

# ETSI TS 103 093 V1.1.1 (2012-05)



**Machine-to-Machine communications (M2M);  
BBF TR-069 compatible Management Objects for ETSI M2M**

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**Reference**

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**Keywords**

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## Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Machine-to-Machine communications (M2M).

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# 1 Scope

The present document contains BBF TR-069 compatible Data Model for ETSI M2M.

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## 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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### 2.1 Normative references

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 102 690: "Machine-to-Machine communications (M2M); Functional architecture".
- [2] ETSI TS 102 921: "Machine-to-Machine communications (M2M); mIa, dIa and mId interfaces".
- [3] BBF: TR-069, CPE WAN Management Protocol, Issue 1, Amendment 4, July 2011, Protocol version 1.3.

NOTE: Available at [http://www.broadband-forum.org/technical/download/TR-106\\_Amendment-4.pdf](http://www.broadband-forum.org/technical/download/TR-106_Amendment-4.pdf).

- [4] BBF: TR-106 Data Model Template for TR-069-Enabled Devices, Issue 1, Amendment 6, July 2011.

NOTE: Available at [http://www.broadband-forum.org/technical/download/TR-106\\_Amendment-6.pdf](http://www.broadband-forum.org/technical/download/TR-106_Amendment-6.pdf).

- [5] BBF: TR-181 Device Data Model for TR-069, Issue 2.
- [6] IETF/RFC 3986: Uniform Resource Identifier (URI): Generic Syntax. .
- [7] POSIX.1-2008: The Open Group Technical Standard Base Specifications, Issue 7.

### 2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Liaison Statement from BBF to ETSI TC M2M. December 02nd 2011.Document ETSI M2M(12)19-011-ETSI-M2M-Service-TR-069-Data-Model.
- [i.2] ETSI TR 102 725: "Machine to Machine Communications (M2M); Definitions".

NOTE: Explanations on the acronyms and abbreviations used in the present document can be found in TR 102 725.

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## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 102 725 [i.2] apply.

### 3.2 Symbols

For the purposes of the present document, the symbols given in TR 102 725 [i.2] apply.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 102 725 [i.2] apply.

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## 4 General principles

In its TR-069 [3] the BroadBand Forum specifies a protocol for communication between a CPE (Customer Premises Equipment) and an ACS (Auto-Configuration Server).

Any TR-069 compliant device (the CPE) has to follow the data model as described in the TR-106 [4] and TR-181 [5].

ETSI M2M defines a Device Management function that allows to remotely configure the M2M Devices by using already existing Device Management protocols (e.g. BBF-TR-069, OMA-DM, etc.). Due to the RESTfull nature of the interface with the M2M Applications, some ETSI Management Objects are specified and modelled as REST resources in [1].

Some of these ETSI resources may be mapped on already existing Data Models / Management Objects as defined by BBF or/and OMA. The corresponding mapping rules are specified in [2].

Some other resources do not correspond to any existing Data Models/Management Objects as defined by BBF or/and OMA. The present document defines the corresponding BBF-TR-069 compatible Data Model.

The data model for a TR-069 enabled device has to follow a common set of requirements (see in the TR-181 [5]). A data hierarchy is specified based on a single Root Object which is called "Device". Each Management Object is a sub-element of this Root object.

Broadband Forum decided to implement the ETSI Management Objects at root level of the tree. It means that the ETSI Management Objects are directly implemented at "Device" level.

The 3 ETSI Management Objects (etsiScI Mo, etsiAreaNwkInfo, and etsiAreaNwkDeviceInfo) are gathered together in one single ETSI M2M Management Object.

When a data structure is represented by comma separated list of type "string", if a comma is contained in an item of such a list, the comma shall be escaped by using '\,'.

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## 5 IM2ETSMservice: 1.0 Data Model

NOTE: The data model contained in table 1 is a Broadband Forum work and it is still a work in progress (as mentioned by BBF in a LS sent to ETSI TC M2M referenced in [i.1]).

The exact mapping between the attributes and sub-resources of the ETSI resource and the elements of table 1 is specified in [2], annex E.

