "minItems": 3,
3274     "readOnly": true,
3275     "uniqueItems": true,
3276     "type": "array"
3277 },
3278 "links": {
3279     "description": "A set of simple or individual Links.",
3280     "items": {
3281         "$ref": "#/definitions/oic.oic-link"
3282     },
3283     "type": "array"
3284 }
3285 },
3286 "type": "object",
3287 "required": ["rt", "rts", "if", "links"]
3288 },
3289 "AlertCollection-ll" : {
3290     "type": "array",
3291     "items": {
3292         "$ref": "#/definitions/oic.oic-link"
3293     }
3294 },
3295 "oic.oic-link": {
3296     "type": "object",
3297     "properties": {
3298         "anchor": {
3299             "$ref":
3300 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3301 schema.json#/definitions/anchor"
3302         },
3303         "di": {
3304             "$ref":
3305 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3306 schema.json#/definitions/di"
3307         },
3308         "eps": {
3309             "$ref":
3310 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3311 schema.json#/definitions/eps"
3312         },

```

```

3313         "href": {
3314             "$ref":
3315 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3316 schema.json#/definitions/href"
3317         },
3318         "ins": {
3319             "$ref":
3320 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3321 schema.json#/definitions/ins"
3322         },
3323         "p": {
3324             "$ref":
3325 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3326 schema.json#/definitions/p"
3327         },
3328         "rel": {
3329             "$ref":
3330 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3331 schema.json#/definitions/rel_array"
3332         },
3333         "title": {
3334             "$ref":
3335 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3336 schema.json#/definitions/title"
3337         },
3338         "type": {
3339             "$ref":
3340 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3341 schema.json#/definitions/type"
3342         },
3343         "if": {
3344             "description": "The OCF Interfaces supported by the target Resource",
3345             "items": {
3346                 "enum": [
3347                     "oic.if.r",
3348                     "oic.if.baseline"
3349                 ],
3350                 "type": "string",
3351                 "maxLength": 64
3352             },
3353             "minItems": 2,
3354             "uniqueItems": true,
3355             "type": "array",
3356             "readOnly": true
3357         },
3358         "rt": {
3359             "description": "Resource Type of the target Resource",
3360             "items": {
3361                 "maxLength": 64,
3362                 "type": "string",
3363                 "enum": ["oic.r.alert"]
3364             },
3365             "minItems": 1,
3366             "type": "array",
3367             "uniqueItems": true,
3368             "readOnly": true
3369         }
3370     },
3371     "required": [
3372         "href",
3373         "rt",
3374         "if"
3375     ]
3376 }
3377 }
3378 }
3379

```

### 3380 A.11.5 Property definition

3381 Table A.20 defines the Properties that are part of the "oic.r.alertcollection" Resource Type.



3382  
3383

**Table A.20 – The Property definitions of the Resource with type "rt" = "oic.r.alertcollection".**

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

3384 **A.11.6 CRUDN behaviour**

3385 Table A.21 defines the CRUDN operations that are supported on the "oic.r.alertcollection"  
3386 Resource Type.

3387 **Table A.21 – The CRUDN operations of the Resource with type "rt" = "oic.r.alertcollection".**

Create	Read	Update	Delete	Notify
	get			observe

## 3388 **A.12 software update**

### 3389 **A.12.1 Introduction**

3390 The Resource performing scheduled software update.

### 3391 **A.12.2 Example URI**

3392 /softwareupdateResURI

### 3393 **A.12.3 Resource type**

3394 The Resource Type is defined as: "oic.r.softwareupdate".

### 3395 **A.12.4 OpenAPI 2.0 definition**

```
3396 {
3397   "swagger": "2.0",
3398   "info": {
3399     "title": "software update",
3400     "version": "20190408",
3401     "license": {
3402       "name": "OCF Data Model License",
3403       "url":
3404         "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
3405         CENSE.md",
3406       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
3407     },
3408     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
3409   },
3410   "schemes": ["http"],
3411   "consumes": ["application/json"],
3412   "produces": ["application/json"],
3413   "paths": {
3414     "/softwareupdateResURI" : {
3415       "get": {
3416         "description": "The Resource performing scheduled software update.",
3417         "parameters": [
3418           {"$ref": "#/parameters/interface"}
3419         ],
3420         "responses": {
3421           "200": {
3422             "description": "Schedule an software update.",
3423             "x-example":
3424               {
3425                 "rt": ["oic.r.softwareupdate"],
3426                 "if": ["oic.if.rw", "oic.if.baseline"],
3427                 "nv": "my version",
3428                 "purl": "https://myvendor/myexampleurl",
3429                 "swupdateaction": "idle",
3430                 "swupdatestate": "idle",
3431                 "swupdateresult": 0,
3432                 "lastupdate": "2015-01-09T14:30:00Z",
3433                 "signed": "vendor",
3434                 "updatetime": "2015-01-09T14:30:00Z"
3435               },
3436             "schema": { "$ref": "#/definitions/swupdate" }
3437           }
3438         }
3439       },
3440       "post": {
3441         "description": "Mechanism to schedule a start of the software update.",
3442         "parameters": [
3443           {"$ref": "#/parameters/interface"},
3444           {
3445             "name": "body",
3446             "in": "body",
3447             "required": true,
3448             "schema": { "$ref": "#/definitions/swupdate-update" },
3449             "x-example":
```

