OCF Core - Optional Specification

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Legal Disclaimer

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1 Scope

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

– Core specification: The Core specification document specifies the Framework, i.e., the OCF core architecture, interfaces, protocols and services to enable OCF profiles implementation for Internet of Things (IoT) usages and ecosystems. This document is mandatory for all Devices to implement.

– Core optional specification (this document): The Core optional specification document specifies the Framework, i.e., the OCF core architecture, interfaces, protocols and services to enable OCF profiles implementation for Internet of Things (IoT) usages and ecosystems that can optionally be implemented by any Device.

– Core extension specification(s): The Core extension specification(s) document(s) specifies optional OCF Core functionality that are significant in scope (e.g., Wi-Fi easy setup, Cloud).

2 Normative references

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

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

ISO/IEC 30118-1:2018, Information technology – Open Connectivity Foundation (OCF)
Specification – Part 1: Core specification
https://www.iso.org/standard/53238.html
Latest version available at: https://openconnectivity.org/specs/OCF_Core_Specification.pdf

ISO/IEC 30118-2:2018, Information technology – Open Connectivity Foundation (OCF)
Specification – Part 2: Security specification
https://www.iso.org/standard/74239.html
Latest version available at: https://openconnectivity.org/specs/OCF_Security_Specification.pdf

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

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

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

IANA ifType-MIB Definitions
https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib

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

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

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

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

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

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

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

3.1.1
Alert
information provided by the Device by means of a specialised Resource Type that provides details with regard to potential problems, issues, or Device status of interest on which action can be taken

3.1.2
Scene
a static entity that stores a set of defined Property values for a Collection of Resources

Note 1 to entry: A Scene (3.1.2) is a prescribed setting of a set of Resources with each having a predetermined value for the Property that has to change.

3.1.3
Scene Collection
a Collection that contains an enumeration of possible Scene Values (3.1.5) and the current Scene Value (3.1.5)

Note 1 to entry: The member values of the Scene Collection (3.1.3) are Scene Members (3.1.4).

3.1.4
Scene Member
a Resource that contains mappings of Scene Values (3.1.5) to values of a Property in the Resource

3.1.5
Scene Value
a Scene (3.1.2) enumerator representing the state in which a Resource can be

4 Document conventions and organization

4.1 Conventions

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

4.2 Notation

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

Required (or shall or mandatory)(M).

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

Recommended (or should)(S).

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

285 Allowed (may or allowed)(O).

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

289 DEPRECATED.

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

296 Conditionally allowed (CA).

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

299 Conditionally required (CR).

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

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

304 Words that are emphasized are printed in italic.

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

4.3 Data types

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

5 Functional interactions

5.1 Introduction

314 The functional interactions between a Client and a Server are described in 5.2 through 5.6
315 respectively. The functional interactions use CRUDN messages (clause 8 in ISO/IEC 30118-1:2018)
316 and include Discovery, Notification, and Device management. These functions require support of
317 core defined Resources as defined in Table 1.

318 **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.scenellist"	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

319

5.2 Onboarding, provisioning and configuration

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

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

324 **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

325

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

327 **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

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
							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.

328

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

330   **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	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.

For example, |

							[{"language":"en", "value":"Dave's Laptop"}]

331

5.3 Device management

5.3.1 Overview

Device management includes the following functions:

– Diagnostics and maintenance

– Network monitoring

5.3.2 Diagnostics and maintenance Resource Type

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

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"	The Resource through which the Device is maintained and can be used for diagnostic purposes. The Properties exposed by "/oic/mnt" are listed in Table 6.	Device management

Table 6 defines the "oic.wk.mnt" Resource Type. At least one of the Factory_Reset, Reboot, or last 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
Factory_Reset	"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
Reboot	"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)
Last error	"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.

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

5.3.3   Core behaviours on Device maintenance state changes

5.3.3.1   Overview

As defined in ISO/IEC 30118-2:2018 a Device has a state machine through which it transitions during its operational lifetime.

ISO/IEC 30118-2:2018 details actions on such state transitions for the Resources defined therein. This clause defines the actions to be taken on such state transitions for the Resources and functionality defined within this document.

The state transitions to be considered are:

– RFNOP to Soft Reset

– RFNOP to Hard Reset

– RFNOP to RFPRO

– RFPRO to RFNOP

Table 7 provides a summary of the actions to be taken in each case.

Table 7 – Actions on Device state change

	Soft reset	**Hard reset**	**RFNOP -> RFPRO**	**RFPRO -> RFNOP**
SVR	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.
Vertical Resources	No change.	Reset to defined defaults; see clause 5.3.3.3.	No change.	No change.
Created Resources	No change.	Deleted.	No change.	No change.
Observe Transactions	No change.	Canceled; see clause 5.3.3.2.	No change	Re-evaluate ACL; see clause 5.3.3.2.

5.3.3.2   Handling of Observe transactions

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

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

5.3.3.3　Reset of Resource Properties to defined defaults

5.3.3.3.1　Overview

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

The default values to be applied for any Vertical Resources are defined in the following clause.

5.3.3.3.2　Defaults for Vertical Resources

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

5.3.4　Network monitoring Resource Type

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

The network monitoring Resource Type is "oic.wk.nmon" and is described in Table 8. The Resource Type may occur multiple times if more than 1 network interface is implemented. The Common Property "n" may be used to distinguish the different network interfaces, like distinguish the 2.4 and 5G Wi-Fi network interfaces.

Table 8 – 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 9	Device management

Table 9 defines "oic.wk.nmon" Resource Type.

Table 9 – "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	N/A	RW	Yes	Reset of the collected values

			false after the reset occurred.				
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.

388

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

391 A Device should start collecting network monitoring data when receiving an UPDATE operation
392 with the parameter "col" = true. A Device should stop collecting network data when receiving an
393 UPDATE operation with parameter "col" = false. The collected network data should be reset when
394 an UPDATE operation with parameter "reset" = true is received, if the parameter "reset" is false
395 then the values should not be reset. Figure 1 illustrates the interactions with the network monitoring
396 Resource.
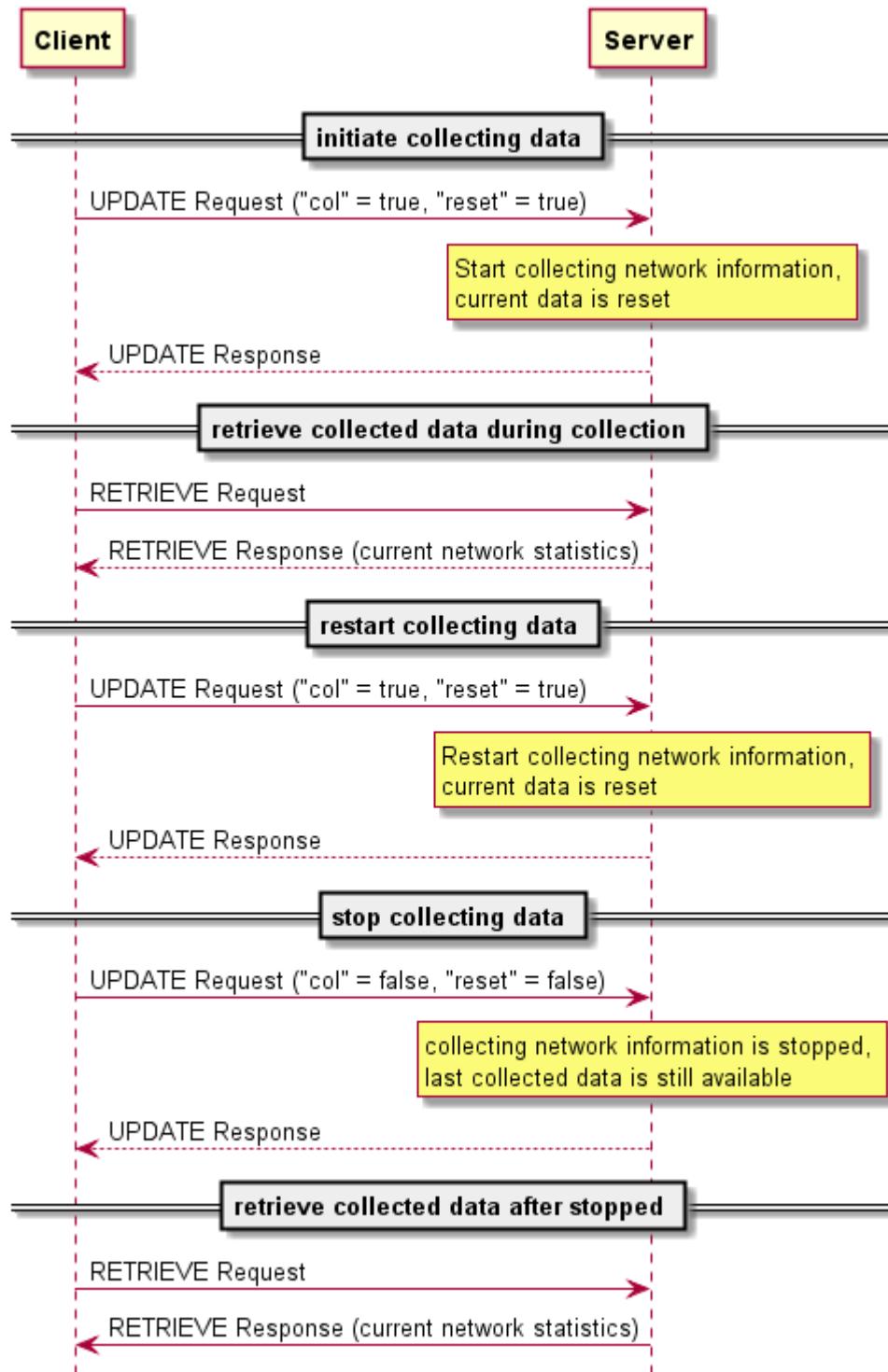
Figure 1 – Interactions with the network monitoring Resource

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

401
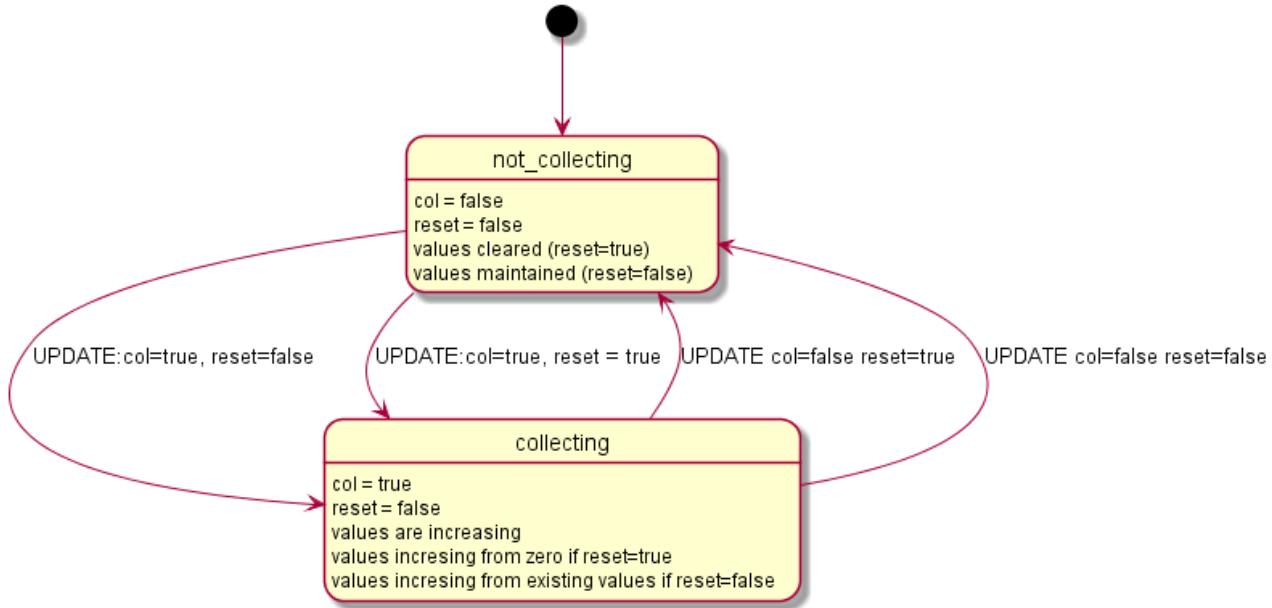
Figure 2 – State transition diagram of collecting network information

403 **5.3.5   Software update Resource Type**

404 The software update Resource is used to control software updats of the Device.

405 In ISO/IEC 30118-2:2018 there is already a manual triggered software update mechanism available.
406 The triggering of the Client (manual) software update is achieved via the security Resource Type
407 "oic.r.pstat" by using the appropriate bits in the "tm" Property. The software update triggering
408 results in updates of the "cm" Property in the "oic.r.pstat" Resource Type (see ISO/IEC 30118-
409 2:2018 clause 13.8). The software update Resource adds additional features to the security
410 specified mechanism, like:

411   –   Specify the source to obtain the software package.

412   –   Time scheduled software update actions.

413   –   Status information, especially more info about various error situations.

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

419 The software update Resource Type is "oic.r.softwareupdate" and is described in Table 10.

420 **Table 10 – 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

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					"oic.r.softwareupdate" are listed in Table 11.	

