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| CHANGE REQUEST | |
| Meeting ID:\* | RDM #48 |
| Source:\* | Cyrille Bareau, Orange, [cyrille.bareau@orange.com](mailto:cyrille.bareau@orange.com)  Marianne Mohali, Orange, [marianne.mohali@orange.com](mailto:marianne.mohali@orange.com) |
| Date:\* | 2020-12-07 |
| Reason for Change/s:\* | See the introduction below |
| CR against: Release\* | Release 4 |
| CR against: WI\* | Active WI-0099  MNT maintenance / < Work Item number(optional)>  Is this a mirror CR? Yes  No  mirror CR number: (Note to Rapporteur - use latest agreed revision)  STE Small Technical Enhancements / < Work Item number (optional)>  Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0023 v.4.6.0 |
| Clauses \* | Modified clauses: 5.2.2, 5.8.2, 6.2.4, 6.4.1, 6.4.4, 6.4.5, 6.4.1, 6.5.2, 6.5.3, 6.5.4, 6.5.5 |
| Type of change: \* | Editorial change  Bug Fix or Correction  Change to existing feature or functionality  New feature or functionality  Only ONE of the above shall be ticked |
| Impacted other TS/TR(s) |  |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES  NO  This CR may break backwards compatibility with the last approved version of the TS? YES  NO |
| Template Version: January 2017 (Do not modify) | |

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## Introduction

This CR proposes to fix missing changes related to previous agreed CRs that we have identified.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### Description rules for Module Classes and Device models

When the Home Appliances Information Model is described based on SDT, the following rules shall be applied:

* Rule 1: CamelCase rule:
* When naming each element, lowerCamelCase shall be used as the Java coding rules [2].
* Rule 2: Rule for description of Action, DataPoint:
* DataPoint shall be used to represent stateless operations. (e.g. powerState of binarySwitch for on/off operations).
* Action shall be used when describing stateful condition, handling unknown internal state conditions (e.g. upVolume/downVolume by increasing/decreasing the audioVolume in steps, handling transactional procedures, or checking integrity using username plus password at the same time).
* Rule 3: Rule for description of DataPoint and Property:
* Non-functional information shall be described as a Property. Functional information shall be described as a DataPoint. (E.g. non-functional information: version, id; functional information: targetTemperature, targetVolume).
* Rule 4: Definition of the Domain:
* The Domains are specified as “org.onem2m.[domain]”, where [domain] is one of the following names: “agriculture”, “city”, “common”, “health”, “home”, “industry”, “railway”, and “vehicular”. The name is chosen according to the domain in which the element is defined.
* The sub-domains for Devices, SubDevices, ModuleClasses and Actions shall be specified as "org.onem2m.[domain].device", “org.onem2m.[domain].subdevice”, “org.onem2m.[domain].moduleclass”, and “org.onem2m.[domain].action” respectively.
* Rule 5: Naming rule for the element:

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 5.8.2 flexNode

This flexContainer specialization is the root for SDT-based Device Management modules.

It is targeted by the *flexNodeLink* attribute of *<flexContainer>* SDT devices (see in 6.2.2 the rules 1-6, 1-7 and 1-8).

Table 5.8.2‑1: Subdevice of flexNode model

|  |  |  |  |
| --- | --- | --- | --- |
| Subdevice Instance Name | Subdevice Name | Multiplicity | Description |
| dmAreaNwkInfo | dmAreaNwkInfo | 0..N | See clause 5.8.10 |

The word ‘SubDevice’ refers to the SDT structure as defined in clause 5.2.1, i.e. a resource that is the child of the root resource (Device, of flexNode here), and that can be the parent of Property and/or Module resources. It is mapped as a <flexContainer> resource (see clause 6.2.7).

Table 5.8.2‑2: Modules of flexNode model

|  |  |  |  |
| --- | --- | --- | --- |
| Module Instance Name | Module Class Name | Multiplicity | Description |
| dmAgent | dmAgent | 0..1 | See clause 5.8.3 |
| dmDeviceInfo | dmDeviceInfo | 1 | See clause 5.8.4 |
| dmDataModelIO | dmDataModelIO | 0..N | See clause 5.8.5 |
| dmFirmware | dmFirmware | 1..N | See clause 5.8.6. |
| dmSoftware | dmSoftware | 0..N | See clause 5.8.7 |
| dmEventLog | dmEventLog | 0..N | See clause 5.8.8 |
| dmPackage | dmPackage | 0..N | See clause 5.8.9 |
| battery | battery | 0..N | See clause 5.3.1.10 |
| dmCapability | dmCapability | 0..N | See clause 5.8.12 |
| dmStorage | dmStorage | 0..N | See clause 5.8.13 |

NOTE: The current list of modules for Device Management is not fixed and can evolve with new optional features.