```

3450         {
3451             "purl": "https://myvendor/newversion",
3452             "swupdateaction": "upgrade",
3453             "updatetime" : "2030-01-09T14:30:00Z"
3454         }
3455     },
3456 ],
3457 "responses": {
3458     "200": {
3459         "description": "",
3460         "x-example":
3461             {
3462                 "nv": "my new version",
3463                 "purl": "https://myvendor/myexampleurl",
3464                 "swupdateaction": "upgrade",
3465                 "swupdatestate" : "idle",
3466                 "swupdateresult" : 0,
3467                 "lastupdate" : "2015-01-09T14:30:00Z",
3468                 "signed" : "vendor",
3469                 "updatetime" : "2030-01-09T14:30:00Z"
3470             },
3471         "schema": { "$ref": "#/definitions/swupdate" }
3472     }
3473 }
3474 }
3475 }
3476 },
3477 "parameters": {
3478     "interface": {
3479         "in": "query",
3480         "name": "if",
3481         "type": "string",
3482         "enum": ["oic.if.rw", "oic.if.baseline"]
3483     }
3484 },
3485 "definitions": {
3486     "swupdate": {
3487         "properties": {
3488             "rt": {
3489                 "items": {
3490                     "enum": [
3491                         "oic.r.softwareupdate"
3492                     ],
3493                     "type": "string",
3494                     "maxLength": 64
3495                 },
3496                 "minItems": 1,
3497                 "type": "array",
3498                 "readOnly": true,
3499                 "uniqueItems": true
3500             },
3501             "nv": {
3502                 "description": "New available Software version",
3503                 "maxLength": 64,
3504                 "type": "string",
3505                 "readOnly" : true
3506             },
3507             "purl": {
3508                 "description": "Source of the software package, might be a HTTPS or CoAPs URL",
3509                 "maxLength": 64,
3510                 "type": "string",
3511                 "format": "uri"
3512             },
3513             "swupdateaction": {
3514                 "description": "Scheduled action to do a software update",
3515                 "maxLength": 64,
3516                 "type": "string",
3517                 "enum": [
3518                     "idle",
3519                     "isac",
3520                     "isvv",

```

```

3521         "upgrade"
3522     ]
3523 },
3524 "swupdatestate": {
3525     "description": "State of the software update",
3526     "readOnly": true,
3527     "type": "string",
3528     "enum": [
3529         "idle",
3530         "nsa",
3531         "svv",
3532         "sva",
3533         "upgrading"
3534     ]
3535 },
3536 "swupdateresult": {
3537     "description": "Result of the software update, list of result codes",
3538     "readOnly": true,
3539     "type": "integer"
3540 },
3541 "lastupdate": {
3542     "description": "Time of the last software update (in RFC3339 format), Initial set on date
3543 of manufacturing",
3544     "readOnly": true,
3545     "maxLength": 64,
3546     "type": "string",
3547     "format": "date-time"
3548 },
3549 "signed": {
3550     "description": "Signage method of the software package, currently the only allowed value
3551 is 'vendor'.",
3552     "readOnly": true,
3553     "type": "string",
3554     "enum": [
3555         "vendor"
3556     ]
3557 },
3558 "updateatime": {
3559     "description": "Scheduled time (in RFC3339 format) to do action which is specified in
3560 'swupdateaction' Property.",
3561     "maxLength": 64,
3562     "type": "string",
3563     "format": "date-time"
3564 },
3565 "n": {
3566     "$ref":
3567 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3568 schema.json#/definitions/n"
3569 },
3570 "id": {
3571     "$ref":
3572 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3573 schema.json#/definitions/id"
3574 },
3575 "if": {
3576     "description": "The interface set supported by this resource",
3577     "items": {
3578         "enum": [
3579             "oic.if.rw",
3580             "oic.if.baseline"
3581         ],
3582         "type": "string"
3583     },
3584     "minItems": 2,
3585     "maxItems": 2,
3586     "type": "array",
3587     "readOnly": true,
3588     "uniqueItems": true
3589 }
3590 },
3591 "required": ["purl", "swupdateaction", "swupdatestate", "swupdateresult", "updateatime"]

```

```

3592     },
3593     "swupdate-update": {
3594       "properties": {
3595         "purl": {
3596           "$ref": "#/definitions/swupdate/properties/purl"
3597         },
3598         "swupdateaction" : {
3599           "$ref": "#/definitions/swupdate/properties/swupdateaction"
3600         },
3601         "updatetime": {
3602           "$ref": "#/definitions/swupdate/properties/updatetime"
3603         }
3604       },
3605       "required": ["purl", "swupdateaction", "updatetime"]
3606     }
3607   }
3608 }
3609

```

### 3610 A.12.5 Property definition

3611 Table A.22 defines the Properties that are part of the "oic.r.softwareupdate" Resource Type.

3612 **Table A.22 – The Property definitions of the Resource with type "rt" =**  
3613 **"oic.r.softwareupdate".**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	
nv	string	No	Read Only	New available Software version
purl	string	Yes	Read Write	Source of the software package, might be a HTTPS or CoAPs URL
swupdateaction	string	Yes	Read Write	Scheduled action to do a software update
swupdatestate	string	Yes	Read Only	State of the software update
swupdateresult	integer	Yes	Read Only	Result of the software update, list of result codes
lastupdate	string	No	Read Only	Time of the last software update (in RFC3339 format), Initial set on date of manufacturing
signed	string	No	Read Only	Signage method of the software package, currently the only allowed value is 'vendor'.
updatetime	string	Yes	Read Write	Scheduled time (in RFC3339 format) to do action which is specified in 'swupdateaction' Property.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	

if	array: see schema	No	Read Only	The interface set supported by this resource
purl	multiple types: see schema	Yes	Read Write	
swupdateaction	multiple types: see schema	Yes	Read Write	
updatetime	multiple types: see schema	Yes	Read Write	

3614 **A.12.6 CRUDN behaviour**

3615 Table A.23 defines the CRUDN operations that are supported on the "oic.r.softwareupdate"  
3616 Resource Type.

3617 **Table A.23 – The CRUDN operations of the Resource with type "rt" =**  
3618 **"oic.r.softwareupdate".**

Create	Read	Update	Delete	Notify
	get	post		observe

3619 **A.13 OCF Rule**

3620 **A.13.1 Introduction**

- 3621 A Rule is a Collection made up of 3 Links:  
3622 - A Link to an instance of a Collection of Rule Inputs.  
3623 - A Link to a Rule Expression (the logic of the Rule).  
3624 - A Link to a Collection of Rule Actions.

3625 **A.13.2 Example URI**

3626 /RuleResURI

3627 **A.13.3 Resource type**

3628 The Resource Type is defined as: "oic.r.rule".

3629 **A.13.4 OpenAPI 2.0 definition**

```
3630 {
3631   "swagger": "2.0",
3632   "info": {
3633     "title": "OCF Rule",
3634     "version": "20190910",
3635     "license": {
3636       "name": "OCF Data Model License",
3637       "url":
3638 "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
3639 CENSE.md",
3640       "x-copyright": "copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
3641     },
3642     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
3643   },
3644   "schemes": ["http"],
3645   "consumes": ["application/json"],
3646   "produces": ["application/json"],
3647   "paths": {
3648     "/RuleResURI?if=oic.if.ll": {
3649       "get": {
3650         "description": "A Rule is a Collection made up of 3 Links. \n A Link to an instance of a
3651 Collection of Rule Inputs. \n A Link to a Rule Expression (the logic of the Rule). \n A Link to a
3652 Collection of Rule Actions.",
3653         "parameters": [
```

