Diagnostics and Monitoring Functions Specification

Candidate Version 1.2 – 09 Oct 2012

Open Mobile Alliance

OMA-TS-DiagMon_Functions-V1_2-20121009-C

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1. Scope

This document defines the specific DiagMon Functions using the framework as defined in [DiagMonTS].

Existing DiagMon framework features are reused and this document provides information on the standardised MO format of a set of DiagMon Functions. This specification defines:

- The standardized Management Object Identifier (MOID) format for each of the DiagMon Functions covered in this specification
- Any additional information to execute the DiagMon Function
- The location and format of the data as result of DiagMon Function execution on the device

1.1 Dependencies

The management objects in this TS have a dependency on OMA Device Management v1.2 [DM] or later compatible version

2. References

2.1 Normative References

[3GPP-TS_23.032] 3GPP TS 23.032: Technical Specification Group Services and System Aspects; Universal Geographical Area Description (GAD)

[3GPP-TS_23.038] 3GPP TS 23.038 "Alphabets and language-specific information", URL:http://www.3gpp.org/ftp/Specs/archive/23_series/23.038/

[3GPP-TS_24.008] 3GPP TS 24.008: Technical Specification Group Core Network and Terminals; Mobile radio interface Layer 3 specification; Core network protocols

[3GPP-TS_25.213] 3GPP TS 25.213: Technical Specification Group Radio Access Network; Spreading and modulation (FDD).

[3GPP-TS_25.215] 3GPP TS 25.215: Technical Specification Group Radio Access Network; Physical layer; Measurements (FDD)

[3GPP-TS_25.225] 3GPP TS 25.225: Technical Specification Group Radio Access Network; Physical layer; Measurements (TDD)

[3GPP-TS_25.331] 3GPP TS 25.331: Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol Specification

[3GPP-TS_25.433] 3GPP TS 25.433: Technical Specification Group Radio Access Network; UTRAN Iub interface Node B Application Part (NBAP) signalling

[3GPP-TS_36.101] 3GPP TS 36.101: Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception

[3GPP-TS_36.211] 3GPP TS 36.211: Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation

[3GPP-TS_36.213] 3GPP TS 36.213: Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures

[3GPP-TS_36.214] 3GPP TS 36.214: Technical Specification Group Radio Access Network; Physical layer; Measurements

[3GPP-TS_36.331] 3GPP TS 36.331: Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC)

[3GPP-TS_44.018] 3GPP TS 44.018: Technical Specification Group GSM/EDGE Radio Access Network; Mobile Radio Interface Layer 3 Specification; Radio Resource Control (RRC) Protocol

[DiagMon1_1] "OMA DiagMon Management Object Enabler Release Definition", Version 1.0, Open Mobile Alliance, OMA-ERELD-DiagMon_V1_1, URL:http://www.openmobilealliance.org/

[DiagMonTS] "DiagMon Management Object Framework", Version 1.2, Open Mobile Alliance, OMA-TS-DiagMonMOFrame-V1_2, URL:http://www.openmobilealliance.org/

[DM] "OMA Device Management Enabler Release Definition", Version 1.2, Open Mobile Alliance, OMA-ERELD-DM_V1_2, URL:http://www.openmobilealliance.org/

[ISO8601] ISO 8601:2004, Data elements and interchange formats -- Information interchange -- Representation of dates and times. URL:http://www.iso.ch/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

[SCRRULES] "SCR Rules and Procedures", Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:http://www.openmobilealliance.org/

[TS102.250] "Speech and multimedia Transmission Quality (STQ); QoS aspects for popular services in mobile networks", ETSI TS 102 250-2 ver. 2.2.1, URL:http://www.etsi.org/

2.2 Informative References

[DMSTDOBJ1_3] "OMA Device Management Standardized Objects, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_StdObj-V1_3.
URL:http://www.openmobilealliance.org/

[OMADICT] "Dictionary for OMA Specifications", Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_9,
URL:http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Kindly consult [OMADICT] for all definition used in this document

3.3 Abbreviations

Kindly consult [OMADICT] for all abbreviations used in this document

4. Introduction

This section is informative.

In order to provide advanced customer care services, the DiagMon version 1.2 enabler provides an interface between the Management Authority and Devices – based on OMA DM.

The DiagMon Function specification defines a number of standardised instantiations of the DiagMon Management Object Framewarok [DiagMonTS] for the purposes of obtaining diagnostics and monitoring information in a predictable and industry-wide manner.

4.1 Version 1.0 Functionality

The DiagMon Management Object V1.0 Enabler supports the following functionality.

1) **Diagnostics Policies Management:** support for specification and enforcement of policies related to the management of diagnostics features and data.
2) **Fault Reporting: e**nable the device to report faults to the network as the trouble is detected at the device.
3) **Performance Monitoring:** enable the device to measure, collect and report key performance indicators (KPIs) data as seen by the device such as on a periodic basis.
4) **Device Interrogation:** enable the network to query the device for additional diagnostics data in response to a fault
5) **Remote Diagnostics Procedure Invocation:** enable management authorities to invoke specific diagnostics procedures embedded in the device to perform routine maintenance and diagnostics.
6) **Remote Device Repairing:** enable management authorities to invoke specific repairing procedures based on the results of diagnosis procedures.

4.2 Version 1.1 Functionality

OMA DiagMon MO V1.1 introduces this initial set of functions that can be used on top of framework provided by DiagMon MO 1.0:

- Application Monitoring
- Battery Info
- Browsing Usage
- Data Call and Data Session
- Memory
- Trap Event
- Panic Logs
- Restart
- RF Metrics
- SMS Options and Usage
- MMS Usage
- NFC

- User Equipment Setting
- Phone Book

4.3 Version 1.2 Functionality

OMA DiagMon MO V1.1 introduced an initial set of functions that can be used to collect application usage metrics, obtain device status and performance statistics, and gather information to diagnose and fix problems with a mobile device. DiagMon MO 1.2 contains enhancements to the existing DiagMon MO 1.1 functions and adds new diagnostic functions for common device capabilities that are not currently covered by DiagMon MO 1.1:

- QoS
- Sensor
- Built-in Device Test
- Device Location
- Web Browsing Monitoring
- Application Execution Information

It also extends the DiagMon Framework adding the Trap Events Framework, and a list of Trap Events which are part of other specifications.

This specification is a superset as it includes all DiagMon functions from DiagMon MO V1.1 - whether they were enhanced or not - as well as the functions newly defined in DiagMon MO V1.2.

5. Device

5.1 Info

5.1.1 Battery Info

5.1.1.1 Introduction

If a device contains a battery, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This continuously available function will allow the DiagMon Server to determine a variety of battery information, such as the percentage of charge remaining in the battery or batteries. Since this function is always available, no operations are allowed. No configuration is allowed either.

These values are useful, for example, in determining if there is enough power to do time-intensive operations such as firmware update.

5.1.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/ServerID
<x>/DiagMonConfig
<x>/Operations
<x>/Status

5.1.1.3 Function Description

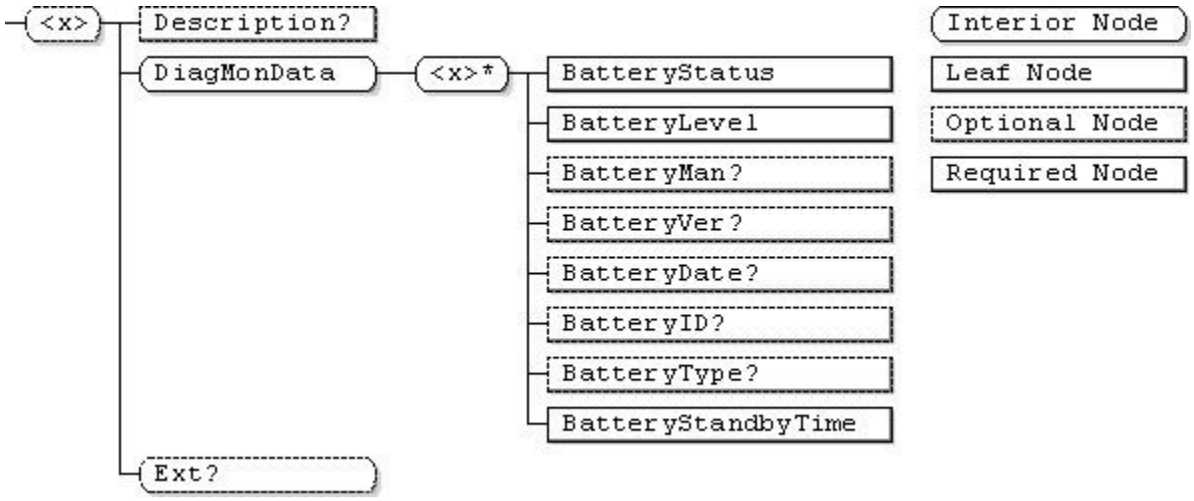

Figure 1 - Battery Info Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Battery MO. Identifier for the Battery MO MUST be: "urn:oma:mo:oma-diag:batteryinfo:1.0".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for zero or more instances of battery data.

<x>/DiagMonData/<x>/BatteryStatus

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node is used to indicate the status of the battery. The value of `BatteryStatus` MUST be one of the following values:

Battery Status	Meaning	Description
0	Normal	The battery is operating normally and not on power.
1	Charging	The battery is currently charging.
2	Charge Complete	The battery is fully charged and still on power.
3	Damaged	The battery has some problem.
4	Low Battery	The battery is low on charge.
5	Not Installed	The battery is not installed.
6	Unknown	The battery information is not available.

<x>/DiagMonData/<x>/BatteryLevel

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the current battery level as a percentage (with a range from 0 to 100). In the case where the battery level is not known, the value of the BatteryLevel node SHALL be 0.

<x>/DiagMonData/<x>/BatteryMan

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This node contains the name of the battery manufacturer.

<x>/DiagMonData/<x>/BatteryVer

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This node contains the version of the battery.

<x>/DiagMonData/<x>/BatteryDate

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	date	Get

This node contains the date of the battery manufacture. If the date of manufacture is not available, this value MUST be null.

<x>/DiagMonData/<x>/BatteryID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This node contains the ID of the battery.

<x>/DiagMonData/<x>/BatteryType

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This node contains the type of the battery technology (e.g. NiMH, LiPl).

<x>/DiagMonData/<x>/BatteryStandbyTime

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

The BatteryStandByTime parameter contains the estimated number of minutes of operation based upon the current drain and charge of all batteries. This value will allow the Server to determine what the estimated standby time is when operating on battery. The time will be the aggregate of all batteries standby time.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.1.2 Memory

5.1.2.1 Introduction

The DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve device memory information which is useful in determining if there is enough device memory or storage to run an application, store SMS, etc.

5.1.2.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/ServerID
<x>/DiagMonConfig
<x>/Operations
<x>/Status

5.1.2.3 Function Description

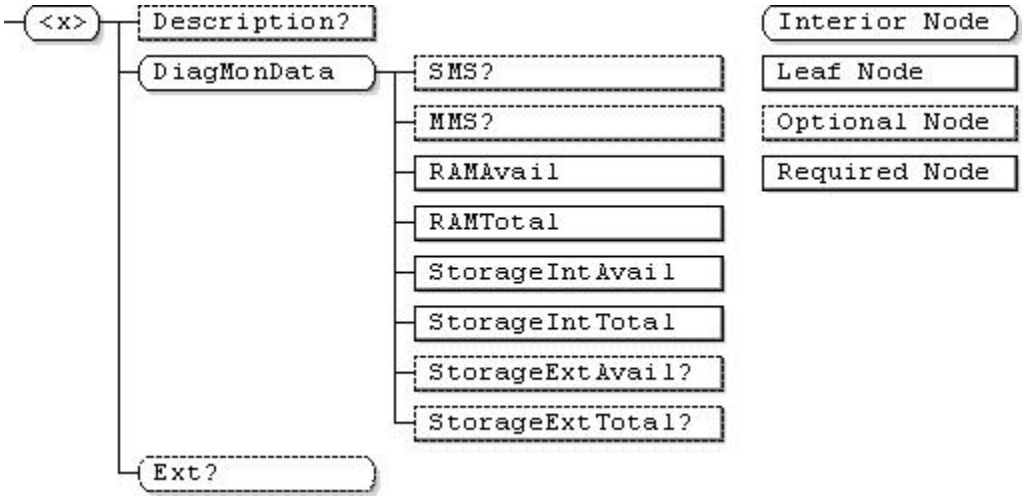

Figure 2 - Memory Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Memory MO. Identifier for the Memory MO MUST be: "urn:oma:mo:oma-diag:memory:1.0".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/SMS

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This node contains the estimated amount of available SMS storage (expressed in kilobytes).

