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| CHANGE REQUEST | |
| Meeting ID:\* | SDS #52 |
| Source:\* | Andreas Kraft, DT, [A.Kraft@telekom.de](mailto:A.Kraft@telekom.de)  Andreas Neubacher, DT, [Andreas.Neubacher@magenta.at](mailto:Andreas.Neubacher@magenta.at) |
| Date:\* | 2022-01-20 |
| Reason for Change/s:\* | Adding [credentials] specialization to TS-0022 (TS-0001) |
| CR against: Release\* | Release 5 |
| CR against: WI\* | Active WI-xxxx  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-0001, V4.13.0 |
| Clauses \* | TS-0001: 9.6.1.2.1, 9.6.18 |
| 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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GUIDELINES for Change Requests:

Provide an informative introduction containing the problem(s) being solved, and a summary list of proposals.

Each CR should contain changes related to only one particular issue/problem.

In case of a correction, and the change apply to previous releases, a separate “mirror CR” should be posted at the same time of this CR

Mirror CR: applies only when the text, including clause numbering are exactly the same.

Companion CR: applies when the change means the same but the baselines differ in some way (e.g. clause number).

Follow the principle of completeness, where all changes related to the issue or problem within a deliverable are simultaneously proposed to be made E.g. A change impacting 5 tables should not only include a proposal to change only 3 tables. Includes any changes to references, definitions, and acronyms in the same deliverable.

Follow the drafting rules.

All pictures must be editable.

Check spelling and grammar to the extent practicable.

Use Change bars for modifications.

The change should include the current and surrounding clauses to clearly show where a change is located and to provide technical context of the proposed change. Additions of complete clauses need not show surrounding clauses as long as the proposed clause number clearly shows where the new clause is proposed to be located.

Multiple changes in a single CR shall be clearly separated by horizontal lines with embedded text such as, start of change 1, end of change 1, start of new clause, end of new clause.

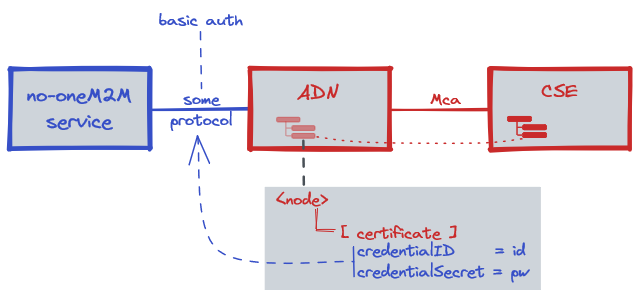
When subsequent changes are made to content of a CR, then the accepted version should not show changes over changes. The accepted version of the CR should only show changes relative to the baseline approved text.

Introduction

This CR proposes a new <mgmtObj> specialization to store general credentials for a device.

In addition to, for example, network identification and authentication, a device might also need credentials to authenticate with third party components such as message broker or an additional non-oneM2M backend components which are out-of-scope of the common oneM2M Mca communication specification. Beside the already available specializations, for example for OAuth2, storing simple username/password combinations or tokens are currently not supported. Though it is recommended to utilize more modern authentication schemes, basic or token-based authentication is still widely used in legacy installations, and in installations that cannot afford or utilize an operated trust infrastructure.

The following diagram shows the general flow. An AE on an ADN requires credentials to access services on a non-oneM2M service. A CSE stores the credentials for that ADN together with other management information and makes them available via Mca. The usual oneM2M security and access methods do apply here, though an implementation may choose to store credentials in a more secure way.



A similar <flexContainer> specialization is specified in TS-0023, 5.3.1.27 “credentials”. That specialization may be added or referenced to <flexContainer> - based device management in TS-0023 to provide the same functionality as well. This would be for another CR.

This is a mirror CR for SDS-2021-0185R01-Adding\_[credentials]\_specialization\_to\_TS-0022 for TS-0004

Change 1 provides an update of TS-0001, Table 9.6.1.2.1-1: <mgmtObj> Specializations.