```

3654     {"$ref": "#/parameters/interface-all"}
3655   ],
3656   "responses": {
3657     "200": {
3658       "description": "Retrieves the rule as Links List.",
3659       "x-example":
3660         [
3661           {
3662             "href": "/ruleinputcollection",
3663             "rt": ["oic.r.rule.inputcollection"],
3664             "if": ["oic.if.ll", "oic.if.baseline"],
3665             "p": {"bm": 3},
3666             "eps": [
3667               {"ep": "coaps://[fe80::b1d6]:1111"}
3668             ]
3669           },
3670           {
3671             "href": "/ruleexpression",
3672             "rt": ["oic.r.rule.expression"],
3673             "if": ["oic.if.rw", "oic.if.baseline"],
3674             "p": {"bm": 3},
3675             "eps": [
3676               {"ep": "coaps://[fe80::b1d6]:1111"}
3677             ]
3678           },
3679           {
3680             "href": "/ruleactioncollection",
3681             "rt": ["oic.r.rule.actioncollection"],
3682             "if": ["oic.if.ll", "oic.if.baseline"],
3683             "p": {"bm": 3},
3684             "eps": [
3685               {"ep": "coap://[fe80::b1d6]:1111"}
3686             ]
3687           }
3688         ],
3689     "schema": {"$ref": "#/definitions/slinklist"}
3690   }
3691 }
3692 },
3693 "/RuleResURI?if=oic.if.baseline": {
3694   "get": {
3695     "description": "A Rule is a Collection made up of 3 Links: \n- A Link to an instance of a
3696 Collection of Rule Inputs. \n- A Link to a Rule Expression (the logic of the Rule). \n- A Link to a
3697 Collection of Rule Actions.",
3698     "parameters": [
3699       {"$ref": "#/parameters/interface-all"}
3700     ],
3701     "responses": {
3702       "200": {
3703         "description": "Retrieves the baseline response for the rule.",
3704         "x-example":
3705           {
3706             "rt": ["oic.r.rule"],
3707             "if": ["oic.if.ll", "oic.if.baseline"],
3708             "rts":
3709 ["oic.r.rule.inputcollection", "oic.r.rule.expression", "oic.r.rule.actioncollection"],
3710             "links": [
3711               {
3712                 "href": "/ruleinputcollection",
3713                 "rt": ["oic.r.rule.inputcollection"],
3714                 "if": ["oic.if.ll", "oic.if.baseline"],
3715                 "p": {"bm": 3},
3716                 "eps": [
3717                   {"ep": "coaps://[fe80::b1d6]:1111"}
3718                 ]
3719               },
3720               {
3721                 "href": "/ruleexpression",
3722                 "rt": ["oic.r.rule.expression"],
3723                 "if": ["oic.if.rw", "oic.if.baseline"],
3724

```

```

3725         "p": { "bm": 3 },
3726         "eps": [
3727             { "ep": "coaps://[fe80::b1d6]:1111" }
3728         ],
3729     },
3730     {
3731         "href": "/ruleactioncollection",
3732         "rt": [ "oic.r.rule.actioncollection" ],
3733         "if": [ "oic.if.ll", "oic.if.baseline" ],
3734         "p": { "bm": 3 },
3735         "eps": [
3736             { "ep": "coap://[fe80::b1d6]:1111" }
3737         ]
3738     }
3739 ],
3740 },
3741 "schema": { "$ref": "#/definitions/sbaseline" }
3742 }
3743 }
3744 }
3745 }
3746 },
3747 "parameters": {
3748     "interface-all": {
3749         "in": "query",
3750         "name": "if",
3751         "type": "string",
3752         "enum": [ "oic.if.ll", "oic.if.baseline" ]
3753     }
3754 },
3755 "definitions": {
3756     "oic.oic-link": {
3757         "type": "object",
3758         "properties": {
3759             "anchor": {
3760                 "$ref":
3761 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3762 schema.json#/definitions/anchor"
3763             },
3764             "di": {
3765                 "$ref":
3766 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3767 schema.json#/definitions/di"
3768             },
3769             "eps": {
3770                 "$ref":
3771 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3772 schema.json#/definitions/eps"
3773             },
3774             "href": {
3775                 "$ref":
3776 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3777 schema.json#/definitions/href"
3778             },
3779             "if": {
3780                 "description": "The OCF Interfaces supported by the Linked Resource",
3781                 "items": {
3782                     "enum": [
3783                         "oic.if.baseline",
3784                         "oic.if.ll",
3785                         "oic.if.rw"
3786                     ],
3787                     "type": "string",
3788                     "maxLength": 64
3789                 },
3790                 "minItems": 1,
3791                 "uniqueItems": true,
3792                 "type": "array"
3793             },
3794             "ins": {
3795                 "$ref":

```



```

3796 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3797 schema.json#/definitions/ins"
3798 },
3799 "p": {
3800   "$ref":
3801     "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3802     schema.json#/definitions/p"
3803   },
3804   "rel": {
3805     "$ref":
3806       "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3807       schema.json#/definitions/rel_array"
3808   },
3809   "rt": {
3810     "description": "Resource Type of the Linked Resource",
3811     "items": {
3812       "maxLength": 64,
3813       "type": "string",
3814       "enum":
3815         ["oic.r.rule.inputcollection", "oic.r.rule.expression", "oic.r.rule.actioncollection"]
3816     },
3817     "minItems": 1,
3818     "uniqueItems": true,
3819     "type": "array"
3820   },
3821   "title": {
3822     "$ref":
3823       "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3824       schema.json#/definitions/title"
3825   },
3826   "type": {
3827     "$ref":
3828       "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3829       schema.json#/definitions/type"
3830   }
3831 },
3832 "required": [
3833   "href",
3834   "rt",
3835   "if"
3836 ],
3837 },
3838 "slinklist": {
3839   "type": "array",
3840   "readOnly": true,
3841   "items": {
3842     "$ref": "#/definitions/oic.oic-link"
3843   },
3844   "minItems": 3,
3845   "maxItems": 3
3846 },
3847 "sbaseline": {
3848   "properties": {
3849     "links": {
3850       "description": "A set of simple or individual Links.",
3851       "items": {
3852         "$ref": "#/definitions/oic.oic-link"
3853       },
3854       "type": "array",
3855       "minItems": 3,
3856       "maxItems": 3
3857     },
3858     "n": {
3859       "$ref":
3860         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3861         schema.json#/definitions/n"
3862     },
3863     "id": {
3864       "$ref":
3865         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3866         schema.json#/definitions/id"

```