421

422   Table 11 defines the Properties of the "oic.r.softwareupdate" Resource Type.

423   **Table 11 – "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 13)	N/A	RW	Yes	Scheduled action to do a software update.
State	"swupdatestate"	"string"	enum (see Table 12)	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 14.
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".
Updatetime	"updatetime"	"string"	date-time	N/A	RW	Yes	Scheduled time, according to IETF RFC 3339, to do action which is specififed in the "swupdateaction" Property.

424
425   The values of the "swupdatestate" Property are described in Table 12.

426   **Table 12 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" |

427 The typical state transitions are described by Figure 3. The state transitions can be trigged
428 manually or by a timed action. The manual state triggers (i.e., "tm" Property of "oic.r.pstat") are
429 described in ISO/IEC 30118-2:2018 clause 13.8. The timed state triggers are managed using the
430 "swupdateaction" and "updatetime" Properties of the software update Resource to trigger software
431 update actions at some future date and time. The action names for scheduled actions are listed in
432 Table 13. When the "updatetime" for the timed action is in the past then the update shall not take
433 place, it is implementation dependent if the UPDATE with an "updatetime" value in the past will
434 give an error on the UPDATE operation.

435 **Table 13 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 versionvValidation.	"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.

436

437
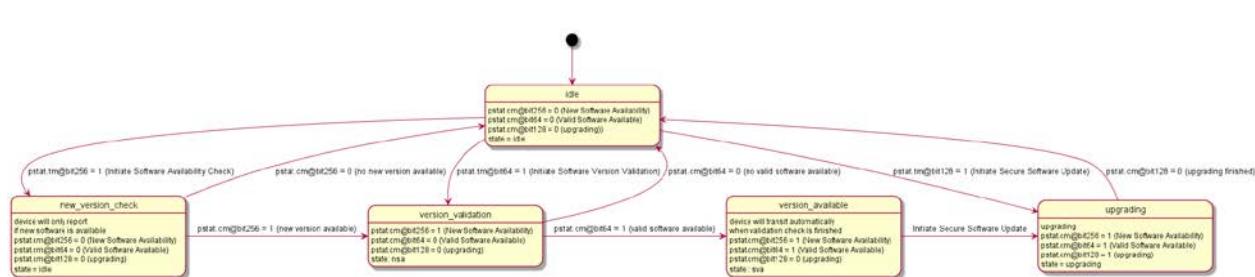
438 **Figure 3 – Typical state transitioning diagram for software update**

439 The "purl" Property indicates the URL to obtain the software package from. This URL shall be a
440 fully qualified URL. If the value is an empty string ("") then the Device will use the built in vendor
441 defined URL (see ISO/IEC 30118-2:2018). If a built in URL is not implemented, setting the "purl"
442 Property value to an empty string will result in an error code value of 6 as defined in Table 14.

443 **Table 14 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

444

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

14

Resources on the same Device

| client | pstat | softwareupgrade | | external server |

observe device

observe state

state: idle

observe cm status

cm: bits zero

software upgrade initialisation

set purl (external server)

ok

trigger software upgrade

Initiate Secure Software Update

Initiate Secure Software Update

new software availiblity check

check if new software is available (purl, version)

new software available

New Software Available (on external server)

state: nsa

state: nsa

cm New Software Available

software download and validation

tm: Initiate Software Version Validation (internal)

cm: Software Version Validation

Initiate Software Version Validation

state: sw

retrieve package

downloading software

package complete

software downloaded

software validation: ok

state: sva

state: sva

cm: valid version available

upgrade image

Initiate Secure Software Update

Initiate Secure Software Update

cm: upgrading

state: upgrading

firmware upgraded

tm triggers cm (bits zero)

cm: idle

state: idle (finished, version= new version)

Copyright

15

447

448   **Figure 4 – Typical sequence for none scheduled upgrading software**

5.4 Scenes

5.4.1 Introduction

451   Scenes are a mechanism for automating certain operations.

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

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

456   In short, Scenes are bundled user settings.

5.4.2 Scenes Resource model

5.4.2.1 Introduction

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

464   The Scene functionality is created by multiple Resources and has the structure depicted in Figure 5.
465   The sceneList and sceneCollection Resources are overloaded Collection Resources. The
466   sceneCollection Resource contains a list of Scenes. This list contains zero or more Scenes. The
467   sceneMember Resource contains the mapping between a Scene and what needs to happen
468   according to that Scene on an indicated Resource.
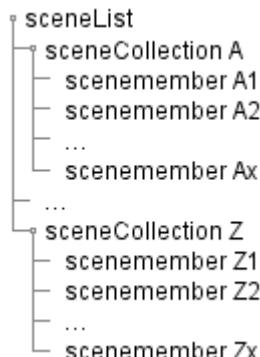
470   **Figure 5 – Generic Scene Resource structure**

5.4.2.2 Scene creation

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

481 Resource and the mapping between the Scene listed in the "sceneValues" Property and the actual
482 Property value of the Resource indicated by the Link.
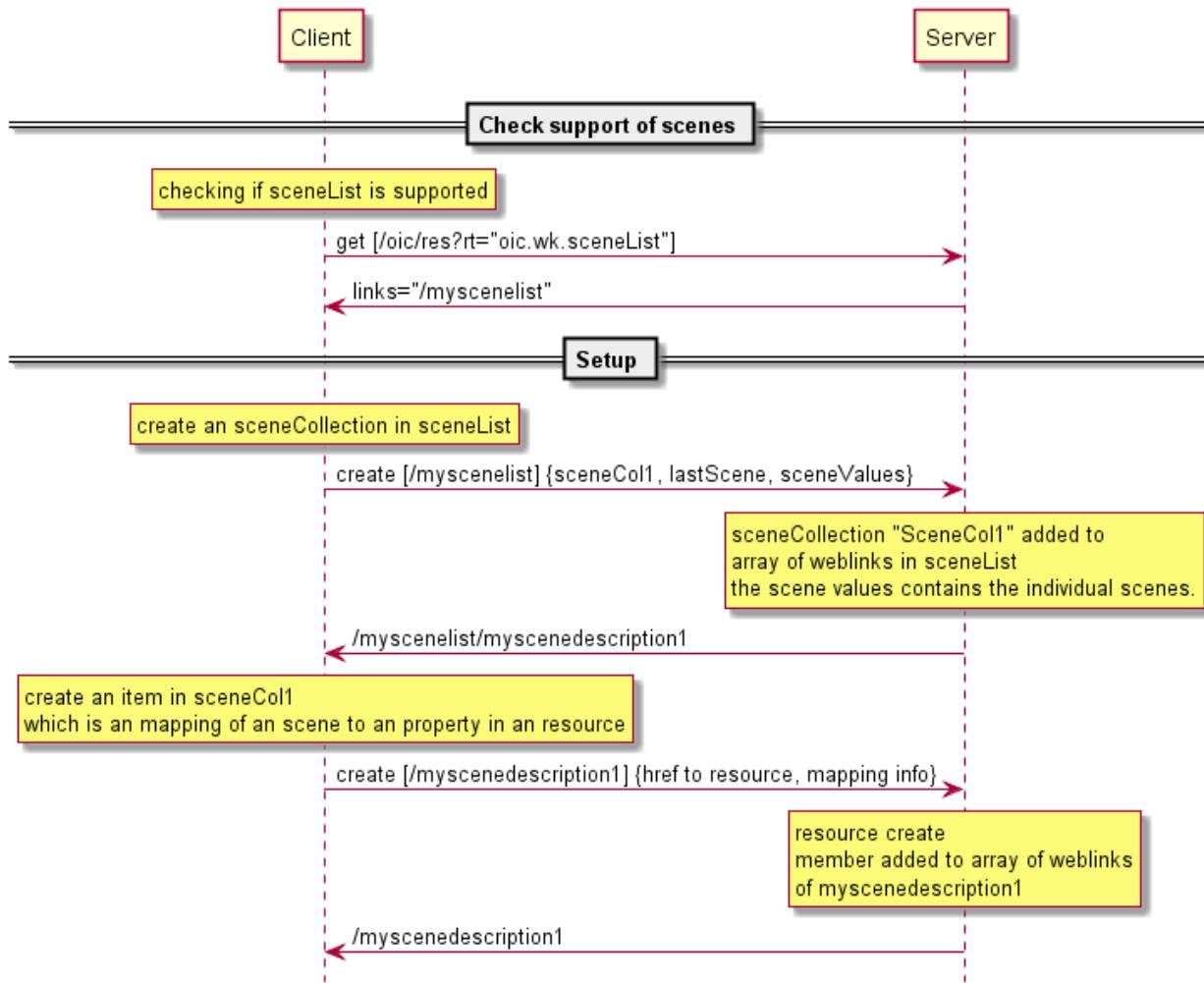
483

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

485 **5.4.2.3   Interacting with Scenes**

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

494
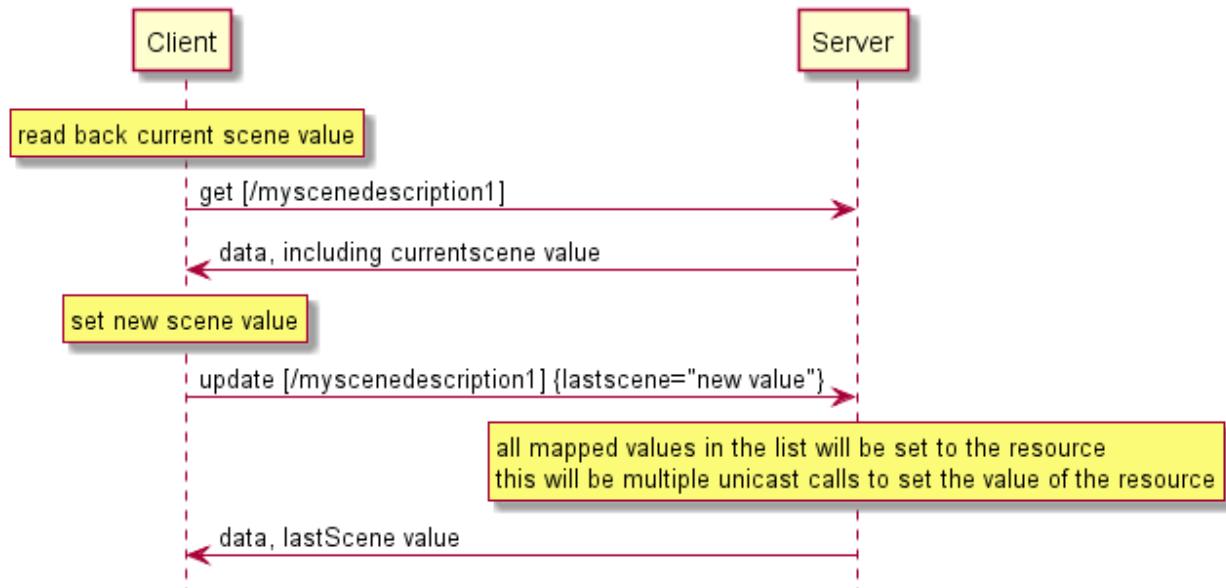
Figure 7 – Client interactions on a specific Scene

