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Technical Specification

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

Reference

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Contents

Intellectual Property Rights	4
Foreword.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	5
3 Definitions, symbols and abbreviations	5
3.1 Definitions.....	5
3.2 Symbols.....	6
3.3 Abbreviations	6
4 General principles	6
5 ETSI M2M Data Model	6
Annex A (informative): BBF Data Model for ETSI M2M Management Objects	7
History	19

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Foreword

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

1 Scope

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

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-069_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.

- [5] BBF TR-181: "Device Data Model for TR-069, Issue 2", Amendment 6, November 2012.
- [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] Void.
- [i.2] ETSI TR 102 725: "Machine to Machine Communications (M2M); M2M definitions".

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.

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 (etsiSciMo, 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", any whitespace or comma characters contained in an item of such a list shall be escaped using percent as defined in Section 3.2.3 of [4].

5 ETSI M2M Data Model

The BBF TR-69 compliant ETSI M2M data model is specified by the Broadband Forum in TR-181 Issue 2 Amendment 6 [5]. A copy of the detailed data model is shown in Annex A (informative) of the present document.

The exact mapping between the attributes and sub-resources of the ETSI resource and the elements of BBF TR-69 compliant ETSI M2M data model is specified in annex E of [2].

Annex A (informative): BBF Data Model for ETSI M2M Management Objects

The present annex provides a copy of the data model extracted from BBF TR-181 Issue 2 Amendment 6 [5], it is reproduced here for information.

Table A.1: BBF Data Model for ETSI M2M Management Objects

Name	Type	Write	Description	Object Default	Version
Device.	object	-	The top-level object for a Device.	-	2.0
Device.ETSIM2M.	object	-	The ETSIM2M object represents the management object for the Remote Entity Functions (REM) functions defined in the M2M Functional Architecture [1].	-	2.99
SCLNumberOfEntries	unsignedInt	-	The number of entries in the SCL table.	-	2.99
Device.ETSIM2M.SCL.{i}.	object	W	<p>This object represents an instance of a Service Capability Layer (SCL) for a M2M device or gateway.</p> <p>Each device or gateway has only one SCL instance per M2M Service Provider. The REM functionality in this SCL can only manage the subtree of the specific SCL object that corresponds to it.</p> <p>The SCL MAY be maintained by the ACS or by the CPE.</p> <p>When the SCL provides the administration of an SCL that is represented as a SoftwareModules.ExecutionUnit the SCL is maintained in the SoftwareModules.ExecutionUnit.{i}.References parameter.</p> <p>Section 5.1.2 of the M2M Functional Architecture [1] describes the high level event flows for SCL registration.</p> <p>Section 9.3.2.6.2 of the M2M Functional Architecture [1] describes the creation/registration of SCLs.</p> <p>Section 9.3.2.6.4 of the M2M Functional Architecture [1] describes the update/re-registration of SCLs.</p> <p>Section 9.3.2.6.5 of the M2M Functional Architecture [1] describes the deletion/deregistration of SCLs.</p> <p>At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias such that the new entry does not conflict with any existing entries.</p>	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	<p>A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference.</p> <p>If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced:</p> <p>Its value shall NOT be empty.</p>	-	2.99

Name	Type	Write	Description	Object Default	Version
			Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.		
AnnouncedToSCLList	string	W	Comma-separated list of strings. The list represents an unordered set of URIs [6]. A list item is a URI string that represents a SCL to which this SCL will announce original (local) resources. The AnnouncedToSCL has an interest in the discovery of the local resource. Section 9.2.1.14 Announced Resource of the M2M Functional Architecture [1] provides a description of this behaviour of an Announced Resource. Section 9.3.2.28 of the M2M Functional Architecture [1] and Section 10.3.2.7 of the M2M mla, dla and mld Interfaces [2] describes the process of announcing and deannouncing of resources within a SCL.	-	2.99
SAFPolicySetNumberOfEntries	unsignedInt	-	The number of entries in the SAFPolicySet table.	-	2.99
AreaNwkInstanceNumberOfEntries	unsignedInt	-	The number of entries in the AreaNwkInstance table.	-	2.99
AreaNwkDeviceInfoInstanceNumberOfEntries	unsignedInt	-	The number of entries in the AreaNwkDeviceInfoInstance table.	-	2.99
Device.ETSIM2M.SCL.{i}.AreaNwkDeviceInfoInstance.{i}	object	-	The M2M Area Network Device Information provides the administration capability to the SCL for maintenance of M2M Devices (D', d) that are attached to this SCL instance. 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 Hosts.Host table. When the M2M Device is managed by the CWMP endpoint of the CPE, the AreaNwkDeviceInfoInstance is expected to be referenced by an instance of one of the following tables: ManagementServer.EmbeddedDevice ManagementServer.VirtualDevice Section 5.3.5 of the M2M Functional Architecture [1] describes the REM functionality expected of a SCL to a M2M Device. 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 AreaNwkInstance. This table contains parameters and information of the M2M Device related to each AreaNwkInstance instance. 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.	-	2.99

