

OCF Core - Optional Specification

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201

202 **1 Scope**

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

- 204 – Core specification: The Core specification document specifies the Framework, i.e., the OCF
205 core architecture, interfaces, protocols and services to enable OCF profiles implementation for
206 Internet of Things (IoT) usages and ecosystems. This document is mandatory for all Devices to
207 implement.
- 208 – Core optional specification (this document): The Core optional specification document specifies
209 the Framework, i.e., the OCF core architecture, interfaces, protocols and services to enable
210 OCF profiles implementation for Internet of Things (IoT) usages and ecosystems that can
211 optionally be implemented by any Device.
- 212 – Core extension specification(s): The Core extension specification(s) document(s) specifies
213 optional OCF Core functionality that are significant in scope (e.g., Wi-Fi easy setup, Cloud).

214

215 **2 Normative references**

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

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

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

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

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

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

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

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

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

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

241 **3 Terms, definitions, and abbreviated terms**

242 **3.1 Terms and definitions**

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

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

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

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

249 **3.1.1**

250 **Alert**

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

253 **3.1.2**

254 **Scene**

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

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

258 **3.1.3**

259 **Scene Collection**

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

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

263 **3.1.4**

264 **Scene Member**

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

266 **3.1.5**

267 **Scene Value**

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

269 **4 Document conventions and organization**

270 **4.1 Conventions**

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

275 **4.2 Notation**

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

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

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

282 Recommended (or should)(S).

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

289 Allowed (may or allowed)(O).

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

293 DEPRECATED.

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

300 Conditionally allowed (CA).

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

303 Conditionally required (CR).

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

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

308 Words that are emphasized are printed in italic.

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

313 4.3 Data types

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

316 5 Functional interactions

317 5.1 Introduction

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

322 **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

323

324 5.2 Onboarding, provisioning and configuration

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

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

328

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

329

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

331

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

Property title	Property name	Value type	Value rule	Unit	Access mode	Mandatory	Description
(Device) Name	"n" (Common Property of "/example/oic/con")	"string"	N/A	N/A	R, W	Yes	Human friendly name configurable by the end user (e.g. Bob's thermostat). The "n" Common Property of the oic.wk.con Core Resource and the "n" Common Property of the "/oic/d" Core Resource shall have the same Value. When the "n" Common Property Value of the oic.wk.con Core Resource is modified, it shall be reflected to

							the "n" Common Property of "/oic/d" Core Resource.
Location	"loc"	array of float (has two elements, the first is latitude, the second is longitude)	N/A	Degrees	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.

332

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

334

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"}]]
--	--	--	--	--	--	--	--------------------------------------------------

335

336 **5.3 Device management**

337 **5.3.1 Overview**

338 Device management includes the following functions:

- 339 – Diagnostics and maintenance
- 340 – Network monitoring

341 **5.3.2 Diagnostics and maintenance Resource Type**

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

345 **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

346 Table 6 defines the "oic.wk.mnt" Resource Type. At least one of the Factory_Reset, Reboot, or last
 347 error Properties shall be implemented.

348 **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.

349

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

351 **5.3.3 Core behaviours on Device maintenance state changes**

352 **5.3.3.1 Overview**

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

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

358 The state transitions to be considered are:

- 359 – RFNOP to Soft Reset
- 360 – RFNOP to Hard Reset
- 361 – RFNOP to RFPRO
- 362 – RFPRO to RFNOP

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

364

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
Mandatory Core Resources	No change	Reset to defined defaults, see clause 5.3.3.3.3	No change	No change
Optional Core Resources	No change	Reset to defined defaults, see clause 5.3.3.3.4	No change	No change
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
OCF Cloud	No change	See clause 5.3.3.4	No change	No change

365

366 **5.3.3.2 Handling of Observe transactions**

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

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

374 **5.3.3.3 Reset of Resource Properties to defined defaults**

375 **5.3.3.3.1 Overview**

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

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

381 **5.3.3.3.2 Defaults for Vertical Resources**

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

383 **5.3.3.3.3 Defaults for mandatory Core Resources**

384 Table 8 and

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

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

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

389

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

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

391

392 **5.3.3.3.4 Defaults for optional Core Resources**

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

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

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

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

400

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

Property	Default	Notes
"loc"	[0.0,0.0]	
"locn"	""	Empty string
"c"	""	Empty string
"r"	""	Empty string
"ln"	[{}]	One item array with an empty object.
"dl"	Defined by the manufacturer	Recommend the primary language tag for the region into which the Device is marketed (e.g. "en" for primarily English speaking countries).

402

403 **5.3.3.4 Handling of OCF Cloud**

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

406 Further, on a hard reset the CoAPCloudConf Resource ("oic.r.coapcloudconf") shall be modified in
 407 accordance with Table 11 for those Properties that are implemented.

408 **Table 11 – Default values for CoAPCloudConf Resource**

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

409

410 **5.3.4 Network monitoring Resource Type**

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

412 The network monitoring Resource Type is "oic.wk.nmon" and is described in Table 12. The
 413 Resource Type may occur multiple times if more than 1 network interface is implemented. The
 414 Common Property "n" may be used to distinguish the different network interfaces, like distinguish
 415 the 2.4 and 5G Wi-Fi network interfaces.

Table 12 – 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 13	Device management

417

418 Table 13 defines "oic.wk.nmon" Resource Type.

419

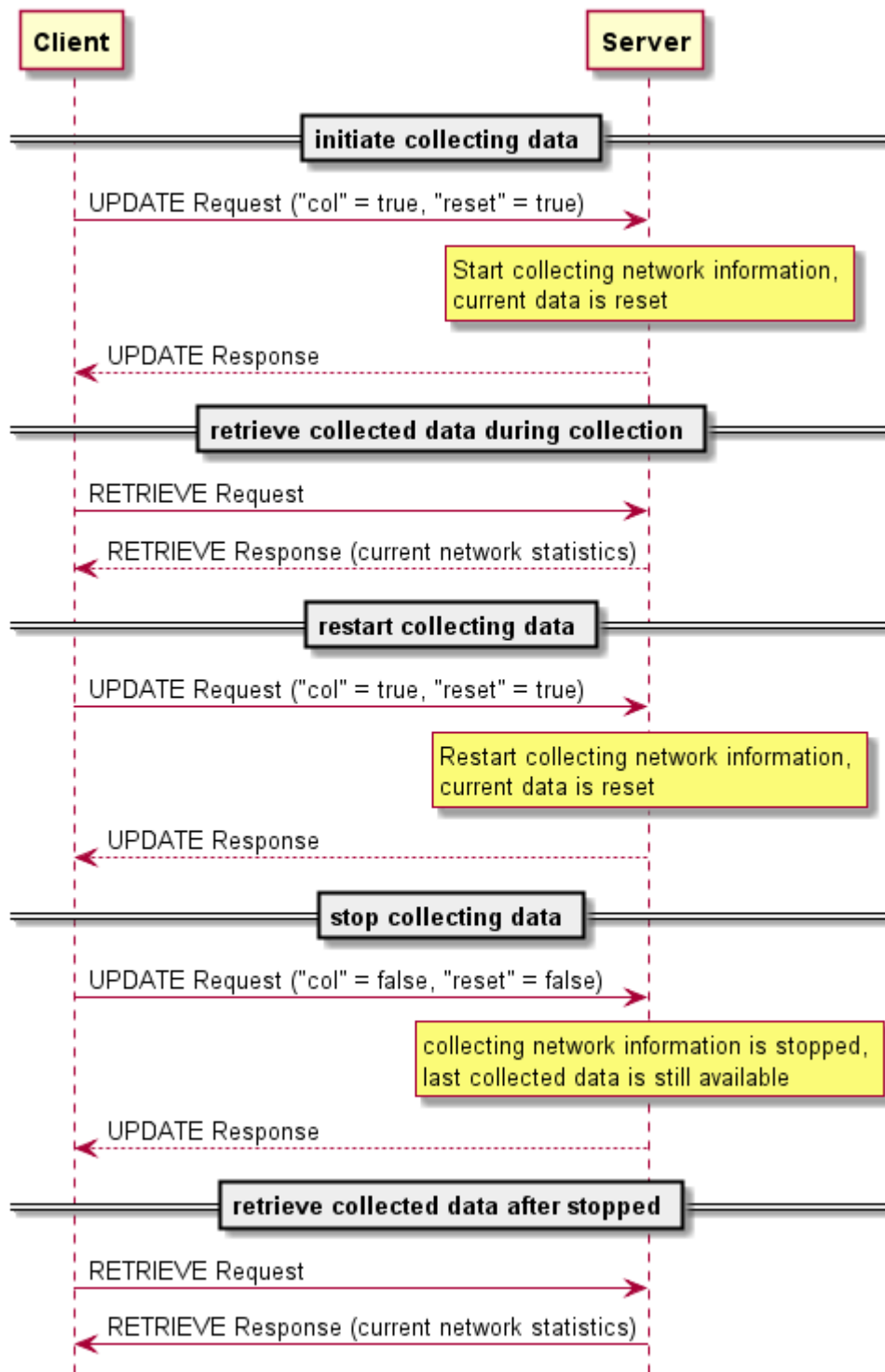
Table 13 – "oic.wk.nmon" Resource Type definition

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

Maximum message size -rx	"mmsrx"	"integer"	bytes	byte s	R	No	Maximum received message, e.g. Max(rx) in the collection period
Average message size -tx	"amstx"	"integer"	bytes	byte s	R	No	Average transmitted message size, e.g. AVG(tx) in the collection period.
Average message size -rx	"amsrx"	"integer"	bytes	byte s	R	No	Average received message size e.g. AVT(rx) in the collection period.

420
421 Examples of typical used values for ianaifType are 71 (ieee80211) for Wi-Fi and 6 (ethernetCsmacd)
422 for Ethernet.

423 A Device should start collecting network monitoring data when receiving an UPDATE operation
424 with the parameter "col" = true. A Device should stop collecting network data when receiving an
425 UPDATE operation with parameter "col" = false. The collected network data should be reset when
426 an UPDATE operation with parameter "reset" = true is received, if the parameter "reset" is false
427 then the values should not be reset. Figure 1 illustrates the interactions with the network monitoring
428 Resource.

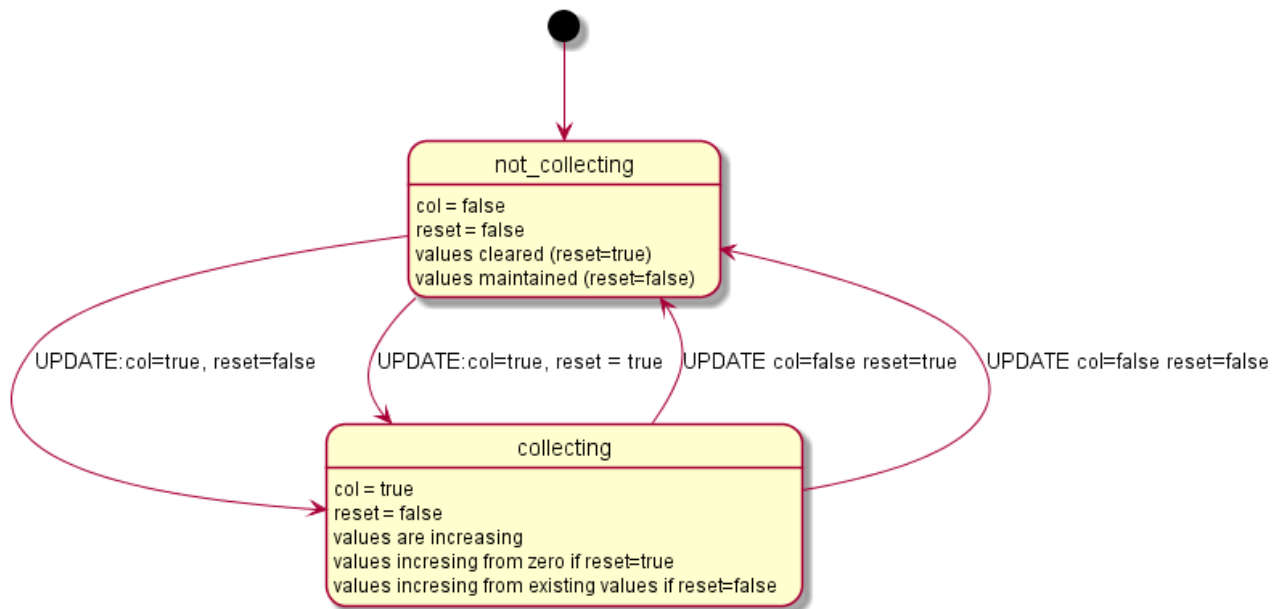


429

430

Figure 1 – Interactions with the network monitoring Resource

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



433

434

Figure 2 – State transition diagram of collecting network information

435 5.3.5 Software update Resource Type

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

437 In ISO/IEC 30118-2:2018 there is already a manual triggered software update mechanism available.
 438 The triggering of the Client (manual) software update is achieved via the security Resource Type
 439 "oic.r.pstat" by using the appropriate bits in the "tm" Property. The software update triggering
 440 results in updates of the "cm" Property in the "oic.r.pstat" Resource Type (see ISO/IEC 30118-
 441 2:2018 clause 13.8). The software update Resource adds additional features to the security
 442 specified mechanism, like:

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

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

451 The software update Resource Type is "oic.r.softwareupdate" and is described in Table 14.

452

Table 14 – Optional software update Resources

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

				"oic.r.softwareupdate" are listed in Table 15.	
--	--	--	--	------------------------------------------------	--

453

454 Table 15 defines the Properties of the "oic.r.softwareupdate" Resource Type.

455

Table 15 – "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 17)	N/A	RW	Yes	Scheduled action to do a software update.
State	"swupdatestate"	"string"	enum (see Table 16)	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 18.
Lastupdate	"lastupdate"	"string"	date-time	N/A	R	No	Time of the last software update according to IETF RFC 3339. Initial set on date of manufacturing.
Signage	"signed"	"string"	enum	N/A	R	No	Signage method of the software package, currently the only allowed value is "vendor".
Update time	"update time"	"string"	date-time	N/A	RW	Yes	Scheduled time, according to IETF RFC 3339, to do action which is specified in the "swupdateaction" Property.