<x>/DiagMonData/MMS

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This node contains the estimated amount of available MMS storage (expressed in kilobytes).

<x>/DiagMonData/RAMAvail

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the estimated current available amount of runtime memory resource for system or application software running (expressed in kilobytes).

<x>/DiagMonData/RAMTotal

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the total amount of runtime memory resource for system or application software running (expressed in kilobytes).

<x>/DiagMonData/StorageIntAvail

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the estimated current available amount of storage space, which can store data and software in the device (expressed in megabytes).

<x>/DiagMonData/StorageIntTotal

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the total amount of storage space, which can store data and software in the Device (expressed in megabytes).

<x>/DiagMonData/StorageExtAvail

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This optional node contains the estimated current available amount of external storage space (expressed in megabytes). The external storage can store data and software. The external storage is typically a memory card (i.e. SD card,) or any R/W storage media.

<x>/DiagMonData/StorageExtTotal

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This optional node contains the total amount of external storage space (expressed in megabytes). The external storage can store data and software. The external storage is typically a memory card (i.e. SD card,) or any R/W storage media

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.1.3 Device Location

5.1.3.1 Introduction

This function allows the DiagMon Server to request for the device to update and preport the geographic location of the device. If the device exposes location information, the DiagMon Client SHOULD support this function. The DiagMon Server MUST support this function.

On receiving the Exec command to the `Operations/Update` node, the DiagMon Client updates the location data, and performs the result reporting as specified in [DiagMonTS]. Alternately, the DiagMon Server MAY perform the Exec command to the `Operations/Upload` node to upload the location data to the DiagDataURL node as specified in [DiagMonTS].

This function SHOULD be disabled by default for protecting user's privacy, and the DiagMon Client SHOULD have an interface to enable or to disable this function anytime. When this function is disabled or rejected by user, the result code for Exec command on the `Operations/Start` node MUST be '`1401 Unauthorized`'.

5.1.3.2 Non-applicable nodes form DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ConfigParms
<x>/DiagMonConfig/DefDuration
<x>/DiagMonConfig/DefMemory
<x>/DiagMonConfig/ReportCondition
<x>/Operations/Start
<x>/Operations/Stop

5.1.3.3 Function Description

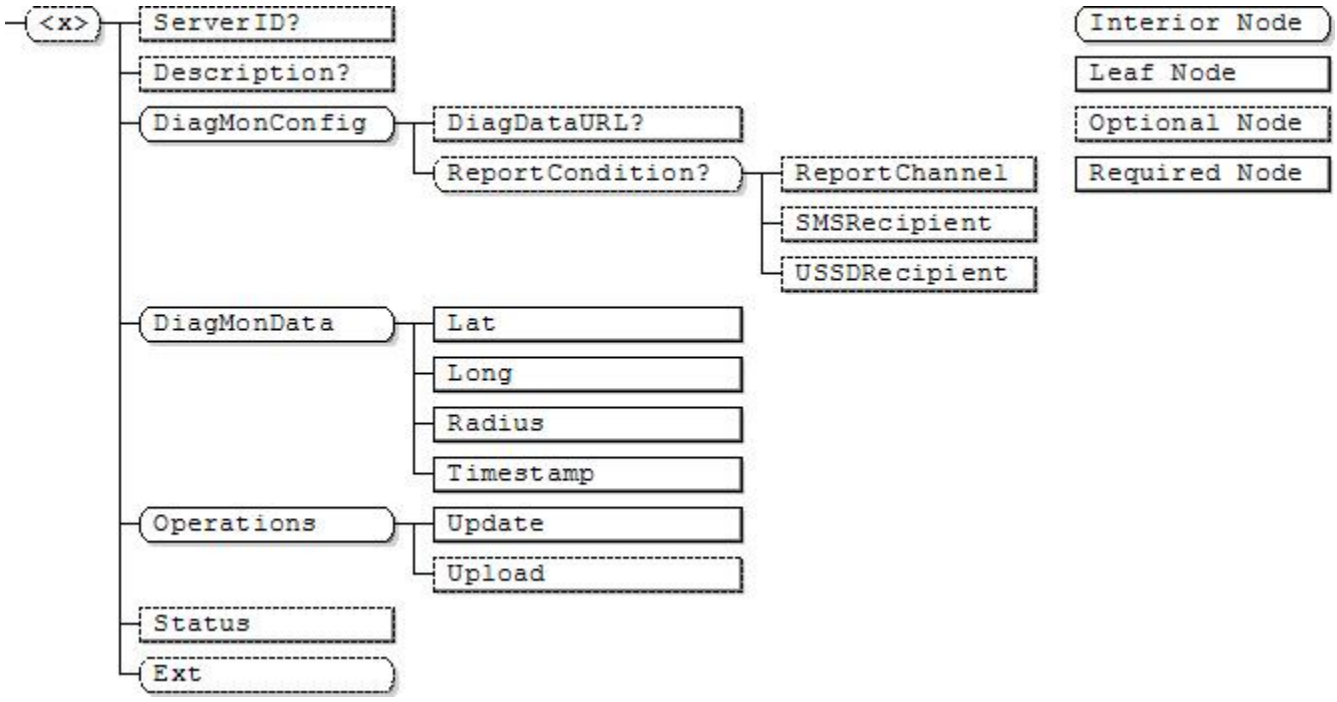

Figure 3 - Device Location Function

<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Last Device Location MO. Identifier for the Last Device Location MO MUST be: "`urn:oma:mo:oma-diag:devicelocation:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	**Tree Occurrence**	**Format**	**Min. Access Types**
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	**Tree Occurrence**	**Format**	**Min. Access Types**
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/Lat

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, No Replace

This leaf node contains the latitude of the circular area as defined in [3GPP-TS_23.032][3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388607 to 8388607.

<x>/DiagMonData/Long

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, No Replace

This leaf node contains the longitude of the circular area as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388607 to 8388607.

<x>/DiagMonData/Radius

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, No Replace

This leaf node contains the radius of the circular area as defined in [3GPP-TS_23.032], section 6.6 i.e. as an integer in the range of 0 to 65535.

<x>/DiagMonData/Timestamp

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, No Replace

This leaf node contains the timestamp that the location data is collected. This value is the time and date string expressed as a UTC based [ISO8601] basic format.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Update

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

This node is used for the DiagMon Server to update the location data of the device. On receiving the Exec command to this node, the DiagMon Client SHOULD update the location data by properly setting the DiagMonData sub-tree. The location date MUST be updated once per the received Exec command, and MUST NOT be periodically updated.

After processing the Exec command, the DiagMon Client performs the result reporting as specified in the [DiagMonTS].

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node. This node is used for the DiagMon Server to update the location data and upload it to the specific URL. On receiving the Exec command to this node, the DiagMon Client MUST update the location data first by properly setting the DiagMonData sub-tree. If the location update is successful, the location data will be uploaded to the URL specified by the `DiagMonConfig/DiagDataURL` node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

See [DiagMonTS] for description of this node.

5.2 Diagnostic

5.2.1 Trap Event Logging Function

5.2.1.1 Introduction

If the device exposes trap event functionality to the DiagMon Client, then the DiagMon Client SHOULD support this function. The DiagMon Server MUST support this function.

This function is used for logging trap event in the device. The Trap mechanism specified in [DiagMonTrapMO] is to notify the specific events to the DiagMon Server (outward notification) or to the functional component such as an MO (inward notification). Besides notifying the trap events, there are cases that logging trap events might be desirable. The trap event logging can be used for the batch retrieval of the trap event records to analyse the overall trap processing. The Trap Event Logging Function will provide a standard method to selectively collect trap events, of single or multiple types, and then to retrieve the log at the time of interest and/or convenience depending on the characteristics of management tasks. Note that this function doesn't change the Trap mechanism specified in the [DiagMonTrapMO], and this function just enables the recording of the trap events

.

The Trap Event Logging Function collects the specified trap events and stores them in the log, which is separately managed by each instance of the function and can be retrieved by the management system through Get command (note that it is not prevented to use periodic report functions described in the DiagMon framework for automated reporting).

Through the Trap Event Logging Function Management Objects described in the next section, the DiagMon Server can specify one or more trap events to be collected, possibly together with other information related to the events generated, and the way they are stored. In addition, it also allows the DiagMon Server to remotely control the execution status of the function.

5.2.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ReportCondition

5.2.1.3 Function Description

Figure below is graphical representation of the Trap Event Logging Function MO.

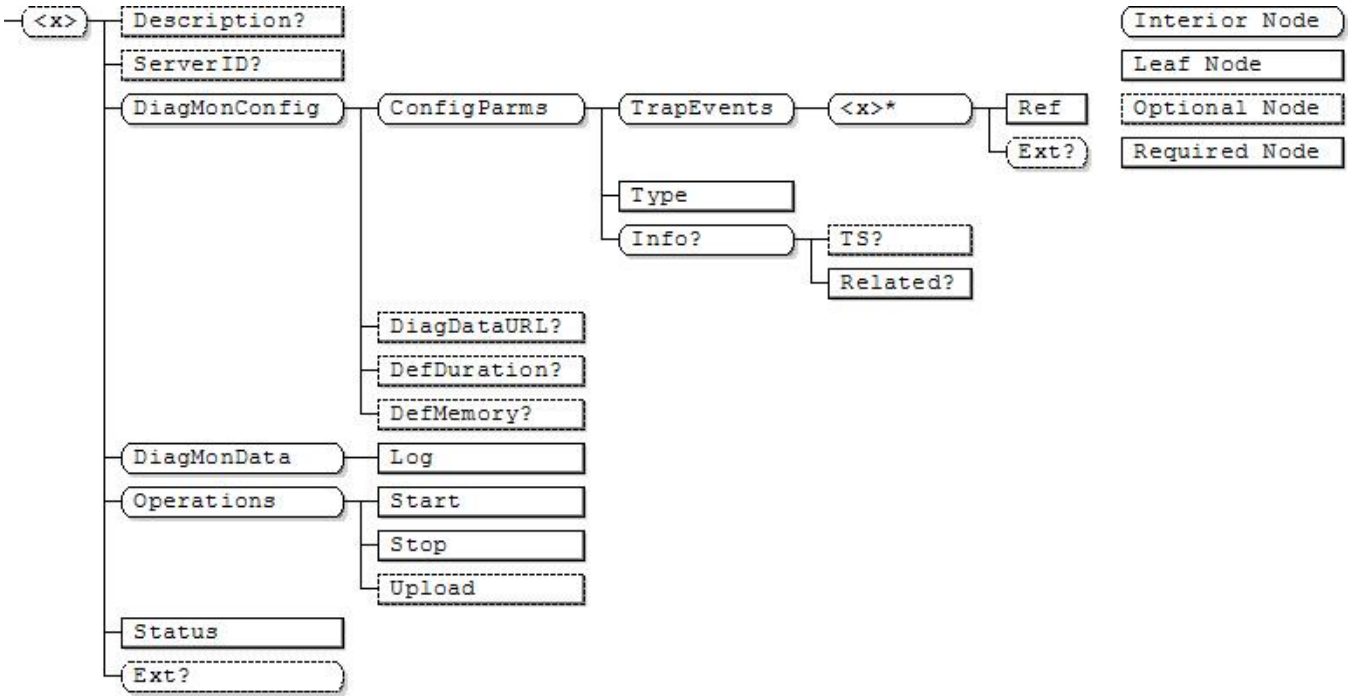

Figure 4 - Trap Event Logging Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Trap Event MO. Identifier for the Trap Event MO MUST be: "`urn:oma:mo:oma-diag:trapeventlogging:1.1`".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/TrapEvents

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

This interior node is a placeholder for the configuration nodes that are used to specify the events (one or more) to be collected and other information needed for collecting those events. For those specified by these nodes, the Trap Event Logging Function SHALL collect and store events into the log as they occur.

<x>/DiagMonConfig/ConfigParms/TrapEvents/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node is a placeholder for those nodes to specify each event to be collected and other information needed for collecting those trap events.

<x>/DiagMonConfig/ConfigParms/TrapEvents/<x>/Ref

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node specifies the Trap Identifier or vendor specified equivalent to indicate the trap event that is required to be logged.

<x>/DiagMonConfig/ConfigParms/TrapEvents/<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This interior node is for vendor specific extension in terms of specifying and collecting trap events.

<x>/DiagMonConfig/ConfigParms/Type

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node specifies the type of logging buffer. The Trap Event Logging Function SHALL reserve some buffer in memory to store the collected trap events, but the size of the buffer is determined by the vendor. It is also up to the vendor to decide which types of buffer to support. In this specification, there are two different types of buffer specified: linear and circular, and hence the content of this node can be “linear” or “circular” (value is case-insensitive).