Name	Type	Write	Description	Object Default	Version
AreaNwkInstance	string	-	The value shall be the path name of a row in the AreaNwkInstance table.	-	2.99
Host	string	-	Comma-separated list of strings. Each list item shall be the path name of the Hosts.Host table entry that represents an active or inactive M2M Device. If the referenced object is deleted, the corresponding item shall be removed from the list.	-	2.99
ListOfDeviceNeighbors	string	-	Comma-separated list of strings. Each list item shall be the path name of a row in the Hosts.Host table. If the referenced object is deleted, the corresponding item shall be removed from the list. References all the Hosts.Host 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 [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 AreaNwkInstance. Table B.58 of the M2M Functional Architecture [1] describes this parameter.	-	2.99
SleepInterval	unsignedInt	W	The interval, in seconds, between sleep periods for the device. A value of 0 represents a device that does not sleep. NOTE: When this value is modified, the CPE could modify the SleepInterval for this M2M Device in other Area Networks.	-	2.99
SleepDuration	unsignedInt	W	The duration, in seconds, of a sleep period. The value 0 represents an unknown value. NOTE: When this value is modified, the CPE could modify the SleepDuration for this M2M Device in other Area Networks.	-	2.99
Status	string	-	The sleep status of the device. Enumeration of: ASLEEP AWAKE	-	2.99
Active	boolean	-	Whether or not this M2M Device is currently attached to this SCL instance. The ability to list inactive M2M Devices is OPTIONAL. If the CPE includes inactive M2MDevices in this table, Active is set to false 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 Property 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 this AreaNwkDeviceInfoInstance instance. For example, if the AreaNwkInstance.{i}.AreaNwkType value is ZigBee, this AreaNwkDeviceInfoInstance contains ZigBee-specific parameters that are not formally modeled for this AreaNwkDeviceInfoInstance instance.	-	2.99

Name	Type	Write	Description	Object Default	Version
Name	string	-	The name of the property	-	2.99
Value	string	-	The value of the property.	-	2.99
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 this SCL instance. 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 AreaNwkType. Multiple instances of AreaNwkInstance with the same AreaNwkType is permitted. Section 5.3.5 of the M2M Functional Architecture [1] 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 ID.	-	2.99
ID	string	-	URI [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 SCL instance. The AreaNwkType is an implementation-chosen string that indicates the type of M2M Area Network.	-	2.99
ListOfDevices	string	-	Comma-separated list of strings. Each list item shall be the path name of a row in the AreaNwkDeviceInfoInstance table, or an empty string. The list represents the M2M Devices (D', d) that are attached to this SCL instance that are within this AreaNwkInstance instance. The list does not contain an instance for this CPE.	-	2.99
PropertyNumberOfEntries	unsignedInt	-	The number of entries in the Property 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 this AreaNwkInstance instance. For example, if the AreaNwkType is ZigBee the AreaNwkInstance will contain ZigBee specific parameters that have not been modeled for the M2M Area network. At a minimum, a property instance shall 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
Device.ETSIM2M.SCL.{i}.Discovery.	object	-	This object is represents the administration properties used when a NSCL requests discovery of resources within this SCL instance. Section 9.3.2.27 of the M2M Functional Architecture [1] describes the process of discovery of resources within a SCL.	-	2.99