As described previously, a Scene can reference one or more Resources (i.e., sceneMembers) that are present on one or more Servers. The Scene Members are re-evaluated each time a Scene change takes place. This evaluation is triggered by a Client that is either embedded as part of the Server hosting the Scene, or separate to the Server having knowledge of the Scene via a RETRIEVE operation, Observing the referenced Resources using the mechanism described in clause 11.3.2 in ISO/IEC 30118-1:2018. The embedded Client located in the same Device with the Server is a general Client but interacts only with Scene functionalities. During the evaluation the mappings for the new Scene Value will be applied to the Servers which contain sceneMembers from the Scene that is being updated. This behaviour is depicted in Figure 8.
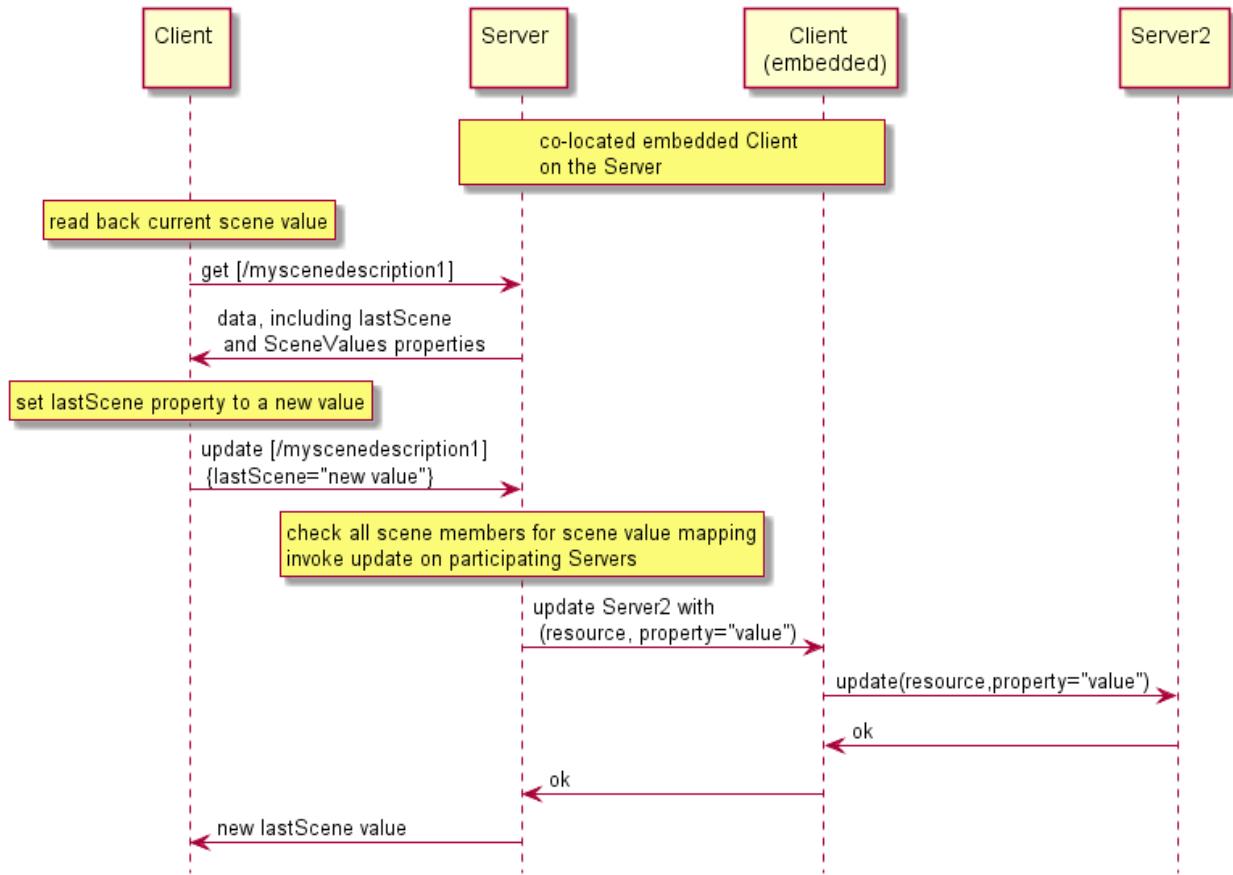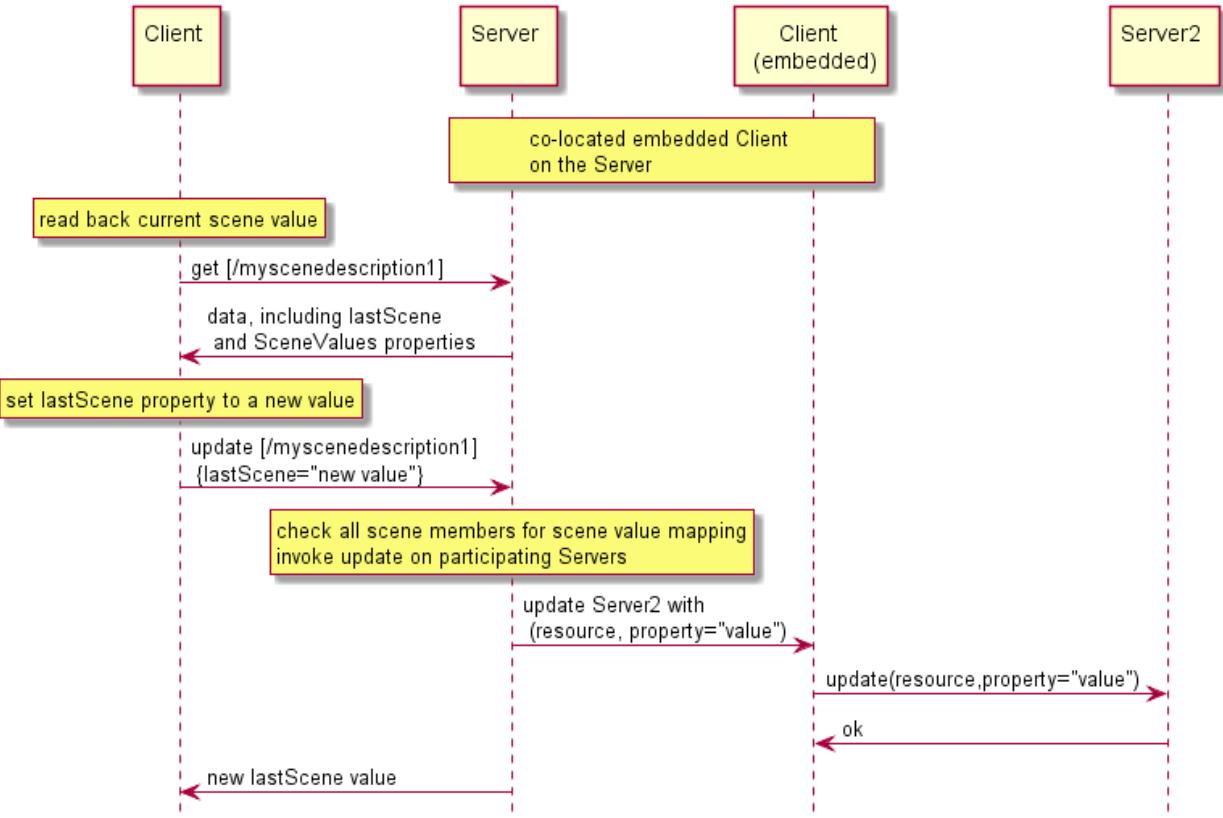
507

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

509   **5.4.2.4   Summary of Resource Types defined for Scene functionality**

510   Table 15 summarizes the list of Resource Types that are part of Scenes.

511   **Table 15 – 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

512

513   **5.4.3   Security considerations**

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

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

5.5 Icons

5.5.1 Overview

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

5.5.2 Resource

528 The icon Resource is as defined in Table 16.

529 **Table 16 – 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 17.	Icon

530

531 Table 17 defines the details for the "oic.r.icon" Resource Type.

532 **Table 17 – "oic.r.icon" Resource Type definition**

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
Mime Type	"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
Width	"width"	"integer"	>= 1	pixels	R	Yes	Width of the icon in pixels greater than or equal to 1.
Height	"height"	"integer"	>= 1	pixels	R	Yes	Height of the icon in pixels greater than or equal to 1.
Icon	"media"	"uri"	N/A	N/A	R	Yes	URI to the location of the icon image.

533

5.6 Alerts

5.6.1 Overview

536 Alerts provide a means by which a Device provides information to an interested party with regard
537 to error or other conditions that the Device is experiencing. An Alert contains human readable text
538 that is dependent on the Device itself and the condition being reported. A Device may expose
539 discrete instances of an Alert Resource Type ("oic.r.alert") or may also expose Alerts within an
540 Alert Collection ("oic.r.alertcollection"). If the instance of "oic.r.alertcollection" is Observable (see
541 clause 7.8.2.2.2 in ISO/IEC 30118-1:2018) then a Client may Observe the Collection using the

542 mechanisms defined in clause 11.3 in ISO/IEC 30118-1:2018. As the Device adds and removes
543 Alerts from the Collection notifications may be generated for any registered Observers, the format
544 of which is dependent upon the OCF Interface used for the initial Observe, see clause 7.6.3 in
545 ISO/IEC 30118-1:2018.

5.6.2 Resource Types

547 The Alert and Alert Collection Resource Types are as defined in Table 18.

548   **Table 18 – 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 19.	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

549

550 Table 19 defines the details for the "oic.r.alert" Resource Type.

551   **Table 19 – "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

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
							generating this Alert is associated.

552

The Alert Collection ("oic.r.alertcollection") Resource Type defines no Properties additional to those defined for all instances of a Collection in Table 13 of ISO/IEC 30118-1:2018. However the Alert Collection does impose restrictions of the values that shall be populated in the "rt" and "rts" Properties. These are described in Table 20.

557 **Table 20 – "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.

558

5.6.3 Example of Use

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

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

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

Annex A
(normative)

Resource Type definitions

A.1 List of Resource Type definitions

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

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
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

A.2 Device Configuration

A.2.1 Introduction

Resource that allows for Device specific information to be configured.

A.2.2 Example URI

/exampleDeviceConfigurationResURI

A.2.3 Resource type

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

A.2.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Device Configuration",
    "version": "2019-02-28",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
      "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
```

```
602           },
603           "schemes": [
604             "http"
605           ],
606           "consumes": [
607             "application/json"
608           ],
609           "produces": [
610             "application/json"
611           ],
612           "paths": {
613             "/exampleDeviceConfigurationResURI" : {
614               "get": {
615                 "description": "Resource that allows for Device specific information to be configured.\n",
616                 "parameters": [
617                   {
618                     "$ref": "#/parameters/interface-all"
619                   }
620                 ],
621                 "responses": {
622                   "200": {
623                     "description" : "",
624                     "x-example": {
625                       "n":    "My Friendly Device Name",
626                       "rt":   ["oic.wk.con"],
627                       "loc":  [32.777,-96.797],
628                       "locn": "My Location Name",
629                       "c":    "USD",
630                       "r":    "MyRegion",
631                       "dl":   "en"
632                     },
633                     "schema": {
634                       "$ref": "#/definitions/Configuration"
635                     }
636                   }
637                 }
638               },
639               "post": {
640                 "description": "Update the information about the Device\n",
641                 "parameters": [
642                   {
643                     "$ref": "#/parameters/interface-rw"
644                   },
645                   {
646                     "name": "body",
647                     "in": "body",
648                     "required": true,
649                     "schema": {
650                       "$ref": "#/definitions/Update"
651                     },
652                     "x-example": {
653                       "n": "Nuevo Nombre Amistoso",
654                       "r": "MyNewRegion",
655                       "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
656                       "dl": "es"
657                     }
658                   }
659                 ],
660                 "responses": {
661                   "200": {
662                     "description": "",
663                     "x-example":  {
664                       "n": "Nuevo Nombre Amistoso",
665                       "r": "MyNewRegion",
666                       "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
667                       "dl":    "es"
668                     },
669                     "schema": {
670                       "$ref": "#/definitions/Update"
671                     }
672                   }
```

```
673                    }
674                }
675            }
676        },
677        "parameters": {
678            "interface-rw" : {
679                "in" : "query",
680                "name" : "if",
681                "type" : "string",
682                "enum" : ["oic.if.rw"]
683            },
684            "interface-all" : {
685                "in" : "query",
686                "name" : "if",
687                "type" : "string",
688                "enum" : ["oic.if.rw", "oic.if.baseline"]
689            }
690        },
691        "definitions": {
692            "Configuration": {
693                "properties": {
694                    "rt":  {
695                        "description": "Resource Type of the Resource",
696                        "items": {
697                            "enum": ["oic.wk.con"],
698                            "type": "string",
699                            "maxLength": 64
700                        },
701                        "minItems": 1,
702                        "uniqueItems": true,
703                        "readOnly": true,
704                        "type": "array"
705                    },
706                    "loc": {
707                        "description": "Location information (lat, long)",
708                        "items": {
709                            "type": "number"
710                        },
711                        "maxItems": 2,
712                        "minItems": 2,
713                        "type": "array"
714                    },
715                    "c": {
716                        "description": "Currency",
717                        "maxLength": 64,
718                        "type": "string"
719                    },
720                    "ln": {
721                        "description": "Localized names",
722                        "items": {
723                            "properties": {
724                                "language": {
725                                    "allOf": [
726                                        {
727                                            "description": "Format pattern according to IETF RFC 5646 (language tag).",
728                                            "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
729                                            "type": "string"
730                                        },
731                                        {
732                                            "description": "An RFC 5646 language tag."
733                                        }
734                                    ]
735                                },
736                                "value": {
737                                    "description": "The Device name in the indicated language.",
738                                    "maxLength": 64,
739                                    "type": "string"
740                                }
741                            },
742                            "type": "object"
743                        },
```

```
744              "minItems": 1,
745              "type": "array"
746            },
747            "locn": {
748              "description": "Human Friendly Name for location",
749              "maxLength": 64,
750              "type": "string"
751            },
752            "dl": {
753              "allOf": [
754                {
755                  "description": "Format pattern according to IETF RFC 5646 (language tag).",
756                  "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
757                  "type": "string"
758                },
759                {
760                  "description": "Default Language as an RFC 5646 language tag."
761                }
762              ]
763            },
764            "n": {
765              "$ref" :
766    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
767    schema.json#/definitions/n"
768            },
769            "id": {
770              "$ref" :
771    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
772    schema.json#/definitions/id"
773            },
774            "r": {
775              "description": "Region",
776              "maxLength": 64,
777              "type": "string"
778            },
779            "if" : {
780              "description": "The OCF Interfaces supported by this Resource",
781              "items": {
782                "enum": [
783                  "oic.if.baseline",
784                  "oic.if.rw"
785                ],
786                "type": "string",
787                "maxLength": 64
788              },
789              "minItems": 1,
790              "uniqueItems": true,
791              "readOnly": true,
792              "type": "array"
793            }
794          },
795          "type" : "object",
796          "required": ["n"]
797        },
798        "Update" : {
799          "properties": {
800            "loc": {
801              "description": "Location information (lat, long)",
802              "items": {
803                "type": "number"
804              },
805              "maxItems": 2,
806              "minItems": 2,
807              "type": "array"
808            },
809            "c": {
810              "description": "Currency",
811              "maxLength": 64,
812              "type": "string"
813            },
814            "ln": {
```