456

457 The values of the "swupdatestate" Property are described in Table 16.

458

Table 16 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"

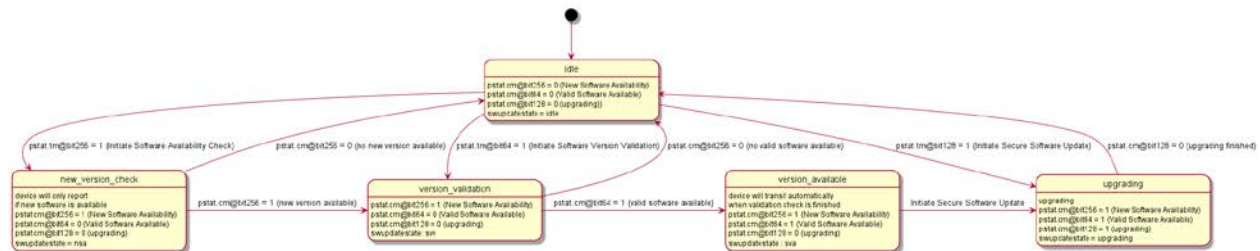
Software version available (The software is downloaded and deemed to be valid)	"sva"	Bit 64 = 1 Bit 128 = 0 Bit 256 = 1	"idle", "nsa", "svv", "upgrading"
Upgrading	"upgrading"	Bit 64 = 1 Bit 128 = 1 Bit 256 = 1	"idle", "nsa", "svv", "sva"

459 The typical state transitions are described Figure 3. The state transitions can be triggered manually
 460 or by a timed action. The manual state triggers (i.e., "tm" Property of "oic.r.pstat") are described in
 461 ISO/IEC 30118-2:2018 clause 13.8. The timed state triggers are managed using the
 462 "swupdateaction" and "updatetime" Properties of the software update Resource to trigger software
 463 update actions at some future date and time. The action names for scheduled actions are listed in
 464 Table 17. When the "updatetime" for the timed action is in the past then the update shall not take
 465 place, it is implementation dependent if the UPDATE with an "updatetime" value in the past will
 466 give an error on the UPDATE operation.

467 **Table 17 Value definitions for the Property "swupdateaction"**

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

468



469

470

Figure 3 – Typical state transitioning diagram for software update

471 The "purl" Property indicates the URL to obtain the software package from. This URL shall be a
 472 fully qualified URL. If the value is an empty string ("") then the Device will use the built in vendor
 473 defined URL (see ISO/IEC 30118-2:2018). If a built in URL is not implemented, setting the "purl"
 474 Property value to an empty string will result in an error code value of 6 as defined in Table 18.

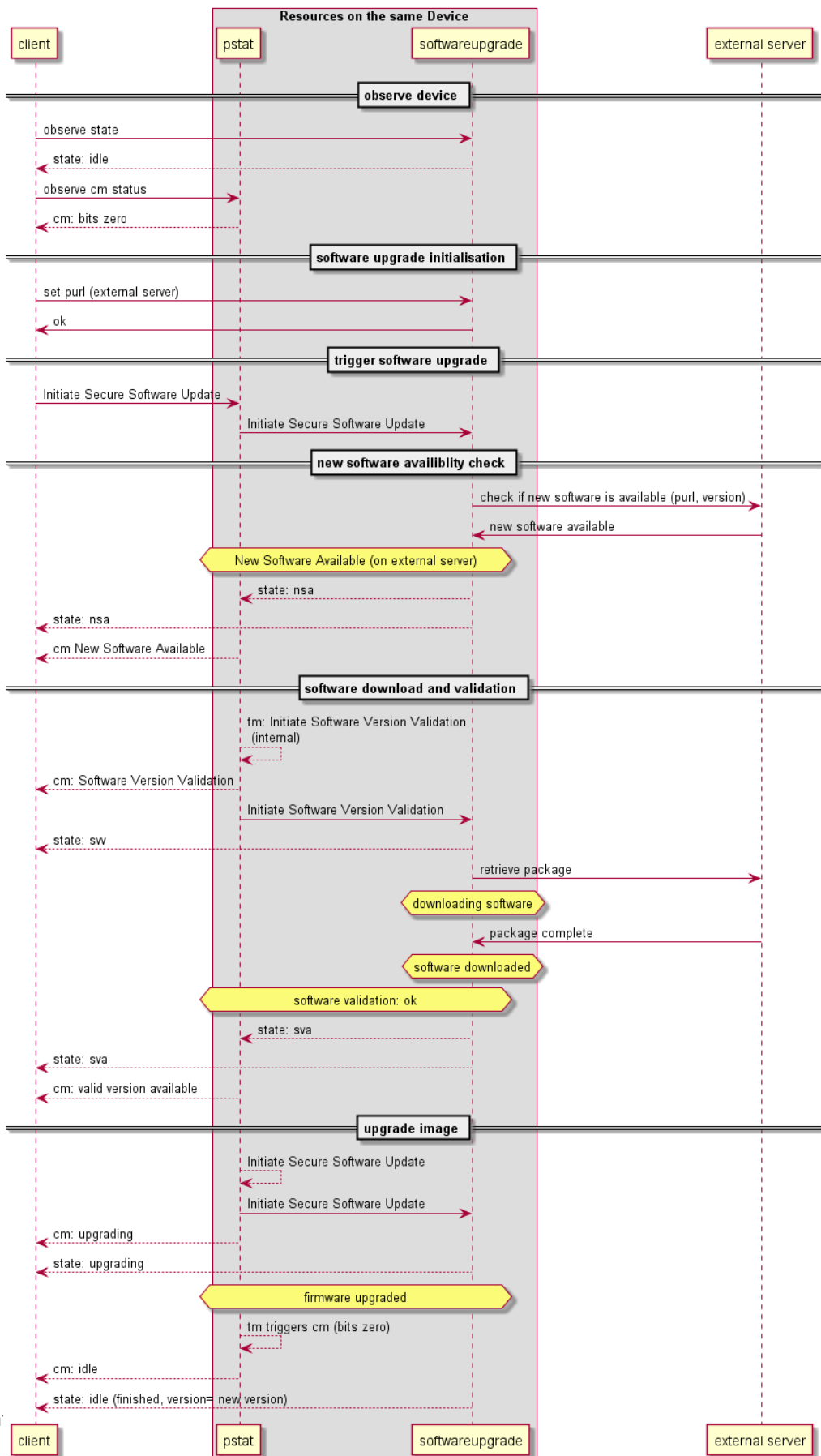
475

Table 18 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

476

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



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

481 **5.4 Scenes**

482 **5.4.1 Introduction**

483 Scenes are a mechanism for automating certain operations.

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

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

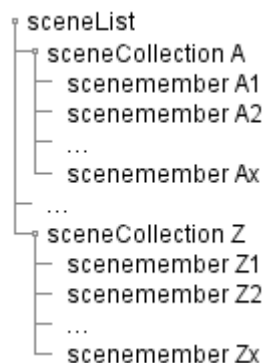
488 In short, Scenes are bundled user settings.