<x>/DiagMonConfig/ConfigParms/Info

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	node	Get

This interior node is a placeholder for configuration nodes to specify the elements of information to be collected together with the associated trap events.

<x>/DiagMonConfig/ConfigParms/Info/TS

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	bool	Get

This optional node specifies whether the time stamp is to be recorded as the associated trap event is collected. If the content of this node is “true”, then the time stamp MUST be recorded. Otherwise, or if the node is not present, time stamp is not recorded.

<x>/DiagMonConfig/ConfigParms/Info/Related

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node specifies other associated information to be collected together with the event.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/Log

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node stores the log of trap events encapsulated in XML format. The value of this node MUST conform to the format specified in the section 5.2.1.4.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.2.1.4 Trap Event Log Content and Format

When a trap event occurs, the event information is notified to the registered recipients as specified in the [DiagMonTrapMO]. Basically, the record of the trap event log contains the same contents delivered in this notification, and it contains the following information:

- **Type**: This element MUST be specified, and the content of this element MUST be 'true' for the active trap and 'false' for the inactive trap.
- **Source**: This element MUST be specified and the content of this element MUST specify the URI of the root node for the Trap MO.
- **Recipient**: This element MUST be specified in case that there are any recipients for the Trap. This element specifies one recipient of the Trap, and multiple elements MUST be specified as many as the recipients that the Trap has. The content of this element MUST contain the value of either the ToRef/TargetServer/<x>/ServerID node or ToRef/TargetURI/<x>/URI node.
- **MOID:** This element MUST be specified and the content of this element MUST specify the value of the MOID of the Trap MO.
- **Timestamp:** This element MUST be specified if the DiagMonConfig/ConfigParms/Info/TS node indicates to record the timestamp. The content of this element MUST follow the [YYYYMMDD]T[hhmmss]Z format, as defined by [ISO8601].

The content of the DiagMonData/Log node MUST conform to the XML schema defined in the C.4, and here is an illustrative example for the content of the DiagMonData/Log node storing two trap event records:

```
<TrapEventLog>
  <TrapEvent>
    <Type>true</Type>
    <Source>./trap/qostrap</Source>
    <MOID>urn:oma:mo:oma-diagmontrap:qos:1.0</MOID>
    <Recipient>DMServerID1</Recipient>
    <Recipient>DMServerID2</Recipient>
    <Recipient>DMServerID3</Recipient>
  </TrapEvent>
  <TrapEvent>
    <Type>true</Type>
    <Source>./trap/hardreboottrap</Source>
```

```
    <MOID>urn:oma:mo:oma-diagmontrap:hard-reboot:1.0</MOID>
    <Timestamp>20121221T235959Z</Timestamp><Recipient>DMServerID1</Recipie
  nt>
    <Recipient>./builtindevicetest/Operations/Start</Recipient>
  </TrapEvent>
</TrapEventLog>
```

5.2.2 Built-in Device Test

5.2.2.1 Introduction

This function allows the DiagMon Server to invoke a Built-in Device Test on a device. As an optional capability, the DiagMon Client MAY record the log of the Built-in Test performed on the device.

This function MUST be invoked by performing an Exec on the 'Operations/Start' node.

If the device exposes Built-in Device Test interface, the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

5.2.2.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/DefDuration
<x>/DiagMonConfig/DefMemory
<x>/DiagMonConfig/ReportCondition

5.2.2.3 Function Description

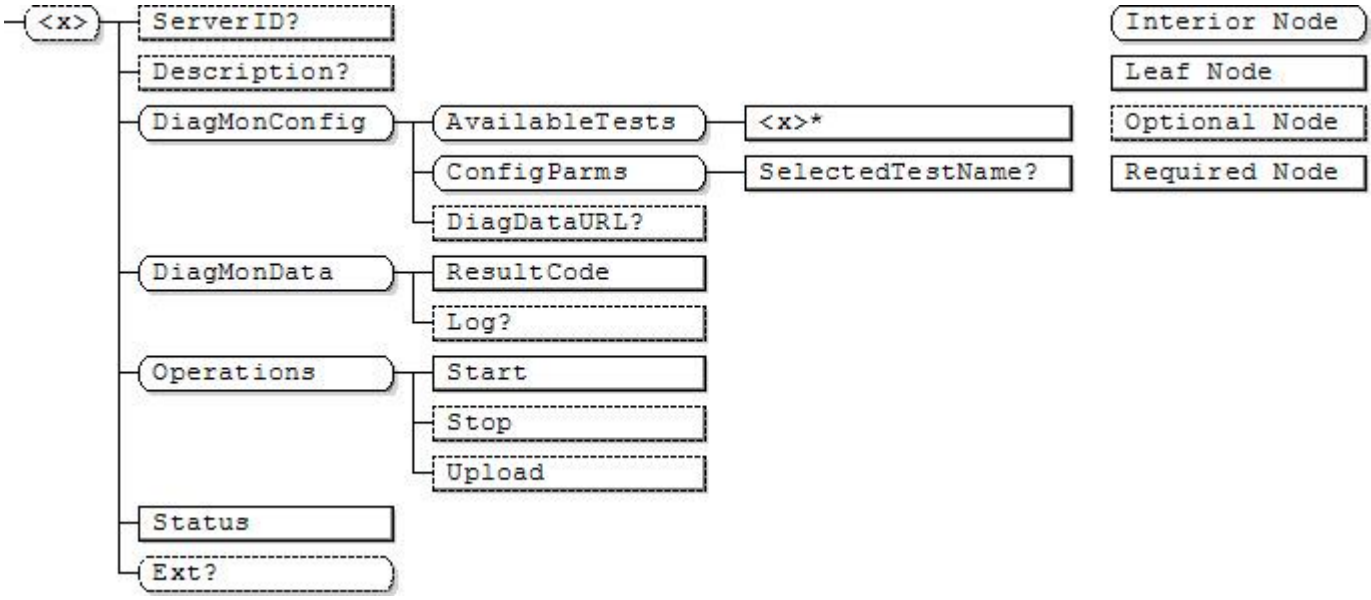

Figure 5 - Built-in Device Test Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Built-in Device Test MO. Identifier for the Built-in Device Test MO MUST be: "`urn:oma:mo:oma-diag:builtintest:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/AvailableTests

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

This node is a placeholder for a list of all built-in Device tests which are supported by the device .

<x>/DiagMonConfig/AvailableTests/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	chr	Get

This node contains a name of a self-test that the Device supports.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/SelectedTestName

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node contains the name of the Built-in Test to run, such as 'LCDTest' or 'MemoryTest', which is specified by the DiagMon Server. If this node does not exist, that indicates that the Server is asking the Device to perform the default built-in test. The value of the node is up to implementation. If the Server specified a value that is not supported by the Client, the Client MUST return error code `1460` (Failure, Specified Built-in Test Function Not Supported) as the result of the Exec on the `Operations/Start` node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/ResultCode

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node provides the result of the most recent run of Built-in Device Test. The status codes are defined in the following table:

Code	Meaning
1100	Ready to run the test, but waiting for the Device restart
1200	Success, no log recorded.
1201	Success, log was recorded.
1400	Failure, no log was recorded.
1401	Failure, log was recorded.
1460	Test was not run - Specified Built-In Test Function is Not Supported, no log was recorded.

<x>/DiagMonData/Log

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	xml	Get

This node contains the log data of the Built-in Device Test in XML format. The content of this node SHOULD be initialized by Exec on “Operations/Start”.The actual XML structure is up to implementations.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Get, Exec

See [DiagMonTS] for description of this node. If the device supports a single buit-in test, then:

a) If the test can be stopped, this node SHOULD be present.

b) If the test cannot be stopped, this node MUST NOT be present.

If the device supports multiple built-in tests and some can be stopped and some cannot, executing this node on non-stoppable test MUST return error code 1402 (Not Implemented).

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.2.3 Trace Logs

5.2.3.1 Introduction

This function allows the DiagMon Server to control recording trace logs, and to retrieve it. The trace log is useful in determining whether there is any device (or application) malfunction for debugging purpose.

If the device exposes trace logs interface, the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

5.2.3.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ReportCondition

5.2.3.3 Function Description

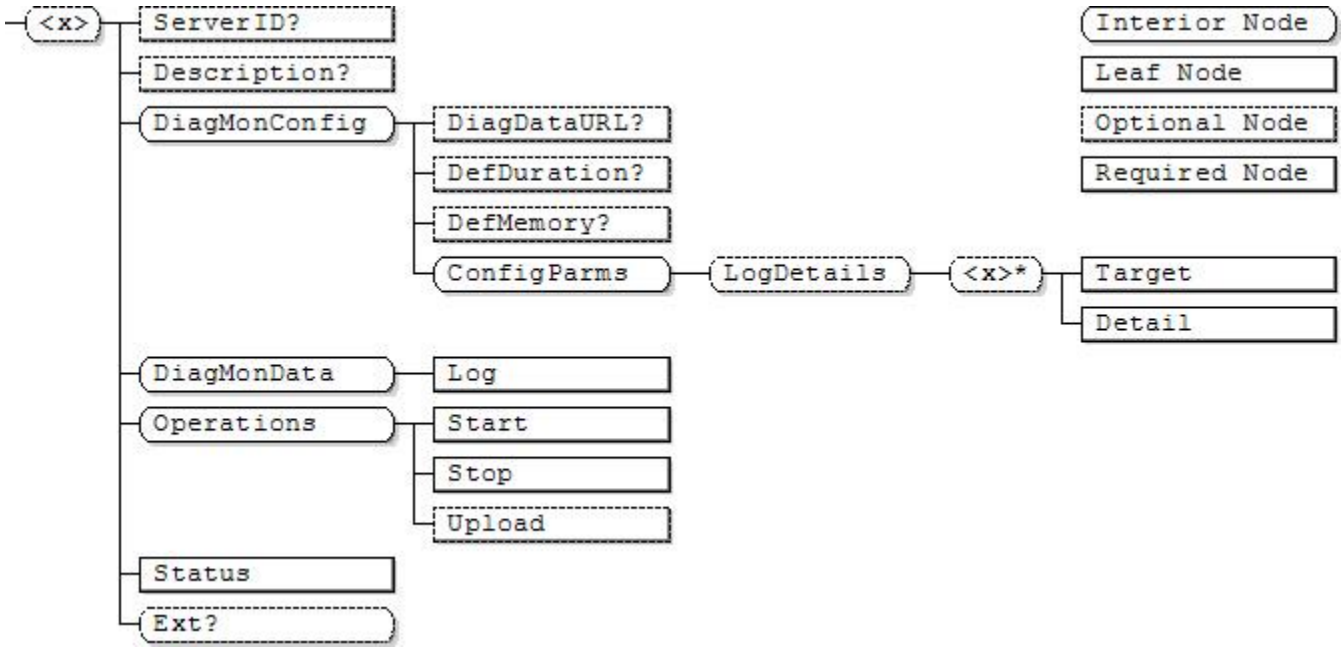

Figure 6 - Trace Logs Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Trace Log MO. Identifier for the Trace Log MO MUST be: "`urn:oma:mo:oma-diag:tracelog:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/LogDetails

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This optional node is the placeholder of sets of configuration parameters which control the level of details on logging records. If this node is not exist, controlling the level of detail is not supported.

<x>/DiagMonConfig/ConfigParms/LogDetails/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get, Add, Delete

This optional node holds the sets of configuration parameters to control the level of detail on logging records. These node MAY be added by DM Server.

<x>/DiagMonConfig/ConfigParms/LogDetails/<x>/Target

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This required node holds the name of the log facility module for controlling the level of detail. The allowed names to specify are up to implementation.

<x>/DiagMonConfig/ConfigParms/LogDetails/<x>/Detail

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This required node specifies the level of detail on the log facility module which is specified by 'Target' node. The range of value MUST be 0-9. The range SHOULD follow the rule that a) higher number mean more details and vice versa; b) a value of 0 means no log should be generated. If the Server specified a value that is outside the range supported by the Client, the Client MAY convert it to the closest value.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/Log

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Exec

Thisnode contains the data of log. The XML schema of the data is left to implementation.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.2.4 Panic Logs

5.2.4.1 Introduction

If the device exposes panic log functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve panic logs and device crash information. This value is useful in determining if there is a device or application malfunction and retrieve associated information on the event occurrences.