```
815              "description": "Localized names",
816              "items": {
817                "properties": {
818                  "language": {
819                    "allOf": [
820                      {
821                        "description": "Format pattern according to IETF RFC 5646 (language tag).",
822                        "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
823                        "type": "string"
824                      },
825                      {
826                        "description": "An RFC 5646 language tag."
827                      }
828                    ]
829                  },
830                  "value": {
831                    "description": "The Device name in the indicated language.",
832                    "maxLength": 64,
833                    "type": "string"
834                  }
835                },
836                "type": "object"
837              },
838              "minItems": 1,
839              "type": "array"
840            },
841            "locn": {
842              "description": "Human Friendly Name for location",
843              "maxLength": 64,
844              "type": "string"
845            },
846            "dl": {
847              "allOf": [
848                {
849                  "description": "Format pattern according to IETF RFC 5646 (language tag).",
850                  "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
851                  "type": "string"
852                },
853                {
854                  "description": "Default Language as an RFC 5646 language tag."
855                }
856              ]
857            },
858            "n": {
859              "description": "The human friendly name to be set on the Resource, this is also reflected
860    in the same Property in oic.wk.d",
861              "maxLength": 64,
862              "type": "string"
863            },
864            "r": {
865              "description": "Region",
866              "maxLength": 64,
867              "type": "string"
868            }
869          },
870          "anyOf": [
871            {
872              "required": ["loc"]
873            },
874            {
875              "required": ["locn"]
876            },
877            {
878              "required": ["c"]
879            },
880            {
881              "required": ["r"]
882            },
883            {
884              "required": ["ln"]
885            },
```

```
886            {
887               "required": ["dl"]
888            },
889            {
890               "required": ["n"]
891            }
892         ],
893         "type" : "object"
894      }
895    }
896 }
897
```

A.2.5 Property definition

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

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.

A.2.6 CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get	post		observe

A.3 Platform Configuration

A.3.1 Introduction

906 Resource that allows for Platform specific information to be configured.
907

A.3.2 Example URI

909 /examplePlatformConfigurationResURI

A.3.3 Resource type

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

A.3.4 OpenAPI 2.0 definition

```
913  {
914    "swagger": "2.0",
915    "info": {
916      "title": "Platform Configuration",
917      "version": "2019-03-04",
918      "license": {
919        "name": "OCF Data Model License",
920        "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
921        "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
922      },
923      "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
924    },
925    "schemes": [
926      "http"
927    ],
928    "consumes": [
929      "application/json"
930    ],
931    "produces": [
932      "application/json"
933    ],
934    "paths": {
935      "/examplePlatformConfigurationResURI": {
936        "get": {
937          "description": "Resource that allows for Platform specific information to be configured.\n",
938          "parameters": [
939            {
940              "$ref": "#/parameters/interface-all"
941            }
942          ],
943          "responses": {
944            "200": {
945              "description": "",
946              "x-example": {
947                "rt":   ["oic.wk.con.p"],
948                "mnpn": [ { "language": "en", "value": "My Friendly Device Name" } ]
949              },
950              "schema": { "$ref": "#/definitions/Conf_Platform" }
951            }
952          }
953        },
954        "post": {
955          "description": "Update the information about the Platform\n",
956          "parameters": [
957            {
958              "$ref": "#/parameters/interface-rw"
```

```
959                },
960                {
961                  "name": "body",
962                  "in": "body",
963                  "required": true,
964                  "schema": { "$ref": "#/definitions/Update_Platform" },
965                  "x-example": {
966                    "n": "Nuevo nombre",
967                    "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
968                  }
969                }
970              ],
971              "responses": {
972                "200": {
973                  "description": "",
974                  "x-example": {
975                    "n": "Nuevo nombre",
976                    "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
977                  },
978                  "schema": { "$ref": "#/definitions/Update_Platform" }
979                }
980              }
981            }
982          }
983        },
984        "parameters": {
985          "interface-rw": {
986            "in": "query",
987            "name": "if",
988            "type": "string",
989            "enum" : ["oic.if.rw"]
990          },
991          "interface-all": {
992            "in": "query",
993            "name": "if",
994            "type": "string",
995            "enum": ["oic.if.rw", "oic.if.baseline"]
996          }
997        },
998        "definitions": {
999          "Conf_Platform": {
1000            "properties": {
1001              "rt":   {
1002                "description": "Resource Type of the Resource",
1003                "items": {
1004                  "enum": ["oic.wk.con.p"],
1005                  "type": "string",
1006                  "maxLength": 64
1007                },
1008                "minItems": 1,
1009                "uniqueItems": true,
1010                "readOnly": true,
1011                "type": "array"
1012              },
1013              "n":   {
1014                "$ref":
1015  "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1016  schema.json#/definitions/n"
1017              },
1018              "mnpn":   {
1019                "description": "Platform names",
1020                "items": {
1021                  "properties": {
1022                    "language": {
1023                      "allOf": [
1024                        {
1025                          "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1026  schema.json#/definitions/language-tag"
1027                        },
1028                        {
1029                          "description": "An RFC 5646 language tag."
```

```
1030                          }
1031                        ]
1032                      },
1033                      "value": {
1034                        "description": "The Platform description in the indicated language.",
1035                        "maxLength": 64,
1036                        "type": "string"
1037                      }
1038                    },
1039                    "type": "object"
1040                  },
1041                  "minItems": 1,
1042                  "type": "array"
1043                },
1044                "id": {
1045                  "$ref":
1046     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1047     schema.json#/definitions/id"
1048                },
1049                "if": {
1050                  "description": "The OCF Interfaces supported by this Resource",
1051                  "items": {
1052                    "enum": [
1053                      "oic.if.rw",
1054                      "oic.if.baseline"
1055                    ],
1056                    "type": "string",
1057                    "maxLength": 64
1058                  },
1059                  "minItems": 1,
1060                  "readOnly": true,
1061                  "uniqueItems": true,
1062                  "type": "array"
1063                }
1064              },
1065              "type" : "object"
1066            },
1067            "Update_Platform": {
1068              "properties": {
1069                "n" :   {
1070                  "description": "The human friendly name to be set on the Resource, this is also reflected
1071     in the same Property in oic.wk.p",
1072                  "maxLength": 64,
1073                  "type": "string"
1074                },
1075                "mnpn" :   {
1076                  "description": "Platform names",
1077                  "items": {
1078                    "properties": {
1079                      "language": {
1080                        "allOf": [
1081                          {
1082                            "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1083     schema.json#/definitions/language-tag"
1084                          },
1085                          {
1086                            "description": "An RFC 5646 language tag."
1087                          }
1088                        ]
1089                      },
1090                      "value": {
1091                        "description": "The Platform description in the indicated language.",
1092                        "maxLength": 64,
1093                        "type": "string"
1094                      }
1095                    },
1096                    "type": "object"
1097                  },
1098                  "minItems": 1,
1099                  "type": "array"
1100                }
```

```
1101          },
1102          "type": "object",
1103          "anyOf": [
1104            {
1105              "required": ["mnpn"]
1106            },
1107            {
1108              "required": ["n"]
1109            }
1110          ]
1111        }
1112      }
1113    }
1114
```

A.3.5 Property definition

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

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.

A.3.6 CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get	post		observe

A.4 Icon

A.4.1 Introduction

This Resource describes the attributes associated with an Icon.

A.4.2   Example URI

/IconResURI

A.4.3   Resource type

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

A.4.4   OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Icon",
    "version": "2019-02-26",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
      "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": [
    "http"
  ],
  "consumes": [
    "application/json"
  ],
  "produces": [
    "application/json"
  ],
  "paths": {
    "/IconResURI" : {
      "get": {
        "description": "This Resource describes the attributes associated with an Icon.\n",
        "parameters": [
          {
            "$ref": "#/parameters/interface"
          }
        ],
        "responses": {
          "200": {
            "description": "",
            "x-example": {
              "rt": ["oic.r.icon"],
              "mimetype": "image/png",
              "width": 256,
              "height": 256,
              "media": "http://findbetter.ru/public/uploads/1481662800/2043.png"
            },
            "schema": {
              "$ref": "#/definitions/Icon"
            }
          }
        }
      }
    }
  },
  "parameters": {
    "interface" : {
      "in" : "query",
      "name" : "if",
      "type" : "string",
      "enum" : ["oic.if.r", "oic.if.baseline"]
    }
  },
  "definitions": {
    "Icon" : {
      "properties": {
        "mimetype": {
          "description": "The Media Type of the icon",
```

```
1191              "maxLength": 64,
1192              "readOnly": true,
1193              "type": "string"
1194            },
1195            "rt": {
1196              "description": "Resource Type of the Resource",
1197              "items": {
1198                "enum": ["oic.r.icon"],
1199                "type": "string",
1200                "maxLength": 64
1201              },
1202              "minItems": 1,
1203              "uniqueItems": true,
1204              "readOnly": true,
1205              "type": "array"
1206            },
1207            "media": {
1208              "description": "Specifies the URI to the icon",
1209              "format": "uri",
1210              "maxLength": 256,
1211              "readOnly": true,
1212              "type": "string"
1213            },
1214            "n": {
1215              "$ref" :
1216    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1217    schema.json#/definitions/n"
1218            },
1219            "id": {
1220              "$ref" :
1221    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1222    schema.json#/definitions/id"
1223            },
1224            "width": {
1225              "description": "The width in pixels",
1226              "minimum": 1,
1227              "readOnly": true,
1228              "type": "integer"
1229            },
1230            "height": {
1231              "description": "The height in pixels",
1232              "minimum": 1,
1233              "readOnly": true,
1234              "type": "integer"
1235            },
1236            "if": {
1237              "description": "The OCF Interfaces supported by this Resource",
1238              "items": {
1239                "enum": [
1240                  "oic.if.r",
1241                  "oic.if.baseline"
1242                ],
1243                "maxLength": 64,
1244                "type": "string"
1245              },
1246              "minItems": 2,
1247              "uniqueItems": true,
1248              "readOnly": true,
1249              "type": "array"
1250            }
1251          },
1252          "type" : "object",
1253          "required": ["mimetype", "width", "height", "media"]
1254        }
1255      }
1256    }
1257
```

A.4.5   Property definition

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

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.

1261 **A.4.6   CRUDN behaviour**

1262 Table A-7 defines the CRUDN operations that are supported on the "oic.r.icon" Resource Type.

1263   **Table A-7 – The CRUDN operations of the Resource with type "rt" = "oic.r.icon".**

Create	Read	Update	Delete	Notify
	get			observe

1264 **A.5   Maintenance**

1265 **A.5.1   Introduction**

1266 The Resource through which a Device is maintained and can be used for diagnostic purposes.
1267 fr   (Factory   Reset)   is   a   boolean.
1268 The   value   0   means   No   action   (Default),   the   value   1   means   Start   Factory   Reset
1269 After   factory   reset,   this   value   shall   be   changed   back   to   the   default   value
1270 rb   (Reboot)   is   a   boolean.
1271 The   value   0   means   No   action   (Default),   the   value   1   means   Start   Reboot
1272 After   Reboot,   this   value   shall   be   changed   back   to   the   default   value
1273