489 **5.4.2 Scenes Resource model**

490 **5.4.2.1 Introduction**

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

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

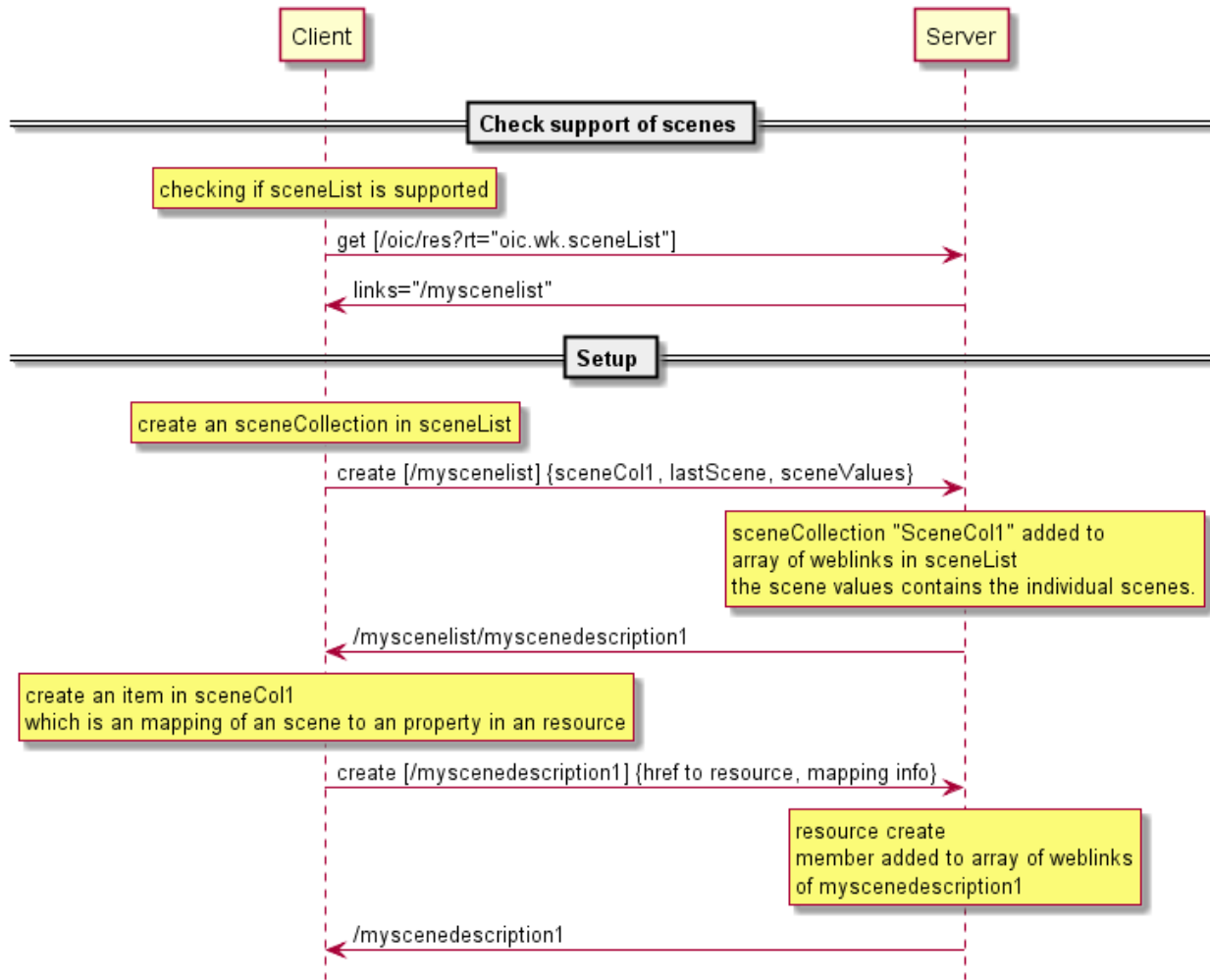


501
502 **Figure 5 – Generic Scene Resource structure**

503 **5.4.2.2 Scene creation**

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

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



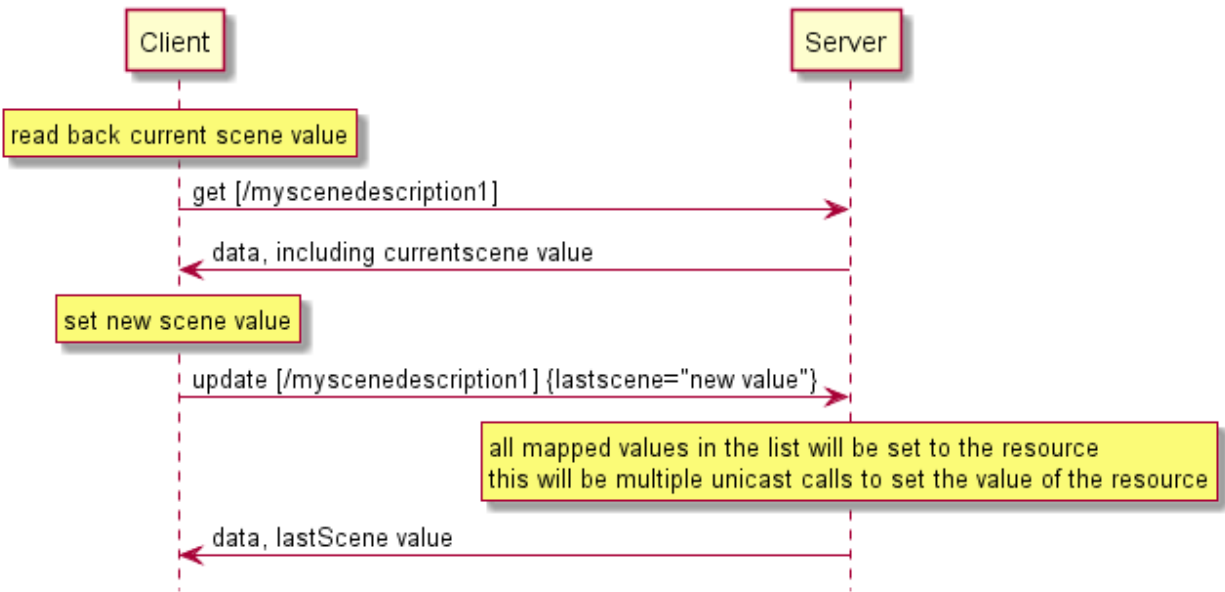
515

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

517 **5.4.2.3 Interacting with Scenes**

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

526

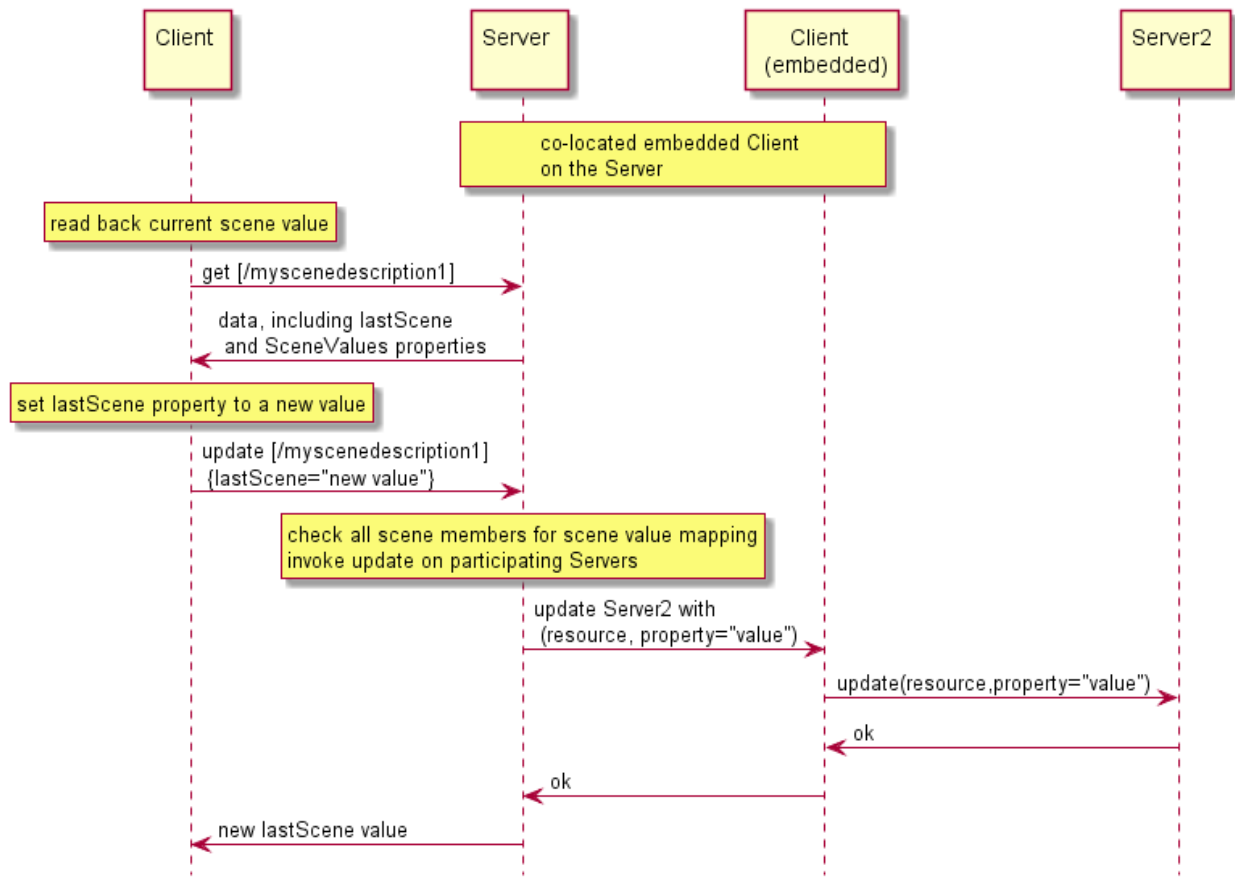


527

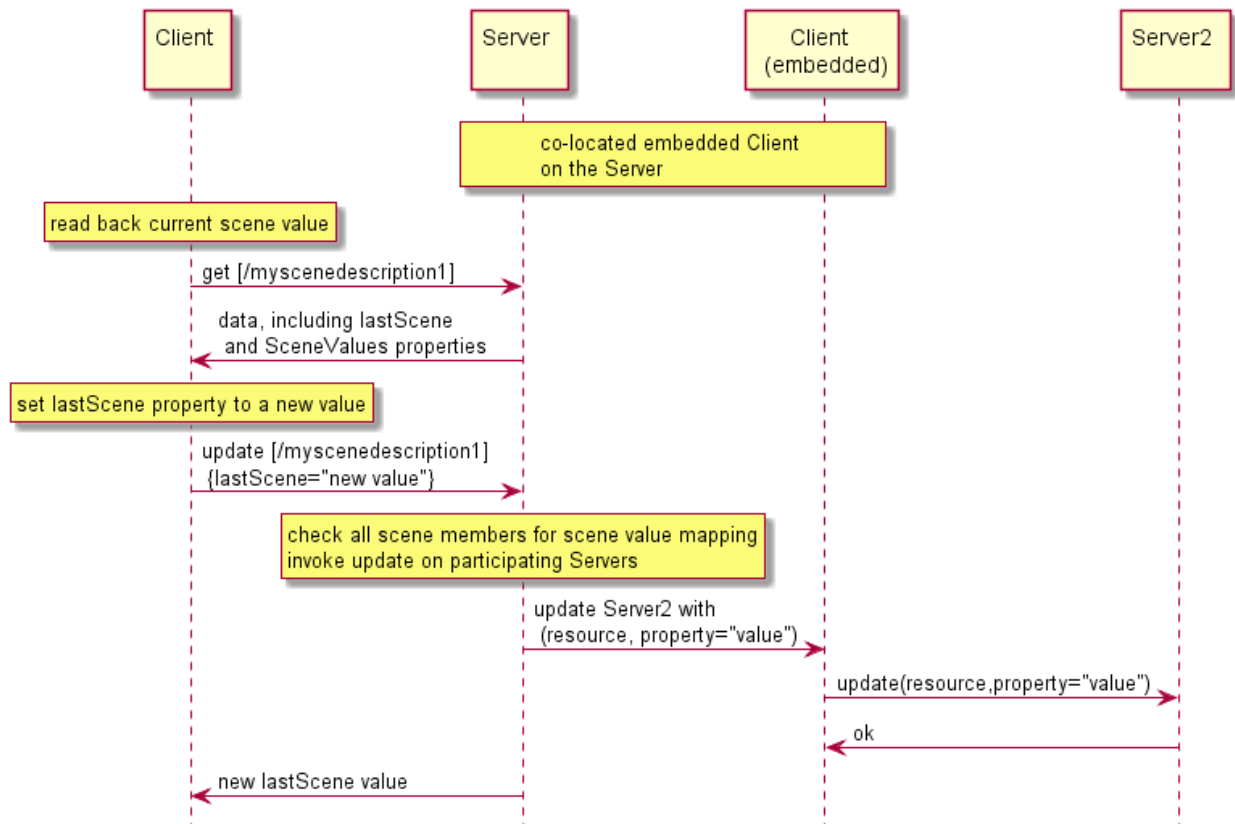
528

Figure 7 – Client interactions on a specific Scene

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



538



539

540

Figure 8 – Interaction overview due to a Scene change

541

5.4.2.4 Summary of Resource Types defined for Scene functionality

542

Table 19 summarizes the list of Resource Types that are part of Scenes.

543

Table 19 – 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

544

545

5.4.3 Security considerations

546

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

547

548

549

550

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

554 5.5 Icons

555 5.5.1 Overview

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

559 5.5.2 Resource

560 The icon Resource is as defined in Table 20.

561 **Table 20 – 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 21.	Icon

562

563 Table 21 defines the details for the "oic.r.icon" Resource Type.

564 **Table 21 – "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.

565

566 5.6 Alerts

567 5.6.1 Overview

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

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

578 **5.6.2 Resource Types**

579 The Alert and Alert Collection Resource Types are as defined in Table 22.

580 **Table 22 – 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 23.	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

581

582 Table 23 defines the details for the "oic.r.alert" Resource Type.

583 **Table 23 – "oic.r.alert" Resource Type definition**

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

							generating this Alert is associated.
--	--	--	--	--	--	--	--------------------------------------

584

585 The Alert Collection ("oic.r.alertcollection") Resource Type defines no Properties additional to
586 those defined for all instances of a Collection in Table 13 of ISO/IEC 30118-1:2018. However the
587 Alert Collection does impose restrictions of the values that shall be populated in the "rt" and "rts"
588 Properties. These are described in Table 24.

589 **Table 24 – "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.

590

591 **5.6.3 Example of Use**

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

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

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

603 Annex A
604 (normative)

605 Resource Type definitions
606

607 **A.1 List of Resource Type definitions**

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

612 **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

613
614 **A.2 Device Configuration**

615 **A.2.1 Introduction**

616 Resource that allows for Device specific information to be configured.
617

618 **A.2.2 Example URI**

619 /exampleDeviceConfigurationResURI

620 **A.2.3 Resource type**

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

622 **A.2.4 OpenAPI 2.0 definition**

```
623 {  
624   "swagger": "2.0",  
625   "info": {  
626     "title": "Device Configuration",  
627     "version": "2019-02-28",  
628     "license": {  
629       "name": "OCF Data Model License",  
630       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",  
631       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."  
632     },  
633     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
```

```

634     },
635     "schemes": [
636         "http"
637     ],
638     "consumes": [
639         "application/json"
640     ],
641     "produces": [
642         "application/json"
643     ],
644     "paths": {
645         "/exampleDeviceConfigurationResURI" : {
646             "get": {
647                 "description": "Resource that allows for Device specific information to be configured.\n",
648                 "parameters": [
649                     {
650                         "$ref": "#/parameters/interface-all"
651                     }
652                 ],
653                 "responses": {
654                     "200": {
655                         "description": "",
656                         "x-example": {
657                             "n": "My Friendly Device Name",
658                             "rt": ["oic.wk.con"],
659                             "loc": [32.777,-96.797],
660                             "locn": "My Location Name",
661                             "c": "USD",
662                             "r": "MyRegion",
663                             "dl": "en"
664                         },
665                         "schema": {
666                             "$ref": "#/definitions/Configuration"
667                         }
668                     }
669                 }
670             },
671             "post": {
672                 "description": "Update the information about the Device\n",
673                 "parameters": [
674                     {
675                         "$ref": "#/parameters/interface-rw"
676                     },
677                     {
678                         "name": "body",
679                         "in": "body",
680                         "required": true,
681                         "schema": {
682                             "$ref": "#/definitions/Update"
683                         },
684                         "x-example": {
685                             "n": "Nuevo Nombre Amistoso",
686                             "r": "MyNewRegion",
687                             "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
688                             "dl": "es"
689                         }
690                     }
691                 ],
692                 "responses": {
693                     "200": {
694                         "description": "",
695                         "x-example": {
696                             "n": "Nuevo Nombre Amistoso",
697                             "r": "MyNewRegion",
698                             "ln": [ { "language": "es", "value": "Nuevo Nombre Amistoso" } ],
699                             "dl": "es"
700                         },
701                         "schema": {
702                             "$ref": "#/definitions/Update"
703                         }
704                     }

```

```

705     }
706   }
707 }
708 },
709 "parameters": {
710   "interface-rw" : {
711     "in" : "query",
712     "name" : "if",
713     "type" : "string",
714     "enum" : ["oic.if.rw"]
715   },
716   "interface-all" : {
717     "in" : "query",
718     "name" : "if",
719     "type" : "string",
720     "enum" : ["oic.if.rw", "oic.if.baseline"]
721   }
722 },
723 "definitions": {
724   "Configuration": {
725     "properties": {
726       "rt": {
727         "description": "Resource Type of the Resource",
728         "items": {
729           "enum": ["oic.wk.con"],
730           "type": "string",
731           "maxLength": 64
732         },
733         "minItems": 1,
734         "uniqueItems": true,
735         "readOnly": true,
736         "type": "array"
737       },
738       "loc": {
739         "description": "Location information (lat, long)",
740         "items": {
741           "type": "number"
742         },
743         "maxItems": 2,
744         "minItems": 2,
745         "type": "array"
746       },
747       "c": {
748         "description": "Currency",
749         "maxLength": 64,
750         "type": "string"
751       },
752       "ln": {
753         "description": "Localized names",
754         "items": {
755           "properties": {
756             "language": {
757               "allOf": [
758                 {
759                   "description": "Format pattern according to IETF RFC 5646 (language tag).",
760                   "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
761                   "type": "string"
762                 },
763                 {
764                   "description": "An RFC 5646 language tag."
765                 }
766               ]
767             },
768             "value": {
769               "description": "The Device name in the indicated language.",
770               "maxLength": 64,
771               "type": "string"
772             }
773           },
774           "type": "object"
775         },

```

```

776         "minItems": 1,
777         "type": "array"
778     },
779     "locn": {
780         "description": "Human Friendly Name for location",
781         "maxLength": 64,
782         "type": "string"
783     },
784     "dl": {
785         "allOf": [
786             {
787                 "description": "Format pattern according to IETF RFC 5646 (language tag).",
788                 "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
789                 "type": "string"
790             },
791             {
792                 "description": "Default Language as an RFC 5646 language tag."
793             }
794         ]
795     },
796     "n": {
797         "$ref" :
798         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
799         schema.json#/definitions/n"
800     },
801     "id": {
802         "$ref" :
803         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
804         schema.json#/definitions/id"
805     },
806     "r": {
807         "description": "Region",
808         "maxLength": 64,
809         "type": "string"
810     },
811     "if" : {
812         "description": "The OCF Interfaces supported by this Resource",
813         "items": {
814             "enum": [
815                 "oic.if.baseline",
816                 "oic.if.rw"
817             ],
818             "type": "string",
819             "maxLength": 64
820         },
821         "minItems": 1,
822         "uniqueItems": true,
823         "readOnly": true,
824         "type": "array"
825     }
826 },
827 "type" : "object",
828 "required": ["n"]
829 },
830 "Update" : {
831     "properties": {
832         "loc": {
833             "description": "Location information (lat, long)",
834             "items": {
835                 "type": "number"
836             },
837             "maxItems": 2,
838             "minItems": 2,
839             "type": "array"
840         },
841         "c": {
842             "description": "Currency",
843             "maxLength": 64,
844             "type": "string"
845         },
846         "ln": {

```

```

847     "description": "Localized names",
848     "items": {
849         "properties": {
850             "language": {
851                 "allOf": [
852                     {
853                         "description": "Format pattern according to IETF RFC 5646 (language tag).",
854                         "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
855                         "type": "string"
856                     },
857                     {
858                         "description": "An RFC 5646 language tag."
859                     }
860                 ]
861             },
862             "value": {
863                 "description": "The Device name in the indicated language.",
864                 "maxLength": 64,
865                 "type": "string"
866             }
867         },
868         "type": "object"
869     },
870     "minItems": 1,
871     "type": "array"
872 },
873 "locn": {
874     "description": "Human Friendly Name for location",
875     "maxLength": 64,
876     "type": "string"
877 },
878 "dl": {
879     "allOf": [
880         {
881             "description": "Format pattern according to IETF RFC 5646 (language tag).",
882             "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
883             "type": "string"
884         },
885         {
886             "description": "Default Language as an RFC 5646 language tag."
887         }
888     ]
889 },
890 "n": {
891     "description": "The human friendly name to be set on the Resource, this is also reflected
892 in the same Property in oic.wk.d",
893     "maxLength": 64,
894     "type": "string"
895 },
896 "r": {
897     "description": "Region",
898     "maxLength": 64,
899     "type": "string"
900 }
901 },
902 "anyOf": [
903     {
904         "required": ["loc"]
905     },
906     {
907         "required": ["locn"]
908     },
909     {
910         "required": ["c"]
911     },
912     {
913         "required": ["r"]
914     },
915     {
916         "required": ["ln"]
917     }