Table 1: BBF Data Model for ETSI M2M Management Objects

Name	Type	Write	Description	Object default	Version
Device.ETSIM2M.	object	-	The <i>ETSIM2M</i> object represents the management object for the Remote Entity Functions (REM) functions defined in the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ).	-	2.99
SCLNumberOfEntries	unsignedInt	-	The number of entries in the <i>SCL</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.	object	W	This object represents an instance of a Service Capability Layer (SCL) for a M2M device or gateway. The <i>SCL</i> MAY be maintained by the ACS or by the CPE. When the <i>SCL</i> provides the administration of an SCL that is represented as a <i>SoftwareModules.ExecutionUnit</i> the <i>SCL</i> is maintained in the <i>SoftwareModules.ExecutionUnit.{i}.References</i> parameter. Clause 5.1.2 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) describes the high level event flows for SCL registration. Clause 9.3.2.6.2 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) describes the creation/registration of SCLs. Clause 9.3.2.6.4 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) describes the update/re-registration of SCLs. Clause 9.3.2.6.5 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) describes the deletion/deregistration of SCLs. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries. At most one enabled entry in this table can exist with a given value for <i>SCLID</i> .	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. <i>Alias</i> provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the <i>Alias</i> -based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4 [3]</a> and described in Appendix II/ <a href="#">TR-069a4 [3]</a> , the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
AnnouncedToSCLList	string	W	Comma-separated list of strings. The list represents an unordered set of URIs (RFC 3986 [6]). A list item is a URI string that represents a SCL to which this SCL will announce original (local) resources.	-	2.99

Name	Type	Write	Description	Object default	Version
			The AnnouncedToSCL has an interest in the discovery of the local resource. Clause 9.2.1.14 Announced Resource of the M2M Functional Architecture ( <a href="#">ETSIM2MFA</a> [1]) provides a description of this behaviour of an Announced Resource. Clause 9.3.2.28 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA</a> [1]) and Clause 7.3.2.7 of the M2M mla, dla and mld Interfaces ( <a href="#">ETSIM2MInterfaces</a> [2]) describes the process of announcing and denouncing of resources within a ETSIM2M.SCL.		
SAFPolicySetNumberOfEntries	unsignedInt	-	The number of entries in the <i>SAFPolicySet</i> table.	-	2.99
AreaNwkInstanceNumberOfEntries	unsignedInt	-	The number of entries in the <i>AreaNwkInstance</i> table.	-	2.99
AreaNwkDeviceInfoInstanceNumberOfEntries	unsignedInt	-	The number of entries in the <i>AreaNwkDeviceInfoInstance</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.Discovery.	object	-	This object is represents the administration properties used when a NSCL requests discovery of resources within the ETSIM2M.SCL. Clause 9.3.2.27 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA</a> [1]) describes the process of discovery of resources within a ETSIM2M.SCL.	-	2.99
MaxNumberOfDiscovRecords	unsignedInt	W	The maximum number of URIs (RFC 3986 [6]) for discovered resources contained in a discovery result. This parameter and the <i>MaxSizeOfDiscovAnswer</i> parameter are mutually exclusive in that a result can be limited due to the bounds of either parameter. A value of 0 indicates that the SCL does not have a limit for this parameter.	-	2.99
MaxSizeOfDiscovAnswer	unsignedInt	W	The maximum size in bytes of the Discovery Answer. This parameter and the <i>MaxNumberOfDiscovRecords</i> parameter are mutually exclusive in that a result can be limited due to the bounds of either parameter. A value of 0 indicates that the SCL does not have a limit for this parameter.	-	2.99
Device.ETSIM2M.SCL.{i}.Reregistration.	object	-	This object represents the properties and status necessary for a SCL to reregister with one or more NSCLs.	-	2.99
RegTargetNSCLList	string	W	Comma-separated list of strings. The list represents a priority ordered set of URIs (RFC 3986 [6]). The item that is first in the list has the highest priority. A list item is a URI (RFC 3986 [6]) string that represents a NSCL that this SCL can use in order to attempt registration. When modified the contents of this parameter replace the <i>RegTargetNSCLList</i> received during the bootstrap procedure.	-	2.99