1274 **A.5.2   Well-known URI**

1275 /oic/mnt

1276 **A.5.3   Resource type**

1277 The Resource Type is defined as: "oic.wk.mnt".

1278 **A.5.4   OpenAPI 2.0 definition**

```
1279 {
1280   "swagger": "2.0",
1281   "info": {
1282     "title": "Maintenance",
1283     "version": "2019-03-04",
1284     "license": {
1285       "name": "OCF Data Model License",
1286       "url":
```

```
1287    "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1288  CENSE.md",
1289        "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1290       },
1291       "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1292     },
1293     "schemes": ["http"],
1294     "consumes": ["application/json"],
1295     "produces": ["application/json"],
1296     "paths": {
1297       "/oic/mnt" : {
1298         "get": {
1299           "description": "The Resource through which a Device is maintained and can be used for
1300  diagnostic purposes.\nfr (Factory Reset) is a boolean.\n  The value 0 means No action (Default), the
1301  value 1 means Start Factory Reset\nAfter factory reset, this value shall be changed back to the
1302  default value\nrb (Reboot) is a boolean.\n  The value 0 means No action (Default), the value 1 means
1303  Start Reboot\nAfter Reboot, this value shall be changed back to the default value\n",
1304           "parameters": [
1305             {"$ref": "#/parameters/interface-all"}
1306           ],
1307           "responses": {
1308             "200": {
1309               "description" : "",
1310               "x-example": {
1311                 "rt":    ["oic.wk.mnt"],
1312                 "fr":    false,
1313                 "rb":    false,
1314                 "err" : 503
1315               },
1316               "schema": { "$ref": "#/definitions/mnt" }
1317             }
1318           }
1319         },
1320         "post": {
1321           "description": "Set the maintenance action(s)\n",
1322           "parameters": [
1323             {"$ref": "#/parameters/interface-rw"},
1324             {
1325               "name": "body",
1326               "in": "body",
1327               "required": true,
1328               "schema": { "$ref": "#/definitions/mnt-update" },
1329               "x-example": {
1330                 "fr":    false,
1331                 "rb":    false
1332               }
1333             }
1334           ],
1335           "responses": {
1336             "200": {
1337               "description" : "",
1338               "x-example": {
1339                 "fr":    false,
1340                 "rb":    false
1341               },
1342               "schema": { "$ref": "#/definitions/mnt" }
1343             }
1344           }
1345         }
1346       }
1347     },
1348     "parameters": {
1349       "interface-all" : {
1350         "in" : "query",
1351         "name" : "if",
1352         "type" : "string",
1353         "enum" : ["oic.if.rw", "oic.if.baseline"]
1354       },
1355       "interface-rw" : {
1356         "in" : "query",
1357         "name" : "if",
```

```
1358            "type" : "string",
1359            "enum" : ["oic.if.rw"]
1360          }
1361        },
1362      "definitions": {
1363        "mnt" : {
1364          "properties": {
1365            "rt" : {
1366              "description": "Resource Type of the Resource",
1367              "items": {
1368                "enum":    ["oic.wk.mnt"],
1369                "type": "string",
1370                "maxLength": 64
1371              },
1372              "minItems": 1,
1373              "uniqueItems": true,
1374              "readOnly": true,
1375              "type": "array"
1376            },
1377            "fr" : {
1378              "description": "Factory Reset",
1379              "type": "boolean"
1380            },
1381            "err" : {
1382              "description": "Last HTTP occurred error",
1383              "maximum": 599,
1384              "minimum": 399,
1385              "readOnly": true,
1386              "type": "integer"
1387            },
1388            "n": {
1389              "$ref":
1390    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1391    schema.json#/definitions/n"
1392            },
1393            "rb" : {
1394              "description": "Reboot Action",
1395              "type": "boolean"
1396            },
1397            "id" : {
1398              "$ref":
1399    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1400    schema.json#/definitions/id"
1401            },
1402            "if" : {
1403              "description": "The OCF Interfaces supported by this Resource",
1404              "items": {
1405                "enum": [
1406                  "oic.if.rw",
1407                  "oic.if.baseline"
1408                ],
1409                "type": "string",
1410                "maxLength": 64
1411              },
1412              "minItems": 1,
1413              "readOnly": true,
1414              "uniqueItems": true,
1415              "type": "array"
1416            }
1417          },
1418          "anyOf" : [
1419            {
1420              "required": [ "fr" ]
1421            },
1422            {
1423              "required": [ "rb" ]
1424            },
1425            {
1426              "required": [ "err" ]
1427            }
1428          ],
```

```
1429        "type" : "object"
1430      },
1431      "mnt-update" : {
1432        "properties": {
1433          "fr" : {
1434            "description": "Factory Reset",
1435            "type": "boolean"
1436          },
1437          "n": {
1438            "$ref":
1439  "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1440  schema.json#/definitions/n"
1441          },
1442          "rb" : {
1443            "description": "Reboot Action",
1444            "type": "boolean"
1445          }
1446        },
1447        "anyOf" : [
1448          {
1449            "required": [
1450              "fr"
1451            ]
1452          },
1453          {
1454            "required": [
1455              "rb"
1456            ]
1457          }
1458        ],
1459        "type" : "object"
1460      }
1461    }
1462  }
1463
```

A.5.5 Property definition

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

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.

1467   **A.5.6   CRUDN behaviour**

1468   Table A-9 defines the CRUDN operations that are supported on the "oic.wk.mnt" Resource Type.

1469   **Table A-9 – The CRUDN operations of the Resource with type "rt" = "oic.wk.mnt".**

Create	Read	Update	Delete	Notify
	get	post		observe

1470   **A.6   Network Monitoring**

1471   **A.6.1   Introduction**

1472   The   Resource   through   which   a   Device   can   monitor   network   traffic.
1473

1474   **A.6.2   Example URI**

1475   /nmonResURI

1476   **A.6.3   Resource type**

1477   The Resource Type is defined as: "oic.wk.nmon".

1478   **A.6.4   OpenAPI 2.0 definition**

```
1479    {
1480      "swagger": "2.0",
1481      "info": {
1482        "title": "Network Monitoring",
1483        "version": "2019-03-27",
1484        "license": {
1485          "name": "OCF Data Model License",
1486          "url":
1487    "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1488    CENSE.md",
1489          "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1490        },
1491        "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1492      },
1493      "schemes": ["http"],
1494      "consumes": ["application/json"],
1495      "produces": ["application/json"],
1496      "paths": {
1497        "/nmonResURI" : {
1498          "get": {
1499            "description": "The Resource through which a Device can monitor network traffic.\n",
1500            "parameters": [
1501              {"$ref": "#/parameters/interface-all"}
1502            ],
1503            "responses": {
1504              "200": {
1505                "description" : "",
1506                "x-example": {
1507                  "rt":    ["oic.wk.nmon"],
1508                  "ianaifType":    71,
1509                  "reset":    false,
1510                  "col" : false,
1511                  "tx" : 10,
1512                  "rx" : 15,
1513                  "mmstx" : 50,
1514                  "amstx" : 35,
1515                  "mmsrx" : 35,
1516                  "amsrx" : 20
1517                },
1518                "schema": { "$ref": "#/definitions/nmon" }
1519              }
1520          }
```

```
1521              },
1522            "post": {
1523              "description": "Start/Stop collecting and reset the networking monitor Resource\n",
1524              "parameters": [
1525                {"$ref": "#/parameters/interface-rw"},
1526                {
1527                  "name": "body",
1528                  "in": "body",
1529                  "required": true,
1530                  "schema": { "$ref": "#/definitions/nmon-update" },
1531                  "x-example": {
1532                    "col":    true,
1533                    "reset":     true
1534                  }
1535                }
1536              ],
1537              "responses": {
1538                "200": {
1539                  "description" : "",
1540                  "x-example": {
1541                    "rt":    ["oic.wk.nmon"],
1542                    "ianaifType":    71,
1543                    "reset":    false,
1544                    "col" : true,
1545                    "tx" : 0,
1546                    "rx" : 0,
1547                    "mmstx" : 0,
1548                    "amstx" : 0,
1549                    "mmsrx" : 0,
1550                    "amsrx" : 0
1551                  },
1552                  "schema": { "$ref": "#/definitions/nmon" }
1553                }
1554              }
1555            }
1556          }
1557        },
1558        "parameters": {
1559          "interface-rw" : {
1560            "in" : "query",
1561            "name" : "if",
1562            "type" : "string",
1563            "enum" : ["oic.if.rw"]
1564          },
1565          "interface-all" : {
1566            "in" : "query",
1567            "name" : "if",
1568            "type" : "string",
1569            "enum" : ["oic.if.rw", "oic.if.baseline"]
1570          }
1571        },
1572        "definitions": {
1573          "nmon" : {
1574            "properties": {
1575              "amstx" : {
1576                "description": "Average transmitted message size in bytes (tx) in the collection period",
1577                "readOnly": true,
1578                "type": "integer"
1579              },
1580              "reset" : {
1581                "description": "True: reset the collected values",
1582                "readOnly": false,
1583                "type": "boolean"
1584              },
1585              "mmsrx" : {
1586                "description": "Maximum received message size in bytes (rx) in the collection period",
1587                "readOnly": true,
1588                "type": "integer"
1589              },
1590              "mmstx" : {
1591                "description": "Maximum transmitted message size in bytes (tx) in the collection period",
```

```
1592              "readOnly": true,
1593              "type": "integer"
1594            },
1595            "tx" : {
1596              "description": "Amount of transmitted kilo bytes from the collection",
1597              "readOnly": true,
1598              "type": "integer"
1599            },
1600            "rt" : {
1601              "description": "Resource Type of the Resource",
1602              "items": {
1603                "enum": ["oic.wk.nmon"],
1604                "type": "string",
1605                "maxLength": 64
1606              },
1607              "minItems": 1,
1608              "uniqueItems": true,
1609              "readOnly": true,
1610              "type": "array"
1611            },
1612            "ianaifType" : {
1613              "description": "The type of the network connection, as defined by iana
1614     https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib",
1615              "readOnly": true,
1616              "type": "integer"
1617            },
1618            "rx" : {
1619              "description": "Amount of received kilobytes from the collection",
1620              "readOnly": true,
1621              "type": "integer"
1622            },
1623            "id" : {
1624              "$ref":
1625     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1626     schema.json#/definitions/id"
1627            },
1628            "amsrx" : {
1629              "description": "Average received message size in bytes (rx) in the collection period",
1630              "readOnly": true,
1631              "type": "integer"
1632            },
1633            "n" : {
1634              "$ref":
1635     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1636     schema.json#/definitions/n"
1637            },
1638            "col" : {
1639              "description": "True: Device is collecting values",
1640              "readOnly": false,
1641              "type": "boolean"
1642            },
1643            "if" : {
1644              "description": "The OCF Interfaces supported by this Resource",
1645              "items": {
1646                "enum": [
1647                  "oic.if.rw",
1648                  "oic.if.baseline"
1649                ],
1650                "type": "string",
1651                "maxLength": 64
1652              },
1653              "minItems": 1,
1654              "readOnly": true,
1655              "uniqueItems": true,
1656              "type": "array"
1657            }
1658          },
1659          "type" : "object",
1660          "required": ["reset", "col", "ianaifType"]
1661        },
1662        "nmon-update" : {
```

```
1663            "properties": {
1664              "reset" : {
1665                "description": "True: reset the collected values",
1666                "readOnly": false,
1667                "type": "boolean"
1668              },
1669              "n" : {
1670                "$ref":
1671    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1672    schema.json#/definitions/n"
1673              },
1674              "col" : {
1675                "description": "True: Device is collecting values",
1676                "readOnly": false,
1677                "type": "boolean"
1678              }
1679            },
1680            "type" : "object",
1681            "required": ["reset", "col"]
1682          }
1683        }
1684    }
1685
```

A.6.5   Property definition

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

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 https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib
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

43

| n | multiple types: see schema | No | Read Write | |
| col | boolean | Yes | Read Write | True: Device is collecting values |

A.6.6   CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get	post		observe

A.7   Scene List

A.7.1   Introduction

Toplevel   Scene   Resource.
This   Resource   is   a   generic   Collection   Resource.
The   rts   value   contains   oic.wk.scenecollection   Resource   Types.

A.7.2   Example URI

/SceneListResURI

A.7.3   Resource type

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

A.7.4   OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Scene List",
    "version": "2019-03-04",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
      "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": [
    "http"
  ],
  "consumes": [
    "application/json"
  ],
  "produces": [
    "application/json"
  ],
  "paths": {
    "/SceneListResURI?if=oic.if.ll": {
      "get": {
        "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection
Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
        "parameters": [
          {
            "$ref": "#/parameters/interface-all"
          }
        ],
        "responses": {
          "200": {
            "description" : "",
```

```
1737                "x-example": [
1738                     {"href": "/scenecollection1","rt": ["oic.wk.scenecollection"],"if":["oic.if.ll",
1739     "oic.if.baseline"]},
1740                     {"href": "/scenecollection2","rt": ["oic.wk.scenecollection"],"if":["oic.if.ll",
1741     "oic.if.baseline"]}
1742                ],
1743                "schema": {
1744                  "$ref": "#/definitions/slinks"
1745                }
1746              }
1747            }
1748          }
1749        },
1750        "/SceneListResURI?if=oic.if.baseline": {
1751          "get": {
1752            "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection
1753     Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
1754            "parameters": [
1755              {
1756                "$ref": "#/parameters/interface-all"
1757              }
1758            ],
1759            "responses": {
1760              "200": {
1761                "description" : "",
1762                "x-example": {
1763                  "rt":  ["oic.wk.scenelist"],
1764                  "if":  ["oic.if.ll", "oic.if.baseline"],
1765                  "n":   "list of scene collections",
1766                  "rts": ["oic.wk.scenecollection"],
1767                  "links": [
1768                     {"href": "/scenecollection1","rt": ["oic.wk.scenecollection"],"if":["oic.if.ll",
1769     "oic.if.baseline"]},
1770                     {"href": "/scenecollection2","rt": ["oic.wk.scenecollection"],"if":["oic.if.ll",
1771     "oic.if.baseline"]}
1772                  ]
1773                },
1774                "schema": { "$ref": "#/definitions/Collection" }
1775              }
1776            }
1777          }
1778        }
1779      },
1780      "parameters": {
1781        "interface-all" : {
1782          "in" : "query",
1783          "name" : "if",
1784          "type" : "string",
1785          "enum" : ["oic.if.ll", "oic.if.baseline"]
1786        }
1787      },
1788      "definitions": {
1789        "Collection": {
1790          "properties": {
1791            "links": {
1792              "description": "A set of simple or individual OCF Links.",
1793              "items": {
1794                "$ref": "#/definitions/oic.oic-link"
1795              },
1796              "type": "array"
1797            },
1798            "n": {
1799              "$ref" :
1800     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1801     schema.json#/definitions/n"
1802            },
1803            "id": {
1804              "$ref" :
1805     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1806     schema.json#/definitions/id"
1807            },
```