5.2.4.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ConfigParams
<x>/DiagMonConfig/DefDuration
<x>/DiagMonConfig/DefMemory
<x>/DiagMonConfig/ReportCondition

5.2.4.3 Function Description

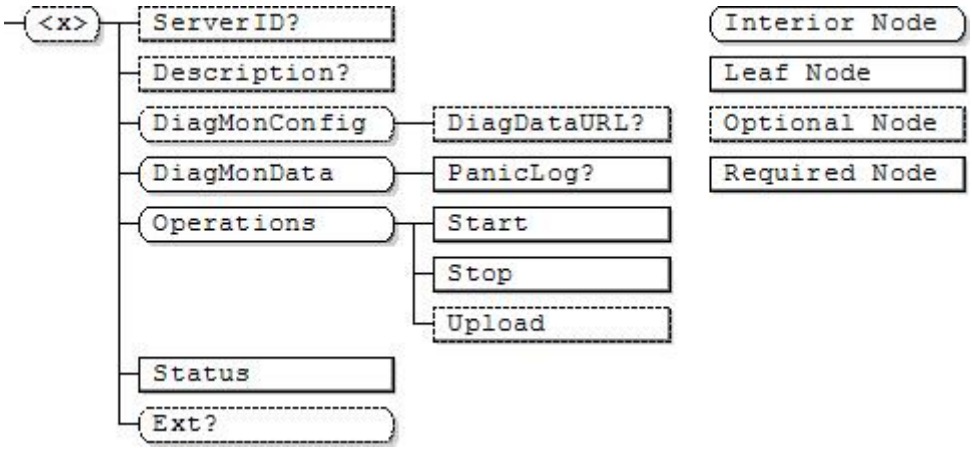

Figure 7 - Panic Logs Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Panic Log MO. Identifier for the Panic Log MO MUST be: "urn:oma:mo:oma-diag:paniclog:1.1".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/PanicLog

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	xml	Get

This node contains the panic log and associated data encapsulated in XML format describing panic/device crash logs. The XML schema of the data is left to implementation.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.2.5 NFC (Near Field Communication)

5.2.5.1 Introduction

If the device exposes NFC functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.
The scope of the NFC Function is to allow the DiagMon Server to evaluate the status of a NFC (Near Field Communication) enabled device and retrieve information on the status and interconnection of its hardware components.

5.2.5.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ConfigParams

5.2.5.3 Function Description

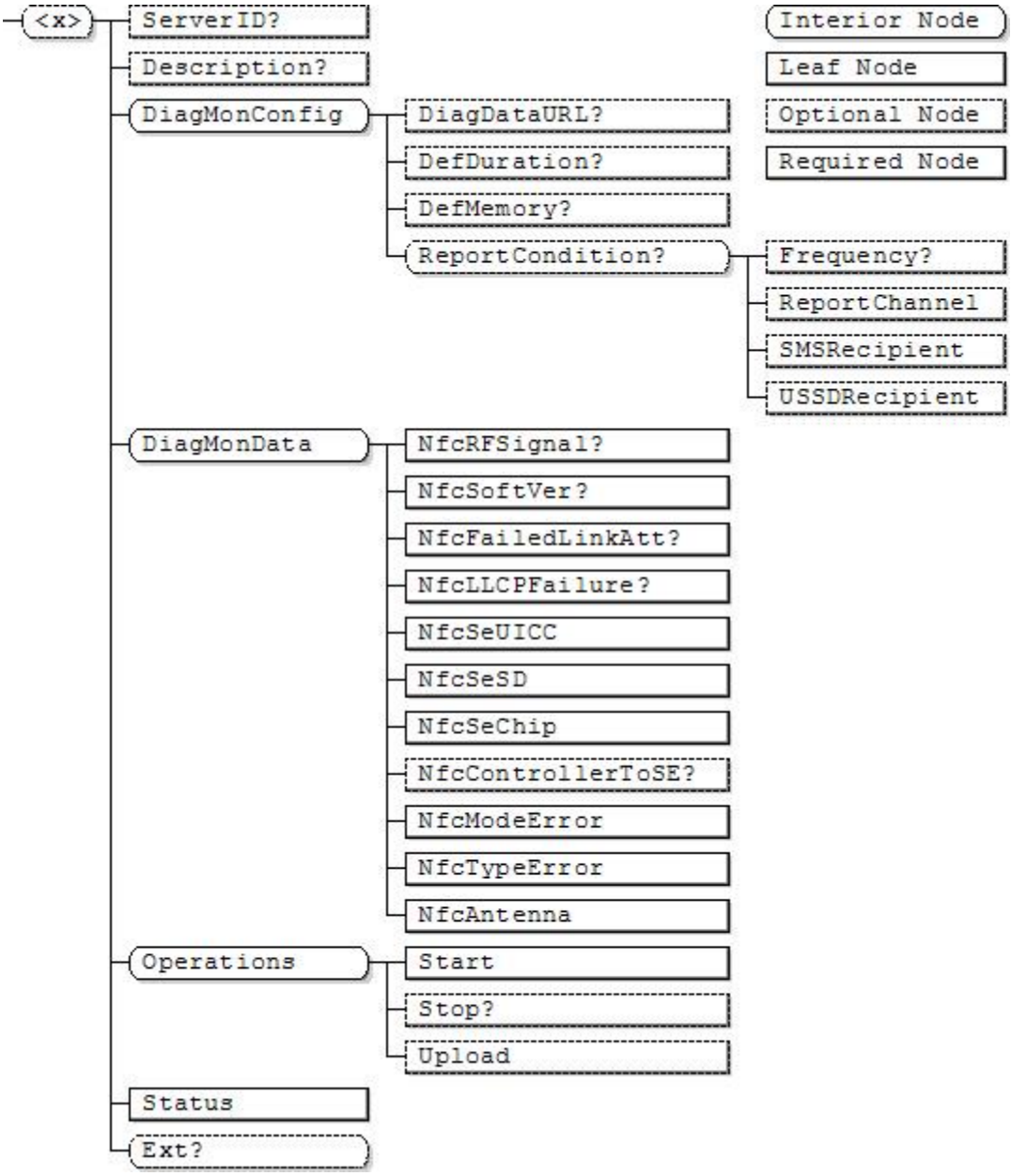

Figure 8 - NFC Info Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the NFC MO. Identifier for the NFC MO MUST be: "urn:oma:mo:oma-diag:NFC:1.1".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/NfcRFSignal

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	xml	Get

This node contains the log and associated data encapsulated in XML format describing RF Signal failures, including: type and sub-type of technology used, index modulation, communication result (including error code), average bit error and date and time of the failure.

Data description and associated XML schema is added in Appendix C 1

<x>/DiagMonData/NfcSoftVer

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node collects the Software version installed in the controller.

<x>/DiagMonData/NfcFailedLinkAtt

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

Differently from the information provided by the NfcRFSignal, this node collects logs from failed link attempts between two NFC entities where the issue is not related to RF Signal failures.

Logs MUST include specific error code(s), date and time when the error(s) occurred.

Data	**Description**
Date and Time: [ISO8601] basic format	UTC based date and time of the failure
ErrorCode: <data>	Error Code

<x>/DiagMonData/NfcLLCPFailure

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node collects error logs related to failures within the LLCP layer (The LLCP is only used for Peer-2-Peer Communication and allows upper layers to have a reliable bi-directional data link over Lower layer - NFC Interface and Protocol).

Logs MUST include specific error code(s), date and time when the error(s) occurred.

<x>/DiagMonData/NfcSeUICC

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node defines the number of UICCs embedded as Secure Element in the NFC device.

<x>/DiagMonData/NfcSeSD

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node defines the number of SD Cards embedded as Secure Element in the NFC device.

<x>/DiagMonData/NfcSeChip

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node defines the number of chips embedded as Secure Element in the NFC device.

<x>/DiagMonData/NfcControllerToSE

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This optional node collects log and associated data describing communication failures between the controller and the Secure Element(s), including: specific SE where the issue occurred, specific error code, and date and time of the error.

Secure Element	**Description**
1	Chip
2	UICC
3	SD Card

Data	**Description**
Secure Element: <1 to 3>	Secure Element
ErrorCode: <data>	Error Code
Date and Time: [ISO8601] basic format	UTC based date and time of the failure

<x>/DiagMonData/NfcModeError

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node collects error log and associated data encapsulated in XML format describing failures within the NFC controller about mode switch.
Log to include: Date, time, NFC mode attempted to contact on the last failure(s) and last successful NFC mode.
Data description and associated XML schema is added in Appendix C 2

Mode	**Description**
1	P2P
2	Read & Write
3	Card Emulation

<x>/DiagMonData/NfcTypeError

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node collects error log and associated data encapsulated in XML format describing failures within the NFC controller about type switch.
Log to include: Date, time and NFC technology type attempted to contact on the last failure(s).
Data description and associated XML schema is added in Appendix C 3

Type	Description
1	ISO 14443 Type A
2	ISO 14443 Type B
3	ISO 18092 Type F

<x>/DiagMonData/NfcAntenna

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node specifies whether the NFC Controller can communicate with an NFC antenna

Presence	Description
1	Yes
0	No

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	null	Get,Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.3 Operational

5.3.1 Restart

5.3.1.1 Introduction

If the device supports restart functionality, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to remotely restart a device. As an optional capability, different "restart levels" MAY be supported to enable varying degrees of device initialization. This function MUST be invoked explicitly.

5.3.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/DiagDataURL
<x>/DiagMonConfig/DefDuration
<x>/DiagMonConfig/DefMemory
<x>/DiagMonConfig/ReportCondition
<x>/Operations/Stop
<x>/Operations/Upload
<x>/Status

5.3.1.3 Function Description

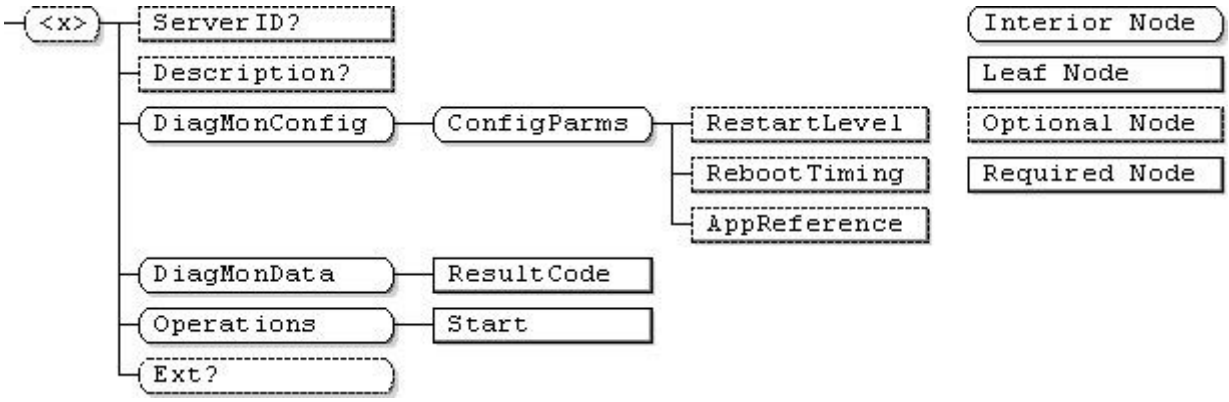

Figure 9 - Restart Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Restart MO. Identifier for the Restart MO MUST be: "urn:oma:mo:oma-diag:restart:1.0".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/RestartLevel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get

This optional node specifies the level at which the device restart operation is.

Integer Value	RestartLevel	Description
10	Restart operating system	Restart the operating system.
20	Restart all applications	Restart all applications
30	Restart single application	Restart of a single application, as identified by the AppReference node
40-100	Reserved	

Note: The DiagMon Function MUST fail if the RestartLevel is set to 30 (Restart Single Application) and the AppReference node is not present or if the value of that node does not map to an application which is currently running on the device.

<x>/DiagMonConfig/ConfigParms/RebootTiming

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

This optional node specifies the timing of the requested reboot.

Integer Value	Restart Timing	Description
10	Immediate	Reboot immediately. This forces the device to reboot immediately.
20	Requested	Reboot requested. This indicates that a graceful reboot has been requested and the device will reboot at the next practical opportunity.
30	Reserved	

<x>/DiagMonConfig/ConfigParms/AppReference

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

This optional node specifies the application to be restarted in the case of single application restart. The semantics of the application reference is up to implementation.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/ResultCode

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node provides the status of the last restart operation. The allowed range of values for this node is as per the following table:

Code	Meaning
1100	No information on status of the last restart operation
1200	Success
1240 - 1249	Success: vendor specified result code for added information
1400	Failure
1402	Failure: reboot by software not supported
1401	Failure: reboot request rejected due to device policy
1470 - 1499	Failure: vendor specified result code for added information

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

5.3.1.4 Additional Information

The status of this DiagMon function MUST be reported, either asynchronously, using the Generic Alert mechanism [DMPRO] or synchronously, by storing the status in the DM Tree for later retrieval.