Name	Type	Write	Description	Object default	Version
RegSearchStrings	string	W	Comma-separated list of strings. The list represents the string tokens used as keys when searching for this SCL instance. Clauses 9.2.3.6.2 and 9.2.3.6.4 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA</a> [1]) describe the usage for this parameter.	-	2.99
RegAccessRightID	string	W	URI (RFC 3986 [6]) that represents the identifier of the access right resource. The value of this parameter is maintained by the NSCL and used by the SCL as a default access right identifier for re-registration to NSCLs.	-	2.99
RegExpirationDuration	long	W	The duration, in <i>seconds</i> , that the SCL will use in its next re-registration attempt. Any negative value represents an infinite duration.	-1	2.99
Reregistration	boolean	W	The value of this parameter is not part of the device configuration and is always <i>false</i> when read. When set to <i>true</i> , triggers an immediate re-registration action where the SCL re-registers with the SCLs in the <i>RegTargetNSCLList</i> .	-	2.99
Device.ETSIM2M.SCL.{i}.Reregistration.ActionStatus.	object	-	This object represents the status of the Reregistration action.	-	2.99
Progress	unsignedInt-[0:100]	-	The progress, in <i>percent</i> , of the Reregistration action. The progress is measured from 0 % to - 100 %. A value of 0 indicates that the action has not started. A value of 100 indicates that the action has completed.	-	2.99
FinalStatus	string	-	The completion status of the Reregistration operation. Enumeration of: <i>SUCCESS</i> <i>FAILURE</i>	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.	object	W	This object describes the parameters necessary to administer the store-and-forward (SAF) handling policies applied to requests to access remotely hosted resources. Policies are described by instances of <i>SAFPolicySet</i> . Which instances of <i>SAFPolicySet</i> is used by the SCL is determined by the <i>PolicyScope</i> parameter. Clause 9.3.1.5 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA</a> [1]) and Clause 7.3.1.2.2 of the M2M mla, dla and mld Interfaces ( <a href="#">ETSIM2MInterfaces</a> [2]) describe the behaviour for SAF processing. There is at most one <i>SAFPolicySet</i> instance with the <i>PolicyScope</i> containing a specific application id (APP-ID) URI value within the list. There is exactly one <i>SAFPolicySet</i> instance with a <i>PolicyScope</i> value of "default". At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99

Name	Type	Write	Description	Object default	Version
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/TR-069a4 [3] and described in Appendix II/TR-069a4 [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
PolicyScope	string	W	Comma-separated list of strings. The parameter defines the scope of the policies contained in this instance of a <i>SAFPolicySet</i> . The parameter value is: a list of unordered set of URIs (RFC 3986 [6]) that represents an M2M application id (APP-ID) the value of "default" an empty string When this parameter is set to a list of application id (APP-ID) URIs (RFC 3986 [6]), the scope indicates that the policies are applicable to requests coming from any specific application on that list. When this parameter is set to a string with the value "default", the scope indicates that the policies are the default policies for this ETSIM2M.SCL. When this parameter is set to an empty string, the value represents an unknown <i>SAFPolicySet</i> and the <i>SAFPolicySet</i> is not to be used.	<Empty>	2.99
ANPPolicyNumberOfEntries	unsignedInt	-	The number of entries in the <i>ANPPolicy</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.ANPPolicy.{i}	object	W	This table contains the SAF-handling policies which are controlled by the Access Network Provider(s). At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries. At most one enabled entry in this table can exist with a given value for <i>ANName</i> .	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99

Name	Type	Write	Description	Object default	Version
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
ANName	string	W	This parameter is the name of the access network provider and used to determine for which access network the policies defined in the <i>ANPPolicy</i> table will apply.	<Empty>	2.99
BlockPeriodNumberOfEntries	unsignedInt	-	The number of entries in the <i>BlockPeriod</i> table.	-	2.99
RCATScheduleNumberOfEntries	unsignedInt	-	The number of entries in the <i>RCATSchedule</i> table.	-	2.99
Device.ETSIM2M.SCL_{i}.SAFPolicySet_{i}.ANPPolicy_{i}.BlockPeriod_{i}	object	W	This table contains a list of block periods for a <i>ANPPolicy</i> . A block period defines how long the device will wait before re-trying to establish connectivity via the access network associated with the policy's <i>ANName</i> parameter after the previous attempt has failed. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99