```

3867     },
3868     "rt": {
3869         "description": "The Resource Type.",
3870         "items": {
3871             "enum": ["oic.r.rule"],
3872             "maxLength": 64,
3873             "type": "string"
3874         },
3875         "minItems": 1,
3876         "uniqueItems": true,
3877         "readOnly": true,
3878         "type": "array"
3879     },
3880     "rts": {
3881         "description": "The Linked Resource Types.",
3882         "items": {
3883             "enum": ["oic.r.rule.inputcollection",
3884                 "oic.r.rule.expression",
3885                 "oic.r.rule.actioncollection"],
3886             "maxLength": 64,
3887             "type": "string"
3888         },
3889         "minItems": 3,
3890         "maxItems": 3,
3891         "uniqueItems": true,
3892         "readOnly": true,
3893         "type": "array"
3894     },
3895     "if": {
3896         "description": "The OCF Interfaces supported by this Resource",
3897         "items": {
3898             "enum": [
3899                 "oic.if.ll",
3900                 "oic.if.baseline"
3901             ],
3902             "type": "string",
3903             "maxLength": 64
3904         },
3905         "minItems": 2,
3906         "uniqueItems": true,
3907         "readOnly": true,
3908         "type": "array"
3909     }
3910 },
3911 "additionalProperties": true,
3912 "type": "object",
3913 "required": [
3914     "rt",
3915     "if",
3916     "links",
3917     "rts"
3918 ]
3919 }
3920 }
3921 }
3922

```

### 3923 A.13.5 Property definition

3924 Table A.24 defines the Properties that are part of the "oic.r.rule" Resource Type.

3925 **Table A.24 – 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

3926 **A.13.6 CRUDN behaviour**

3927 Table A.25 defines the CRUDN operations that are supported on the "oic.r.rule" Resource Type.

3928 **Table A.25 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule".**

Create	Read	Update	Delete	Notify
	get			observe

3929 **A.14 OCF Rule Input Collection**

3930 **A.14.1 Introduction**

3931 Collection of Links to the Resources (i.e., Rule Inputs) that contain the Properties whose values  
3932 are evaluated as part of the Rule Expression.

3933 **A.14.2 Example URI**

3934 /RuleInputCollectionResURI

3935 **A.14.3 Resource type**

3936 The Resource Type is defined as: "oic.r.rule.inputcollection".

#### 3937 A.14.4 OpenAPI 2.0 definition

```
3938 {
3939   "swagger": "2.0",
3940   "info": {
3941     "title": "OCF Rule Input Collection",
3942     "version": "20200114",
3943     "license": {
3944       "name": "OCF Data Model License",
3945       "url":
3946         "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
3947         CENSE.md",
3948       "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
3949     },
3950     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
3951   },
3952   "schemes": ["http"],
3953   "consumes": ["application/json"],
3954   "produces": ["application/json"],
3955   "paths": {
3956     "/RuleInputCollectionResURI?if=oic.if.ll": {
3957       "get": {
3958         "description": "Collection of Links to the Resources (i.e., Rule Inputs) that contain the
3959         Properties whose values are evaluated as part of the Rule Expression.",
3960         "parameters": [
3961           {"$ref": "#/parameters/interface-all"}
3962         ],
3963         "responses": {
3964           "200": {
3965             "description": "Retrieves the Rule Input Links.",
3966             "x-example":
3967               [
3968                 {
3969                   "anchor": "mytemperature",
3970                   "href": "/mylocaltemperaturesensor",
3971                   "rel": ["ruleinput"],
3972                   "rt": ["oic.r.temperature"],
3973                   "if": ["oic.if.s"],
3974                   "p": {"bm": 3},
3975                   "eps": [
3976                     {"ep": "coaps://[fe80::b1d6]:1111"}
3977                   ]
3978                 }
3979               ],
3980           "schema": {"$ref": "#/definitions/slinklist"}
3981         }
3982       }
3983     }
3984   },
3985   "/RuleInputCollectionResURI?if=oic.if.baseline": {
3986     "get": {
3987       "description": "Collection of Links to the Resources (i.e., Rule Inputs) that contain the
3988       Properties whose values are evaluated as part of the Rule Expression.",
3989       "parameters": [
3990         {"$ref": "#/parameters/interface-all"}
3991       ],
3992       "responses": {
3993         "200": {
3994           "description": "Retrieves the rule input Links.",
3995           "x-example":
3996             {
3997               "rt": ["oic.r.rule.inputcollection"],
3998               "if": ["oic.if.ll", "oic.if.baseline"],
3999               "rts": ["oic.r.temperature"],
4000               "n": "My Rule Inputs",
4001               "links": [
4002                 {
4003                   "anchor": "mytemperature",
4004                   "href": "/mylocaltemperaturesensor",
4005                   "rel": ["ruleinput"],
4006                   "rt": ["oic.r.temperature"],
```

```

4007         "if": ["oic.if.s"],
4008         "p": {"bm": 3},
4009         "eps": [
4010             {"ep": "coaps://[fe80::b1d6]:1111"}
4011         ]
4012     }
4013 ]
4014 },
4015 "schema": { "$ref": "#/definitions/sbaseline" }
4016 }
4017 }
4018 }
4019 },
4020 },
4021 "parameters": {
4022     "interface-all": {
4023         "in": "query",
4024         "name": "if",
4025         "type": "string",
4026         "enum": ["oic.if.ll", "oic.if.baseline"]
4027     }
4028 },
4029 "definitions": {
4030     "oic.oic-link": {
4031         "type": "object",
4032         "properties": {
4033             "anchor": {
4034                 "$ref":
4035 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4036 schema.json#/definitions/anchor"
4037             },
4038             "di": {
4039                 "$ref":
4040 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4041 schema.json#/definitions/di"
4042             },
4043             "eps": {
4044                 "$ref":
4045 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4046 schema.json#/definitions/eps"
4047             },
4048             "href": {
4049                 "$ref":
4050 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4051 schema.json#/definitions/href"
4052             },
4053             "if": {
4054                 "description": "The OCF Interfaces supported by the Linked Resource",
4055                 "items": {
4056                     "enum": [
4057                         "oic.if.baseline",
4058                         "oic.if.ll",
4059                         "oic.if.b",
4060                         "oic.if.rw",
4061                         "oic.if.r",
4062                         "oic.if.a",
4063                         "oic.if.s"
4064                     ],
4065                     "type": "string",
4066                     "maxLength": 64
4067                 },
4068                 "minItems": 1,
4069                 "maxItems": 1,
4070                 "uniqueItems": true,
4071                 "type": "array"
4072             },
4073             "ins": {
4074                 "$ref":
4075 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4076 schema.json#/definitions/ins"
4077             },

```