```

```

918     {
919         "required": ["dl"]
920     },
921     {
922         "required": ["n"]
923     }
924 ],
925 "type" : "object"
926 }
927 }
928 }
929

```

930 A.2.5 Property definition

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

932 **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

933 A.2.6 CRUDN behaviour

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

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

Create	Read	Update	Delete	Notify
	get	post		observe

936 **A.3 Platform Configuration**

937 **A.3.1 Introduction**

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

939

940 **A.3.2 Example URI**

941 /examplePlatformConfigurationResURI

942 **A.3.3 Resource type**

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

944 **A.3.4 OpenAPI 2.0 definition**

```

945 {
946   "swagger": "2.0",
947   "info": {
948     "title": "Platform Configuration",
949     "version": "2019-03-04",
950     "license": {
951       "name": "OCF Data Model License",
952       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
953       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
954     },
955     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
956   },
957   "schemes": [
958     "http"
959   ],
960   "consumes": [
961     "application/json"
962   ],
963   "produces": [
964     "application/json"
965   ],
966   "paths": {
967     "/examplePlatformConfigurationResURI": {
968       "get": {
969         "description": "Resource that allows for Platform specific information to be configured.\n",
970         "parameters": [
971           {
972             "$ref": "#/parameters/interface-all"
973           }
974         ],
975         "responses": {
976           "200": {
977             "description": "",
978             "x-example": {
979               "rt": ["oic.wk.con.p"],
980               "mnpn": [ { "language": "en", "value": "My Friendly Device Name" } ]
981             },
982             "schema": { "$ref": "#/definitions/Conf_Platform" }
983           }
984         }
985       },
986       "post": {
987         "description": "Update the information about the Platform\n",
988         "parameters": [
989           {
990             "$ref": "#/parameters/interface-rw"

```

```

991     },
992     {
993         "name": "body",
994         "in": "body",
995         "required": true,
996         "schema": { "$ref": "#/definitions/Update_Platform" },
997         "x-example": {
998             "n": "Nuevo nombre",
999             "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
1000         }
1001     }
1002 ],
1003 "responses": {
1004     "200": {
1005         "description": "",
1006         "x-example": {
1007             "n": "Nuevo nombre",
1008             "mnpn": [ { "language": "es", "value": "Nuevo nombre de Plataforma Amigable" } ]
1009         },
1010         "schema": { "$ref": "#/definitions/Update_Platform" }
1011     }
1012 }
1013 }
1014 }
1015 },
1016 "parameters": {
1017     "interface-rw": {
1018         "in": "query",
1019         "name": "if",
1020         "type": "string",
1021         "enum": [ "oic.if.rw" ]
1022     },
1023     "interface-all": {
1024         "in": "query",
1025         "name": "if",
1026         "type": "string",
1027         "enum": [ "oic.if.rw", "oic.if.baseline" ]
1028     }
1029 },
1030 "definitions": {
1031     "Conf_Platform": {
1032         "properties": {
1033             "rt": {
1034                 "description": "Resource Type of the Resource",
1035                 "items": {
1036                     "enum": [ "oic.wk.con.p" ],
1037                     "type": "string",
1038                     "maxLength": 64
1039                 },
1040                 "minItems": 1,
1041                 "uniqueItems": true,
1042                 "readOnly": true,
1043                 "type": "array"
1044             },
1045             "n": {
1046                 "$ref":
1047 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1048 schema.json#/definitions/n"
1049             },
1050             "mnpn": {
1051                 "description": "Platform names",
1052                 "items": {
1053                     "properties": {
1054                         "language": {
1055                             "allOf": [
1056                                 {
1057                                     "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1058 schema.json#/definitions/language-tag"
1059                                 },
1060                                 {
1061                                     "description": "An RFC 5646 language tag."

```



```

1062         }
1063     ]
1064 },
1065     "value": {
1066         "description": "The Platform description in the indicated language.",
1067         "maxLength": 64,
1068         "type": "string"
1069     }
1070 },
1071     "type": "object"
1072 },
1073     "minItems": 1,
1074     "type": "array"
1075 },
1076     "id": {
1077         "$ref":
1078 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1079 schema.json#/definitions/id"
1080     },
1081     "if": {
1082         "description": "The OCF Interfaces supported by this Resource",
1083         "items": {
1084             "enum": [
1085                 "oic.if.rw",
1086                 "oic.if.baseline"
1087             ],
1088             "type": "string",
1089             "maxLength": 64
1090         },
1091         "minItems": 1,
1092         "readOnly": true,
1093         "uniqueItems": true,
1094         "type": "array"
1095     }
1096 },
1097     "type" : "object"
1098 },
1099     "Update_Platform": {
1100         "properties": {
1101             "n": {
1102                 "description": "The human friendly name to be set on the Resource, this is also reflected
1103 in the same Property in oic.wk.p",
1104                 "maxLength": 64,
1105                 "type": "string"
1106             },
1107             "mnpn" : {
1108                 "description": "Platform names",
1109                 "items": {
1110                     "properties": {
1111                         "language": {
1112                             "allOf": [
1113                                 {
1114                                     "$ref": "http://openconnectivityfoundation.github.io/core/schemas/oic.types-
1115 schema.json#/definitions/language-tag"
1116                                 },
1117                                 {
1118                                     "description": "An RFC 5646 language tag."
1119                                 }
1120                             ]
1121                         },
1122                         "value": {
1123                             "description": "The Platform description in the indicated language.",
1124                             "maxLength": 64,
1125                             "type": "string"
1126                         }
1127                     },
1128                     "type": "object"
1129                 },
1130                 "minItems": 1,
1131                 "type": "array"
1132             }

```

```

1133     },
1134     "type": "object",
1135     "anyOf": [
1136       {
1137         "required": ["mnpn"]
1138       },
1139       {
1140         "required": ["n"]
1141       }
1142     ]
1143   }
1144 }
1145 }
1146

```

1147 A.3.5 Property definition

1148 Table A.4 defines the Properties that are part of the "oic.wk.con.p" Resource Type.

1149 **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

1150 A.3.6 CRUDN behaviour

1151 Table A.5 defines the CRUDN operations that are supported on the "oic.wk.con.p" Resource Type.

1152 **Table A.5 – The CRUDN operations of the Resource with type "rt" = "oic.wk.con.p".**

Create	Read	Update	Delete	Notify
	get	post		observe

1153 A.4 Icon

1154 A.4.1 Introduction

1155 This Resource describes the attributes associated with an Icon.

1156

1157 A.4.2 Example URI

1158 /IconResURI

1159 A.4.3 Resource type

1160 The Resource Type is defined as: "oic.r.icon".

1161 A.4.4 OpenAPI 2.0 definition

```
1162 {
1163   "swagger": "2.0",
1164   "info": {
1165     "title": "Icon",
1166     "version": "2019-02-26",
1167     "license": {
1168       "name": "OCF Data Model License",
1169       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
1170       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1171     },
1172     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1173   },
1174   "schemes": [
1175     "http"
1176   ],
1177   "consumes": [
1178     "application/json"
1179   ],
1180   "produces": [
1181     "application/json"
1182   ],
1183   "paths": {
1184     "/IconResURI" : {
1185       "get": {
1186         "description": "This Resource describes the attributes associated with an Icon.\n",
1187         "parameters": [
1188           {
1189             "$ref": "#/parameters/interface"
1190           }
1191         ],
1192         "responses": {
1193           "200": {
1194             "description": "",
1195             "x-example": {
1196               "rt": ["oic.r.icon"],
1197               "mimetype": "image/png",
1198               "width": 256,
1199               "height": 256,
1200               "media": "http://findbetter.ru/public/uploads/1481662800/2043.png"
1201             },
1202             "schema": {
1203               "$ref": "#/definitions/Icon"
1204             }
1205           }
1206         }
1207       }
1208     }
1209   },
1210   "parameters": {
1211     "interface" : {
1212       "in" : "query",
1213       "name" : "if",
1214       "type" : "string",
1215       "enum" : ["oic.if.r", "oic.if.baseline"]
1216     }
1217   },
1218   "definitions": {
1219     "Icon" : {
1220       "properties": {
1221         "mimetype": {
1222           "description": "The Media Type of the icon",
1223           "maxLength": 64,
1224           "readOnly": true,
1225           "type": "string"
1226         },
```

```

1227     "rt": {
1228         "description": "Resource Type of the Resource",
1229         "items": {
1230             "enum": ["oic.r.icon"],
1231             "type": "string",
1232             "maxLength": 64
1233         },
1234         "minItems": 1,
1235         "uniqueItems": true,
1236         "readOnly": true,
1237         "type": "array"
1238     },
1239     "media": {
1240         "description": "Specifies the URI to the icon",
1241         "format": "uri",
1242         "maxLength": 256,
1243         "readOnly": true,
1244         "type": "string"
1245     },
1246     "n": {
1247         "$ref" :
1248         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1249         schema.json#/definitions/n"
1250     },
1251     "id": {
1252         "$ref" :
1253         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1254         schema.json#/definitions/id"
1255     },
1256     "width": {
1257         "description": "The width in pixels",
1258         "minimum": 1,
1259         "readOnly": true,
1260         "type": "integer"
1261     },
1262     "height": {
1263         "description": "The height in pixels",
1264         "minimum": 1,
1265         "readOnly": true,
1266         "type": "integer"
1267     },
1268     "if": {
1269         "description": "The OCF Interfaces supported by this Resource",
1270         "items": {
1271             "enum": [
1272                 "oic.if.r",
1273                 "oic.if.baseline"
1274             ],
1275             "maxLength": 64,
1276             "type": "string"
1277         },
1278         "minItems": 2,
1279         "uniqueItems": true,
1280         "readOnly": true,
1281         "type": "array"
1282     }
1283 },
1284 "type" : "object",
1285 "required": ["mimetype", "width", "height", "media"]
1286 }
1287 }
1288 }
1289

```

1290 **A.4.5 Property definition**

1291 Table A.6 defines the Properties that are part of the "oic.r.icon" Resource Type.

1292

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

A.4.6 CRUDN behaviour

1294 Table A.7 defines the CRUDN operations that are supported on the "oic.r.icon" Resource Type.

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

Create	Read	Update	Delete	Notify
	get			observe

A.5 Maintenance**A.5.1 Introduction**

1298 The Resource through which a Device is maintained and can be used for diagnostic purposes.
1299 fr (Factory Reset) is a boolean.

1300 The value 0 means No action (Default), the value 1 means Start Factory Reset
1301 After factory reset, this value shall be changed back to the default value
1302 rb (Reboot) is a boolean.

1303 The value 0 means No action (Default), the value 1 means Start Reboot
1304 After Reboot, this value shall be changed back to the default value
1305

A.5.2 Well-known URI

1307 /oic/mnt

A.5.3 Resource type

1309 The Resource Type is defined as: "oic.wk.mnt".

A.5.4 OpenAPI 2.0 definition

```

1311 {
1312   "swagger": "2.0",
1313   "info": {
1314     "title": "Maintenance",
1315     "version": "2019-03-04",
1316     "license": {
1317       "name": "OCF Data Model License",
1318       "url":

```

```

1319 "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1320 CENSE.md",
1321   "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1322 },
1323   "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1324 },
1325   "schemes": ["http"],
1326   "consumes": ["application/json"],
1327   "produces": ["application/json"],
1328   "paths": {
1329     "/oic/mnt" : {
1330       "get": {
1331         "description": "The Resource through which a Device is maintained and can be used for
1332 diagnostic purposes.\nfr (Factory Reset) is a boolean.\n The value 0 means No action (Default), the
1333 value 1 means Start Factory Reset\nAfter factory reset, this value shall be changed back to the
1334 default value\nrb (Reboot) is a boolean.\n The value 0 means No action (Default), the value 1 means
1335 Start Reboot\nAfter Reboot, this value shall be changed back to the default value\n",
1336         "parameters": [
1337           {"$ref": "#/parameters/interface-all"}
1338         ],
1339         "responses": {
1340           "200": {
1341             "description": "",
1342             "x-example": {
1343               "rt": ["oic.wk.mnt"],
1344               "fr": false,
1345               "rb": false,
1346               "err" : 503
1347             },
1348             "schema": { "$ref": "#/definitions/mnt" }
1349           }
1350         }
1351       },
1352       "post": {
1353         "description": "Set the maintenance action(s)\n",
1354         "parameters": [
1355           {"$ref": "#/parameters/interface-rw"},
1356           {
1357             "name": "body",
1358             "in": "body",
1359             "required": true,
1360             "schema": { "$ref": "#/definitions/mnt-update" },
1361             "x-example": {
1362               "fr": false,
1363               "rb": false
1364             }
1365           }
1366         ],
1367         "responses": {
1368           "200": {
1369             "description": "",
1370             "x-example": {
1371               "fr": false,
1372               "rb": false
1373             },
1374             "schema": { "$ref": "#/definitions/mnt" }
1375           }
1376         }
1377       }
1378     }
1379   },
1380   "parameters": {
1381     "interface-all" : {
1382       "in" : "query",
1383       "name" : "if",
1384       "type" : "string",
1385       "enum" : ["oic.if.rw", "oic.if.baseline"]
1386     },
1387     "interface-rw" : {
1388       "in" : "query",
1389       "name" : "if",

```

```

1390     "type" : "string",
1391     "enum" : ["oic.if.rw"]
1392   }
1393 },
1394 "definitions": {
1395   "mnt" : {
1396     "properties": {
1397       "rt" : {
1398         "description": "Resource Type of the Resource",
1399         "items": {
1400           "enum": ["oic.wk.mnt"],
1401           "type": "string",
1402           "maxLength": 64
1403         },
1404         "minItems": 1,
1405         "uniqueItems": true,
1406         "readOnly": true,
1407         "type": "array"
1408       },
1409       "fr" : {
1410         "description": "Factory Reset",
1411         "type": "boolean"
1412       },
1413       "err" : {
1414         "description": "Last HTTP occurred error",
1415         "maximum": 599,
1416         "minimum": 399,
1417         "readOnly": true,
1418         "type": "integer"
1419       },
1420       "n" : {
1421         "$ref":
1422         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1423         schema.json#/definitions/n"
1424       },
1425       "rb" : {
1426         "description": "Reboot Action",
1427         "type": "boolean"
1428       },
1429       "id" : {
1430         "$ref":
1431         "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1432         schema.json#/definitions/id"
1433       },
1434       "if" : {
1435         "description": "The OCF Interfaces supported by this Resource",
1436         "items": {
1437           "enum": [
1438             "oic.if.rw",
1439             "oic.if.baseline"
1440           ],
1441           "type": "string",
1442           "maxLength": 64
1443         },
1444         "minItems": 1,
1445         "readOnly": true,
1446         "uniqueItems": true,
1447         "type": "array"
1448       }
1449     },
1450     "anyOf" : [
1451       {
1452         "required": [ "fr" ]
1453       },
1454       {
1455         "required": [ "rb" ]
1456       },
1457       {
1458         "required": [ "err" ]
1459       }
1460     ]