Name	Type	Write	Description	Object default	Version
FailedAttempts	unsignedInt	W	Number of consecutively failed access attempts for which the <i>BlockDuration</i> will be used to block the next access attempt. The SCL will apply the <i>BlockPeriod</i> entry with the largest number of consecutive failed attempts that is smaller or equal to the actual number of consecutive failed attempts.	0	2.99
BlockDuration	long	W	The duration, in <i>seconds</i> , to which to block further access attempts.	0	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.ANPPolicy.{i}.RCATSchedule.{i}.	object	W	This table contains a list of Request Category (RCAT) schedule policy items for defining when it is appropriate to use the access network associated with the <i>ANName</i> . parameter value for processing requests of specific RCAT values. The combination of all instances of the <i>AbsTimeSpan</i> along with the <i>Schedules</i> parameter makes up the RCAT schedule. The <i>Schedules</i> parameter defines a recurrence of the schedule and the <i>AbsTimeSpan</i> , if present, places constraints on the schedule recurrence. Processing behaviour for the use of RCAT Schedules is defined in Clause 7.3.1.2.2.1 of the M2M mla, dla and mld Interfaces ( <a href="#">ETSIM2MInterfaces</a> [2]) document. The instance is uniquely identified by the RCATList. In addition, the value of an item within the RCATList is unique across all instances of the <i>RCATSchedule</i> . At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in (Section 3.6.1/ <a href="#">TR-069a4</a> [3]) and described in (Appendix II/ <a href="#">TR-069a4</a> [3]), the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
RCATList	string	W	Comma-separated list of strings. The list is a set of RCATs. An RCAT is a string that represents a request category used for policy enforcement for access to a provider's access network.	<Empty>	2.99

Name	Type	Write	Description	Object default	Version
Schedules	string	W	Comma-separated list of strings. The list is a set of schedule strings. A <i>Schedules</i> string is a string formatted according to the date and time fields defined CRONTAB input file definition in (POSIXBase [7]). The <i>Schedules</i> is used to set the recurrence of the schedule. Note the command field is not used in this definition and any whitespace or comma characters within a Schedule string MUST be escaped using percent as defined in Section 3.2.3/TR-106a5 [4] Example of CRONTAB string: "%200-6%20*%20*%201-5" would mean the period from 0:00h to 6:00h (inclusive) on any week day (Monday through Friday) "%2022-2%2C,0-4%20*%20*%201-5" would mean the period from 22:00h to 04:00h on any week day (Monday through Friday)	<Empty>	2.99
AbsTimeSpanNumberOfEntries	unsignedInt	-	The number of entries in the <i>AbsTimeSpan</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.ANPPolicy.{i}.RCATSchedule.{i}.AbsTimeSpan.{i}	object	W	This object defines an instance of a time span used for determining an RCAT schedule. An instance of the <i>AbsTimeSpan</i> represents a time span in which the schedule recurrence defined in <i>Schedules</i> is constrained. <i>AbsTimeSpan</i> instances with unknown values for the <i>StartTime</i> or <i>EndTime</i> are ignored. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/TR-069a4 [3] and described in Appendix II/TR-069a4 [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
StartTime	dateTime	W	Date and time that represents the start of the time span. The value 0001-01-01T00:00:00Z represents an unknown value.	0001-01-01T00:00:00Z	2.99