```
1808            "if": {
1809              "type": "array",
1810              "description": "The OCF Interfaces supported by this Resource",
1811              "items": {
1812                "enum": [
1813                  "oic.if.ll",
1814                  "oic.if.baseline"
1815                ],
1816                "type": "string",
1817                "maxLength": 64
1818              },
1819              "minItems": 2,
1820              "uniqueItems": true,
1821              "readOnly": true
1822            },
1823            "rts": {
1824              "description": "The list of allowable Resource Types in Links included in the Collection",
1825              "items": {
1826                "enum": ["oic.wk.scenecollection"],
1827                "type": "string",
1828                "maxLength": 64
1829              },
1830              "minItems": 1,
1831              "uniqueItems": true,
1832              "readOnly": true,
1833              "type": "array"
1834            },
1835            "rt": {
1836              "description": "Resource Type of the Resource",
1837              "items": {
1838                "enum": ["oic.wk.scenelist"],
1839                "type": "string",
1840                "maxLength": 64
1841              },
1842              "minItems": 1,
1843              "readOnly": true,
1844              "uniqueItems": true,
1845              "type": "array"
1846            }
1847          },
1848          "type": "object",
1849          "required": [
1850            "rt",
1851            "if",
1852            "links"
1853          ]
1854        },
1855        "slinks" : {
1856          "type" : "array",
1857          "items" : {
1858            "$ref": "#/definitions/oic.oic-link"
1859          }
1860        },
1861        "oic.oic-link": {
1862          "properties": {
1863            "if": {
1864              "description": "The OCF Interfaces supported by the Linked Resource",
1865              "items": {
1866                "enum": [
1867                  "oic.if.ll",
1868                  "oic.if.baseline"
1869                ],
1870                "type": "string",
1871                "maxLength": 64
1872              },
1873              "minItems": 1,
1874              "uniqueItems": true,
1875              "readOnly": true,
1876              "type": "array"
1877            },
1878            "rt": {
```

```
1879              "description": "The Resource Type of the Linked Resource",
1880              "items": {
1881                "enum": ["oic.wk.scenecollection"],
1882                "type": "string",
1883                "maxLength": 64
1884              },
1885              "minItems": 1,
1886              "uniqueItems": true,
1887              "readOnly": true,
1888              "type": "array"
1889            },
1890            "anchor": {
1891              "$ref":
1892    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1893    schema.json#/definitions/anchor"
1894            },
1895            "di": {
1896              "$ref":
1897    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1898    schema.json#/definitions/di"
1899            },
1900            "eps": {
1901              "$ref":
1902    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1903    schema.json#/definitions/eps"
1904            },
1905            "href": {
1906              "$ref":
1907    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1908    schema.json#/definitions/href"
1909            },
1910            "ins": {
1911              "$ref":
1912    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1913    schema.json#/definitions/ins"
1914            },
1915            "p": {
1916              "$ref":
1917    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1918    schema.json#/definitions/p"
1919            },
1920            "rel": {
1921              "$ref":
1922    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1923    schema.json#/definitions/rel_array"
1924            },
1925            "title": {
1926              "$ref":
1927    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1928    schema.json#/definitions/title"
1929            },
1930            "type": {
1931              "$ref":
1932    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1933    schema.json#/definitions/type"
1934            }
1935          },
1936          "required": [
1937            "href",
1938            "rt",
1939            "if"
1940          ],
1941          "type": "object"
1942        }
1943      }
1944    }
1945
```

A.7.5   Property definition

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

1948   **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	

1949   **A.7.6   CRUDN behaviour**

1950   Table A-13 defines the CRUDN operations that are supported on the "oic.wk.scenelist" Resource
1951   Type.

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

Create	Read	Update	Delete	Notify
	get			observe

A.8   Scene Collection

A.8.1   Introduction

Collection that models a set of Scenes.
This Resource is a generic Collection Resource with additional Properties.
The rts value contains oic.scenemember Resource Types.
The additional Properties are
lastScene, this is the Scene Value last set by any Client
sceneValues, this is the list of available Scenes
lastScene shall be listed in sceneValues.

A.8.2   Example URI

/SceneCollectionResURI

A.8.3   Resource type

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

A.8.4   OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Scene Collection",
    "version": "2019-03-04",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
      "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": [
    "http"
  ],
  "consumes": [
    "application/json"
  ],
  "produces": [
    "application/json"
  ],
  "paths": {
    "/SceneCollectionResURI?if=oic.if.ll" : {
      "get": {
        "description": "Collection that models a set of Scenes.\nThis Resource is a generic
Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
Types.\nThe additional Properties are\n  lastScene, this is the Scene Value last set by any Client\n
sceneValues, this is the list of available Scenes\n  lastScene shall be listed in sceneValues.\n",
        "parameters": [
          {
            "$ref": "#/parameters/interface-all"
          }
        ],
        "responses": {
          "200": {
            "description" : "",
            "x-example": [
              {"href": "/scenemember1","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]},
              {"href": "/scenemember2","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]}
```

```
2007                  ],
2008                  "schema": {
2009                    "$ref": "#/definitions/slinks"
2010                  }
2011                }
2012              }
2013            }
2014          },
2015          "/SceneCollectionResURI?if=oic.if.baseline" : {
2016            "get": {
2017              "description": "Collection that models a set of Scenes.\nThis Resource is a generic
2018    Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
2019    Types.\nThe additional Properties are\n  lastScene, this is the Scene Value last set by any Client\n
2020    sceneValues, this is the list of available Scenes\n  lastScene shall be listed in sceneValues.\n",
2021              "parameters": [
2022                {
2023                  "$ref": "#/parameters/interface-all"
2024                }
2025              ],
2026              "responses": {
2027                "200": {
2028                  "description" : "",
2029                  "x-example": {
2030                    "lastScene": "off",
2031                    "sceneValues": ["off","Reading","TVWatching"],
2032                    "rt":        ["oic.wk.scenecollection"],
2033                    "n":         "My Scenes for my living room",
2034                    "rts":       ["oic.wk.scenemember"],
2035                    "links": [
2036                      {"href": "/scenemember1","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]},
2037                      {"href": "/scenemember2","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]}
2038                    ]
2039                  },
2040                  "schema": {
2041                    "$ref": "#/definitions/SceneCollection"
2042                  }
2043                }
2044              }
2045            },
2046            "post": {
2047              "description": "Provides the action to change the last set Scene selection.\nCalling this
2048    method shall update all Scene Members to the prescribed membervalue.\nWhen this method is called
2049    with the same value as the current lastScene value\nthen all Scene Members shall be updated.\n",
2050              "parameters": [
2051                {
2052                  "$ref": "#/parameters/interface-update"
2053                },
2054                {
2055                  "name": "body",
2056                  "in": "body",
2057                  "required": true,
2058                  "schema": {
2059                    "$ref": "#/definitions/SceneCollectionUpdate"
2060                  },
2061                  "x-example": {
2062                    "lastScene": "Reading"
2063                  }
2064                }
2065              ],
2066              "responses": {
2067                "200": {
2068                  "description" : "Indicates that the value is changed.\nThe changed Properties are
2069    provided in the response.\n",
2070                  "x-example": {
2071                    "lastScene": "Reading"
2072                  },
2073                  "schema": {
2074                    "$ref": "#/definitions/SceneCollectionUpdate"
2075                  }
2076                }
2077              }
```

```
2078              }
2079            }
2080          },
2081          "parameters": {
2082            "interface-update" : {
2083              "in" : "query",
2084              "name" : "if",
2085              "type" : "string",
2086              "enum" : ["oic.if.a"]
2087            },
2088            "interface-all" : {
2089              "in" : "query",
2090              "name" : "if",
2091              "type" : "string",
2092              "enum" : ["oic.if.ll", "oic.if.baseline"]
2093            }
2094          },
2095          "definitions": {
2096            "SceneCollection": {
2097              "properties": {
2098                "rt": {
2099                  "description": "Resource Type of the Resource",
2100                  "items": {
2101                    "enum": ["oic.wk.scenecollection"],
2102                    "type": "string",
2103                    "maxLength": 64
2104                  },
2105                  "minItems": 1,
2106                  "readOnly": true,
2107                  "uniqueItems": true,
2108                  "type": "array"
2109                },
2110                "lastScene": {
2111                  "description": "Last selected Scene from the set of sceneValues",
2112                  "type": "string"
2113                },
2114                "links": {
2115                  "description": "A set of simple or individual OCF Links.",
2116                  "items": {
2117                    "$ref": "#/definitions/oic.oic-link"
2118                  },
2119                  "type": "array"
2120                },
2121                "sceneValues": {
2122                  "description": "All available Scene Values",
2123                  "items": {
2124                    "type": "string"
2125                  },
2126                  "readOnly": true,
2127                  "type": "array"
2128                },
2129                "n": {
2130                  "$ref" :
2131      "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2132      schema.json#/definitions/n"
2133                },
2134                "id": {
2135                  "$ref" :
2136      "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2137      schema.json#/definitions/id"
2138                },
2139                "rts": {
2140                  "description": "Resource Type of the Resources within the Collection",
2141                  "items": {
2142                    "enum": ["oic.wk.scenemember"],
2143                    "type": "string",
2144                    "maxLength": 64
2145                  },
2146                  "minItems": 1,
2147                  "readOnly": true,
2148                  "uniqueItems": true,
```

```
2149              "type": "array"
2150            },
2151            "if" : {
2152              "description": "The OCF Interfaces supported by this Resource",
2153              "items": {
2154                "enum": [
2155                  "oic.if.ll",
2156                  "oic.if.baseline",
2157                  "oic.if.a"
2158                ],
2159                "type": "string",
2160                "maxLength": 64
2161              },
2162              "minItems": 1,
2163              "uniqueItems": true,
2164              "readOnly": true,
2165              "type": "array"
2166            }
2167          },
2168          "type" : "object"
2169        },
2170        "SceneCollectionUpdate": {
2171          "properties": {
2172            "lastScene": {
2173              "description": "Last selected Scene from the set of sceneValues",
2174              "type": "string"
2175            }
2176          },
2177          "type" : "object"
2178        },
2179        "slinks" : {
2180          "type" : "array",
2181          "items" : {
2182            "$ref": "#/definitions/oic.oic-link"
2183          }
2184        },
2185        "oic.oic-link": {
2186          "type": "object",
2187          "properties": {
2188            "if": {
2189              "description": "The OCF Interfaces supported by the Linked Resource",
2190              "items": {
2191                "enum": [
2192                  "oic.if.baseline"
2193                ],
2194                "type": "string",
2195                "maxLength": 64
2196              },
2197              "minItems": 1,
2198              "uniqueItems": true,
2199              "readOnly": true,
2200              "type": "array"
2201            },
2202            "rt": {
2203              "description": "Resource Type of the Linked Resource",
2204              "items": {
2205                "enum": ["oic.wk.scenemember"],
2206                "type": "string",
2207                "maxLength": 64
2208              },
2209              "minItems": 1,
2210              "uniqueItems": true,
2211              "readOnly": true,
2212              "type": "array"
2213            },
2214            "anchor": {
2215              "$ref":
2216   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2217   schema.json#/definitions/anchor"
2218            },
2219            "di": {
```

```
2220          "$ref":
2221   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2222   schema.json#/definitions/di"
2223          },
2224          "eps": {
2225            "$ref":
2226   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2227   schema.json#/definitions/eps"
2228          },
2229          "href": {
2230            "$ref":
2231   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2232   schema.json#/definitions/href"
2233          },
2234          "ins": {
2235            "$ref":
2236   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2237   schema.json#/definitions/ins"
2238          },
2239          "p": {
2240            "$ref":
2241   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2242   schema.json#/definitions/p"
2243          },
2244          "rel": {
2245            "$ref":
2246   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2247   schema.json#/definitions/rel_array"
2248          },
2249          "title": {
2250            "$ref":
2251   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2252   schema.json#/definitions/title"
2253          },
2254          "type": {
2255            "$ref":
2256   "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2257   schema.json#/definitions/type"
2258          }
2259        },
2260        "required": [
2261          "href",
2262          "rt",
2263          "if"
2264        ]
2265      }
2266    }
2267  }
2268
```

2269 ### A.8.5 Property definition

2270 Table A-14 defines the Properties that are part of the "oic.wk.scenecollection" Resource Type.

2271 **Table A-14 – The Property definitions of the Resource with type "rt" =**
2272 **"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	

2273 **A.8.6   CRUDN behaviour**

2274 Table A-15 defines the CRUDN operations that are supported on the "oic.wk.scenecollection"
2275 Resource Type.

2276 **Table A-15 – The CRUDN operations of the Resource with type "rt" =**
2277 **"oic.wk.scenecollection".**