Name	Type	Write	Description	Object Default	Version
MaxNumberOfDiscovRecords	unsignedInt	W	The maximum number of URIs [6] for discovered resources contained in a discovery result. This parameter and the MaxSizeOfDiscovAnswer 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 MaxNumberOfDiscovRecords 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.{}.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 [6]. The item that is first in the list has the highest priority. A list item is a URI [6] string that represents a NSCL that this SCL instance can use in order to attempt registration. When modified the contents of this parameter replace the RegTargetNSCLList received during the bootstrap procedure.	-	2.99
RegSearchStrings	string	W	Comma-separated list of strings. The list represents the string tokens used as keys when searching for this SCL instance. Sections 9.2.3.6.2 and 9.2.3.6.4 of the M2M Functional Architecture [1] describe the usage for this parameter.	-	2.99
RegAccessRightID	string	W	URI [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	int	W	The duration, in seconds, 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 false when read. When set to true, triggers an immediate re-registration action where the SCL re-registers with the SCLs in the RegTargetNSCLList .	-	2.99
Device.ETSIM2M.SCL.{}.Reregistration.ActionStatus.	object	-	This object represents the status of the Reregistration action.	-	2.99
Progress	unsignedInt-[0:100]	-	The progress, in percent, of the Reregistration action. The progress is measured from 0-100%. A value of 0 indicates that the action has not started. A value of 100 indicates that the action has completed.	-	2.99

Name	Type	Write	Description	Object Default	Version
FinalStatus	string	-	The completion status of the Reregistration operation. Enumeration of: SUCCESS FAILURE	-	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 SAFPolicySet. Which instances of SAFPolicySet are used by the SCL is determined by the PolicyScope parameter. Section 9.3.1.5 of the M2M Functional Architecture [1] and Section 10.3.1.2.2 of the M2M mla, dla and mld Interfaces [2] describe the behaviour for SAF processing. There is at most one SAFPolicySet instance with the PolicyScope containing a specific application id (APP-ID) URI value within the list. There is exactly one SAFPolicySet instance with a PolicyScope 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 Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced: Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.	-	2.99

Name	Type	Write	Description	Object Default	Version
PolicyScope	string	W	Comma-separated list of strings. The parameter defines the scope of the policies contained in this instance of a SAFPolicySet. The parameter value is: a list of unordered set of URIs [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 [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 SCL instance. When this parameter is set to an empty string, the value represents an unknown SAFPolicySet and the SAFPolicySet is not to be used.	<Empty>	2.99
ANPPolicyNumberOfEntries	unsignedInt	-	The number of entries in the ANPPolicy 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 Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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 ANName.	-	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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced: Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall 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 ANPPolicy table will apply.	<Empty>	2.99
BlockPeriodNumberOfEntries	unsignedInt	-	The number of entries in the BlockPeriod table.	-	2.99
RequestCategoryNumberOfEntries	unsignedInt	-	The number of entries in the RequestCategory table.	-	2.99

Name	Type	Write	Description	Object Default	Version
Device.ETSIM2M.SCL.{i}.SAF PolicySet.{i}.ANPPolicy.{i}.Block Period.{i}.	object	W	This table contains a list of block periods for a ANPPolicy. A block period defines how long the device will wait before re-trying to establish connectivity via the access network 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 Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced: Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.	-	2.99
FailedAttempts	unsignedInt	W	Number of consecutively failed access attempts for which the BlockDuration will be used to block the next access attempt. The SCL will apply the BlockPeriod 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	int	W	The duration, in seconds, to which to block further access attempts.	0	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.ANPPolicy.{i}.Request Category.{i}.	object	W	This table contains the Request Category (RCAT) policy items for defining when it is appropriate to use the access network for processing requests. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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 RCAT.	-	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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced:	-	2.99

Name	Type	Write	Description	Object Default	Version
			Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.		
RCAT	string	W	An RCAT is a string that represents a request category used for policy enforcement.	-	2.99
ScheduleNumberOfEntries	unsignedInt	-	The number of entries in the Schedule table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{i}.ANPPolicy.{i}.RequestCategory.{i}.Schedule.{i}	object	W	This table contains the schedules that define when it is appropriate to use the access network for processing requests for the specified value of the RCAT. The combination of all instances of the AbsTimeSpan along with the Schedules parameter makes up the complete schedule for this Schedule. The Schedules parameter defines a recurrence of the schedule and the AbsTimeSpan, if instances of AbsTimeSpan exist, these instances places constraints on the schedule recurrence. If the value of the Schedules parameter is an empty string, at least one instance of AbsTimeSpan must exist. Processing behaviour for the use of RCAT Schedules is defined in section 10.3.1.2.2 of the M2M mla, dla and mld Interfaces [2] document. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced: Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.	-	2.99
Schedules	string	W	Comma-separated list of strings. The list is a set of schedule strings. A Schedules string is a string formatted according to the date and time fields defined CRONTAB input file definition in [7]. The Schedules is used to set the recurrence of the schedule.	<Empty>	2.99