Question: The TS-0022 mgmtObj specializations are not listed in TS-0001, Table 9.6.18-1: Child resources of <node> resource. But where are they, e.g. to state the cardinality.

**R01**

* Added change 2: Add to table 9.6.18-1

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of Change 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 9.6.1.2.1 Specializations of <*mgmtObj*>

Table 9.6.1.2.1-1 lists specializations of the *<mgmtObj>* resource type in which the *mgmtDefinition* attribute contains an enumerated value that provides further definition of the resource.

Table 9.6.1.2.1-1: <*mgmtObj*> Specializations

| Resource specialization | Short Description | Child Resource Types | Parent Resource Types | Clause |
| --- | --- | --- | --- | --- |
| *activeCmdhPolicy* | Provides a link to the currently active set of CMDH policies | None specified | *node* | D.12.1 |
| *areaNwkDeviceInfo* | Provides information about the Node in the M2M Area Network | *subscription* | *node* | D.6 |
| *areaNwkInfo* | Describes the list of Nodes attached behind the MN node and its physical or underlying relation among the nodes in the M2M Area Network | *subscription* | *node* | D.5 |
| *battery* | Provides the power information of the node (e.g. remaining battery charge) | *subscription* | *node* | D.7 |
| *cmdhBuffer* | Defines CMDH buffer usage limits | *subscription* | *cmdhPolicy* | D.12.8 |
| *cmdhDefaults* | Defines CMDH default values | *cmdhDefEcValue, cmdhEcDefParamValues*  *subscription* | *cmdhPolicy* | D.12.2 |
| *cmdhEcDefParamValues* | Represent a specific set of default values for the CMDH related parameters | *subscription* | *cmdhDefaults* | D.12.4 |
| *cmdhDefEcValue* | Defines a value for the ***Event Category*** parameter of an incoming request when it is not defined | *subscription* | *cmdhDefaults* | D.12.3 |
| *cmdhLimits* | Defines limits for CMDH related parameter values | *subscription* | *cmdhPolicy* | D.12.5 |
| *cmdhNetworkAccessRules* | Defines rules for the usage of underlying networks | *cmdhNwAccessRule,*  *subscription* | *cmdhPolicy* | D.12.6 |
| *cmdhNwAccessRule* | Defines a rule for the usage of underlying networks | *subscription* | *cmdhNetworkAccessRules* | D.12.7 |
| *cmdhPolicy* | A set of rules defining which CMDH parameters will be used by default | *cmdhDefaults, cmdhLimits, cmdhNetworkAccessRules, cmdhBuffer,*  *subscription* | *node* | D.12 |
| *deviceCapability* | Contains information about the capability supported by the Node | *subscription* | *node* | D.9 |
| *deviceInfo* | Contains information about the identity, manufacturer and model number of the device | *subscription* | *node* | D.8 |
| *eventLog* | Contains information about the log of events of the Node | *subscription* | *node* | D.11 |
| *firmware* | Provides information about the firmware of the Node (e.g. name, version) | *subscription* | *node* | D.2 |
| *memory* | Provides the memory (typically RAM) information of the node (e.g. the amount of total volatile memory) | *subscription* | *node* | D.4 |
| *reboot* | Used to reboot or reset the Node | *subscription* | *node* | D.10 |
| *software* | Provides information about the software of the Node | *subscription* | *node* | D.3 |
| *registration* | To convey the service layer configuration information | *subscription* | *node* | 7.1 in [10] |
| *dataCollection* | To convey the application configuration information | *subscription* | *node* | 7.2 in [10] |
| *authenticationProfile* | To convey the configuration information regarding establishing mutually-authenticated secure communications | *subscription* | *node* | 7.1 in [10] |
| *myCertFileCred* | To configure a certificate or certificate chain | *subscription* | *authenticationProfile* | 7.1 in [10] |
| *trustAnchorCred* | To identify a trust anchor certificate for validation of certificates | *subscription* | *authenticationProfile* | 7.1 in [10] |
| *MAFClientRegCfg* | To convey instructions regarding the MAF Client Registration procedure | *subscription* | *authenticationProfile* | 7.1 in [10] |
| *wifiClient* | To set up configuration of WiFi connection on the client device. | *subscription* | *node* | 7.1 in [10] |
| *storage* | To manage available storage memory on the device | *subscription* | *node* | D.13 |
| *OAuth2Authentication* | To store access token and refresh token used in OAuth2 security protocol | *subscription* | *node* | 7.1 in [10] |
| *credentials* | To store credentials on the client device for authentications | *Subscription* | *node* | 7.1 in [10] |