```

```

1461     "type" : "object"
1462   },
1463   "mnt-update" : {
1464     "properties": {
1465       "fr" : {
1466         "description": "Factory Reset",
1467         "type": "boolean"
1468       },
1469       "n": {
1470         "$ref":
1471 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1472 schema.json#/definitions/n"
1473       },
1474       "rb" : {
1475         "description": "Reboot Action",
1476         "type": "boolean"
1477       }
1478     },
1479     "anyOf" : [
1480       {
1481         "required": [
1482           "fr"
1483         ]
1484       },
1485       {
1486         "required": [
1487           "rb"
1488         ]
1489       }
1490     ],
1491     "type" : "object"
1492   }
1493 }
1494 }
1495

```

1496 A.5.5 Property definition

1497 Table A.8 defines the Properties that are part of the "oic.wk.mnt" Resource Type.

1498 **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

1499 **A.5.6 CRUDN behaviour**

1500 Table A.9 defines the CRUDN operations that are supported on the "oic.wk.mnt" Resource Type.

1501 **Table A.9 – The CRUDN operations of the Resource with type "rt" = "oic.wk.mnt".**

Create	Read	Update	Delete	Notify
	get	post		observe

1502 **A.6 Network Monitoring**

1503 **A.6.1 Introduction**

1504 The Resource through which a Device can monitor network traffic.

1505

1506 **A.6.2 Example URI**

1507 /nmonResURI

1508 **A.6.3 Resource type**

1509 The Resource Type is defined as: "oic.wk.nmon".

1510 **A.6.4 OpenAPI 2.0 definition**

```

1511 {
1512   "swagger": "2.0",
1513   "info": {
1514     "title": "Network Monitoring",
1515     "version": "2019-03-27",
1516     "license": {
1517       "name": "OCF Data Model License",
1518       "url":
1519         "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
1520         CENSE.md",
1521       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1522     },
1523     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1524   },
1525   "schemes": ["http"],
1526   "consumes": ["application/json"],
1527   "produces": ["application/json"],
1528   "paths": {
1529     "/nmonResURI" : {
1530       "get": {
1531         "description": "The Resource through which a Device can monitor network traffic.\n",
1532         "parameters": [
1533           {"$ref": "#/parameters/interface-all"}
1534         ],
1535         "responses": {
1536           "200": {
1537             "description": "",
1538             "x-example": {
1539               "rt": ["oic.wk.nmon"],
1540               "ianaifType": 71,
1541               "reset": false,
1542               "col": false,
1543               "tx": 10,
1544               "rx": 15,
1545               "mmstx": 50,
1546               "amstx": 35,
1547               "mmsrx": 35,
1548               "amsrx": 20
1549             },
1550             "schema": {"$ref": "#/definitions/nmon"}
1551           }
1552         }
1553       }
1554     }
1555   }

```

```

1553     },
1554     "post": {
1555         "description": "Start/Stop collecting and reset the networking monitor Resource\n",
1556         "parameters": [
1557             { "$ref": "#/parameters/interface-rw" },
1558             {
1559                 "name": "body",
1560                 "in": "body",
1561                 "required": true,
1562                 "schema": { "$ref": "#/definitions/nmon-update" },
1563                 "x-example": {
1564                     "col": true,
1565                     "reset": true
1566                 }
1567             }
1568         ],
1569         "responses": {
1570             "200": {
1571                 "description": "",
1572                 "x-example": {
1573                     "rt": ["oic.wk.nmon"],
1574                     "ianaifType": 71,
1575                     "reset": false,
1576                     "col": true,
1577                     "tx": 0,
1578                     "rx": 0,
1579                     "mmstx": 0,
1580                     "amstx": 0,
1581                     "mmsrx": 0,
1582                     "amsrx": 0
1583                 },
1584                 "schema": { "$ref": "#/definitions/nmon" }
1585             }
1586         }
1587     }
1588 },
1589 },
1590 "parameters": {
1591     "interface-rw": {
1592         "in": "query",
1593         "name": "if",
1594         "type": "string",
1595         "enum": ["oic.if.rw"]
1596     },
1597     "interface-all": {
1598         "in": "query",
1599         "name": "if",
1600         "type": "string",
1601         "enum": ["oic.if.rw", "oic.if.baseline"]
1602     }
1603 },
1604 "definitions": {
1605     "nmon": {
1606         "properties": {
1607             "amstx": {
1608                 "description": "Average transmitted message size in bytes (tx) in the collection period",
1609                 "readOnly": true,
1610                 "type": "integer"
1611             },
1612             "reset": {
1613                 "description": "True: reset the collected values",
1614                 "readOnly": false,
1615                 "type": "boolean"
1616             },
1617             "mmsrx": {
1618                 "description": "Maximum received message size in bytes (rx) in the collection period",
1619                 "readOnly": true,
1620                 "type": "integer"
1621             },
1622             "mmstx": {
1623                 "description": "Maximum transmitted message size in bytes (tx) in the collection period",

```

```

1624         "readOnly": true,
1625         "type": "integer"
1626     },
1627     "tx" : {
1628         "description": "Amount of transmitted kilo bytes from the collection",
1629         "readOnly": true,
1630         "type": "integer"
1631     },
1632     "rt" : {
1633         "description": "Resource Type of the Resource",
1634         "items": {
1635             "enum": ["oic.wk.nmon"],
1636             "type": "string",
1637             "maxLength": 64
1638         },
1639         "minItems": 1,
1640         "uniqueItems": true,
1641         "readOnly": true,
1642         "type": "array"
1643     },
1644     "ianaifType" : {
1645         "description": "The type of the network connection, as defined by iana
1646 https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib",
1647         "readOnly": true,
1648         "type": "integer"
1649     },
1650     "rx" : {
1651         "description": "Amount of received kilobytes from the collection",
1652         "readOnly": true,
1653         "type": "integer"
1654     },
1655     "id" : {
1656         "$ref":
1657 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1658 schema.json#/definitions/id"
1659     },
1660     "amsrx" : {
1661         "description": "Average received message size in bytes (rx) in the collection period",
1662         "readOnly": true,
1663         "type": "integer"
1664     },
1665     "n" : {
1666         "$ref":
1667 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1668 schema.json#/definitions/n"
1669     },
1670     "col" : {
1671         "description": "True: Device is collecting values",
1672         "readOnly": false,
1673         "type": "boolean"
1674     },
1675     "if" : {
1676         "description": "The OCF Interfaces supported by this Resource",
1677         "items": {
1678             "enum": [
1679                 "oic.if.rw",
1680                 "oic.if.baseline"
1681             ],
1682             "type": "string",
1683             "maxLength": 64
1684         },
1685         "minItems": 1,
1686         "readOnly": true,
1687         "uniqueItems": true,
1688         "type": "array"
1689     }
1690 },
1691 "type": "object",
1692 "required": ["reset", "col", "ianaifType"]
1693 },
1694 "nmon-update" : {

```

```

1695     "properties": {
1696       "reset" : {
1697         "description": "True: reset the collected values",
1698         "readOnly": false,
1699         "type": "boolean"
1700       },
1701       "n" : {
1702         "$ref":
1703 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1704 schema.json#/definitions/n"
1705       },
1706       "col" : {
1707         "description": "True: Device is collecting values",
1708         "readOnly": false,
1709         "type": "boolean"
1710       }
1711     },
1712     "type" : "object",
1713     "required": ["reset", "col"]
1714   }
1715 }
1716 }
1717

```

1718 A.6.5 Property definition

1719 Table A.10 defines the Properties that are part of the "oic.wk.nmon" Resource Type.

1720 **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

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

1721 **A.6.6 CRUDN behaviour**

1722 Table A.11 defines the CRUDN operations that are supported on the "oic.wk.nmon" Resource Type.

1723 **Table A.11 – The CRUDN operations of the Resource with type "rt" = "oic.wk.nmon".**

Create	Read	Update	Delete	Notify
	get	post		observe

1724 **A.7 Scene List**

1725 **A.7.1 Introduction**

1726 Toplevel Scene Resource.

1727 This Resource is a generic Collection Resource.

1728 The rts value contains oic.wk.scenecollection Resource Types.

1729

1730 **A.7.2 Example URI**

1731 /SceneListResURI

1732 **A.7.3 Resource type**

1733 The Resource Type is defined as: "oic.wk.scenelist".

1734 **A.7.4 OpenAPI 2.0 definition**

```

1735 {
1736   "swagger": "2.0",
1737   "info": {
1738     "title": "Scene List",
1739     "version": "2019-03-04",
1740     "license": {
1741       "name": "OCF Data Model License",
1742       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
1743       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
1744     },
1745     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
1746   },
1747   "schemes": [
1748     "http"
1749   ],
1750   "consumes": [
1751     "application/json"
1752   ],
1753   "produces": [
1754     "application/json"
1755   ],
1756   "paths": {
1757     "/SceneListResURI?if=oic.if.ll": {
1758       "get": {
1759         "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection
1760 Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
1761         "parameters": [
1762           {
1763             "$ref": "#/parameters/interface-all"
1764           }
1765         ],
1766         "responses": {
1767           "200": {
1768             "description": "",

```

```

1769         "x-example": [
1770             {"href": "/scenecollection1", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.ll",
1771 "oic.if.baseline"]},
1772             {"href": "/scenecollection2", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.ll",
1773 "oic.if.baseline"]}
1774         ],
1775         "schema": {
1776             "$ref": "#/definitions/slinks"
1777         }
1778     }
1779 }
1780 }
1781 },
1782 "/SceneListResURI?if=oic.if.baseline": {
1783     "get": {
1784         "description": "Toplevel Scene Resource.\nThis Resource is a generic Collection
1785 Resource.\nThe rts value contains oic.wk.scenecollection Resource Types.\n",
1786         "parameters": [
1787             {
1788                 "$ref": "#/parameters/interface-all"
1789             }
1790         ],
1791         "responses": {
1792             "200": {
1793                 "description": "",
1794                 "x-example": {
1795                     "rt": ["oic.wk.scenelist"],
1796                     "if": ["oic.if.ll", "oic.if.baseline"],
1797                     "n": "list of scene collections",
1798                     "rts": ["oic.wk.scenecollection"],
1799                     "links": [
1800                         {"href": "/scenecollection1", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.ll",
1801 "oic.if.baseline"]},
1802                         {"href": "/scenecollection2", "rt": ["oic.wk.scenecollection"], "if": ["oic.if.ll",
1803 "oic.if.baseline"]}
1804                     ]
1805                 },
1806                 "schema": { "$ref": "#/definitions/Collection" }
1807             }
1808         }
1809     }
1810 },
1811 },
1812 "parameters": {
1813     "interface-all": {
1814         "in": "query",
1815         "name": "if",
1816         "type": "string",
1817         "enum": ["oic.if.ll", "oic.if.baseline"]
1818     }
1819 },
1820 "definitions": {
1821     "Collection": {
1822         "properties": {
1823             "links": {
1824                 "description": "A set of simple or individual OCF Links.",
1825                 "items": {
1826                     "$ref": "#/definitions/oic.oic-link"
1827                 },
1828                 "type": "array"
1829             },
1830             "n": {
1831                 "$ref":
1832 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1833 schema.json#/definitions/n"
1834             },
1835             "id": {
1836                 "$ref":
1837 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
1838 schema.json#/definitions/id"
1839             },

```

```

1840     "if": {
1841         "type": "array",
1842         "description": "The OCF Interfaces supported by this Resource",
1843         "items": {
1844             "enum": [
1845                 "oic.if.ll",
1846                 "oic.if.baseline"
1847             ],
1848             "type": "string",
1849             "maxLength": 64
1850         },
1851         "minItems": 2,
1852         "uniqueItems": true,
1853         "readOnly": true
1854     },
1855     "rts": {
1856         "description": "The list of allowable Resource Types in Links included in the Collection",
1857         "items": {
1858             "enum": ["oic.wk.scenecollection"],
1859             "type": "string",
1860             "maxLength": 64
1861         },
1862         "minItems": 1,
1863         "uniqueItems": true,
1864         "readOnly": true,
1865         "type": "array"
1866     },
1867     "rt": {
1868         "description": "Resource Type of the Resource",
1869         "items": {
1870             "enum": ["oic.wk.scenelist"],
1871             "type": "string",
1872             "maxLength": 64
1873         },
1874         "minItems": 1,
1875         "readOnly": true,
1876         "uniqueItems": true,
1877         "type": "array"
1878     }
1879 },
1880 "type": "object",
1881 "required": [
1882     "rt",
1883     "if",
1884     "links"
1885 ]
1886 },
1887 "slinks" : {
1888     "type" : "array",
1889     "items" : {
1890         "$ref": "#/definitions/oic.oic-link"
1891     }
1892 },
1893 "oic.oic-link": {
1894     "properties": {
1895         "if": {
1896             "description": "The OCF Interfaces supported by the Linked Resource",
1897             "items": {
1898                 "enum": [
1899                     "oic.if.ll",
1900                     "oic.if.baseline"
1901                 ],
1902                 "type": "string",
1903                 "maxLength": 64
1904             },
1905             "minItems": 1,
1906             "uniqueItems": true,
1907             "readOnly": true,
1908             "type": "array"
1909         },
1910         "rt": {

```

```

1911         "description": "The Resource Type of the Linked Resource",
1912         "items": {
1913             "enum": ["oic.wk.scenecollection"],
1914             "type": "string",
1915             "maxLength": 64
1916         },
1917         "minItems": 1,
1918         "uniqueItems": true,
1919         "readOnly": true,
1920         "type": "array"
1921     },
1922     "anchor": {
1923         "$ref":
1924         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1925         schema.json#/definitions/anchor"
1926     },
1927     "di": {
1928         "$ref":
1929         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1930         schema.json#/definitions/di"
1931     },
1932     "eps": {
1933         "$ref":
1934         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1935         schema.json#/definitions/eps"
1936     },
1937     "href": {
1938         "$ref":
1939         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1940         schema.json#/definitions/href"
1941     },
1942     "ins": {
1943         "$ref":
1944         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1945         schema.json#/definitions/ins"
1946     },
1947     "p": {
1948         "$ref":
1949         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1950         schema.json#/definitions/p"
1951     },
1952     "rel": {
1953         "$ref":
1954         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1955         schema.json#/definitions/rel_array"
1956     },
1957     "title": {
1958         "$ref":
1959         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1960         schema.json#/definitions/title"
1961     },
1962     "type": {
1963         "$ref":
1964         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
1965         schema.json#/definitions/type"
1966     }
1967 },
1968 "required": [
1969     "href",
1970     "rt",
1971     "if"
1972 ],
1973 "type": "object"
1974 }
1975 }
1976 }
1977

```

1978 **A.7.5 Property definition**

1979 Table A.12 defines the Properties that are part of the "oic.wk.scenelist" Resource Type.

1980 **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	

1981 **A.7.6 CRUDN behaviour**

1982 Table A.13 defines the CRUDN operations that are supported on the "oic.wk.scenelist" Resource
 1983 Type.

1984 **Table A.13 – The CRUDN operations of the Resource with type "rt" = "oic.wk.scenelist".**

Create	Read	Update	Delete	Notify
	get			observe

1985 **A.8 Scene Collection**

1986 **A.8.1 Introduction**

1987 Collection that models a set of Scenes.

1988 This Resource is a generic Collection Resource with additional Properties.

1989 The rts value contains oic.scenemember Resource Types.

1990 The additional Properties are

1991 lastScene, this is the Scene Value last set by any Client

1992 sceneValues, this is the list of available Scenes

1993 lastScene shall be listed in sceneValues.