Therefore, at least one of the following nodes MUST be defined for this DiagMon Function:

- ServerID (for asynchronous reporting)
- ResultCode (for synchronous reporting)

5.4 Sensor

5.4.1 Sensor Info Function

5.4.1.1 Introduction

If a device contains a sensor, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function will allow the Server to determine a variety of sensor information, such as the sensor data and unit, but also information about the sensor type and its location.

5.4.1.2 Non-applicable nodes from DiagMon MO definition

None

5.4.1.3 Function Description

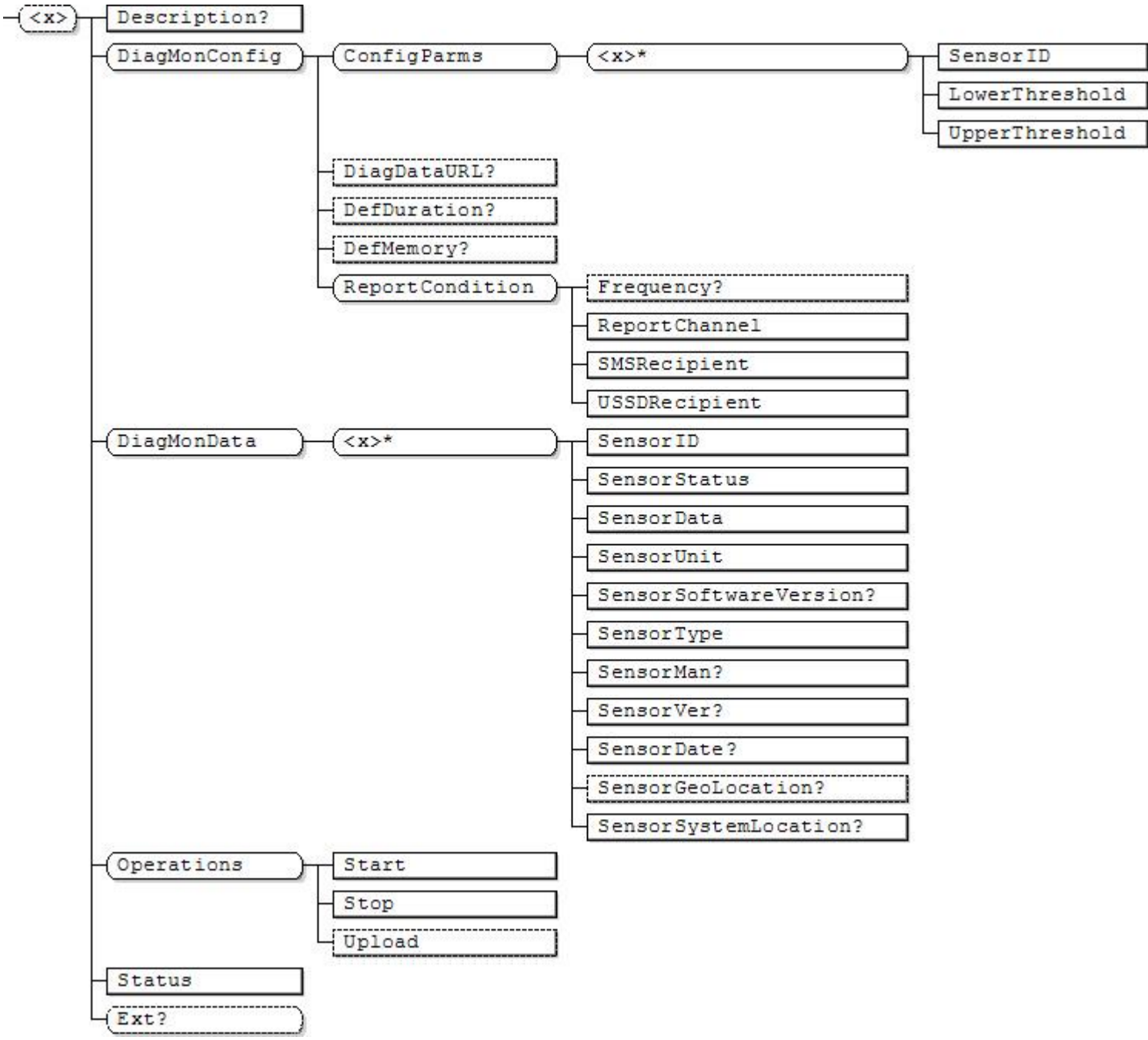

Figure 10 - Sensor Info Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Sensor MO. Identifier for the Sensor MO MUST be: "`urn:oma:mo:oma-diag:sensorinfo:1.0`".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for zero or more instances of sensor ID.

<x>/DiagMonConfig/ConfigParms/<x>/SensorID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the sensor ID.

<x>/DiagMonConfig/ConfigParms/<x>/LowerThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get, Replace

This node specifies the lower reporting threshold for the sensor specified in SensorID.

<x>/DiagMonConfig/ConfigParms/<x>/UpperThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get, Replace

This node specifies the upper reporting threshold for the sensor specified in SensorID.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for zero or more instances of sensor ID.

<x>/DiagMonData/<x>/SensorID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the sensor ID.

<x>/DiagMonData/<x>/SensorStatus

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node is used to indicate the status of the sensor. The value of SensorStatus MUST be one of the following values:

SensorStatus	**Meaning**	**Description**
0	Off	The sensor is switched off.
1	Active	The sensor is switched on and operating normally.
2	Not Installed	The sensor is not installed.
3	Malfunction - unspecified	The sensor has an unspecified error.
4	Malfunction – out of range	The measured value is out of the sensor's measurement range.
5	Malfunction – calibration needed	The sensor needs calibration.
6	Malfunction – SW error	A software error has occurred.
7	Malfunction – transmission error	The sensor has detection transmission problems.
8	Unknown	The sensor information is not available. In this status, the value of the DiagMonData/<x>/SensorData node MUST be ignored.

<x>/DiagMonData/<x>/SensorData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the current sensor data in a unit as described by the `DiagMonData/<x>/SensorUnit` node.

<x>/DiagMonData/<x>/SensorUnit

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the sensor data unit.

<x>/DiagMonData/<x>/SensorSoftwareVersion

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the SW version of the sensor.

<x>/DiagMonData/<x>/SensorType

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the sensor type. Type examples are temperature, humidity, pressure, speed.

<x>/DiagMonData/<x>/SensorMan

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the name of the sensor manufacturer.

<x>/DiagMonData/<x>/SensorVer

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the version of the sensor.

<x>/DiagMonData/<x>/SensorDate

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	date	Get

This node contains the date of the sensor manufacture. If the date of manufacture is not available, this value MUST be null.

<x>/DiagMonData/<x>/SensorGeoLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	bin	Get

This node contains the geo-location of the sensor. with the data encoded as per [3GPP-TS_23.032], section 7.3.2.

<x>/DiagMonData/<x>/SensorSystemLocation

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the location of the sensor within a system e.g. an industry plant.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Get

See [DiagMonTS] for description of this node. This operation is to activate the sensor and start the sensor specific activation process (calibration process).

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Get

See [DiagMonTS] for description of this node. This operation is to deactivate the sensor.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

6. Metrics

6.1 RF Metrics

6.1.1 3GPP GSM Metrics

6.1.1.1 Introduction

If the device exposes GSM RF functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve 3GPP GSM RF parameters, measured by the device, that provide an indication of the RF environment at the time of function invocation. The measured parameters include Network Measurement Results as specified in [3GPP-TS_44018] as well as transmit and receive power and signal quality indicators as specified in [3GPP-TS_25.215] and [3GPP-TS_25.225]. This function is only applicable to 3GPP GSM devices or 3GPP UMTS devices operating on GSM.

This function MUST be invoked explicitly. The status of this DiagMon Function can be reported asynchronously, using the Generic Alert mechanism [DMPRO] or it can be stored in the DM Tree for later retrieval.

6.1.1.2 Non-applicable nodes from DiagMon MO definition

None.

6.1.1.3 Function Description

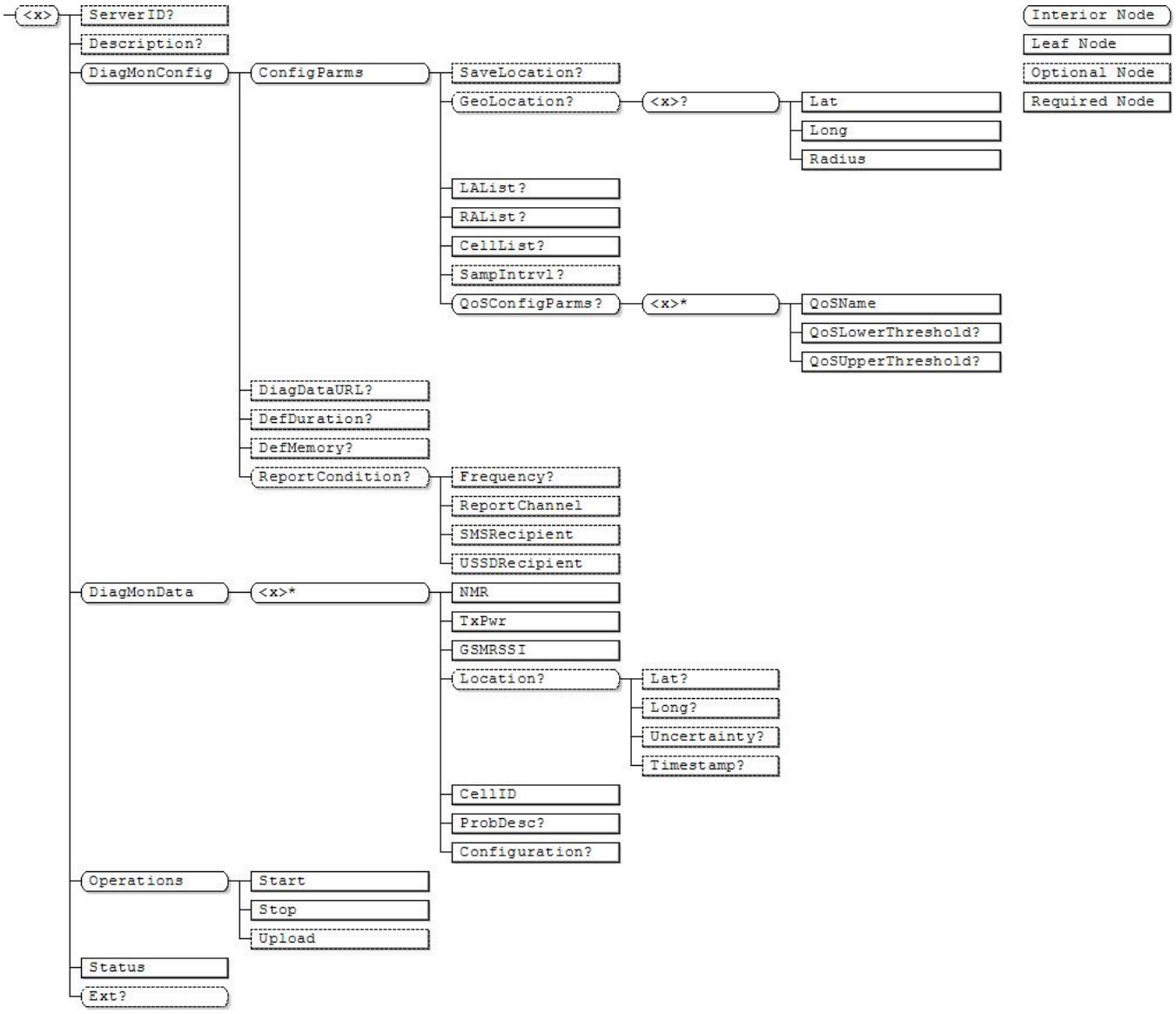

Figure 11 - 3GPP GSM RF Metrics Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the 3GPP GSM RF Metrics MO. Management Object Identifier for the 3GPP GSM RF Metrics MO MUST be: “urn:oma:mo:oma-diag:RFParms_3GPP_GSM:1.1”.

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/SaveLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	bool	Get, Replace

This leaf node indicates whether the location information is requested to be saved. If the device is not able to determine the location, it is not required to save it.

<x>/DiagMonConfig/ConfigParms/GeoLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This node acts as a placeholder for circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	node	Get

This node acts as a placeholder for one or more circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Lat

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the latitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Long

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the longitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Radius

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the radius of the circular area as defined in [3GPP-TS_23.032], section 6.3.