Name	Type	Write	Description	Object default	Version
EndTime	dateTime	W	Date and time that represents the end of the time span. The 9999-12-31T23:59:59Z represents an infinite time span from the start time. The value 0001-01-01T00:00:00Z represents an unknown value.	0001-01-01T00:00:00Z	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.M2MSPPolicy.	object	-	This object maintains the SAF handling policies' properties that are controlled by the M2M service provider for a request. These include: Tolerable Request Processing Delay Time (TRPDT) for one or more RCATs Thresholds for the maximum number of pending requests for one or more RCATs Processing behaviour for the use of M2M Service Provider policies is defined in Clause 7.3.1.2.2.1 of the M2M mla, dla and mld Interfaces ( <a href="#">ETSIM2MInterfaces</a> [2]) document.	-	2.99
DefaultRCATValue	string	W	The default RCAT value to use for requests to remotely hosted resources during SAF-handling when no RCAT value was specified in the request.	<Empty>	2.99
DefaultTRPDTValuesNumberOfEntries	unsignedInt	-	The number of entries in the <i>DefaultTRPDTValues</i> table.	-	2.99
MaxPendReqsNumberOfEntries	unsignedInt	-	The number of entries in the <i>MaxPendReqs</i> table.	-	2.99
MaxPendDataNumberOfEntries	unsignedInt	-	The number of entries in the <i>MaxPendData</i> table.	-	2.99
ANSELListNumberOfEntries	unsignedInt	-	The number of entries in the <i>ANSELList</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.M2MSPPolicy.DefaultTRPDTValues.{i}.	object	W	This object maintains a list of TRPDT properties to be used for forwarding requests with a specified RCAT value within the <i>RCATList</i> . NOTE: Different instances of the <i>DefaultTRPDTValues</i> table MUST NOT contain list items with the same RCAT values in the <i>RCATList</i> . In other words, an RCAT value is unique across all instances of the <i>DefaultTRPDTValues</i> table. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99

Name	Type	Write	Description	Object default	Version
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
RCATList	string	W	Comma-separated list of strings. The list is a set of RCATs. An RCAT is a string that represents a request category used for policy enforcement.	<Empty>	2.99
TolerableDelay	long	W	The tolerable duration, in <i>seconds</i> , that a request can be pending in SAF handling. Any negative value represents an infinite duration.	0	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.M2MSPPolicy.MaxPendReqs.{i}	object	W	This object maintains a list of threshold properties related to the number of requests in the request queue used for forwarding requests with a specified RCAT value within the <i>RCATList</i> . NOTE: Different instances of the <i>MaxPendReqs</i> table MUST NOT contain list items with the same RCAT values in the <i>RCATList</i> . In other words, an RCAT value is unique across all instances of the <i>MaxPendReqs</i> table. <i>MaxPendReqs</i> instances with unknown values for the <i>Thresh</i> are ignored. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99

Name	Type	Write	Description	Object default	Version
RCATList	string	W	Comma-separated list of strings. The list is a set of RCATs. An RCAT is a string that represents a request category used for policy enforcement.	<Empty>	2.99
Thresh	unsignedInt	W	The threshold of maximum number of pending requests permitted to be held for a specified RCAT.	0	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{j}.M2MSPPolicy.MaxPendData.{i}.	object	W	This object maintains a list of threshold properties related to the memory size of the request queue used for forwarding requests with a specified RCAT value within the <i>RCATList</i> . NOTE: Different instances of the <i>MaxPendData</i> table MUST NOT contain list items with the same RCAT values in the <i>RCATList</i> . In other words, an RCAT value is unique across all instances of the <i>MaxPendData</i> table. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
RCATList	string	W	Comma-separated list of strings. The list is a set of RCATs. An RCAT is a string that represents a request category used for policy enforcement.	<Empty>	2.99
Mem	string(16)	W	This parameter defines the maximum size of the request queue for pending requests permitted to be held for a specified RCAT. The format of the string is an integer with an appended memory unit (B - Bytes, K - 1024 Bytes, M - 1048576 Bytes, G - 1073741824 Bytes). When the value is an empty string the memory threshold criteria for the associated RCATList will be ignored in SAF handling. ([0-9]{0,15}?[BKMG]))(<Empty>)	-	2.99