1994

1995 **A.8.2 Example URI**

1996 /SceneCollectionResURI

1997 **A.8.3 Resource type**

1998 The Resource Type is defined as: "oic.wk.scenecollection".

1999 **A.8.4 OpenAPI 2.0 definition**

```
2000 {
2001   "swagger": "2.0",
2002   "info": {
2003     "title": "Scene Collection",
2004     "version": "2019-03-04",
2005     "license": {
2006       "name": "OCF Data Model License",
2007       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2008       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2009     },
2010     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2011   },
2012   "schemes": [
2013     "http"
2014   ],
2015   "consumes": [
2016     "application/json"
2017   ],
2018   "produces": [
2019     "application/json"
2020   ],
2021   "paths": {
2022     "/SceneCollectionResURI?if=oic.if.ll" : {
2023       "get": {
2024         "description": "Collection that models a set of Scenes.\nThis Resource is a generic
2025 Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
2026 Types.\nThe additional Properties are\n lastScene, this is the Scene Value last set by any Client\n
2027 sceneValues, this is the list of available Scenes\n lastScene shall be listed in sceneValues.\n",
2028         "parameters": [
2029           {
2030             "$ref": "#/parameters/interface-all"
2031           }
2032         ],
2033         "responses": {
2034           "200": {
2035             "description": "",
2036             "x-example": [
2037               {"href": "/scenemember1", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]},
2038               {"href": "/scenemember2", "rt": ["oic.wk.scenemember"], "if": ["oic.if.baseline"]}
2039             ],
2040             "schema": {
2041               "$ref": "#/definitions/slinks"
2042             }
2043           }
2044         }
2045       }
2046     }
2047   }
2048 }
```

```

2045     }
2046   },
2047   "/SceneCollectionResURI?if=oic.if.baseline" : {
2048     "get": {
2049       "description": "Collection that models a set of Scenes.\nThis Resource is a generic
2050 Collection Resource with additional Properties.\nThe rts value contains oic.scenemember Resource
2051 Types.\nThe additional Properties are\n lastScene, this is the Scene Value last set by any Client\n
2052 sceneValues, this is the list of available Scenes\n lastScene shall be listed in sceneValues.\n",
2053       "parameters": [
2054         {
2055           "$ref": "#/parameters/interface-all"
2056         }
2057       ],
2058       "responses": {
2059         "200": {
2060           "description" : "",
2061           "x-example": {
2062             "lastScene": "off",
2063             "sceneValues": ["off","Reading","TVWatching"],
2064             "rt": ["oic.wk.scenecollection"],
2065             "n": "My Scenes for my living room",
2066             "rts": ["oic.wk.scenemember"],
2067             "links": [
2068               {"href": "/scenemember1","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]},
2069               {"href": "/scenemember2","rt": ["oic.wk.scenemember"],"if":["oic.if.baseline"]}
2070             ]
2071           },
2072           "schema": {
2073             "$ref": "#/definitions/SceneCollection"
2074           }
2075         }
2076       }
2077     },
2078     "post": {
2079       "description": "Provides the action to change the last set Scene selection.\nCalling this
2080 method shall update all Scene Members to the prescribed membervalue.\nWhen this method is called
2081 with the same value as the current lastScene value\nthen all Scene Members shall be updated.\n",
2082       "parameters": [
2083         {
2084           "$ref": "#/parameters/interface-update"
2085         },
2086         {
2087           "name": "body",
2088           "in": "body",
2089           "required": true,
2090           "schema": {
2091             "$ref": "#/definitions/SceneCollectionUpdate"
2092           },
2093           "x-example": {
2094             "lastScene": "Reading"
2095           }
2096         }
2097       ],
2098       "responses": {
2099         "200": {
2100           "description" : "Indicates that the value is changed.\nThe changed Properties are
2101 provided in the response.\n",
2102           "x-example": {
2103             "lastScene": "Reading"
2104           },
2105           "schema": {
2106             "$ref": "#/definitions/SceneCollectionUpdate"
2107           }
2108         }
2109       }
2110     }
2111   },
2112   "parameters": {
2113     "interface-update" : {
2114       "in" : "query",
2115

```

```

2116     "name" : "if",
2117     "type" : "string",
2118     "enum" : ["oic.if.a"]
2119 },
2120 "interface-all" : {
2121     "in" : "query",
2122     "name" : "if",
2123     "type" : "string",
2124     "enum" : ["oic.if.ll", "oic.if.baseline"]
2125 }
2126 },
2127 "definitions": {
2128     "SceneCollection": {
2129         "properties": {
2130             "rt": {
2131                 "description": "Resource Type of the Resource",
2132                 "items": {
2133                     "enum": ["oic.wk.scenecollection"],
2134                     "type": "string",
2135                     "maxLength": 64
2136                 },
2137                 "minItems": 1,
2138                 "readOnly": true,
2139                 "uniqueItems": true,
2140                 "type": "array"
2141             },
2142             "lastScene": {
2143                 "description": "Last selected Scene from the set of sceneValues",
2144                 "type": "string"
2145             },
2146             "links": {
2147                 "description": "A set of simple or individual OCF Links.",
2148                 "items": {
2149                     "$ref": "#/definitions/oic.oic-link"
2150                 },
2151                 "type": "array"
2152             },
2153             "sceneValues": {
2154                 "description": "All available Scene Values",
2155                 "items": {
2156                     "type": "string"
2157                 },
2158                 "readOnly": true,
2159                 "type": "array"
2160             },
2161             "n": {
2162                 "$ref" :
2163 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2164 schema.json#/definitions/n"
2165             },
2166             "id": {
2167                 "$ref" :
2168 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2169 schema.json#/definitions/id"
2170             },
2171             "rts": {
2172                 "description": "Resource Type of the Resources within the Collection",
2173                 "items": {
2174                     "enum": ["oic.wk.scenemember"],
2175                     "type": "string",
2176                     "maxLength": 64
2177                 },
2178                 "minItems": 1,
2179                 "readOnly": true,
2180                 "uniqueItems": true,
2181                 "type": "array"
2182             },
2183             "if" : {
2184                 "description": "The OCF Interfaces supported by this Resource",
2185                 "items": {
2186                     "enum": [

```

```

2187         "oic.if.ll",
2188         "oic.if.baseline",
2189         "oic.if.a"
2190     ],
2191     "type": "string",
2192     "maxLength": 64
2193 },
2194     "minItems": 1,
2195     "uniqueItems": true,
2196     "readOnly": true,
2197     "type": "array"
2198 }
2199 },
2200 "type" : "object"
2201 },
2202 "SceneCollectionUpdate": {
2203     "properties": {
2204         "lastScene": {
2205             "description": "Last selected Scene from the set of sceneValues",
2206             "type": "string"
2207         }
2208     },
2209     "type" : "object"
2210 },
2211 "slinks" : {
2212     "type" : "array",
2213     "items" : {
2214         "$ref": "#/definitions/oic.oic-link"
2215     }
2216 },
2217 "oic.oic-link": {
2218     "type": "object",
2219     "properties": {
2220         "if": {
2221             "description": "The OCF Interfaces supported by the Linked Resource",
2222             "items": {
2223                 "enum": [
2224                     "oic.if.baseline"
2225                 ],
2226                 "type": "string",
2227                 "maxLength": 64
2228             },
2229             "minItems": 1,
2230             "uniqueItems": true,
2231             "readOnly": true,
2232             "type": "array"
2233         },
2234         "rt": {
2235             "description": "Resource Type of the Linked Resource",
2236             "items": {
2237                 "enum": ["oic.wk.scenemember"],
2238                 "type": "string",
2239                 "maxLength": 64
2240             },
2241             "minItems": 1,
2242             "uniqueItems": true,
2243             "readOnly": true,
2244             "type": "array"
2245         },
2246         "anchor": {
2247             "$ref":
2248 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2249 schema.json#/definitions/anchor"
2250         },
2251         "di": {
2252             "$ref":
2253 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2254 schema.json#/definitions/di"
2255         },
2256         "eps": {
2257             "$ref":

```

```

2258 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2259 schema.json#/definitions/eps"
2260     },
2261     "href": {
2262         "$ref":
2263         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2264         schema.json#/definitions/href"
2265     },
2266     "ins": {
2267         "$ref":
2268         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2269         schema.json#/definitions/ins"
2270     },
2271     "p": {
2272         "$ref":
2273         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2274         schema.json#/definitions/p"
2275     },
2276     "rel": {
2277         "$ref":
2278         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2279         schema.json#/definitions/rel_array"
2280     },
2281     "title": {
2282         "$ref":
2283         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2284         schema.json#/definitions/title"
2285     },
2286     "type": {
2287         "$ref":
2288         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2289         schema.json#/definitions/type"
2290     }
2291     },
2292     "required": [
2293         "href",
2294         "rt",
2295         "if"
2296     ]
2297 }
2298 }
2299 }
2300

```

2301 **A.8.5 Property definition**

2302 Table A.14 defines the Properties that are part of the "oic.wk.scenecollection" Resource Type.

2303 **Table A.14 – The Property definitions of the Resource with type "rt" =**
2304 **"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	

2305 **A.8.6 CRUDN behaviour**

2306 Table A.15 defines the CRUDN operations that are supported on the "oic.wk.scenecollection"
2307 Resource Type.

2308 **Table A.15 – The CRUDN operations of the Resource with type "rt" =**
2309 **"oic.wk.scenecollection".**

Create	Read	Update	Delete	Notify
	get	post		observe

2310 **A.9 Scene Member**

2311 **A.9.1 Introduction**

2312 Single Link that models a Scene Member.
2313

2314 **A.9.2 Example URI**

2315 /SceneMemberResURI

2316 **A.9.3 Resource type**

2317 The Resource Type is defined as: "oic.wk.scenemember".

2318 **A.9.4 OpenAPI 2.0 definition**

```
2319 {
2320   "swagger": "2.0",
2321   "info": {
2322     "title": "Scene Member",
2323     "version": "2019-03-04",
2324     "license": {
2325       "name": "OCF Data Model License",
2326       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2327       "x-copyright": "Copyright 2016-2019 Open Connectivity Foundation, Inc. All rights reserved."
2328     },
2329     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2330   },
2331   "schemes": [
2332     "http"
2333   ],
2334   "consumes": [
2335     "application/json"
2336   ],
2337   "produces": [
2338     "application/json"
2339   ],
2340   "paths": {
2341     "/SceneMemberResURI" : {
2342       "get": {
2343         "description": "Single Link that models a Scene Member.\n",
2344         "parameters": [
2345           {
2346             "$ref": "#/parameters/interface-baseline"
2347           }
2348         ],
2349         "responses": {
2350           "200": {
2351             "description": "",
2352             "x-example": {
2353               "rt": ["oic.wk.scenemember"],
2354               "id": "0685B960-FFFF-46F7-BEC0-9E6234671ADC1",
2355               "n": "my binary switch (for light bulb) mappings",
2356               "if": ["oic.if.baseline"],
2357               "link": {
2358                 "href": "binarySwitch",
2359                 "rt": ["oic.r.switch.binary"],
2360                 "if": ["oic.if.a", "oic.if.baseline"],
2361                 "eps": [
2362                   {"ep": "coap://[fe80::bld6]:1111", "pri": 2},
2363                   {"ep": "coaps://[fe80::bld6]:1122"},
2364                   {"ep": "coap+tcp://[2001:db8:a::123]:2222", "pri": 3}
2365                 ]
2366               }
2367             },
2368             "SceneMappings": [
2369               {
2370                 "scene": "off",
2371                 "memberProperty": "value",
2372                 "memberValue": "true"
2373               },
2374               {
2375                 "scene": "Reading",
2376                 "memberProperty": "value",
2377                 "memberValue": "false"
2378               },
2379               {
2380                 "scene": "TVWatching",
2381                 "memberProperty": "value",
2382                 "memberValue": "true"
2383               }
2384             ]
2385           }
2386         }
2387       }
2388     }
2389   }
2390 }
```



```

2384         },
2385         "schema": {
2386             "$ref": "#/definitions/SceneMember"
2387         }
2388     }
2389 }
2390 }
2391 }
2392 },
2393 "parameters": {
2394     "interface-baseline" : {
2395         "in" : "query",
2396         "name" : "if",
2397         "type" : "string",
2398         "enum" : ["oic.if.baseline"]
2399     }
2400 },
2401 "definitions": {
2402     "SceneMember": {
2403         "properties": {
2404             "rt": {
2405                 "description": "Resource Type of the Resource",
2406                 "items": {
2407                     "enum": ["oic.wk.scenemember"],
2408                     "type": "string",
2409                     "maxLength": 64
2410                 },
2411                 "minItems": 1,
2412                 "readOnly": true,
2413                 "uniqueItems": true,
2414                 "type": "array"
2415             },
2416             "SceneMappings": {
2417                 "description": "Array of mappings per Scene, can be one(1)",
2418                 "items": {
2419                     "properties": {
2420                         "memberProperty": {
2421                             "description": "Property name that will be mapped",
2422                             "readOnly": true,
2423                             "type": "string"
2424                         },
2425                         "memberValue": {
2426                             "description": "Value of the Member Property",
2427                             "readOnly": true,
2428                             "type": "string"
2429                         },
2430                         "scene": {
2431                             "description": "Specifies a Scene Value that will be acted upon",
2432                             "type": "string"
2433                         }
2434                     },
2435                     "required": [
2436                         "scene",
2437                         "memberProperty",
2438                         "memberValue"
2439                     ],
2440                     "type": "object"
2441                 },
2442                 "type": "array"
2443             },
2444             "n": {
2445                 "$ref" :
2446                 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2447                 schema.json#/definitions/n"
2448             },
2449             "id": {
2450                 "$ref" :
2451                 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2452                 schema.json#/definitions/id"
2453             },
2454             "link": {