```

4078         "p": {
4079             "$ref":
4080 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4081 schema.json#/definitions/p"
4082         },
4083         "rel": {
4084             "$ref":
4085 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4086 schema.json#/definitions/rel_array"
4087         },
4088         "rt": {
4089             "description": "Resource Type of the Linked Resource",
4090             "items": {
4091                 "maxLength": 64,
4092                 "type": "string"
4093             },
4094             "minItems": 1,
4095             "uniqueItems": true,
4096             "type": "array"
4097         },
4098         "title": {
4099             "$ref":
4100 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4101 schema.json#/definitions/title"
4102         },
4103         "type": {
4104             "$ref":
4105 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4106 schema.json#/definitions/type"
4107         }
4108     },
4109     "required": [
4110         "href",
4111         "rt",
4112         "if",
4113         "rel"
4114     ]
4115 },
4116 "slinklist": {
4117     "type": "array",
4118     "readOnly": true,
4119     "items": {
4120         "$ref": "#/definitions/oic.oic-link"
4121     }
4122 },
4123 "sbaseline": {
4124     "properties": {
4125         "links": {
4126             "description": "A set of simple or individual Links.",
4127             "items": {
4128                 "$ref": "#/definitions/oic.oic-link"
4129             },
4130             "type": "array"
4131         },
4132         "n": {
4133             "$ref":
4134 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4135 schema.json#/definitions/n"
4136         },
4137         "id": {
4138             "$ref":
4139 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4140 schema.json#/definitions/id"
4141         },
4142         "rt": {
4143             "description": "The Resource Type.",
4144             "items": {
4145                 "enum": ["oic.r.rule.inputcollection"],
4146                 "maxLength": 64,
4147                 "type": "string"
4148             },

```

```

4149     "minItems": 1,
4150     "uniqueItems": true,
4151     "readOnly": true,
4152     "type": "array"
4153   },
4154   "rts": {
4155     "description": "The Resource Types that can be in the Collection.",
4156     "items": {
4157       "maxLength": 64,
4158       "type": "string"
4159     },
4160     "minItems": 1,
4161     "uniqueItems": true,
4162     "readOnly": true,
4163     "type": "array"
4164   },
4165   "if": {
4166     "description": "The OCF Interfaces supported by this Resource",
4167     "items": {
4168       "enum": [
4169         "oic.if.ll",
4170         "oic.if.baseline"
4171       ],
4172       "type": "string",
4173       "maxLength": 64
4174     },
4175     "minItems": 2,
4176     "uniqueItems": true,
4177     "readOnly": true,
4178     "type": "array"
4179   }
4180 },
4181 "additionalProperties": true,
4182 "type": "object",
4183 "required": [
4184   "rt",
4185   "if",
4186   "links",
4187   "rts"
4188 ]
4189 }
4190 }
4191 }
4192

```

#### A.14.5 Property definition

Table A.26 defines the Properties that are part of the "oic.r.rule.inputcollection" Resource Type.

**Table A.26 – 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

4197 **A.14.6 CRUDN behaviour**

4198 Table A.27 defines the CRUDN operations that are supported on the "oic.r.rule.inputcollection"  
4199 Resource Type.

4200 **Table A.27 – The CRUDN operations of the Resource with type "rt" =**  
4201 **"oic.r.rule.inputcollection".**

Create	Read	Update	Delete	Notify
	get			observe

4202 **A.15 OCF Rule Expression**

4203 **A.15.1 Introduction**

4204 Expression for the Rule that defines the Rule logic in terms of the defined Rule Inputs, and which  
4205 evaluates to a boolean value, for which "true" means that the Rule has been triggered.

4206 **A.15.2 Example URI**

4207 /RuleExpressionResURI

4208 **A.15.3 Resource type**

4209 The Resource Type is defined as: "oic.r.rule.expression".

4210 **A.15.4 OpenAPI 2.0 definition**

```
4211 {
4212   "swagger": "2.0",
4213   "info": {
4214     "title": "OCF Rule Expression",
4215     "version": "20200114",
```



```

4216     "license": {
4217         "name": "OCF Data Model License",
4218         "url":
4219 "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
4220 CENSE.md",
4221         "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
4222     },
4223     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
4224 },
4225     "schemes": ["http"],
4226     "consumes": ["application/json"],
4227     "produces": ["application/json"],
4228     "paths": {
4229         "/RuleExpressionResURI": {
4230             "get": {
4231                 "description": "Expression for the Rule that defines the Rule logic in terms of the defined
4232 Rule Inputs, and which evaluates to a boolean value, for which \"true\" means that the Rule has been
4233 triggered.",
4234                 "parameters": [
4235                     { "$ref": "#/parameters/interface-all" }
4236                 ],
4237                 "responses": {
4238                     "200": {
4239                         "description" : "Retrieves the Rule expression.",
4240                         "x-example":
4241                             {
4242                                 "rt": ["oic.r.rule.expression"],
4243                                 "if": ["oic.if.rw", "oic.if.baseline"],
4244                                 "rule": "(mytemperature:temperature >= \"25\")",
4245                                 "ruleresult": false,
4246                                 "ruleenable": true,
4247                                 "actionenable": true
4248                             },
4249                         "schema": { "$ref": "#/definitions/ruleexpression" }
4250                     }
4251                 }
4252             },
4253             "post": {
4254                 "description": "",
4255                 "parameters": [
4256                     { "$ref": "#/parameters/interface-rw" },
4257                     {
4258                         "name": "body",
4259                         "in": "body",
4260                         "required": true,
4261                         "schema": { "$ref": "#/definitions/ruleexpression-update" },
4262                         "x-example":
4263                             {
4264                                 "ruleenable": true,
4265                                 "actionenable": false,
4266                                 "ruleresult": false
4267                             }
4268                     }
4269                 ],
4270                 "responses": {
4271                     "200": {
4272                         "description" : "",
4273                         "x-example": {
4274                             "rule": "(mytemperature:temperature >= 25)",
4275                             "ruleresult": false,
4276                             "ruleenable": true,
4277                             "actionenable": false
4278                         },
4279                         "schema": { "$ref": "#/definitions/ruleexpression" }
4280                     }
4281                 }
4282             }
4283         }
4284     },
4285     "parameters": {
4286         "interface-rw": {

```