Create	Read	Update	Delete	Notify
	get	post		observe

A.9   Scene Member

A.9.1   Introduction

2280   Single   Link   that   models   a   Scene   Member.
2281

2282   **A.9.2   Example URI**

2283   /SceneMemberResURI

2284   **A.9.3   Resource type**

2285   The Resource Type is defined as: "oic.wk.scenemember".

2286   **A.9.4   OpenAPI 2.0 definition**

```
2287    {
2288      "swagger": "2.0",
2289      "info": {
2290        "title": "Scene Member",
2291        "version": "2019-03-04",
2292        "license": {
2293          "name": "OCF Data Model License",
2294          "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2295          "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2296        },
2297        "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2298      },
2299      "schemes": [
2300        "http"
2301      ],
2302      "consumes": [
2303        "application/json"
2304      ],
2305      "produces": [
2306        "application/json"
2307      ],
2308      "paths": {
2309        "/SceneMemberResURI" : {
2310          "get": {
2311            "description": "Single Link that models a Scene Member.\n",
2312            "parameters": [
2313              {
2314                "$ref": "#/parameters/interface-baseline"
2315              }
2316            ],
2317            "responses": {
2318              "200": {
2319                "description" : "",
2320                "x-example": {
2321                  "rt": ["oic.wk.scenemember"],
2322                  "id": "0685B960-FFFF-46F7-BEC0-9E6234671ADC1",
2323                  "n": "my binary switch (for light bulb) mappings",
2324                  "if": ["oic.if.baseline"],
2325                  "link": {
2326                    "href": "binarySwitch",
2327                    "rt":   ["oic.r.switch.binary"],
2328                    "if":   ["oic.if.a", "oic.if.baseline"],
2329                    "eps": [
2330                      {"ep": "coap://[fe80::b1d6]:1111", "pri": 2},
2331                      {"ep": "coaps://[fe80::b1d6]:1122"},
2332                      {"ep": "coap+tcp://[2001:db8:a::123]:2222", "pri": 3}
2333                    ]
2334                  },
2335                  "SceneMappings": [
2336                    {
2337                      "scene":            "off",
2338                      "memberProperty":   "value",
2339                      "memberValue":      "true"
```

```
2340                    },
2341                    {
2342                      "scene":           "Reading",
2343                      "memberProperty":  "value",
2344                      "memberValue":     "false"
2345                    },
2346                    {
2347                      "scene":           "TVWatching",
2348                      "memberProperty":  "value",
2349                      "memberValue":     "true"
2350                    }
2351                  ]
2352                },
2353                "schema": {
2354                  "$ref": "#/definitions/SceneMember"
2355                }
2356              }
2357            }
2358          }
2359        }
2360      },
2361      "parameters": {
2362        "interface-baseline" : {
2363          "in" : "query",
2364          "name" : "if",
2365          "type" : "string",
2366          "enum" : ["oic.if.baseline"]
2367        }
2368      },
2369      "definitions": {
2370        "SceneMember": {
2371          "properties": {
2372            "rt": {
2373              "description": "Resource Type of the Resource",
2374              "items": {
2375                "enum": ["oic.wk.scenemember"],
2376                "type": "string",
2377                "maxLength": 64
2378              },
2379              "minItems": 1,
2380              "readOnly": true,
2381              "uniqueItems": true,
2382              "type": "array"
2383            },
2384            "SceneMappings": {
2385              "description": "Array of mappings per Scene, can be one(1)",
2386              "items": {
2387                "properties": {
2388                  "memberProperty": {
2389                    "description": "Property name that will be mapped",
2390                    "readOnly": true,
2391                    "type": "string"
2392                  },
2393                  "memberValue": {
2394                    "description": "Value of the Member Property",
2395                    "readOnly": true,
2396                    "type": "string"
2397                  },
2398                  "scene": {
2399                    "description": "Specifies a Scene Value that will be acted upon",
2400                    "type": "string"
2401                  }
2402                },
2403                "required": [
2404                  "scene",
2405                  "memberProperty",
2406                  "memberValue"
2407                ],
2408                "type": "object"
2409              },
2410              "type": "array"
```

```
2411              },
2412              "n": {
2413                "$ref" :
2414      "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2415      schema.json#/definitions/n"
2416              },
2417              "id": {
2418                "$ref" :
2419      "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2420      schema.json#/definitions/id"
2421              },
2422              "link": {
2423                "$ref": "#/definitions/oic.oic-link"
2424              },
2425              "if": {
2426                "description": "The OCF Interfaces supported by this Resource",
2427                "items": {
2428                  "enum": [
2429                    "oic.if.baseline"
2430                  ],
2431                  "type": "string",
2432                  "maxLength": 64
2433                },
2434                "minItems": 1,
2435                "readOnly": true,
2436                "uniqueItems": true,
2437                "type": "array"
2438              }
2439            },
2440            "type" : "object",
2441            "required": [
2442              "rt",
2443              "if",
2444              "SceneMappings"
2445            ]
2446          },
2447          "oic.oic-link": {
2448            "properties": {
2449              "if": {
2450                "description": "The OCF Interfaces supported by the target Resource",
2451                "items": {
2452                  "enum": [
2453                    "oic.if.baseline",
2454                    "oic.if.ll",
2455                    "oic.if.b",
2456                    "oic.if.lb",
2457                    "oic.if.rw",
2458                    "oic.if.r",
2459                    "oic.if.a",
2460                    "oic.if.s"
2461                  ],
2462                  "type": "string",
2463                  "maxLength": 64
2464                },
2465                "minItems": 1,
2466                "uniqueItems": true,
2467                "readOnly": true,
2468                "type": "array"
2469              },
2470              "rt": {
2471                "description": "Resource Type of the target Resource",
2472                "items": {
2473                  "type": "string",
2474                  "maxLength": 64
2475                },
2476                "minItems": 1,
2477                "readOnly": true,
2478                "uniqueItems": true,
2479                "type": "array"
2480              },
2481              "anchor": {
```

```
2482            "$ref":
2483  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2484  schema.json#/definitions/anchor"
2485          },
2486          "di": {
2487            "$ref":
2488  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2489  schema.json#/definitions/di"
2490          },
2491          "eps": {
2492            "$ref":
2493  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2494  schema.json#/definitions/eps"
2495          },
2496          "href": {
2497            "$ref":
2498  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2499  schema.json#/definitions/href"
2500          },
2501          "ins": {
2502            "$ref":
2503  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2504  schema.json#/definitions/ins"
2505          },
2506          "p": {
2507            "$ref":
2508  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2509  schema.json#/definitions/p"
2510          },
2511          "rel": {
2512            "$ref":
2513  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2514  schema.json#/definitions/rel_array"
2515          },
2516          "title": {
2517            "$ref":
2518  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2519  schema.json#/definitions/title"
2520          },
2521          "type": {
2522            "$ref":
2523  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2524  schema.json#/definitions/type"
2525          }
2526        },
2527        "required": [
2528          "href",
2529          "rt",
2530          "if"
2531        ],
2532        "type": "object"
2533      }
2534    }
2535  }
2536
```

A.9.5   Property definition

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

**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	

2541 **A.9.6   CRUDN behaviour**

2542 Table A-17 defines the CRUDN operations that are supported on the "oic.wk.scenemember"
2543 Resource Type.

2544 **Table A-17 – The CRUDN operations of the Resource with type "rt" =**
2545 **"oic.wk.scenemember".**

Create	Read	Update	Delete	Notify
	get			observe

2546 **A.10   Alert**

2547 **A.10.1   Introduction**

2548 This Resource provides a mechanism for a Server to expose information to an
2549 interested party with regard to error or other conditions that the Device is experiencing (Alerts).
2550 category is a string that contains the Device defined category for the Alert.
2551 timestamp is an RFC3339 formatted time at which the Alert was generated.

59

2552 originatorid is a string that contains the identity of the originator of the Alert.
2553 severity is an integer that contains the RFC5424 defined severity of the Alert.
2554 subject is an array containing human readable text in one or more languages.
2555 accountid is a string containing the identity of the account with which the Device is associated.
2556

A.10.2   Example URI

2558 /AlertResURI

A.10.3   Resource type

2560 The Resource Type is defined as: "oic.r.alert".

A.10.4   OpenAPI 2.0 definition

```
2562 {
2563   "swagger": "2.0",
2564   "info": {
2565     "title": "Alert",
2566     "version": "2019-02-28",
2567     "license": {
2568       "name": "OCF Data Model License",
2569       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2570       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
2571     },
2572     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2573   },
2574   "schemes": ["http"],
2575   "consumes": ["application/json"],
2576   "produces": ["application/json"],
2577   "paths": {
2578     "/AlertResURI" : {
2579       "get": {
2580         "description": "This Resource provides a mechanism for a Server to expose information to
2581 an\ninterested party with regard to error or other conditions that the Device is experiencing
2582 (Alerts).\ncategory is a string that contains the Device defined category for the Alert.\ntimestamp
2583 is an RFC3339 formatted time at which the Alert was generated.\noriginatorid is a string that
2584 contains the identity of the originator of the Alert.\nseverity is an integer that contains the
2585 RFC5424 defined severity of the Alert.\nsubject is an array containing human readable text in one or
2586 more languages.\naccountid is a string containing the identity of the account with which the Device
2587 is associated.\n",
2588         "parameters": [
2589           {"$ref": "#/parameters/interface"}
2590         ],
2591         "responses": {
2592           "200": {
2593             "description" : "",
2594             "x-example":
2595               {
2596                 "rt":           ["oic.r.alert"],
2597                 "accountid":    "MyAccountID",
2598                 "category":     "MyCategory",
2599                 "timestamp":    "2018-02-28T08:00:00Z",
2600                 "originatorid": "MyOriginatorID",
2601                 "severity":     3,
2602                 "subject":      [{"language":"en-US","value":"System error"}]
2603               },
2604             "schema": { "$ref": "#/definitions/Alert" }
2605           }
2606         }
2607       }
2608     }
2609   },
2610   "parameters": {
2611     "interface" : {
2612       "in" : "query",
2613       "name" : "if",
2614       "type" : "string",
```

```
2615            "enum" : ["oic.if.r", "oic.if.baseline"]
2616          }
2617        },
2618        "definitions": {
2619          "Alert" : {
2620            "properties": {
2621              "category": {
2622                "description": "Category into which the notification is classified",
2623                "maxLength": 64,
2624                "readOnly": true,
2625                "type": "string"
2626              },
2627              "rt": {
2628                "description": "Resource Type",
2629                "items": {
2630                  "maxLength": 64,
2631                  "type": "string",
2632                  "enum": ["oic.r.alert"]
2633                },
2634                "minItems": 1,
2635                "readOnly": true,
2636                "uniqueItems": true,
2637                "type": "array"
2638              },
2639              "severity": {
2640                "description": "RFC 5424 severity of the alert",
2641                "maximum": 7,
2642                "minimum": 0,
2643                "readOnly": true,
2644                "type": "integer"
2645              },
2646              "timestamp": {
2647                "description": "An RFC3339 formated time indicating when the data was observed (e.g.:
2648    2016-02-15T09:19Z, 1996-12-19T16:39:57-08:00)",
2649                "format": "date-time",
2650                "readOnly": true,
2651                "type": "string"
2652              },
2653              "subject": {
2654                "description": "Alert subject matter.",
2655                "items": {
2656                  "properties": {
2657                    "language": {
2658                      "allOf": [
2659                        {
2660                          "description": "An identifier formatted according to IETF RFC 5646 (langusge
2661    tag).",
2662                          "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
2663                          "type": "string"
2664                        },
2665                        {
2666                          "description": "An RFC 5646 language tag.",
2667                          "readOnly": true
2668                        }
2669                      ]
2670                    },
2671                    "value": {
2672                      "description": "Alert subject matter in the indicated language.",
2673                      "maxLength": 255,
2674                      "readOnly": true,
2675                      "type": "string"
2676                    }
2677                  },
2678                  "type": "object"
2679                },
2680                "minItems": 1,
2681                "readOnly": true,
2682                "type": "array"
2683              },
2684              "originatorid": {
2685                "description": "ID of the creator of the event",
```

```
2686              "maxLength": 64,
2687              "readOnly": true,
2688              "type": "string"
2689            },
2690            "n": {
2691              "$ref" :
2692    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2693    schema.json#/definitions/n"
2694            },
2695            "id": {
2696              "$ref" :
2697    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2698    schema.json#/definitions/id"
2699            },
2700            "accountid": {
2701              "description": "ID of the account",
2702              "maxLength": 64,
2703              "readOnly": true,
2704              "type": "string"
2705            },
2706            "if": {
2707              "description": "The OCF Interfaces supported by this Resource",
2708              "items": {
2709                "enum": [
2710                  "oic.if.r",
2711                  "oic.if.baseline"
2712                ],
2713                "type": "string",
2714                "maxLength": 64
2715              },
2716              "minItems": 2,
2717              "readOnly": true,
2718              "uniqueItems": true,
2719              "type": "array"
2720            }
2721          },
2722          "type" : "object",
2723          "required": ["category", "timestamp", "originatorid", "severity"]
2724        }
2725      }
2726    }
2727
```

A.10.5 Property definition

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

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 formated 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.

A.10.6   CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get			observe

A.11   Alert Collection

A.11.1   Introduction

This Resource is a Collection containing instances of Alerts (oic.r.alert). This is the response using the baseline interface.