Name	Type	Write	Description	Object default	Version
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{j}.M2MSPPolicy.ANSelList.{i}.	object	W	This object contains a list of access network selection policy instances to govern selection of a preferred access network for processing requests pending in SAF-handling that are associated with given ranges of RCAT values. Different instances of the <i>ANSelList</i> MUST NOT contain list items with the same RCAT values in the <i>RCATList</i> . In other words, an RCAT value is unique across all instances of the <i>ANSelList</i> table. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for <i>Alias</i> . On creation of a new table entry, the CPE MUST choose an initial value for <i>Alias</i> such that the new entry does not conflict with any existing entries.	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference. If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/ <a href="#">TR-069a4</a> [3] and described in Appendix II/ <a href="#">TR-069a4</a> [3], the following mandatory constraints MUST be enforced: Its value MUST NOT be empty. Its value MUST start with a letter. If its instance object is created by the CPE, the initial value MUST start with a "cpe-" prefix. The CPE MUST NOT change the parameter value.	-	2.99
RCATList	string	W	Comma-separated list of strings. The list is a set of RCATs. An RCAT is a string that represents a request category used for policy enforcement.	<Empty>	2.99
RankedANList	string	W	Comma-separated list of strings. Each list item MUST be the path name of a row in the <i>ANPPolicy</i> table. If the referenced object is deleted, the corresponding item MUST be removed from the list. The list is a prioritized set of Access Networks where the preference of using an Access Network is based on order of the list items with the lowest order list item as the most preferred Access Network.	<Empty>	2.99

Name	Type	Write	Description	Object default	Version
Device.ETSIM2M.SCL.{i}.AreaNwkInstance.{i}.	object	-	The M2M Area Network information provides administration capabilities for remote management (REM) of M2M Devices (D', d) that are attached to the ETSIM2M.SCL. This object provides the administration of the properties needed by the SCL to remotely manage M2M Devices within a specific type of M2M Area network as defined by <i>AreaNwkType</i> . Multiple instances <i>AreaNwkInstance</i> with the same <i>AreaNwkType</i> is permitted. Clause 5.3.5 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) describes the REM functionality expected of a SCL for an M2M Device. At most one entry in this table can exist with a given value for <i>ID</i> .	-	2.99
ID	string	-	URI (RFC 3986 [6]) that represents the identifier of the instance.	-	2.99
AreaNwkType	string	-	Devices (D' and d) that connect to an SCL are said to be "attached devices" and are organized by M2M Area Networks within the ETSIM2M.SCL. The mechanism that a SCL uses to indicate the type of M2M Area Networks and their associated devices is implementation specific with the following constraints: Devices must be of the same Area Network Type (e.g. Zigbee). Devices must be attached to the same SCL instance.	-	2.99
MTU	unsignedInt	-	The maximum transmission unit in this area network.	-	2.99
ListOfDevices	string	-	Comma-separated list of strings. Each list item MUST be the path name of a row in the <i>AreaNwkDeviceInfoInstance</i> table, or an empty string. The list represents the M2M Devices (D', d) that are attached to this SCL instance that are within this M2M Area Network. The list does not contain an instance for this CPE.	-	2.99
PropertyNumberOfEntries	unsignedInt	-	The number of entries in the <i>Property</i> table.	-	2.99
Device.ETSIM2M.SCL.{i}.AreaNwkInstance.{i}.Property.{i}.	object	-	This object contains an instance of a property extension (name value pair) for the <i>AreaNwkInstance</i> . For example, if the <i>AreaNwkType</i> is ZIGBEE the <i>AreaNwkInstance</i> will contain ZIGBEE specific parameters that have not been modelled for the M2M Area network. At a minimum, a property instance MUST exist that defines an attribute that describes the IP layer address type (e.g. IPv4, IPv6, non-IP) of this M2M Area Network.	-	2.99
Name	string	-	The name of the property.	-	2.99
Value	string	-	The value of the property.	-	2.99