<x>/DiagMonConfig/ConfigParms/LAList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of Location Areas. Each LA is defined using LA Identity (LAI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. LAI is specified in 3GPP TS 23.003 section 4.1. The list SHALL be LA values separated by commas.

<x>/DiagMonConfig/ConfigParms/RAList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of Routing Areas. Each RA is defined using RA Identity (RAI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. LAI is specified in 3GPP TS 23.003 section 4.2. The list SHALL be RA values separated by commas.

<x>/DiagMonConfig/ConfigParms/CellList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of cells. Each cell is defined using Cell Identity (CI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. CI is specified in 3GPP TS 23.003 section 4.3. The list SHALL be CI values separated by commas.

<x>/DiagMonConfig/ConfigParms/SampIntrvl

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains an integer value indicating the sampling interval in seconds at which Diagnostics and Monitoring data are collected on the device.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	node	Get

This node is a placeholder for QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for instances of QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, Replace

This node specifies the QoS parameter name to be measured. When using the QoS parameters from [TS102.250], the parameter name SHALL be as specified in the specification (e.g. “Streaming Reproduction Start Delay”).

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSLowerThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as lower threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, "Streaming Reproduction Start Delay", the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is equal or greater than the value of this node.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSUpperThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as upper threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, "Streaming Reproduction Start Delay", the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is minor or equal than the value of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This required node is a placeholder for the various collected RF data sets. The node name is constructed as the time the RF parameter measurements were taken, encoded per [ISO8601]

<x>/DiagMonData/<x>/NMR

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node contains “Network Measurement Results”, as defined by [3GPP-TS_44.018] “Measurement Results”, encapsulated in XML format.

<x>/DiagMonData/<x>/TxPwr

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains a measure of the total transmit power, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225], "UE Transmitted Power".

<x>/DiagMonData/<x>/GSMRSSI

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the value of the GSM Received Signal Strength Indication, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225], "GSM Carrier RSSI".

<x>/DiagMonData/<x>/Location

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This optional node contains the location where the measurements were taken, with the data derived from the definition of [3GPP-TS_23.032], section 7.3.2 ellipsoid point with uncertainty circle. Note that if the location is not desired by the server, or if the location data is unavailable, the node will not be present.

<x>/DiagMonData/<x>/Location/Lat

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the latitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388607 to 8388607

<x>/DiagMonData/<x>/Location/Long

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the longitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388608 to 8388607.

<x>/DiagMonData/<x>/Location/Uncertainty

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the uncertainty of the circular area as defined in [3GPP-TS_23.032], section 6.2 i.e. as an integer in the range of 0 to 127. If uncertainty is not known this note may not be present even if location is provided.

<x>/DiagMonData/<x>/Location/Timestamp

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This leaf node contains the timestamp when the location data is collected. This value is the time and date string expressed as a UTC based [ISO8601] basic format.

<x>/DiagMonData/<x>/CellID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the value of the cell identifier – the CellGlobalIDEutra asdefined in [3GPP-TS_36.331].

<x>/DiagMonData/<x>/ProbDesc

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the text describing any problem that may have occurred during the measurement. It is up to the device to determine if a problem description should be attached or not.

<x>/DiagMonData/<x>/Configuration

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the configuration of the UE at the time of measurement – this node may be used to store data from an error condition.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

6.1.2 3GPP UMTS Metrics

6.1.2.1 Introduction

If the device exposes UMTS RF functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve 3GPP UMTS RF parameters, measured by the device, that provide an indication of the RF environment at the time of function invocation. The measured parameters include Network Measurement Results as specified in [3GPP-TS_44018] as well as transmit and receive power and signal quality indicators as specified in [3GPP-TS_25.215] and [3GPP-TS_25.225]. This function is only applicable to 3GPP UMTS devices.

This function MUST be invoked explicitly. The status of this DiagMon Function can be reported asynchronously, using the Generic Alert mechanism [DMPRO] or it can be stored in the DM Tree for later retrieval.

6.1.2.2 Non-applicable nodes from DiagMon MO definition

None

6.1.2.3 Function Description

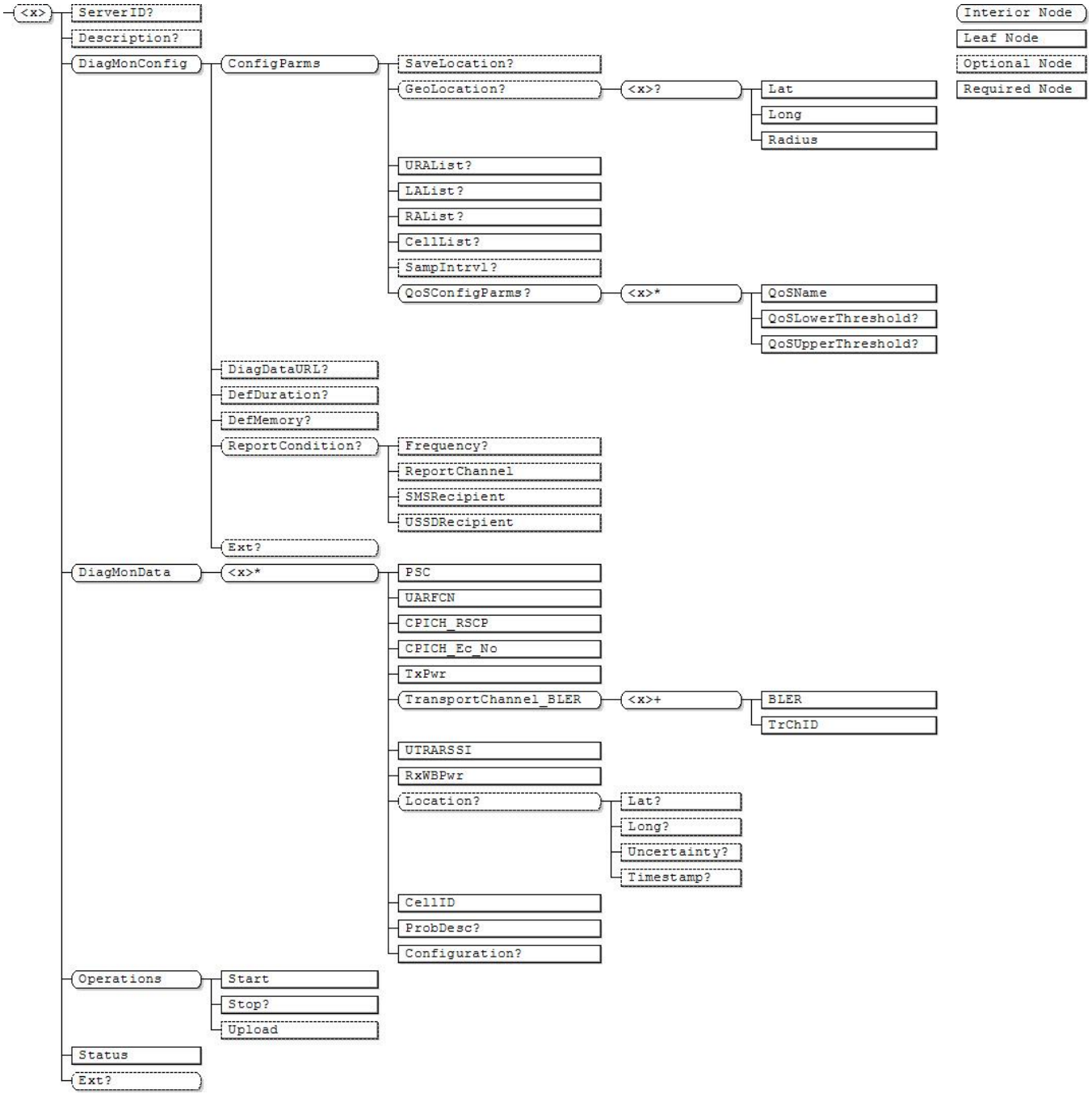

Figure 12 - 3GPP UMTS RF Metrics Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the 3GPP UMTS RF Metrics MO. Management Object Identifier for the 3GPP UMTS RF Metrics MO MUST be: "`urn:oma:mo:oma-diag:RFParms_3GPP_UMTS:1.1`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/SaveLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	bool	Get, Replace

This leaf node indicates whether the location information is requested to be saved. If the device is not able to determine the location, it is not required to save it.

<x>/DiagMonConfig/ConfigParms/GeoLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This node acts as a placeholder for circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	node	Get

This node acts as a placeholder for one or more circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Lat

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the latitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Long

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the longitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Radius

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This leaf node contains the radius of the circular area as defined in [3GPP-TS_23.032], section 6.6.

<x>/DiagMonConfig/ConfigParms/URAList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of UTRAN Registration Areas. Each URA is defined using URA Identity, broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. URA Identity is specified in [3GPP-TS_25.331] section 10.3.2.6. The list SHALL be URA values separated by commas.

<x>/DiagMonConfig/ConfigParms/LAList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of Location Areas. Each LA is defined using LA Identity (LAI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. LAI is specified in 3GPP TS 23.003 section 4.1. The list SHALL be LA values separated by commas.

<x>/DiagMonConfig/ConfigParms/RAList

Status	Tree	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of Routing Areas. Each RA is defined using RA Identity (RAI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. LAI is specified in 3GPP TS 23.003 section 4.2. The list SHALL be RA values separated by commas.

<x>/DiagMonConfig/ConfigParms/CellList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node defines the list of cells. Each cell is defined using Cell Identity (CI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. CI is specified in 3GPP TS 23.003 section 4.3. The list SHALL be CI values separated by commas.

<x>/DiagMonConfig/ConfigParms/SampIntrvl

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains an integer value indicating the sampling interval in seconds at which Diagnostics and Monitoring data are collected on the device.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	node	Get

This node is a placeholder for QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for instances of QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, Replace

This node specifies the QoS parameter name to be measured. When using the QoS parameters from [TS102.250], the parameter name SHALL be as specified in that specification (e.g. “Streaming Reproduction Start Delay”).

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSLowerThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as lower threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is equal or greater than the value of this node.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSUpperThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as upper threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is minor or equal than the value of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This interior node allows for the extensions on report configurations.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This required node is a placeholder for the various collected RF data sets. The node name is constructed as the time the RF parameter measurements were taken, encoded per [ISO8601].

<x>/DiagMonData/<x>/PSC

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the “Primary Scrambling Code”, as defined by [3GPP-TS_25.213].

<x>/DiagMonData/<x>/UARFCN

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the “Downlink UTRA Absolute Radio Frequency Channel Number”, as defined by [3GPP-TS_25.433].

<x>/DiagMonData/<x>/CPICH_RSCP

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the “Common Pilot Channel Received Signal Code Power”, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225].

<x>/DiagMonData/<x>/CPICH_Ec_No

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the ratio of the received energy per PN chip for the Common Pilot Channel to the total received noise power spectral density as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225].

<x>/DiagMonData/<x>/TxPwr

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains a measure of the total transmit power, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225], “UE Transmitted Power”.

<x>/DiagMonData/<x>/TransportChannel_BLER

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

This node is a placeholder for the values of the transport channel block error rate measurements and channel IDs

<x>/DiagMonData/<x>/TransportChannel_BLER/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	OneOrMore	node	Get

This node is a placeholder for the BLER measurements and channel ID.

<x>/DiagMonData/<x>/TransportChannel_BLER/<x>/BLER

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the value of the "Transport Channel Block Error Rate" as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225].

<x>/DiagMonData/<x>/TransportChannel_BLER/<x>/TrChID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	bin	Get

This node contains the value of the "Transport Channel Identity" as defined by [3GPP-TS_25.331].

<x>/DiagMonData/<x>/UTRARSSI

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the value of the UTRAN Received Signal Strength Indication, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225], "UTRA Carrier RSSI".

<x>/DiagMonData/<x>/RxWBPwr

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the value of the total received wideband power, as defined by [3GPP-TS_25.215] and [3GPP-TS_25.225], "Received total wide band power".

<x>/DiagMonData/<x>/Location

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This optional node contains the location where the measurements were taken, with the data derived from the definition of [3GPP-TS_23.032], section 7.3.2 ellipsoid point with uncertainty circle. Note that if the location is not desired by the server, or if the location data is unavailable, the node will not be present.

<x>/DiagMonData/<x>/Location/Lat

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the latitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388607 to 8388607

<x>/DiagMonData/<x>/Location/Long

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the longitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388608 to 8388607.

<x>/DiagMonData/<x>/Location/Uncertainty

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the uncertainty of the circular area as defined in [3GPP-TS_23.032], section 6.2 i.e. as an integer in the range of 0 to 127. If uncertainty is not known this note may not be present even if location is provided.