A.11.2   Example URI

/AlertCollectionResURI

A.11.3   Resource type

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

A.11.4   OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Alert Collection",
    "version": "2019-03-04",
    "license": {
      "name": "OCF Data Model License",
      "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
      "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/AlertCollectionResURI?if=oic.if.ll" : {
      "get": {
        "description": "This Resource is a Collection containing instances of Alerts
(oic.r.alert).\nThis is the response using the links list OCF Interface.\n",
```

```
2764              "parameters": [
2765                {"$ref": "#/parameters/interface-all"}
2766              ],
2767              "responses": {
2768                "200": {
2769                  "description" : "",
2770                  "x-example": [
2771                    {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
2772  ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2773                    {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
2774  ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2775                    {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
2776  ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2777                    {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
2778  ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]}
2779                  ],
2780                  "schema": { "$ref": "#/definitions/AlertCollection-ll" }
2781                }
2782              }
2783            }
2784          },
2785          "/AlertCollectionResURI?if=oic.if.b" : {
2786            "get": {
2787              "description": "This Resource is a Collection containing instances of Alerts
2788  (oic.r.alert).\nThis is the response using the Batch interface.\n",
2789              "parameters": [
2790                {"$ref": "#/parameters/interface-all"}
2791              ],
2792              "responses": {
2793                "200": {
2794                  "description" : "",
2795                  "x-example": [
2796                    {
2797                      "href": "/Alert1ResURI",
2798                      "rep":{
2799                        "rt":              ["oic.r.alert"],
2800                        "accountid":     "MyAccountID",
2801                        "category":      "MyCategory",
2802                        "timestamp":     "2018-02-28T08:00:00Z",
2803                        "originatorid": "MyOriginatorID",
2804                        "severity": 3,
2805                        "subject": [{"language":"en-US","value":"System error"}]
2806                      }
2807                    },
2808                    {
2809                      "href": "/Alert2ResURI",
2810                      "rep":{
2811                        "rt":             ["oic.r.alert"],
2812                        "accountid":     "MyAccountID",
2813                        "category":      "MyCategory",
2814                        "timestamp":     "2018-02-28T08:15:00Z",
2815                        "originatorid": "MyOriginatorID",
2816                        "severity": 4,
2817                        "subject": [{"language":"en-US","value":"Network error"}]
2818                      }
2819                    }
2820                  ],
2821                  "schema": { "$ref": "#/definitions/AlertCollection-b" }
2822                }
2823              }
2824            }
2825          },
2826          "/AlertCollectionResURI?if=oic.if.baseline" : {
2827            "get": {
2828              "description": "This Resource is a Collection containing instances of Alerts
2829  (oic.r.alert).\nThis is the response using the baseline interface.\n",
2830              "parameters": [
2831                {"$ref": "#/parameters/interface-all"}
2832              ],
2833              "responses": {
2834                "200": {
```

```
2835              "description" : "",
2836              "x-example": {
2837                "rt":    ["oic.r.alertcollection"],
2838                "rts":   ["oic.r.alert"],
2839                "if":    ["oic.if.ll", "oic.if.b", "oic.if.baseline"],
2840                "links": [
2841                  {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
2842         ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2843                  {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
2844         ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2845                  {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
2846         ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2847                  {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
2848         ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]}
2849                ]
2850              },
2851              "schema": { "$ref": "#/definitions/AlertCollection-baseline" }
2852            }
2853          }
2854        }
2855      }
2856    },
2857    "parameters": {
2858      "interface-all" : {
2859        "in" : "query",
2860        "name" : "if",
2861        "type" : "string",
2862        "enum" : ["oic.if.ll", "oic.if.b", "oic.if.baseline"]
2863      }
2864    },
2865    "definitions": {
2866      "AlertCollection-b" : {
2867        "type": "array",
2868        "minItems": 0,
2869        "uniqueItems": true,
2870        "items": {
2871          "type": "object",
2872          "additionalProperties": true,
2873          "properties": {
2874            "href": {
2875              "$ref":
2876    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2877    schema.json#/definitions/href"
2878            },
2879            "rep": {
2880              "$ref":
2881    "http://openconnectivityfoundation.github.io/core/swagger2.0/oic.r.alert.swagger.json#/definitions/A
2882    lert"
2883            }
2884          },
2885          "required": [
2886            "href",
2887            "rep"
2888          ]
2889        }
2890      },
2891      "AlertCollection-baseline" : {
2892        "properties": {
2893          "n": {
2894            "$ref" :
2895    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2896    schema.json#/definitions/n"
2897          },
2898          "id": {
2899            "$ref" :
2900    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2901    schema.json#/definitions/id"
2902          },
2903          "rt": {
2904            "items": {
2905              "type": "string",
```

```
2906              "enum": ["oic.r.alertcollection"],
2907              "maxLength": 64
2908            },
2909            "minItems": 1,
2910            "type": "array",
2911            "uniqueItems": true,
2912            "readOnly": true
2913          },
2914          "rts": {
2915            "items": {
2916              "type": "string",
2917              "enum": ["oic.r.alert"],
2918              "maxLength": 64
2919            },
2920            "minItems": 1,
2921            "type": "array",
2922            "uniqueItems": true,
2923            "readOnly": true
2924          },
2925          "if": {
2926            "description": "The OCF Interfaces supported by this Resource",
2927            "items": {
2928              "enum": [
2929                "oic.if.ll",
2930                "oic.if.b",
2931                "oic.if.baseline"
2932              ],
2933              "type": "string",
2934              "maxLength": 64
2935            },
2936            "minItems": 3,
2937            "readOnly": true,
2938            "uniqueItems": true,
2939            "type": "array"
2940          },
2941          "links": {
2942            "description": "A set of simple or individual Links.",
2943            "items": {
2944              "$ref": "#/definitions/oic.oic-link"
2945            },
2946            "type": "array"
2947          }
2948        },
2949        "type" : "object",
2950        "required": ["rt","rts","if","links"]
2951      },
2952      "AlertCollection-ll" : {
2953        "type": "array",
2954        "items": {
2955          "$ref": "#/definitions/oic.oic-link"
2956        }
2957      },
2958      "oic.oic-link": {
2959        "type": "object",
2960        "properties": {
2961          "anchor": {
2962            "$ref":
2963  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2964  schema.json#/definitions/anchor"
2965          },
2966          "di": {
2967            "$ref":
2968  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2969  schema.json#/definitions/di"
2970          },
2971          "eps": {
2972            "$ref":
2973  "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2974  schema.json#/definitions/eps"
2975          },
2976          "href": {
```

```
2977              "$ref":
2978    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2979    schema.json#/definitions/href"
2980            },
2981            "ins": {
2982              "$ref":
2983    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2984    schema.json#/definitions/ins"
2985            },
2986            "p": {
2987              "$ref":
2988    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2989    schema.json#/definitions/p"
2990            },
2991            "rel": {
2992              "$ref":
2993    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2994    schema.json#/definitions/rel_array"
2995            },
2996            "title": {
2997              "$ref":
2998    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2999    schema.json#/definitions/title"
3000            },
3001            "type": {
3002              "$ref":
3003    "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3004    schema.json#/definitions/type"
3005            },
3006            "if": {
3007              "description": "The OCF Interfaces supported by the target Resource",
3008              "items": {
3009                "enum": [
3010                  "oic.if.r",
3011                  "oic.if.baseline"
3012                ],
3013                "type": "string",
3014                "maxLength": 64
3015              },
3016              "minItems": 2,
3017              "uniqueItems": true,
3018              "type": "array",
3019              "readOnly": true
3020            },
3021            "rt": {
3022              "description": "Resource Type of the target Resource",
3023              "items": {
3024                "maxLength": 64,
3025                "type": "string",
3026                "enum": ["oic.r.alert"]
3027              },
3028              "minItems": 1,
3029              "type": "array",
3030              "uniqueItems": true,
3031              "readOnly": true
3032            }
3033          },
3034          "required": [
3035            "href",
3036            "rt",
3037            "if"
3038          ]
3039        }
3040      }
3041    }
3042
```

A.11.5   Property definition

3044   Table A-20 defines the Properties that are part of the "oic.r.alertcollection" Resource Type.

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.

A.11.6 CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get			observe

A.12 software update

A.12.1 Introduction

The Resource performing scheduled software update.

A.12.2 Example URI

/softwareupdateResURI

A.12.3 Resource type

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

A.12.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "software update",
    "version": "20190408",
    "license": {
      "name": "OCF Data Model License",
      "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
CENSE.md",
      "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/softwareupdateResURI" : {
      "get": {
        "description": "The Resource performing scheduled software update.",
        "parameters": [
          {"$ref": "#/parameters/interface"}
        ],
        "responses": {
          "200": {
            "description" : "Schedule an software update.",
            "x-example":
              {
                "rt": ["oic.r.softwareupdate"],
                "if": ["oic.if.rw", "oic.if.baseline"],
                "nv" : "my version",
                "purl": "https://myvendor/myexampleurl",
                "swupdateaction": "idle",
                "swupdatestate" : "idle",
                "swupdateresult" : 0,
                "lastupdate" : "2015-01-09T14:30:00Z",
                "signed" : "vendor",
                "updatetime" : "2015-01-09T14:30:00Z"
              },
            "schema": { "$ref": "#/definitions/swupdate" }
          }
        }
      },
      "post": {
        "description": "Mechanism to schedule a start of the software update.",
        "parameters": [
          {"$ref": "#/parameters/interface"},
          {
            "name": "body",
            "in": "body",
            "required": true,
            "schema": { "$ref": "#/definitions/swupdate-update" },
            "x-example":
```

```
3114                    {
3115                        "purl":   "https://myvendor/newversion",
3116                        "swupdateaction": "upgrade",
3117                        "updatetime" : "2030-01-09T14:30:00Z"
3118                    }
3119                }
3120            ],
3121            "responses": {
3122                "200": {
3123                    "description" : "",
3124                    "x-example":
3125                        {
3126                            "nv" : "my new version",
3127                            "purl":   "https://myvendor/myexampleurl",
3128                            "swupdateaction": "upgrade",
3129                            "swupdatestate" : "idle",
3130                            "swupdateresult" : 0,
3131                            "lastupdate" : "2015-01-09T14:30:00Z",
3132                            "signed" : "vendor",
3133                            "updatetime" : "2030-01-09T14:30:00Z"
3134                        },
3135                        "schema": { "$ref": "#/definitions/swupdate" }
3136                }
3137            }
3138        }
3139    }
3140 },
3141 "parameters": {
3142    "interface": {
3143        "in": "query",
3144        "name": "if",
3145        "type": "string",
3146        "enum": ["oic.if.rw", "oic.if.baseline"]
3147    }
3148 },
3149 "definitions": {
3150    "swupdate": {
3151        "properties": {
3152            "rt": {
3153                "items": {
3154                    "enum": [
3155                        "oic.r.softwareupdate"
3156                    ],
3157                    "type": "string",
3158                    "maxLength": 64
3159                },
3160                "minItems": 1,
3161                "type": "array",
3162                "readOnly": true,
3163                "uniqueItems": true
3164            },
3165            "nv": {
3166                "description": "New available Software version",
3167                "maxLength": 64,
3168                "type": "string",
3169                "readOnly" : true
3170            },
3171            "purl": {
3172                "description": "Source of the software package, might be a HTTPS or CoAPs URL",
3173                "maxLength": 64,
3174                "type": "string",
3175                "format": "uri"
3176            },
3177            "swupdateaction": {
3178                "description": "Scheduled action to do a software update",
3179                "maxLength": 64,
3180                "type": "string",
3181                "enum": [
3182                    "idle",
3183                    "isac",
3184                    "isvv",
```

```
3185                     "upgrade"
3186                 ]
3187             },
3188             "swupdatestate": {
3189                 "description": "State of the software update",
3190                 "readOnly": true,
3191                 "type": "string",
3192                 "enum": [
3193                     "idle",
3194                     "nsa",
3195                     "svv",
3196                     "sva",
3197                     "upgrading"
3198                 ]
3199             },
3200             "swupdateresult": {
3201                 "description": "Result of the software update, list of result codes",
3202                 "readOnly": true,
3203                 "type": "integer"
3204             },
3205             "lastupdate": {
3206                 "description": "Time of the last software update (in RFC3339 format), Initial set on date
3207     of manufacturing",
3208                 "readOnly": true,
3209                 "maxLength": 64,
3210                 "type": "string",
3211                 "format": "date-time"
3212             },
3213             "signed": {
3214                 "description": "Signage method of the software package, currently the only allowed value
3215     is 'vendor'.",
3216                 "readOnly": true,
3217                 "type": "string",
3218                 "enum": [
3219                     "vendor"
3220                 ]
3221             },
3222             "updatetime": {
3223                 "description": "Scheduled time (in RFC3339 format) to do action which is specified in
3224     'swupdateaction' Property.",
3225                 "maxLength": 64,
3226                 "type": "string",
3227                 "format": "date-time"
3228             },
3229             "n": {
3230                 "$ref":
3231     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3232     schema.json#/definitions/n"
3233             },
3234             "id": {
3235                 "$ref":
3236     "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3237     schema.json#/definitions/id"
3238             },
3239             "if": {
3240                 "description": "The interface set supported by this resource",
3241                 "items": {
3242                     "enum": [
3243                         "oic.if.rw",
3244                         "oic.if.baseline"
3245                     ],
3246                     "type": "string"
3247                 },
3248                 "minItems": 2,
3249                 "maxItems": 2,
3250                 "type": "array",
3251                 "readOnly": true,
3252                 "uniqueItems": true
3253             }
3254         },
3255         "required": ["purl", "swupdateaction", "swupdatestate", "swupdateresult", "updatetime"]
```

```
3256           },
3257         "swupdate-update": {
3258           "properties": {
3259             "purl": {
3260               "$ref": "#/definitions/swupdate/properties/purl"
3261             },
3262             "swupdateaction" : {
3263               "$ref": "#/definitions/swupdate/properties/swupdateaction"
3264             },
3265             "updatetime": {
3266               "$ref": "#/definitions/swupdate/properties/updatetime"
3267             }
3268           },
3269           "required": ["purl", "swupdateaction", "updatetime"]
3270         }
3271       }
3272     }
3273
```

3274 A.12.5 Property definition

3275 Table A-22 defines the Properties that are part of the "oic.r.softwareupdate" Resource Type.

3276 **Table A-22 – The Property definitions of the Resource with type "rt" =**
3277 **"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	

3278 **A.12.6 CRUDN behaviour**

3279 Table A-23 defines the CRUDN operations that are supported on the "oic.r.softwareupdate"
3280 Resource Type.

3281 **Table A-23 – The CRUDN operations of the Resource with type "rt" =**
3282 **"oic.r.softwareupdate".**

Create	Read	Update	Delete	Notify
	get	post		observe

3283