Name	Type	Write	Description	Object Default	Version
			<p>The time zone used for this parameter is dependent upon the existence of instances of AbsTimeSpan for this Schedule. If instances of AbsTimeSpan exists, then the time zone of the AbsTimeSpan is used otherwise the UTC time zone is used for this Schedules parameter.</p> <p>Example of CRONTAB string: "* 0-6 * * 1-5" would mean every minute for the period from 0:00h to 6:00h (inclusive) on any week day (Monday through Friday) and would be represented as "%200-6%20*%20*%201-5" "* /15 22-23,0-4 * * 1-5" would mean every 15 minutes for the period from 22:00h to 04:00h on any week day (Monday through Friday) and would be represented as "%2022-23%20C0-4%20*%20*%201-5"</p>		
AbsTimeSpanNumberOfEntries	unsignedInt	-	The number of entries in the AbsTimeSpan table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAF PolicySet.{i}.ANPPolicy.{i}.RequestCategory.{i}.Schedule.{i}.AbsTimeSpan.{i}.	object	W	<p>This object defines an instance of a time span used for determining an RCAT schedule.</p> <p>An instance of the AbsTimeSpan represents a time span in which the schedule recurrence defined in Schedules is constrained.</p> <p>AbsTimeSpan instances with unknown values for the StartTime or EndTime are ignored.</p> <p>All instances of the AbsTimeSpan within this Schedule shall utilize the same time zone.</p> <p>At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias such that the new entry does not conflict with any existing entries.</p>	-	2.99
Enable	boolean	W	Administratively enables or disables this instance.	false	2.99
Alias	string(64)	W	<p>A non-volatile handle used to reference this instance. Alias provides a mechanism for an ACS to label this instance for future reference.</p> <p>If the CPE supports the Alias-based Addressing feature as defined in Section 3.6.1/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced:</p> <p>Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.</p>	-	2.99

Name	Type	Write	Description	Object Default	Version
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. The device shall reject requests to set the StartTime value greater than the EndTime value.	0001-01-01T00:00:00Z	2.99
EndTime	dateTime	W	Date and time that represents the end of the time span. The value 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. The device shall reject requests to set the EndTime value less than or equal the StartTime value.	0001-01-01T00:00:00Z	2.99
Device.ETSIM2M.SCL.{i}.SAF PolicySet.{j}.M2MSPPolicy.	object	-	This object maintains the SAF handling policies' properties that are controlled by the M2M service provider for a request.	-	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
RequestCategoryNumberOf Entries	unsignedInt	-	The number of entries in the RequestCategory table.	-	2.99
Device.ETSIM2M.SCL.{i}.SAFPolicySet.{j}.M2MSPPolicy.Request Category.{i}.	object	W	This object maintains a list of properties to be used for forwarding requests with a specified RCAT. Processing behaviour for the use of M2M Service Provider policies is defined in Section 10.3.1.2.2.1 of the M2M mla, dla and mld Interfaces [2] document. At most one entry in this table (regardless of whether or not it is enabled) can exist with a given value for Alias. On creation of a new table entry, the CPE shall choose an initial value for Alias 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 RCAT.	-	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/[3] and described in Appendix II/[3], the following mandatory constraints shall be enforced: Its value shall NOT be empty. Its value shall start with a letter. If its instance object is created by the CPE, the initial value shall start with a "cpe-" prefix. The CPE shall NOT change the parameter value.	-	2.99
RCAT	string	W	An RCAT is a string that represents a request category used for policy enforcement.	-	2.99

Name	Type	Write	Description	Object Default	Version
TolerableDelay	int	W	The tolerable duration, in seconds, that a request of the given RCAT category can be pending in SAF handling when a request from an M2M Application does not specify a tolerable delay. Any negative value represents an infinite duration.	0	2.99
Thresh	unsignedInt	W	The threshold of maximum number of pending requests permitted to be held for a specified RCAT. A value of 0 indicates that the request should be transmitted immediately.	0	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, T - 1099511627776 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}?[BKMGT])(<Empty>)	-	2.99
RankedANList	string	W	Comma-separated list of strings. Each list item shall be the path name of a row in the ANPPolicy table. If the referenced object is deleted, the corresponding item shall 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

History

Document history		
V1.1.1	May 2012	Publication
V1.2.1	March 2013	Publication
V2.1.1	March 2013	Publication