```

```

2455     "$ref": "#/definitions/oic.oic-link"
2456   },
2457   "if": {
2458     "description": "The OCF Interfaces supported by this Resource",
2459     "items": {
2460       "enum": [
2461         "oic.if.baseline"
2462       ],
2463       "type": "string",
2464       "maxLength": 64
2465     },
2466     "minItems": 1,
2467     "readOnly": true,
2468     "uniqueItems": true,
2469     "type": "array"
2470   }
2471 },
2472 "type" : "object",
2473 "required": [
2474   "rt",
2475   "if",
2476   "SceneMappings"
2477 ]
2478 },
2479 "oic.oic-link": {
2480   "properties": {
2481     "if": {
2482       "description": "The OCF Interfaces supported by the target Resource",
2483       "items": {
2484         "enum": [
2485           "oic.if.baseline",
2486           "oic.if.ll",
2487           "oic.if.b",
2488           "oic.if.lb",
2489           "oic.if.rw",
2490           "oic.if.r",
2491           "oic.if.a",
2492           "oic.if.s"
2493         ],
2494         "type": "string",
2495         "maxLength": 64
2496       },
2497       "minItems": 1,
2498       "uniqueItems": true,
2499       "readOnly": true,
2500       "type": "array"
2501     },
2502     "rt": {
2503       "description": "Resource Type of the target Resource",
2504       "items": {
2505         "type": "string",
2506         "maxLength": 64
2507       },
2508       "minItems": 1,
2509       "readOnly": true,
2510       "uniqueItems": true,
2511       "type": "array"
2512     },
2513     "anchor": {
2514       "$ref":
2515 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2516 schema.json#/definitions/anchor"
2517     },
2518     "di": {
2519       "$ref":
2520 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2521 schema.json#/definitions/di"
2522     },
2523     "eps": {
2524       "$ref":
2525 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-

```

```

2526 schema.json#/definitions/eps"
2527     },
2528     "href": {
2529         "$ref":
2530         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2531         schema.json#/definitions/href"
2532     },
2533     "ins": {
2534         "$ref":
2535         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2536         schema.json#/definitions/ins"
2537     },
2538     "p": {
2539         "$ref":
2540         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2541         schema.json#/definitions/p"
2542     },
2543     "rel": {
2544         "$ref":
2545         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2546         schema.json#/definitions/rel_array"
2547     },
2548     "title": {
2549         "$ref":
2550         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2551         schema.json#/definitions/title"
2552     },
2553     "type": {
2554         "$ref":
2555         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2556         schema.json#/definitions/type"
2557     }
2558 },
2559 "required": [
2560     "href",
2561     "rt",
2562     "if"
2563 ],
2564 "type": "object"
2565 }
2566 }
2567 }
2568

```

2569 **A.9.5 Property definition**

2570 Table A.16 defines the Properties that are part of the "oic.wk.scenemember" Resource Type.

2571 **Table A.16 – The Property definitions of the Resource with type "rt" =**
2572 **"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	

2573 **A.9.6 CRUDN behaviour**

2574 Table A.17 defines the CRUDN operations that are supported on the "oic.wk.scenemember"
2575 Resource Type.

2576 **Table A.17 – The CRUDN operations of the Resource with type "rt" =**
2577 **"oic.wk.scenemember".**

Create	Read	Update	Delete	Notify
	get			observe

2578 **A.10 Alert**

2579 **A.10.1 Introduction**

2580 This Resource provides a mechanism for a Server to expose information to an
2581 interested party with regard to error or other conditions that the Device is experiencing (Alerts).
2582 category is a string that contains the Device defined category for the Alert.
2583 timestamp is an RFC3339 formatted time at which the Alert was generated.
2584 originatorid is a string that contains the identity of the originator of the Alert.
2585 severity is an integer that contains the RFC5424 defined severity of the Alert.
2586 subject is an array containing human readable text in one or more languages.
2587 accountid is a string containing the identity of the account with which the Device is associated.
2588

2589 **A.10.2 Example URI**

2590 /AlertResURI

2591 **A.10.3 Resource type**

2592 The Resource Type is defined as: "oic.r.alert".

2593 **A.10.4 OpenAPI 2.0 definition**

```
2594 {
2595   "swagger": "2.0",
2596   "info": {
2597     "title": "Alert",
2598     "version": "2019-02-28",
2599     "license": {
2600       "name": "OCF Data Model License",
2601       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2602       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
2603     },
2604     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2605   },
2606   "schemes": ["http"],
2607   "consumes": ["application/json"],
2608   "produces": ["application/json"],
2609   "paths": {
2610     "/AlertResURI" : {
2611       "get": {
2612         "description": "This Resource provides a mechanism for a Server to expose information to
2613 an\ninterested party with regard to error or other conditions that the Device is experiencing
2614 (Alerts).\ncategory is a string that contains the Device defined category for the Alert.\ntimestamp
2615 is an RFC3339 formatted time at which the Alert was generated.\noriginatorid is a string that
2616 contains the identity of the originator of the Alert.\nseverity is an integer that contains the
2617 RFC5424 defined severity of the Alert.\nsubject is an array containing human readable text in one or
2618 more languages.\naccountid is a string containing the identity of the account with which the Device
2619 is associated.\n",
2620         "parameters": [
2621           {"$ref": "#/parameters/interface"}
2622         ],
2623         "responses": {
2624           "200": {
2625             "description": "",
2626             "x-example":
2627               {
2628                 "rt": ["oic.r.alert"],
2629                 "accountid": "MyAccountID",
2630                 "category": "MyCategory",
2631                 "timestamp": "2018-02-28T08:00:00Z",
2632                 "originatorid": "MyOriginatorID",
2633                 "severity": 3,
2634                 "subject": [{"language": "en-US", "value": "System error"}]
2635               },
2636             "schema": { "$ref": "#/definitions/Alert" }
2637           }
2638         }
2639       }
2640     },
2641   },
2642   "parameters": {
2643     "interface" : {
2644       "in" : "query",
2645       "name" : "if",
2646       "type" : "string",
2647       "enum" : ["oic.if.r", "oic.if.baseline"]
2648     }
2649   },
2650   "definitions": {
2651     "Alert" : {
2652       "properties": {
2653         "category": {
2654           "description": "Category into which the notification is classified",
2655           "maxLength": 64,
2656           "readOnly": true,
2657           "type": "string"
2658         },
```

```

2659     "rt": {
2660         "description": "Resource Type",
2661         "items": {
2662             "maxLength": 64,
2663             "type": "string",
2664             "enum": ["oic.r.alert"]
2665         },
2666         "minItems": 1,
2667         "readOnly": true,
2668         "uniqueItems": true,
2669         "type": "array"
2670     },
2671     "severity": {
2672         "description": "RFC 5424 severity of the alert",
2673         "maximum": 7,
2674         "minimum": 0,
2675         "readOnly": true,
2676         "type": "integer"
2677     },
2678     "timestamp": {
2679         "description": "An RFC3339 formatted time indicating when the data was observed (e.g.:
2680 2016-02-15T09:19Z, 1996-12-19T16:39:57-08:00)",
2681         "format": "date-time",
2682         "readOnly": true,
2683         "type": "string"
2684     },
2685     "subject": {
2686         "description": "Alert subject matter.",
2687         "items": {
2688             "properties": {
2689                 "language": {
2690                     "allOf": [
2691                         {
2692                             "description": "An identifier formatted according to IETF RFC 5646 (language
2693 tag).",
2694                             "pattern": "^[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*$",
2695                             "type": "string"
2696                         },
2697                         {
2698                             "description": "An RFC 5646 language tag.",
2699                             "readOnly": true
2700                         }
2701                     ]
2702                 },
2703                 "value": {
2704                     "description": "Alert subject matter in the indicated language.",
2705                     "maxLength": 255,
2706                     "readOnly": true,
2707                     "type": "string"
2708                 }
2709             },
2710             "type": "object"
2711         },
2712         "minItems": 1,
2713         "readOnly": true,
2714         "type": "array"
2715     },
2716     "originatorid": {
2717         "description": "ID of the creator of the event",
2718         "maxLength": 64,
2719         "readOnly": true,
2720         "type": "string"
2721     },
2722     "n": {
2723         "$ref": "
2724 https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2725 schema.json#/definitions/n"
2726     },
2727     "id": {
2728         "$ref": "
2729 https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-

```

```

2730 schema.json#/definitions/id"
2731     },
2732     "accountid": {
2733         "description": "ID of the account",
2734         "maxLength": 64,
2735         "readOnly": true,
2736         "type": "string"
2737     },
2738     "if": {
2739         "description": "The OCF Interfaces supported by this Resource",
2740         "items": {
2741             "enum": [
2742                 "oic.if.r",
2743                 "oic.if.baseline"
2744             ],
2745             "type": "string",
2746             "maxLength": 64
2747         },
2748         "minItems": 2,
2749         "readOnly": true,
2750         "uniqueItems": true,
2751         "type": "array"
2752     }
2753 },
2754 "type" : "object",
2755 "required": ["category", "timestamp", "originatorid", "severity"]
2756 }
2757 }
2758 }
2759

```

2760 A.10.5 Property definition

2761 Table A.18 defines the Properties that are part of the "oic.r.alert" Resource Type.

2762 **Table A.18 – The Property definitions of the Resource with type "rt" = "oic.r.alert".**

Property name	Value type	Mandatory	Access mode	Description
category	string	Yes	Read Only	Category into which the notification is classified
rt	array: see schema	No	Read Only	Resource Type
severity	integer	Yes	Read Only	RFC 5424 severity of the alert
timestamp	string	Yes	Read Only	An RFC3339 formatted time indicating when the data was observed (e.g.: 2016-02-15T09:19Z, 1996-12-19T16:39:57-08:00)
subject	array: see schema	No	Read Only	Alert subject matter.
originatorid	string	Yes	Read Only	ID of the creator of the event
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
accountid	string	No	Read Only	ID of the account
if	array: see schema	No	Read Only	The OCF Interfaces supported by this Resource

2763 **A.10.6 CRUDN behaviour**

2764 Table A.19 defines the CRUDN operations that are supported on the "oic.r.alert" Resource Type.

2765 **Table A.19 – The CRUDN operations of the Resource with type "rt" = "oic.r.alert".**

Create	Read	Update	Delete	Notify
	get			observe

2766 **A.11 Alert Collection**

2767 **A.11.1 Introduction**

2768 This Resource is a Collection containing instances of Alerts (oic.r.alert).

2769 This is the response using the baseline interface.

2770

2771 **A.11.2 Example URI**

2772 /AlertCollectionResURI

2773 **A.11.3 Resource type**

2774 The Resource Type is defined as: "oic.r.alertcollection".

2775 **A.11.4 OpenAPI 2.0 definition**

```

2776 {
2777   "swagger": "2.0",
2778   "info": {
2779     "title": "Alert Collection",
2780     "version": "2019-03-04",
2781     "license": {
2782       "name": "OCF Data Model License",
2783       "url": "https://openconnectivityfoundation.github.io/core/LICENSE.md",
2784       "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
2785     },
2786     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
2787   },
2788   "schemes": ["http"],
2789   "consumes": ["application/json"],
2790   "produces": ["application/json"],
2791   "paths": {
2792     "/AlertCollectionResURI?if=oic.if.ll" : {
2793       "get": {
2794         "description": "This Resource is a Collection containing instances of Alerts
2795 (oic.r.alert).\nThis is the response using the links list OCF Interface.\n",
2796         "parameters": [
2797           {"$ref": "#/parameters/interface-all"}
2798         ],
2799         "responses": {
2800           "200": {
2801             "description": "",
2802             "x-example": [
2803               {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
2804 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2805               {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
2806 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2807               {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
2808 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2809               {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
2810 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]}
2811             ],
2812             "schema": { "$ref": "#/definitions/AlertCollection-ll" }
2813           }
2814         }
2815       }
2816     }
2817   }