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Change 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of Change 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 9.6.18 Resource Type *node*

The *<node>* resource represents specific information that provides properties of an M2M Node that can be utilized by other oneM2M operations. The *<node>* resource has specialization of the *<mgmtObj>* as its child resources. These resources represent the Node's context information (e.g. memory and battery), network topology, device information, device capability etc. The specialized *<mgmtObj>* resources are used to perform management of the Node.

This node specific information stored in these resources such as *[memory]* and *[battery]* can be obtained either by the existing device management technologies (OMA DM [i.3], BBF TR-069 [i.2]) or any other way (e.g. JNI [i.18]).

For the case when the *<node>* resource belongs to an ADN, please see figure 9.6.18-1 in conjunction with the description of *nodeLink* attribute in the *<AE>* resource (clause 9.6.5).

For the case when the *<node>* resource belongs to an NoDN and the applications that correspond to interworked devices are represented by <*flexContainer>s* please see figure 9.6.18-2.



Figure 9.6.18-1: Relationship between IN/MN and ADN



Figure 9.6.18-2: Relationship between IPE, interworked Services and NoDN

The *<node>* resource shall contain the child resources specified in table 9.6.18-1.

Table 9.6.18-1: Child resources of *<node>* resource

| Child Resources of *<node>* | Child Resource Type | Multiplicity | Description | *<nodeAnnc>* Child Resource Type |
| --- | --- | --- | --- | --- |
| *[variable]* | *<semanticDescriptor>* | 0..n | See clause 9.6.30 | *<semanticDescriptor>, <semanticDescriptorAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*memory]* | 0..1 | This resource provides the memory (typically RAM) information of the node. (E.g. the amount of total volatile memory), See clause D.4. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*battery]* | 0..n | The resource provides the power information of the node. (E.g. remaining battery charge). See clause D.7. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*areaNwkInfo]* | 0..n | This resource describes the list of Nodes attached behind the MN/ASN node and its physical or underlying relation among the nodes in the M2M Area Network. This attribute is defined in case the Node is MN/ASN. See clause D.5. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*areaNwkDeviceInfo]* | 0..n | This resource describes the information about the Node in the M2M Area Network. See clause D.6. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*firmware]* | *0..n* | This resource describes the information about the firmware of the Node include name, version etc. See clause D.2. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*software]* | 0..n | This resource describes the information about the software of the Node. See clause D.3. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*deviceInfo]* | 0..n | The resource contains information about the identity, manufacturer and model number of the device. See clause D.8. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*deviceCapability]* | 0..n | The resource contains information about the capability supported by the Node. See clause D.9. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*reboot]* | 0..1 | The resource is the place to reboot or reset the Node. See clause D.10. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization [*eventLog]* | 0..1 | The resource contains the information about the log of events of the Node. See clause D.11. | *<mgmtObjAnnc>* |
| *[variable]* | *<mgmtObj>* as defined in the specialization *[cmdhPolicy]* | 0..n | The resource(s) contain(s) information about CMDH policies that are applicable to the CMDH processing on the CSE hosted on the node represented by this *<node>* resource and identified by the *hostedCSELink* attribute of this *<node>* resource. See clause D.12. | NA |
| *[variable]* | *<mgmtObj>* as defined in the specialization *[activeCmdhPolicy]* | 0..1 | This resource defines which of the present *[cmdhPolicy]* resource(s) shall be active for the CMDH processing on the CSE hosted on the node represented by this *<node>* resource and identified by the *hostedCSELink* attribute of this *<node>* resource. See clause D.12. | NA |
| *[variable]* | *<mgmtObj>* as defined in the specialization *[credential]* | 0..n | The resource(s) store(s) credentials for services accessed by the Node. | NA |
| *[variable]* | *<subscription>* | 0..n | See clause 9.6.8. | *<subscription>* |
| *[variable]* | *<schedule>* | 0..n | See clause 9.6.9. | *<scheduleAnnc>* |
| *[variable]* | *<transaction>* | 0..n | See clause 9.6.48 | *<transaction>* |
| *[variable]* | *<action>* | 0..n | See clause 9.6.61 | *None* |