```

4287     "in": "query",
4288     "name": "if",
4289     "type": "string",
4290     "enum": ["oic.if.rw"]
4291 },
4292 "interface-all": {
4293     "in": "query",
4294     "name": "if",
4295     "type": "string",
4296     "enum": ["oic.if.rw","oic.if.baseline"]
4297 }
4298 },
4299 "definitions": {
4300     "ruleexpression" : {
4301         "properties": {
4302             "rt": {
4303                 "description": "The Resource Type.",
4304                 "items": {
4305                     "enum": ["oic.r.rule.expression"],
4306                     "maxLength": 64,
4307                     "type": "string"
4308                 },
4309                 "minItems": 1,
4310                 "uniqueItems": true,
4311                 "readOnly": true,
4312                 "type": "array"
4313             },
4314             "rule": {
4315                 "description": "The logical expression to be evaluated, see BNF",
4316                 "type": "string"
4317             },
4318             "ruleresult": {
4319                 "type": "boolean"
4320             },
4321             "ruleenable": {
4322                 "type": "boolean"
4323             },
4324             "actionenable": {
4325                 "type": "boolean"
4326             },
4327             "n": {
4328                 "$ref":
4329 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4330 schema.json#/definitions/n"
4331             },
4332             "id": {
4333                 "$ref":
4334 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4335 schema.json#/definitions/id"
4336             },
4337             "if": {
4338                 "description": "The OCF Interface set supported by this Resource.",
4339                 "items": {
4340                     "enum": [
4341                         "oic.if.rw",
4342                         "oic.if.baseline"
4343                     ],
4344                     "type": "string"
4345                 },
4346                 "minItems": 2,
4347                 "uniqueItems": true,
4348                 "readOnly": true,
4349                 "type": "array"
4350             }
4351         },
4352         "type": "object",
4353         "required": ["rule","ruleresult","actionenable","ruleenable"]
4354     },
4355     "ruleexpression-update" : {
4356         "properties": {
4357             "rule": {

```

```

4358         "description": "The logical expression to be evaluated, see BNF",
4359         "type": "string"
4360     },
4361     "ruleenable": {
4362         "type": "boolean"
4363     },
4364     "actionenable": {
4365         "type": "boolean"
4366     },
4367     "ruleresult": {
4368         "type": "boolean"
4369     }
4370 },
4371 "type": "object"
4372 }
4373 }
4374 }
4375

```

4376 **A.15.5 Property definition**

4377 Table A.28 defines the Properties that are part of the "oic.r.rule.expression" Resource Type.

4378 **Table A.28 – The Property definitions of the Resource with type "rt" =**  
4379 **"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	

4380 **A.15.6 CRUDN behaviour**

4381 Table A.29 defines the CRUDN operations that are supported on the "oic.r.rule.expression"  
4382 Resource Type.

4383 **Table A.29 – The CRUDN operations of the Resource with type "rt" =**  
4384 **"oic.r.rule.expression".**

Create	Read	Update	Delete	Notify
	get	post		observe

## 4385 **A.16 OCF Rule Action Collection**

### 4386 **A.16.1 Introduction**

4387 A Collection of Links to one or more Rule Actions, which are processed when the Rule  
4388 Expression evaluates to "true".

### 4389 **A.16.2 Example URI**

4390 /RuleActionCollectionResURI

### 4391 **A.16.3 Resource type**

4392 The Resource Type is defined as: "oic.r.rule.actioncollection".

### 4393 **A.16.4 OpenAPI 2.0 definition**

```
4394 {  
4395   "swagger": "2.0",  
4396   "info": {  
4397     "title": "OCF Rule Action Collection",  
4398     "version": "20200122",  
4399     "license": {  
4400       "name": "OCF Data Model License",  
4401       "url":  
4402       "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI  
4403       CENSE.md",  
4404       "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."  
4405     },  
4406     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"  
4407   },  
4408   "schemes": ["http"],  
4409   "consumes": ["application/json"],  
4410   "produces": ["application/json"],  
4411   "paths": {  
4412     "/RuleActionCollectionResURI?if=oic.if.ll": {  
4413       "get": {  
4414         "description": "A Collection of Links to one or more Rule Actions, which are processed when  
4415         the Rule Expression evaluates to \"true\".",  
4416         "parameters": [  
4417           {"$ref": "#/parameters/interface-all"}  
4418         ],  
4419         "responses": {  
4420           "200": {  
4421             "description": "Retrieves the rule action Links.",  
4422             "x-example":  
4423             [  
4424               {  
4425                 "href": "/myruleaction",  
4426                 "rt": ["oic.r.rule.action"],  
4427                 "if": ["oic.if.rw", "oic.if.baseline"],  
4428                 "p": {"bm": 3},  
4429                 "eps": [  
4430                   {"ep": "coaps://[fe80::b1d6]:1111"}  
4431                 ]  
4432               }  
4433             ],  
4434             "schema": {"$ref": "#/definitions/slinklist" }  
4435           }  
4436         }  
4437       }  
4438     },  
4439     "/RuleActionCollectionResURI?if=oic.if.baseline": {  
4440       "get": {  
4441         "description": "A Collection of Links to one or more Rule Actions, which are processed when  
4442         the Rule Expression evaluates to \"true\".",  
4443         "parameters": [  
4444           {"$ref": "#/parameters/interface-all"}  
4445         ],  
4446         "responses": {
```