<x>/DiagMonData/<x>/Location/Timestamp

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This leaf node contains the timestamp when the location data is collected. This value is the time and date string expressed as a UTC based [ISO8601] basic format.

<x>/DiagMonData/<x>/CellID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the value of the cell identifier – the CellGlobalIDEutra asdefined in [3GPP-TS_36.331].

<x>/DiagMonData/<x>/ProbDesc

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the text describing any problem that may have occurred during the measurement. It is up to the device to determine if a problem description should be attached or not.

<x>/DiagMonData/<x>/Configuration

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the configuration of the UE at the time of measurement – this node may be used to store data from an error condition.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	Null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

6.1.3 3GPP LTE Metrics

6.1.3.1 Introduction

If the device exposes LTE RF functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve 3GPP LTE RF parameters, measured by the device, that provide an indication of the RF environment at the time of function invocation. The measured parameters include Network Measurement Results as specified in [3GPP-TS_44018] as well as transmit and receive power and signal quality indicators as specified in [3GPP-TS_36.214]. This function is only applicable to 3GPP LTE devices.

This function MUST be invoked explicitly. The status of this DiagMon Function can be reported asynchronously, using the Generic Alert mechanism [DMPRO] or it can be stored in the DM Tree for later retrieval.

6.1.3.2 Non-applicable nodes from DiagMon MO definition

None

6.1.3.3 Function Description

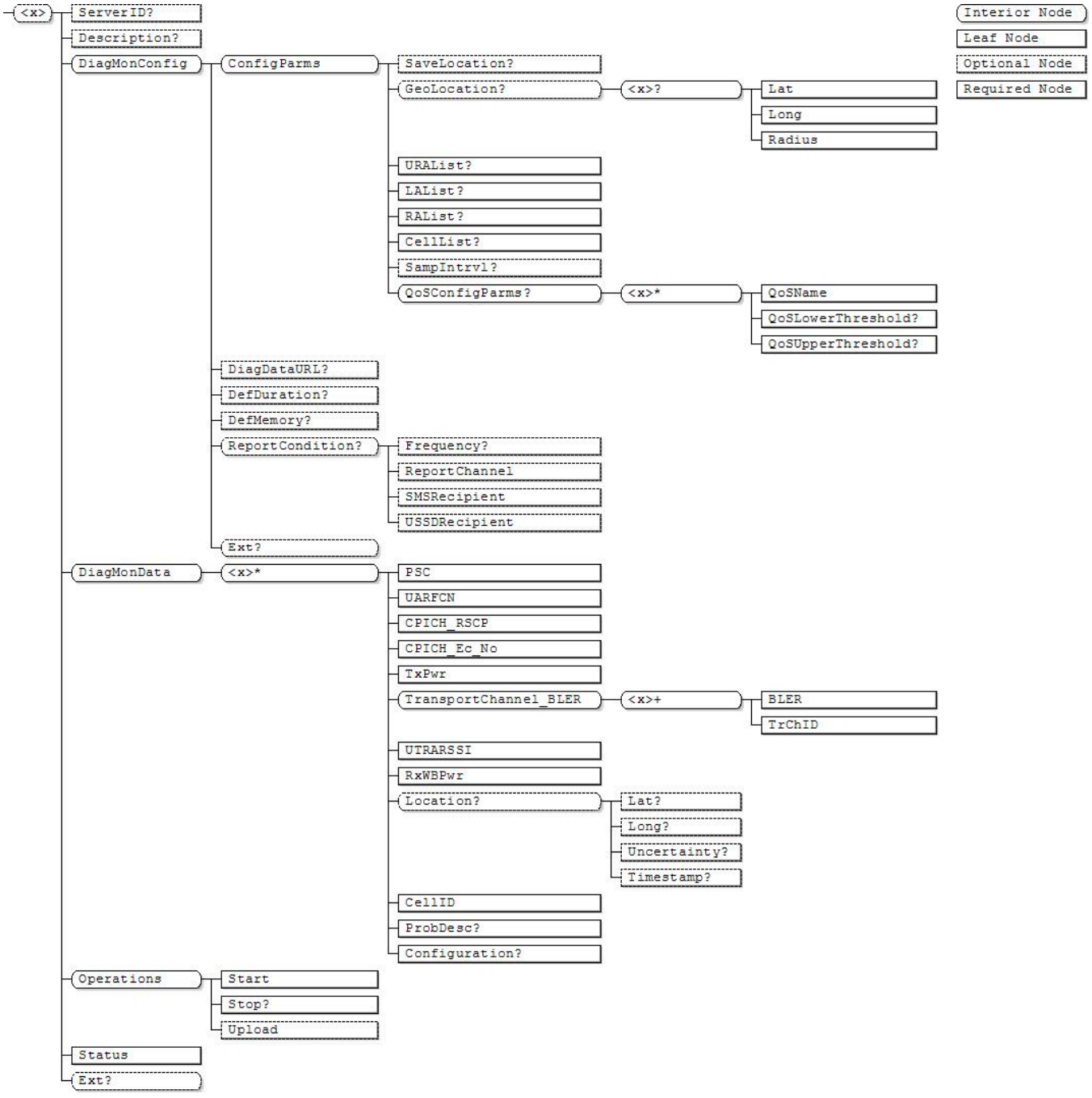

Figure 13 - 3GPP LTE RF Metrics Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	Node	Get

This interior node is a placeholder for the 3GPP LTE RF Metrics MO. Management Object Identifier for the 3GPP LTE RF Metrics MO MUST be: "`urn:oma:mo:oma-diag:RFParms_3GPP_LTE:1.1`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/SaveLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Bool	Get, Replace

This leaf node indicates whether the location information is requested to be saved. If the device is not able to determine the location, it is not required to save it.

<x>/DiagMonConfig/ConfigParms/GeoLocation

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Node	Get

This node acts as a placeholder for circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Node	Get

This node acts as a placeholder for one or more circular geographic locations.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Lat

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Bin	Get, Replace

This leaf node contains the latitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Long

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Bin	Get, Replace

This leaf node contains the longitude of the circular area as defined in [3GPP-TS_23.032], section 6.1.

<x>/DiagMonConfig/ConfigParms/GeoLocation/<x>/Radius

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Int	Get, Replace

This leaf node contains the radius of the circular area as defined in [3GPP-TS_23.032], section 6.3.

<x>/DiagMonConfig/ConfigParms/TAList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Chr	Get, Replace

This node defines the list of Location Areas. Each TA is defined using TA Identity (TAI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. TAI is specified in [3GPP-TS_24.301] section 9.9.9.32. The list SHALL be LA values separated by commas.

<x>/DiagMonConfig/ConfigParms/CellList

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Chr	Get, Replace

This node defines the list of cells. Each cell is defined using Cell Identity (CI), broadcast by each UTRAN cell via RRC protocol over the Broadcast Channel. CI is specified in 3GPP TS 36.331. The list SHALL be CI values separated by commas.

<x>/DiagMonConfig/ConfigParms/SampIntrvl

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Int	Get

This leaf node contains an integer value indicating the sampling interval in seconds at which Diagnostics and Monitoring data are collected on the device.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	Node	Get

This node is a placeholder for QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	Node	Get

This node is a placeholder for instances of QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Chr	Get, Replace

This node specifies the QoS parameter name to be measured. When using the QoS parameters from [TS102.250], the parameter name SHALL be as specified in that specification (e.g. “Streaming Reproduction Start Delay”).

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSLowerThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Chr	Get, Replace

This node specifies the value of QoS parameters to be used as lower threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is equal or greater than the value of this node..

<x>/DiagMonConfig/ConfigParms/QoSConfigParms/<x>/QoSUpperThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Chr	Get, Replace

This node specifies the value of QoS parameters to be used as upper threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value is expressed in seconds according to [TS102.250]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is minor or equal than the value of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	Int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	Int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	Chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	Chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	Node	Get

This required node is a placeholder for the various collected RF data sets. The node name is constructed as the time the RF parameter measurements were taken, encoded per [ISO8601]

<x>/DiagMonData/<x>/PCID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Int	Get

This node contains the “Physical Cell ID”, as defined by [3GPP-TS_36.211].

<x>/DiagMonData/<x>/EARFCN

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Int	Get

This node contains the “Downlink E-UTRA Absolute Radio Frequency Channel Number”, as defined by [3GPP-TS_36.101].

<x>/DiagMonData/<x>/RSRP

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Float	Get

This node contains the “Received Signal Received Power”, as defined by [3GPP-TS_36.214], encoded in float values.

<x>/DiagMonData/<x>/RSRQ

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Float	Get

This node contains the "Reference Signal Received Quality" (RSRQ) is defined as the ratio NxRSRP/(E-UTRA carrier RSSI), where N is the number of RB's of the E-UTRA carrier RSSI measurement bandwidth, as defined by [3GPP-TS_36.214].

<x>/DiagMonData/<x>/RSSI

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Float	Get

This node contains the "Received Signal Strength Indication" (RSSI), as defined by [3GPP-TS_36.214].

<x>/DiagMonData/<x>/TxPwrHdrm

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Float	Get

This node contains a measure of the power headroom (device maximum transmit power minus current transmit power), as defined by [3GPP-TS_36.213], "Power Headroom".

<x>/DiagMonData/<x>/Location

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

This node contains the location where the measurements were taken, with the data derived from encoded as per [3GPP-TS_23.032], section 7.3.2 ellipsoid point with uncertainty circle. Note that if the location is not desired by the server, or if the location data is unavailable, the node will not be present.

<x>/DiagMonData/<x>/Location/Lat

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the latitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388607 to 8388607

<x>/DiagMonData/<x>/Location/Long

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the longitude of the point as defined in [3GPP-TS_23.032], section 6.1 i.e. as an integer in the range of -8388608 to 8388607.

<x>/DiagMonData/<x>/Location/Uncertainty

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This leaf node contains the uncertainty of the circular area as defined in [3GPP-TS_23.032], section 6.2 i.e. as an integer in the range of 0 to 127. If uncertainty is not known this note may not be present even if location is provided.

<x>/DiagMonData/<x>/Location/Timestamp

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

This leaf node contains the timestamp when the location data is collected. This value is the time and date string expressed as a UTC based [ISO8601] basic format.

<x>/DiagMonData/<x>/CellID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	Int	Get

This optional leaf node contains the value of the cell identifier – the CellGlobalIDEutra as defined in [3GPP-TS_36.331]

<x>/DiagMonData/<X>/ProbDesc

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	Chr	Get

This node contains the text describing any problem that may have occurred during the measurement. It is up to the device to determine if a problem description should be attached or not.

<x>/DiagMonData/<x>/Configuration

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the configuration of the UE at the time of measurement – this node may be used to store data from an error condition.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

6.2 Air Interface Metrics

6.2.1 Mobility Management Rejection

6.2.1.1 Introduction

If the device operates on a 3G network, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function will allow the DiagMon Server to retrieve information associated with the failure of a device to establish connection with a mobile network. This function stores Mobility Management Reject Codes (as defined in [3GPP-TS_24.008]), along with Cell ID and time/date stamp associated with each connection failure.

6.2.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ConfigParms
<x>/DiagMonConfig/ReportCondition

6.2.1.3 Function Description

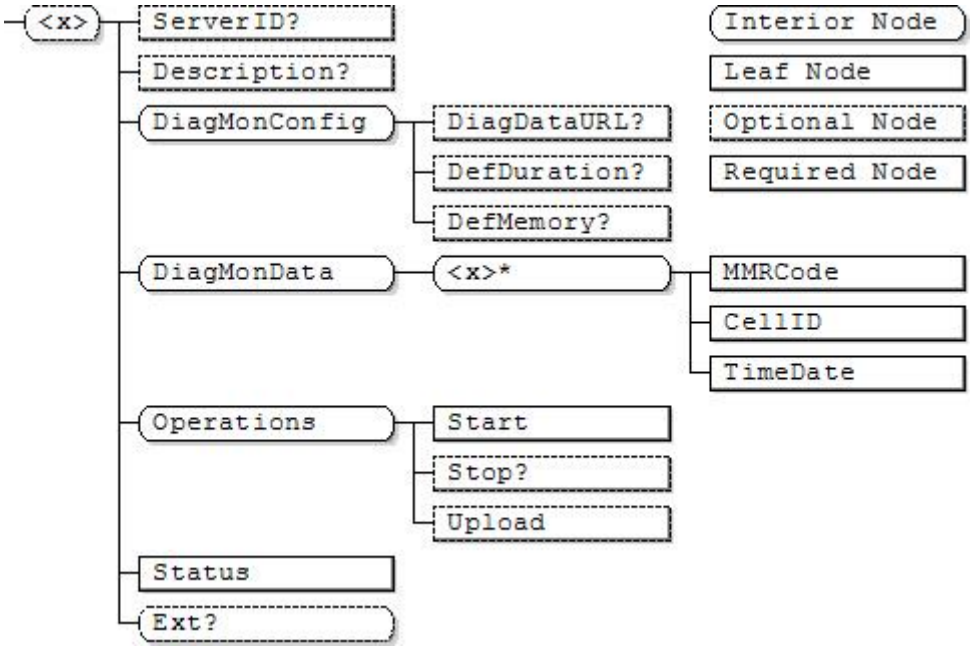

Figure 14 - Mobility Management Rejection Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Mobility Management Rejection MO. Identifier for the Mobility Management Rejection MO MUST be: “urn:oma:mo:oma-diag:mobility_management_rejection:1.1”.