Table 5.8.2-3: Resource Specific Attributes of [*flexNode*] resource

| Attributes of  *[flexNode]* | Multiplicity | RW/  RO/  WO | Description | *[flexNodeAnnc]* attributes |
| --- | --- | --- | --- | --- |
| *nodeID* | 1 | RW | The M2M-Node-ID of the node which is represented by this *<flexNode>* resource. |  |
| *nodeLink* | 0..1 | RW | The resource identifier of a <node> resource, if any, that stores the node specific information of the NoDN on which the interworked service represented by this [flexNode]> resource resides. |  |
| *hostedAELinks* | 0..1(L) | RO | This attribute allows to find the AEs that are represented by this [*flexNode*] resource, if any. The attribute shall contain a list of resource identifiers of *<AE>* resources representing the ADN-Aes that are represented by the current [*flexNode*] resource. | OA |
| *hostedServiceLinks* | 0..1(L) | RO | This attribute allows to find SDT device <*flexContainer>* resources that havebeen created to represent services hosted on a device (ADN or NoDN proxied by an IPE), the device being represented by this [*flexNode*] resource.  If the device hosts a set of services represented by SDT device <*flexContainer>s,* then the attribute shall contain the list of resource identifiers of these <*flexContainer>* resources. | OA |

If the <flexContainer>(s) that are listed in the *hostedServiceLinks* attribute have a *nodeLink* attribute that points to a <node>, then :

- if there are more than one such <flexContainer>, they shall all have the same *nodeLink* attribute value, and

- this [flexNode] resource shall have a *nodeLink* attribute with the same value, and shall have the same nodeID attribute as this <node> resource.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.2.4 Resource mapping for Action

Actions defined as part of a ModuleClass model shall be mapped to the specializations of a <flexContainer> resource. The following rules shall be applied:

* Rule 3-1: The *containerDefinition* attribute shall be set according to 6.4.4.
* Rule 3-2: When the Action supports any 'Arguments' or 'Return Type', they are mapped to [customizedAttribute] with its variable names (short names are given in clause 6.3.4).
* Rule 3-3: XSD file for each Action shall be named according to 6.5.4.
* Rule 3-4: The Action shall be triggered:
  + by updating at least one of the Arguments custom attributes with any value, if the action has at least one argument, or
  + by updating the <flexContainer> resource with *empty content* if it has no argument
* Rule 3-5: The *resourceName* attribute for each Action model that appears as a child of a ModuleClass model shall be CREATED with the value set to “Action name”.
* Rule 3-6: If an action returns a value that is of a complex data type, i.e. not one of the standard scalar types, then this value shall be encoded as a JSON structure and returned serialized in an xs:string.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.4.1 Introduction

Each specialization has a containerDefinition attribute which can be used as a unique identifier and contains the information of the resource. In this clause, the detailed values of containerDefinition attributes in every specializations for the harmonized information model are given.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 5 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.4.4 Actions

Depending on the domain, the containerDefinition attribute of specializations for actions shall have the values

that comply with the following rule.

* Rule: “org.onem2m.[domain].action.[action name]”, where [domain] is one of the following names: “agriculture”, “city”, “common”, “health”, “home”, “industry”, “railway”, and “vehicular”. The name is chosen according to the domain in which the action is defined.

For example, the containerDefinition attribute of the specialization for activateClockTimer in the timer module class of the “common” domain shall be “org.onem2m.common.action.activateClocktimer”.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 5 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 6 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.4.5 SubDevices

Depending on the domain, the containerDefinition attribute of specializations for sub-devices shall have the values that comply with the following rule.

- Rule: “org.onem2m.[domain].subdevice.[subDevice name]”, where [domain] is one of the following names: “agriculture”, “city”, “common”, “health”, “home”, “industry”, “railway”, and “vehicular”. The name is chosen according to the domain in which the sub-device is defined.

For example, the containerDefinition attribute of specialization for subDevicePowerOutlet of the “common” domain shall be “org.onem2m.common.subdevice.subDevicePowerOutlet”.

The containerDefinition of the [dmAreaNwkInfo] model defined in clause 5.8.10. shall be “org.onem2m.devicemanagement.areaNwkInfo”.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 6 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of change 7 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.5.2 XSD definitions for Device models

The XSD definitions for Device models are specified upon the following rule.

* Rule: [Domain Prefix]-[device name]-v<TS-version>.xsd where the string '<TS-version>' shall be interpreted as the version of the present document

For example, the XSD definition for deviceAirConditioner specified in TS-0023 v4.3.0 shall be “HOD-deviceAirConditioner-v4\_3\_0.xsd”

### 6.5.3 XSD definitions for ModuleClass

The XSD definitions for ModuleClass are specified upon the following rule.

* Rule: [Domain Prefix]-mod-[ModuleClass name]-v<TS-version>.xsd where the string '<TS-version>' shall be interpreted as the version of the present document

For example, the XSD definition for alarmSpeaker specified in TS-0023 v4.3.0 shall be “COD-mod-alarmSpeaker-v4\_3\_0.xsd”

### 6.5.4 XSD definitions for Action

The XSD definitions for Actions are specified upon the following rule.

* Rule: [Domain Prefix]-act-[action name]-v<TS-version>.xsd where the string '<TS-version>' shall be interpreted as the version of the present document

For example, the XSD definition for activateClockTimer specified in TS-0023 v4.3.0 shall be “HOD-act- activateClockTimer -v4\_3\_0.xsd”.

### 6.5.5 XSD definitions for SubDevices

The XSD definitions for SubDevices are specified upon the following rule.

* Rule: [Domain Prefix]-[SubDevice name]-v<TS-version>.xsd where the string '<TS-version>' shall be interpreted as the version of the present document.

For example, the XSD definition for subDeviceCuff specified in TS-0023 v4.3.0 shall be “COD-subDeviceCuff-v4\_3\_0.xsd”.

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of change 7 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*