The *<node>* resource shall contain the attributes specified in table 9.6.18-2.

Table 9.6.18-2: Attributes of *<node>* resource

| Attributes of  *<node>* | Multiplicity | RW/  RO/  WO | Description | *<nodeAnnc>* attributes |
| --- | --- | --- | --- | --- |
| *resourceType* | 1 | RO | See clause 9.6.1.3. | NA |
| *resourceID* | 1 | RO | See clause 9.6.1.3. | NA |
| *resourceName* | 1 | WO | See clause 9.6.1.3. | NA |
| *parentID* | 1 | RO | See clause 9.6.1.3. | NA |
| *expirationTime* | 1 | RW | See clause 9.6.1.3. | MA |
| *accessControlPolicyIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *creationTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *labels* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *announceTo* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *announcedAttribute* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *announceSyncType* | 0..1 | RW | See clause 9.6.1.3. | MA |
| *dynamicAuthorizationConsultationIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | OA |
| *custodian* | 0..1 | RW | See clause 9.6.1.3 | NA |
| *nodeID* | 1 | RW | The M2M-Node-ID of the node which is represented by this *<node>* resource. | MA |
| *nodeType* | 0..1 | RW | Indicates the type of node.  It shall have one of the following values:   * IN * MN * ASN * ADN * NoDN­­ * UNSPECIFIED | OA |
| *hostedCSELink* | 0..1 | RW | This attribute allows to find the <CSEBase> or <remoteCSE> resource representing the CSE that is residing on the node that is represented by this <*node*> resource. The attribute contains the resource ID of a resource where all of the following applies:   * The resource is a *<CSEBase>* resource or a *<remoteCSE>* resource. * The resource represents the CSE which resides on the specific node that is represented by the current *<node>* resource.   In case the node that is represented by this <node> resource does not contain a CSE, this attribute shall not be present. | OA |
| *hostedAELinks* | 0..1(L) | RW | This attribute allows to find the AEs hosted by the node that is represented by this <*node*> resource. The attribute shall contain a list of resource identifiers of *<AE>* resources representing the ADN-AEs residing on the node that is represented by the current *<node>* resource.  In case the node that is represented by this <node> resource does not contain an AE, this attribute shall not be present. | OA |
| *hostedServiceLinks* | 0..1(L) | RW | This attribute allows to find <*flexContainer> resources that have* been created by an IPE to represent services hosted on a NoDN, the NoDN being represented by this <*node*> resource.  If the NoDN hosts a set of services represented by <*flexContainer>s,* then the attribute shall contain the list of resource identifiers of these <*flexContainer>* resources.  In case the node that is represented by this <*node*> resource does not contain a  service that is represented by a <*flexContainer>,* this attribute shall not be present. | OA |
| *mgmtClientAddress* | 0..1 | RW | Represents the physical address of management client of the node which is represented by this <node> resource.  This attribute is absent if management server is able to acquire the physical address of the management client. | OA |
| *roamingStatus* | 0..1 | RO | Indicates if the M2M Node is currently roaming from the perspective of the underlying network.  The allowed values are "Yes" or "No". | OA |
| *networkID* | 0..1 | RO | Configured with the identity of the underlying network which the M2M Node is currently attached to. | OA |

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Change 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*