```

4447         "200": {
4448             "description" : "Retrieves the rule action Links.",
4449             "x-example":
4450             {
4451                 "rt": ["oic.r.rule.actioncollection"],
4452                 "if":
4453             ["oic.if.ll", "oic.if.baseline", "oic.if.create", "oic.if.linkadd", "oic.if.linkremove"],
4454                 "rts": ["oic.r.rule.action"],
4455                 "n": "My collection of Rule Actions",
4456                 "links": [
4457                     {
4458                         "href": "/myruleaction",
4459                         "rt": ["oic.r.rule.action"],
4460                         "if": ["oic.if.rw", "oic.if.baseline"],
4461                         "p": {"bm": 3},
4462                         "eps": [
4463                             {"ep": "coaps://[fe80::b1d6]:1111"}
4464                         ]
4465                     }
4466                 ]
4467             },
4468             "schema": { "$ref": "#/definitions/sbaseline" }
4469         }
4470     }
4471 }
4472 }
4473 },
4474 "parameters": {
4475     "interface-all": {
4476         "in": "query",
4477         "name": "if",
4478         "type": "string",
4479         "enum": ["oic.if.ll", "oic.if.baseline"]
4480     }
4481 },
4482 "definitions": {
4483     "oic.oic-link": {
4484         "type": "object",
4485         "properties": {
4486             "anchor": {
4487                 "$ref":
4488             "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4489             schema.json#/definitions/anchor"
4490             },
4491             "di": {
4492                 "$ref":
4493             "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4494             schema.json#/definitions/di"
4495             },
4496             "eps": {
4497                 "$ref":
4498             "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4499             schema.json#/definitions/eps"
4500             },
4501             "href": {
4502                 "$ref":
4503             "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4504             schema.json#/definitions/href"
4505             },
4506             "if": {
4507                 "description": "The OCF Interfaces supported by the Linked Resource",
4508                 "items": {
4509                     "enum": [
4510                         "oic.if.baseline",
4511                         "oic.if.rw"
4512                     ],
4513                     "type": "string",
4514                     "maxLength": 64
4515                 },
4516                 "minItems": 1,
4517                 "uniqueItems": true,

```

```

4518         "type": "array"
4519     },
4520     "ins": {
4521         "$ref":
4522         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4523         schema.json#/definitions/ins"
4524     },
4525     "p": {
4526         "$ref":
4527         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4528         schema.json#/definitions/p"
4529     },
4530     "rel": {
4531         "$ref":
4532         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4533         schema.json#/definitions/rel_array"
4534     },
4535     "rt": {
4536         "description": "Resource Type of the Linked Resource",
4537         "items": {
4538             "maxLength": 64,
4539             "type": "string",
4540             "enum": ["oic.r.rule.action"]
4541         },
4542         "minItems": 1,
4543         "uniqueItems": true,
4544         "type": "array"
4545     },
4546     "title": {
4547         "$ref":
4548         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4549         schema.json#/definitions/title"
4550     },
4551     "type": {
4552         "$ref":
4553         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4554         schema.json#/definitions/type"
4555     },
4556     "required": [
4557         "href",
4558         "rt",
4559         "if"
4560     ]
4561 },
4562 },
4563 "slinklist": {
4564     "type": "array",
4565     "readOnly": true,
4566     "items": {
4567         "$ref": "#/definitions/oic.oic-link"
4568     }
4569 },
4570 "sbaseline" : {
4571     "properties": {
4572         "links" : {
4573             "description": "A set of simple or individual Links.",
4574             "items": {
4575                 "$ref": "#/definitions/oic.oic-link"
4576             },
4577             "type": "array"
4578         },
4579         "n": {
4580             "$ref" :
4581             "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4582             schema.json#/definitions/n"
4583         },
4584         "id": {
4585             "$ref" :
4586             "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4587             schema.json#/definitions/id"
4588         },

```

```

4589     "rt": {
4590         "description": "The Resource Type.",
4591         "items": {
4592             "enum": ["oic.r.rule.actioncollection"],
4593             "maxLength": 64,
4594             "type": "string"
4595         },
4596         "minItems": 1,
4597         "uniqueItems": true,
4598         "readOnly": true,
4599         "type": "array"
4600     },
4601     "rts": {
4602         "description": "The Resource Types contained within the Collection.",
4603         "items": {
4604             "enum": ["oic.r.rule.action"],
4605             "maxLength": 64,
4606             "type": "string"
4607         },
4608         "minItems": 1,
4609         "uniqueItems": true,
4610         "readOnly": true,
4611         "type": "array"
4612     },
4613     "if": {
4614         "description": "The OCF Interfaces supported by this Resource",
4615         "items": {
4616             "enum": [
4617                 "oic.if.ll",
4618                 "oic.if.baseline",
4619                 "oic.if.create",
4620                 "oic.if.linkadd",
4621                 "oic.if.linkremove",
4622                 "oic.if.delete"
4623             ],
4624             "type": "string",
4625             "maxLength": 64
4626         },
4627         "minItems": 2,
4628         "uniqueItems": true,
4629         "readOnly": true,
4630         "type": "array"
4631     }
4632 },
4633 "additionalProperties": true,
4634 "type": "object",
4635 "required": [
4636     "rt",
4637     "if",
4638     "links",
4639     "rts"
4640 ]
4641 }
4642 }
4643 }
4644

```

4645 **A.16.5 Property definition**

4646 Table A.30 defines the Properties that are part of the "oic.r.rule.actioncollection" Resource Type.

4647 **Table A.30 – The Property definitions of the Resource with type "rt" =**  
4648 **"oic.r.rule.actioncollection".**

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 Resource Types contained within the Collection.
if	array: see schema	Yes	Read Only	The OCF Interfaces supported by this Resource

4649 **A.16.6 CRUDN behaviour**

4650 Table A.31 defines the CRUDN operations that are supported on the "oic.r.rule.actioncollection"  
4651 Resource Type.

4652 **Table A.31 – The CRUDN operations of the Resource with type "rt" =**  
4653 **"oic.r.rule.actioncollection".**

Create	Read	Update	Delete	Notify
	get			observe

4654 **A.17 OCF Rule Action**

4655 **A.17.1 Introduction**

4656 Rule Action contains a link to Scene Collection and a value to be set for the "lastScene" Property  
4657 within that Collection.

4658 **A.17.2 Example URI**

4659 /RuleActionResURI



### 4660 A.17.3 Resource type

4661 The Resource Type is defined as: "oic.r.rule.action".

### 4662 A.17.4 OpenAPI 2.0 definition