```



```

2816     },
2817     "/AlertCollectionResURI?if=oic.if.b" : {
2818         "get": {
2819             "description": "This Resource is a Collection containing instances of Alerts
2820 (oic.r.alert).\nThis is the response using the Batch interface.\n",
2821             "parameters": [
2822                 {"$ref": "#/parameters/interface-all"}
2823             ],
2824             "responses": {
2825                 "200": {
2826                     "description" : "",
2827                     "x-example": [
2828                         {
2829                             "href": "/Alert1ResURI",
2830                             "rep":{
2831                                 "rt":          ["oic.r.alert"],
2832                                 "accountid":   "MyAccountID",
2833                                 "category":    "MyCategory",
2834                                 "timestamp":   "2018-02-28T08:00:00Z",
2835                                 "originatorid": "MyOriginatorID",
2836                                 "severity": 3,
2837                                 "subject": [{"language":"en-US","value":"System error"}]
2838                             }
2839                         },
2840                         {
2841                             "href": "/Alert2ResURI",
2842                             "rep":{
2843                                 "rt":          ["oic.r.alert"],
2844                                 "accountid":   "MyAccountID",
2845                                 "category":    "MyCategory",
2846                                 "timestamp":   "2018-02-28T08:15:00Z",
2847                                 "originatorid": "MyOriginatorID",
2848                                 "severity": 4,
2849                                 "subject": [{"language":"en-US","value":"Network error"}]
2850                             }
2851                         }
2852                     ],
2853                     "schema": { "$ref": "#/definitions/AlertCollection-b" }
2854                 }
2855             }
2856         },
2857     },
2858     "/AlertCollectionResURI?if=oic.if.baseline" : {
2859         "get": {
2860             "description": "This Resource is a Collection containing instances of Alerts
2861 (oic.r.alert).\nThis is the response using the baseline interface.\n",
2862             "parameters": [
2863                 {"$ref": "#/parameters/interface-all"}
2864             ],
2865             "responses": {
2866                 "200": {
2867                     "description" : "",
2868                     "x-example": {
2869                         "rt":          ["oic.r.alertcollection"],
2870                         "rts":         ["oic.r.alert"],
2871                         "if":          ["oic.if.ll", "oic.if.b", "oic.if.baseline"],
2872                         "links": [
2873                             {"href": "/myAlert1ResURI", "rt": ["oic.r.alert"], "if":
2874 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2875                             {"href": "/myAlert2ResURI", "rt": ["oic.r.alert"], "if":
2876 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2877                             {"href": "/myAlert3ResURI", "rt": ["oic.r.alert"], "if":
2878 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]},
2879                             {"href": "/myAlert4ResURI", "rt": ["oic.r.alert"], "if":
2880 ["oic.if.r","oic.if.baseline"], "eps": [{"ep": "coaps://[fe80::b1d6]:1122"}]}
2881                         ]
2882                     },
2883                     "schema": { "$ref": "#/definitions/AlertCollection-baseline" }
2884                 }
2885             }
2886         }
2887     }

```

```

2887     }
2888   },
2889   "parameters": {
2890     "interface-all" : {
2891       "in" : "query",
2892       "name" : "if",
2893       "type" : "string",
2894       "enum" : ["oic.if.ll", "oic.if.b", "oic.if.baseline"]
2895     }
2896   },
2897   "definitions": {
2898     "AlertCollection-b" : {
2899       "type": "array",
2900       "minItems": 0,
2901       "uniqueItems": true,
2902       "items": {
2903         "type": "object",
2904         "additionalProperties": true,
2905         "properties": {
2906           "href": {
2907             "$ref":
2908 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2909 schema.json#/definitions/href"
2910           },
2911           "rep": {
2912             "$ref":
2913 "http://openconnectivityfoundation.github.io/core/swagger2.0/oic.r.alert.swagger.json#/definitions/A
2914 lert"
2915           }
2916         },
2917         "required": [
2918           "href",
2919           "rep"
2920         ]
2921       }
2922     },
2923     "AlertCollection-baseline" : {
2924       "properties": {
2925         "n": {
2926           "$ref" :
2927 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2928 schema.json#/definitions/n"
2929         },
2930         "id": {
2931           "$ref" :
2932 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
2933 schema.json#/definitions/id"
2934         },
2935         "rt": {
2936           "items": {
2937             "type": "string",
2938             "enum": ["oic.r.alertcollection"],
2939             "maxLength": 64
2940           },
2941           "minItems": 1,
2942           "type": "array",
2943           "uniqueItems": true,
2944           "readOnly": true
2945         },
2946         "rts": {
2947           "items": {
2948             "type": "string",
2949             "enum": ["oic.r.alert"],
2950             "maxLength": 64
2951           },
2952           "minItems": 1,
2953           "type": "array",
2954           "uniqueItems": true,
2955           "readOnly": true
2956         },
2957         "if": {

```

```

2958         "description": "The OCF Interfaces supported by this Resource",
2959         "items": {
2960             "enum": [
2961                 "oic.if.ll",
2962                 "oic.if.b",
2963                 "oic.if.baseline"
2964             ],
2965             "type": "string",
2966             "maxLength": 64
2967         },
2968         "minItems": 3,
2969         "readOnly": true,
2970         "uniqueItems": true,
2971         "type": "array"
2972     },
2973     "links": {
2974         "description": "A set of simple or individual Links.",
2975         "items": {
2976             "$ref": "#/definitions/oic.oic-link"
2977         },
2978         "type": "array"
2979     }
2980 },
2981 "type": "object",
2982 "required": ["rt", "rts", "if", "links"]
2983 },
2984 "AlertCollection-ll" : {
2985     "type": "array",
2986     "items": {
2987         "$ref": "#/definitions/oic.oic-link"
2988     }
2989 },
2990 "oic.oic-link": {
2991     "type": "object",
2992     "properties": {
2993         "anchor": {
2994             "$ref":
2995 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
2996 schema.json#/definitions/anchor"
2997         },
2998         "di": {
2999             "$ref":
3000 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3001 schema.json#/definitions/di"
3002         },
3003         "eps": {
3004             "$ref":
3005 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3006 schema.json#/definitions/eps"
3007         },
3008         "href": {
3009             "$ref":
3010 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3011 schema.json#/definitions/href"
3012         },
3013         "ins": {
3014             "$ref":
3015 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3016 schema.json#/definitions/ins"
3017         },
3018         "p": {
3019             "$ref":
3020 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3021 schema.json#/definitions/p"
3022         },
3023         "rel": {
3024             "$ref":
3025 "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3026 schema.json#/definitions/rel_array"
3027         },
3028         "title": {

```

```

3029         "$ref":
3030         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3031         schema.json#/definitions/title"
3032     },
3033     "type": {
3034         "$ref":
3035         "https://openconnectivityfoundation.github.io/core/schemas/oic.links.properties.core-
3036         schema.json#/definitions/type"
3037     },
3038     "if": {
3039         "description": "The OCF Interfaces supported by the target Resource",
3040         "items": {
3041             "enum": [
3042                 "oic.if.r",
3043                 "oic.if.baseline"
3044             ],
3045             "type": "string",
3046             "maxLength": 64
3047         },
3048         "minItems": 2,
3049         "uniqueItems": true,
3050         "type": "array",
3051         "readOnly": true
3052     },
3053     "rt": {
3054         "description": "Resource Type of the target Resource",
3055         "items": {
3056             "maxLength": 64,
3057             "type": "string",
3058             "enum": ["oic.r.alert"]
3059         },
3060         "minItems": 1,
3061         "type": "array",
3062         "uniqueItems": true,
3063         "readOnly": true
3064     }
3065 },
3066 "required": [
3067     "href",
3068     "rt",
3069     "if"
3070 ]
3071 }
3072 }
3073 }
3074

```

3075 A.11.5 Property definition

3076 Table A.20 defines the Properties that are part of the "oic.r.alertcollection" Resource Type.

3077 **Table A.20 – The Property definitions of the Resource with type "rt" =**
3078 **"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

3079 **A.11.6 CRUDN behaviour**

3080 Table A.21 defines the CRUDN operations that are supported on the "oic.r.alertcollection"
3081 Resource Type.

3082 **Table A.21 – The CRUDN operations of the Resource with type "rt" = "oic.r.alertcollection".**

Create	Read	Update	Delete	Notify
	get			observe

3083 **A.12 software update**

3084 **A.12.1 Introduction**

3085 The Resource performing scheduled software update.

3086 **A.12.2 Example URI**

3087 /softwareupdateResURI

3088 **A.12.3 Resource type**

3089 The Resource Type is defined as: "oic.r.softwareupdate".

3090 **A.12.4 OpenAPI 2.0 definition**

3091 {
3092 "swagger": "2.0",
3093 "info": {

```

3094     "title": "software update",
3095     "version": "20190408",
3096     "license": {
3097         "name": "OCF Data Model License",
3098         "url":
3099     "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LI
3100     CENSE.md",
3101         "x-copyright": "Copyright 2019 Open Connectivity Foundation, Inc. All rights reserved."
3102     },
3103     "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
3104 },
3105     "schemes": ["http"],
3106     "consumes": ["application/json"],
3107     "produces": ["application/json"],
3108     "paths": {
3109         "/softwareupdateResURI" : {
3110             "get": {
3111                 "description": "The Resource performing scheduled software update.",
3112                 "parameters": [
3113                     {"$ref": "#/parameters/interface"}
3114                 ],
3115                 "responses": {
3116                     "200": {
3117                         "description": "Schedule an software update.",
3118                         "x-example":
3119                             {
3120                                 "rt": ["oic.r.softwareupdate"],
3121                                 "if": ["oic.if.rw", "oic.if.baseline"],
3122                                 "nv": "my version",
3123                                 "purl": "https://myvendor/myexampleurl",
3124                                 "swupdateaction": "idle",
3125                                 "swupdatestate" : "idle",
3126                                 "swupdateresult" : 0,
3127                                 "lastupdate" : "2015-01-09T14:30:00Z",
3128                                 "signed" : "vendor",
3129                                 "updatetime" : "2015-01-09T14:30:00Z"
3130                             },
3131                         "schema": { "$ref": "#/definitions/swupdate" }
3132                     }
3133                 }
3134             },
3135             "post": {
3136                 "description": "Mechanism to schedule a start of the software update.",
3137                 "parameters": [
3138                     {"$ref": "#/parameters/interface"},
3139                     {
3140                         "name": "body",
3141                         "in": "body",
3142                         "required": true,
3143                         "schema": { "$ref": "#/definitions/swupdate-update" },
3144                         "x-example":
3145                             {
3146                                 "purl": "https://myvendor/newversion",
3147                                 "swupdateaction": "upgrade",
3148                                 "updatetime" : "2030-01-09T14:30:00Z"
3149                             }
3150                     }
3151                 ],
3152                 "responses": {
3153                     "200": {
3154                         "description": "",
3155                         "x-example":
3156                             {
3157                                 "nv": "my new version",
3158                                 "purl": "https://myvendor/myexampleurl",
3159                                 "swupdateaction": "upgrade",
3160                                 "swupdatestate" : "idle",
3161                                 "swupdateresult" : 0,
3162                                 "lastupdate" : "2015-01-09T14:30:00Z",
3163                                 "signed" : "vendor",
3164                                 "updatetime" : "2030-01-09T14:30:00Z"

```

```

3165         },
3166         "schema": { "$ref": "#/definitions/swupdate" }
3167     }
3168 }
3169 }
3170 }
3171 },
3172 "parameters": {
3173     "interface": {
3174         "in": "query",
3175         "name": "if",
3176         "type": "string",
3177         "enum": ["oic.if.rw", "oic.if.baseline"]
3178     }
3179 },
3180 "definitions": {
3181     "swupdate": {
3182         "properties": {
3183             "rt": {
3184                 "items": {
3185                     "enum": [
3186                         "oic.r.softwareupdate"
3187                     ],
3188                     "type": "string",
3189                     "maxLength": 64
3190                 },
3191                 "minItems": 1,
3192                 "type": "array",
3193                 "readOnly": true,
3194                 "uniqueItems": true
3195             },
3196             "nv": {
3197                 "description": "New available Software version",
3198                 "maxLength": 64,
3199                 "type": "string",
3200                 "readOnly": true
3201             },
3202             "purl": {
3203                 "description": "Source of the software package, might be a HTTPS or CoAPs URL",
3204                 "maxLength": 64,
3205                 "type": "string",
3206                 "format": "uri"
3207             },
3208             "swupdateaction": {
3209                 "description": "Scheduled action to do a software update",
3210                 "maxLength": 64,
3211                 "type": "string",
3212                 "enum": [
3213                     "idle",
3214                     "isac",
3215                     "isvv",
3216                     "upgrade"
3217                 ]
3218             },
3219             "swupdatestate": {
3220                 "description": "State of the software update",
3221                 "readOnly": true,
3222                 "type": "string",
3223                 "enum": [
3224                     "idle",
3225                     "nsa",
3226                     "svv",
3227                     "sva",
3228                     "upgrading"
3229                 ]
3230             },
3231             "swupdateresult": {
3232                 "description": "Result of the software update, list of result codes",
3233                 "readOnly": true,
3234                 "type": "integer"
3235             }

```

```

3236         "lastupdate": {
3237             "description": "Time of the last software update (in RFC3339 format), Initial set on date
3238 of manufacturing",
3239             "readOnly": true,
3240             "maxLength": 64,
3241             "type": "string",
3242             "format": "date-time"
3243         },
3244         "signed": {
3245             "description": "Signage method of the software package, currently the only allowed value
3246 is 'vendor'.",
3247             "readOnly": true,
3248             "type": "string",
3249             "enum": [
3250                 "vendor"
3251             ]
3252         },
3253         "updatetime": {
3254             "description": "Scheduled time (in RFC3339 format) to do action which is specified in
3255 'swupdateaction' Property.",
3256             "maxLength": 64,
3257             "type": "string",
3258             "format": "date-time"
3259         },
3260         "n": {
3261             "$ref":
3262 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3263 schema.json#/definitions/n"
3264         },
3265         "id": {
3266             "$ref":
3267 "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
3268 schema.json#/definitions/id"
3269         },
3270         "if": {
3271             "description": "The interface set supported by this resource",
3272             "items": {
3273                 "enum": [
3274                     "oic.if.rw",
3275                     "oic.if.baseline"
3276                 ],
3277                 "type": "string"
3278             },
3279             "minItems": 2,
3280             "maxItems": 2,
3281             "type": "array",
3282             "readOnly": true,
3283             "uniqueItems": true
3284         }
3285     },
3286     "required": ["purl", "swupdateaction", "swupdatestate", "swupdateresult", "updatetime"]
3287 },
3288 "swupdate-update": {
3289     "properties": {
3290         "purl": {
3291             "$ref": "#/definitions/swupdate/properties/purl"
3292         },
3293         "swupdateaction" : {
3294             "$ref": "#/definitions/swupdate/properties/swupdateaction"
3295         },
3296         "updatetime": {
3297             "$ref": "#/definitions/swupdate/properties/updatetime"
3298         }
3299     },
3300     "required": ["purl", "swupdateaction", "updatetime"]
3301 }
3302 }
3303 }
3304

```


3305 **A.12.5 Property definition**

3306 Table A.22 defines the Properties that are part of the "oic.r.softwareupdate" Resource Type.

3307 **Table A.22 – The Property definitions of the Resource with type "rt" =**
 3308 **"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	

3309 **A.12.6 CRUDN behaviour**

3310 Table A.23 defines the CRUDN operations that are supported on the "oic.r.softwareupdate"
 3311 Resource Type.

3312
3313

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

Create	Read	Update	Delete	Notify
	get	post		observe

3314