Name	Type	Write	Description	Object default	Version
Device.ETSIM2M.SCL.{i}.AreaNwkDeviceInfoInstance.{j}.	object	-	<p>The M2M Area Network Device Information provides the administration capability to the SCL for maintenance of M2M Devices (D', d) that are attached to the ETSIM2M.SCL. While discovery and identification of devices by the M2M Gateway or Device (CPE) is implementation specific, each device is represented by an instance of the <i>Hosts</i> table.</p> <p>When the M2M Device is managed by the CWMP endpoint of the CPE, the <i>AreaNwkDeviceInfoInstance</i> is expected to be referenced by an instance of one of the following tables:  <i>ManagementServer.EmbeddedDevice</i>  <i>ManagementServer.VirtualDevice</i></p> <p>Clause 5.3.5 of the M2M Functional Architecture (<a href="#">ETSIM2MFA [1]</a>) describes the REM functionality expected of a SCL to a M2M Device.</p> <p>This object instance provides the administration properties required by a SCL to remotely manage an instance of a M2M Device within a M2M area network. A M2M Device is associated with an instance of a M2M area network. This table contains parameters and information of the M2M Device related to each M2M Area Network. Instances of this table are created and deleted by the CPE. The ACS MAY modify the writeable parameters of this object instance but it is possible that the value set by the ACS is not retained between reboots of the M2M Device.</p>	-	2.99
AreaNwkInstance	string	-	The value MUST be the path name of a row in the <i>AreaNwkInstance</i> table.	-	2.99
Host	string	-	Comma-separated list of strings. Each list item MUST be the path name of the <i>Hosts</i> . Host table entry that represents an active or inactive M2M Device. If the referenced object is deleted, the corresponding item MUST be removed from the list.	-	2.99
ListOfDeviceNeighbors	string	-	Comma-separated list of strings. Each list item MUST be the path name of a row in the <i>Hosts.Host</i> table. If the referenced object is deleted, the corresponding item MUST be removed from the list. References all the <i>Hosts.Host</i> table entries, whether active or inactive, that represent the reachable neighbours of this M2M Device (D' or d).	-	2.99
ListOfDeviceApplications	string	-	Comma-separated list of strings. The list is an unordered set of URIs (RFC 3986 [6]). A list item is an URI string that represents an application id (APP-ID) for the M2M D'A applications residing on the M2M Device for the associated <i>AreaNwkInstance</i> . Table B.58 of the M2M Functional Architecture ( <a href="#">ETSIM2MFA [1]</a> ) and describes this parameter.	-	2.99

Name	Type	Write	Description	Object default	Version
SleepInterval	unsignedInt	W	The interval, in <i>seconds</i> , between sleep periods for the device. A value of 0 represents a device that does not sleep.	-	2.99
SleepDuration	unsignedInt	W	The duration, in <i>seconds</i> , of a sleep period. The value 0 represents an unknown value. NOTE: When this value is modified, the CPE could modify the <i>SleepDuration</i> for this M2M Device in other Area Networks.	-	2.99
Status	string	-	The sleep status of the device. Enumeration of: <i>ASLEEP</i> <i>AWAKE</i>	-	2.99
Active	boolean	-	Whether or not this M2M Device is currently attached to this <i>SCL</i> instance. The ability to list inactive M2M Devices is OPTIONAL. If the CPE includes inactive M2MDevices in this table, <i>Active</i> is set to <i>false</i> for each inactive M2M Device. The length of time an inactive M2M Device remains listed in this table is a local matter to the CPE.	-	2.99
PropertyNumberOfEntries	unsignedInt	-	The number of entries in the <i>Property</i> table.	-	2.99
Device.ETSIM2M.SCL_{i}.AreaNwkDeviceInfoInstance_{i}.Property_{i}	object	-	This object contains an instance of a property extension (name value pair) for the <i>AreaNwkDeviceInfoInstance</i> . For example, if the <i>AreaNwkType</i> is ZIGBEE, the <i>AreaNwkDeviceInfoInstance</i> contains ZIGBEE-specific parameters that are not formally modelled for the <i>AreaNwkDeviceInfoInstance</i> .	-	2.99
Name	string	-	The name of the property.	-	2.99
Value	string	-	The value of the property.	-	2.99

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## Annex A (normative): ETSIM2MService xsd file

NOTE: Reference to BBF xsd definition should be added later when BBF's work is done.

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## History

<b>Document history</b>		
V1.1.1	May 2012	Publication