```
4663 {
4664   "swagger": "2.0",
4665   "info": {
4666     "title": "OCF Rule Action",
4667     "version": "20190910",
4668     "license": {
4669       "name": "OCF Data Model License",
4670       "url":
4671 "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
4672 CENSE.md",
4673       "x-copyright": "copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
4674     },
4675     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
4676   },
4677   "schemes": ["http"],
4678   "consumes": ["application/json"],
4679   "produces": ["application/json"],
4680   "paths": {
4681     "/RuleActionResURI": {
4682       "get": {
4683         "description": "Rule Action contains a link to Scene Collection and a value to be set for
4684 the \"lastScene\" Property within that Collection.",
4685         "parameters": [
4686           { "$ref": "#/parameters/interface-all" }
4687         ],
4688         "responses": {
4689           "200": {
4690             "description": "Retrieves the Rule action.",
4691             "x-example":
4692             {
4693               "rt": ["oic.r.rule.action"],
4694               "if": ["oic.if.rw", "oic.if.baseline"],
4695               "link": { "href":
4696 "/myscene", "rt":["oic.wk.scenecollection"], "if":["oic.if.a","oic.if.ll","oic.if.baseline"]},
4697               "scenevalue": "desiredlastscenevalue"
4698             },
4699             "schema": { "$ref": "#/definitions/ruleaction" }
4700           }
4701         }
4702       },
4703       "post": {
4704         "description": "",
4705         "parameters": [
4706           { "$ref": "#/parameters/interface-rw"},
4707           {
4708             "name": "body",
4709             "in": "body",
4710             "required": true,
4711             "schema": { "$ref": "#/definitions/ruleaction-update" },
4712             "x-example":
4713             {
4714               "scenevalue": "somedifferentlastscenevalue"
4715             }
4716           }
4717         ],
4718         "responses": {
4719           "200": {
4720             "description": "",
4721             "x-example": {
4722               "link": { "href":
4723 "/myscene", "rt":["oic.wk.scenecollection"], "if":["oic.if.a","oic.if.ll","oic.if.baseline"]},
4724               "scenevalue": "somedifferentlastscenevalue"
4725             },
4726             "schema": { "$ref": "#/definitions/ruleaction" }
4727           }
4728         }
4729       }
4730     }
4731   }
4732 }
```

```

4728     }
4729   }
4730 }
4731 },
4732 "parameters": {
4733   "interface-rw": {
4734     "in": "query",
4735     "name": "if",
4736     "type": "string",
4737     "enum": ["oic.if.rw"]
4738   },
4739   "interface-all": {
4740     "in": "query",
4741     "name": "if",
4742     "type": "string",
4743     "enum": ["oic.if.rw", "oic.if.baseline"]
4744   }
4745 },
4746 "definitions": {
4747   "oic.oic-link": {
4748     "type": "object",
4749     "properties": {
4750       "anchor": {
4751         "$ref":
4752 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4753 schema.json#/definitions/anchor"
4754       },
4755       "di": {
4756         "$ref":
4757 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4758 schema.json#/definitions/di"
4759       },
4760       "eps": {
4761         "$ref":
4762 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4763 schema.json#/definitions/eps"
4764       },
4765       "href": {
4766         "$ref":
4767 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4768 schema.json#/definitions/href"
4769       },
4770       "if": {
4771         "description": "The OCF Interfaces supported by the Linked Resource",
4772         "items": {
4773           "enum": [
4774             "oic.if.baseline",
4775             "oic.if.ll",
4776             "oic.if.a"
4777           ],
4778           "type": "string",
4779           "maxLength": 64
4780         },
4781         "minItems": 1,
4782         "uniqueItems": true,
4783         "type": "array"
4784       },
4785       "ins": {
4786         "$ref":
4787 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4788 schema.json#/definitions/ins"
4789       },
4790       "p": {
4791         "$ref":
4792 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4793 schema.json#/definitions/p"
4794       },
4795       "rel": {
4796         "$ref":
4797 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4798 schema.json#/definitions/rel_array"

```

```

4799     },
4800     "rt": {
4801       "description": "Resource Type of the Linked Resource",
4802       "items": {
4803         "enum": ["oic.wk.scenecollection"],
4804         "maxLength": 64,
4805         "type": "string"
4806       },
4807       "minItems": 1,
4808       "uniqueItems": true,
4809       "type": "array"
4810     },
4811     "title": {
4812       "$ref":
4813 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4814 schema.json#/definitions/title"
4815     },
4816     "type": {
4817       "$ref":
4818 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
4819 schema.json#/definitions/type"
4820     }
4821   },
4822   "required": [
4823     "href",
4824     "rt",
4825     "if"
4826   ]
4827 },
4828 "ruleaction" : {
4829   "properties": {
4830     "rt" : {
4831       "description": "The Resource Type.",
4832       "items": {
4833         "enum": ["oic.r.rule.action"],
4834         "maxLength": 64,
4835         "type": "string"
4836       },
4837       "minItems": 1,
4838       "uniqueItems": true,
4839       "readOnly": true,
4840       "type": "array"
4841     },
4842     "link": {
4843       "$ref": "#/definitions/oic.oic-link"
4844     },
4845     "scenevalue": {
4846       "type": "string"
4847     },
4848     "n": {
4849       "$ref":
4850 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4851 schema.json#/definitions/n"
4852     },
4853     "id": {
4854       "$ref":
4855 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
4856 schema.json#/definitions/id"
4857     },
4858     "if" : {
4859       "description": "The OCF Interface set supported by this Resource.",
4860       "items": {
4861         "enum": [
4862           "oic.if.rw",
4863           "oic.if.baseline"
4864         ],
4865         "type": "string"
4866       },
4867       "minItems": 2,
4868       "uniqueItems": true,
4869       "readOnly": true,

```

```

4870         "type": "array"
4871     },
4872 },
4873     "type": "object",
4874     "required": ["link", "scenevalue"]
4875 },
4876     "ruleaction-update" : {
4877         "properties": {
4878             "scenevalue": {
4879                 "type": "string"
4880             }
4881         },
4882         "type": "object",
4883         "required": ["scenevalue"]
4884     }
4885 }
4886 }
4887

```

4888 **A.17.5 Property definition**

4889 Table A.32 defines the Properties that are part of the "oic.r.rule.action" Resource Type.

4890 **Table A.32 – 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	

4891 **A.17.6 CRUDN behaviour**

4892 Table A.33 defines the CRUDN operations that are supported on the "oic.r.rule.action" Resource  
 4893 Type.

4894 **Table A.33 – The CRUDN operations of the Resource with type "rt" = "oic.r.rule.action".**

Create	Read	Update	Delete	Notify
	get	post		observe

4895  
 4896