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node acts as a placeholder for Mobility Management Reject information.

<x>/DiagMonData/<x>/MMRCode

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the Mobility Management Reject Cause code as defined in Table 10.5.95 of [3GPP-TS_24.008].

<x>/DiagMonData/<x>/CellID

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the Cell ID of the serving cell associated with the Mobility Management Reject – the CellGlobalIDEutra asdefined in [3GPP-TS_36.331].

<x>/DiagMonData/<x>/TimeDate

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the Time and Date associated with the Mobility Management Reject, encoded per the UTC based [ISO8601] basic format.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	null	Get, Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

6.3 Quality of Service

6.3.1 QoS Metrics

6.3.1.1 Introduction

If the device exposes QoS metrics functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve ETSI QoS parameters as specified in [TS102.250] , measured by the device, that provide an indication of the QoS environment at the time of function invocation.

Examples of ETSI QoS parameters are:

- Streaming Service Access Time
- Streaming Audio Quality
- Streaming Video Quality
- Streaming Teardown Time
- Telephony Speech Quality on Call Basis
- Telephony Cut-off Call Ratio
- IMS Multimedia Telephony

This function MUST be invoked explicitly. The status of this DiagMon Function can be reported asynchronously, using the Generic Alert mechanism [DMPRO] or it can be stored in the DM Tree for later retrieval.

6.3.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/ServerID

6.3.1.3 Function Description

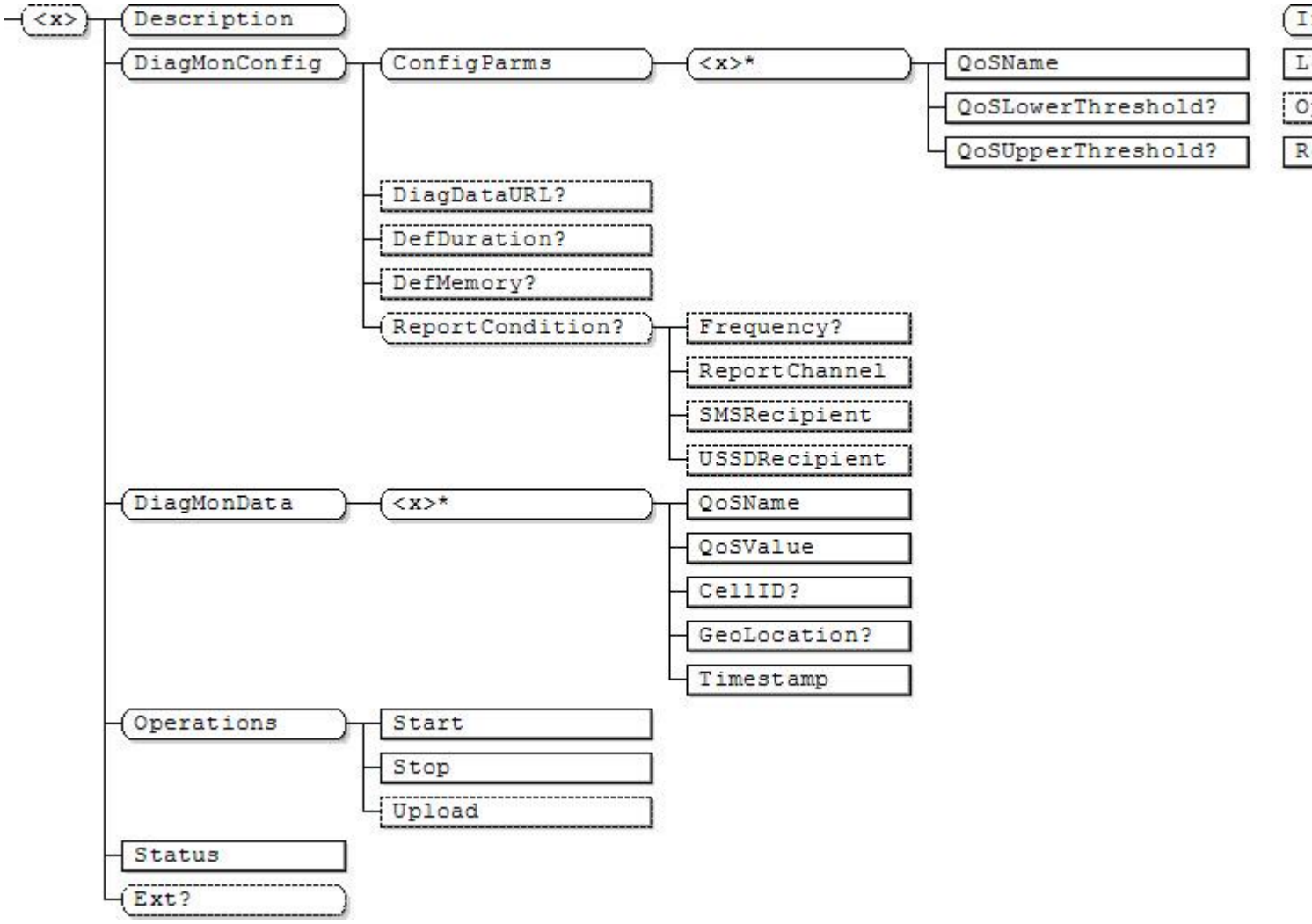

Figure 15 - QoS Metrics Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the QoS Function MO. Identifier for the QoS MO MUST be: "urn:oma:mo:oma-diag:qos:1.0".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for instances of QoS configuration parameters.

<x>/DiagMonConfig/ConfigParms/<x>/QoSName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, Replace

This node specifies the QoS parameter name to be measured. When using the QoS parameters from [TS102.250], the parameter name SHALL be as specified in this specification (e.g. “Streaming Reproduction Start Delay”).

<x>/DiagMonConfig/ConfigParms/<x>/QoSLowerThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as lower threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value MUST be expressed in seconds according to [TS 102-250-2]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is equal or greater than [QoSLowerThreshold].

<x>/DiagMonConfig/ConfigParms/<x>/QoSUpperThreshold

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies the value of QoS parameters to be used as upper threshold. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, "Streaming Reproduction Start Delay", the value MUST be expressed in seconds according to [TS 102-250-2]). If this node is not present or its value is null, then no threshold MUST be applied; the DiagMon data SHALL be collected when its value is minor or equal than [QoSUpperThreshold].

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node is a placeholder for zero or more instances of QoS metrics data.

<x>/DiagMonData/<x>/QoSName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node specifies the QoS parameter name to be measured. When using the QoS parameters from [TS102.250], the parameter name SHALL be as specified in this specification (e.g. “Streaming Reproduction Start Delay”).

<x>/DiagMonData/<x>/QoSValue

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value of the parameter which is specified in QoSParameterName. The value format MUST be interpreted according to parameter definition (e.g., if the parameter is, as previously indicated, “Streaming Reproduction Start Delay”, the value MUST be expressed in seconds according to [TS 102-250-2]).

<x>/DiagMonData/<x>/CellID

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	int	Get

This leaf node contains the value of the cell identifier – the CellGlobalIDEutra as defined in [3GPP-TS_36.331].

<x>/DiagMonData/<x>/GeoLocation

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	bin	Get

This node contains the location where the measurements were taken, with the data encoded as per [3GPP-TS_23.032], section 7.3.1.

<x>/DiagMonData/<x>/Timestamp

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

The time and date the parameters sample measurement was taken, expressed as a UTC based [ISO8601] basic format.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

7. IP Layer

7.1 Data Session Metrics

7.1.1 Data Call and Data Session

7.1.1.1 Introduction

If the device supports data calls, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

The Data Call and Data Session function will allow a DiagMon Server to collect metrics and details of each data call and of each data session.

7.1.1.2 Non-applicable nodes from DiagMon MO definition

None

7.1.1.3 Function Description

Figure 16 - Data Call and Data Session Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Data Call and Data Session MO. Identifier for the Data Call and Data Session MO MUST be: “urn:oma:mo:oma-diag:DataCallAndDataSession:1.1”.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node

<x>/DiagMonConfig/ConfigParms/BearerType

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node specifies the BearerType for which all the individual data sessions information associated with the different data calls are collected. The values of the BearerType are defined in the DevInfo/CBT leaf node description in [DMSTDOBJ1_3].

<x>/DiagMonConfig/ConfigParms/DataCallApp

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get

This optional node specifies the Data Call application for which all the individual data sessions information with the relevant data call are collected. The formats of the DataCallApp are vendor specific.

<x>/DiagMonConfig/ConfigParms/SampleDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get

This node specifies the duration in seconds of data samples collected during data session.

<x>/DiagMonConfig/ConfigParms/SampleUplinkDataThreshold

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get

This node specifies the minimum number of uplink data (in kilobytes) before data is to be recorded.

<x>/DiagMonConfig/ConfigParms/SampleDownlinkDataThreshold

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get

This node specifies the minimum number of Downlink data (in kilobytes) before data is to be recorded.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node acts as a placeholder for all the collected data sessions information of the data calls.

<x>/DiagMonData/<x>/SessionCount

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the information about the serial counter of the session. The counter resets to zero on Start operation. For every subsequent session the counter increments by one.

<x>/DiagMonData/<x>/SessionInfo

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node contains the information about the session such as bearer type, data call application and other supported information (e.g. protocol information on which session has happened, such as over HTTP, SIP, etc.), encapsulated in XML format.

Note that the XML schema of the data is left to implementation.

<x>/DiagMonData/<x>/SessionTimeStamp

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the time stamp of a session start.

The session start value is the time and date expressed as a UTC based [ISO8601] basic format.

<x>/DiagMonData/<x>/SessionDuration

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the duration of the session expressed in seconds.

<x>/DiagMonData/<x>/UplinkDataSize

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the amount of data uploaded in a session, expressed in kilobytes.

<x>/DiagMonData/<x>/DownlinkDataSize

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the amount of data downloaded in a session, expressed in kilobytes.

<x>/DiagMonData/<x>/UplinkDataSpeed

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the speed of the uplink data of a session, expressed in kilobytes per second.

<x>/DiagMonData/<x>/DownlinkDataSpeed

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the speed of the downlink data of a session, expressed in kilobytes per second.

<x>/DiagMonData/<x>/UplinkOneWayDelay

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Uplink connection, of the One-way Delay parameter, defined as in [RFC2679].

<x>/DiagMonData/<x>/UplinkOneWayPacketLoss

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Uplink connection, of the One-way Packet Loss parameter, defined as in [RFC2680].

<x>/DiagMonData/<x>/UplinkPacketDelayVariation

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Uplink connection, of the Packet Delay Variation parameter, defined as in [RFC3393].

<x>/DiagMonData/<x>/DownlinkOneWayDelay

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Downlink connection, of the One-way Delay parameter, defined as in [RFC2679].

<x>/DiagMonData/<x>/DownlinkOneWayPacketLoss

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Downlink connection, of the One-way Packet Loss parameter, defined as in [RFC2680].

<x>/DiagMonData/<x>/DownlinkPacketDelayVariation

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the value, for the Downlink connection, of the Packet Delay Variation parameter, defined as in [RFC3393].

<x>/DiagMonData/<x>/Samples

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node acts as a placeholder for all the samples collected if a SampleDuration valid value is set.

<x>/DiagMonData/<x>/Samples/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This required node is a placeholder for the various collected data sets. The node name is constructed as the time the sample measurements were taken, encoded per [ISO8601]

<x>/DiagMonData/<x>/Samples/<x>/UplinkDataSize

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the amount of data uploaded in a sample, expressed in kilobytes

<x>/DiagMonData/<x>/Samples/<x>/DownlinkDataSize

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the amount of data downloaded in a sample, expressed in kilobytes

<x>/DiagMonData/<x>/Samples/<x>/UplinkDataSpeed

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the speed of the uplink data of a sample, expressed in kilobytes per second

<x>/DiagMonData/<x>/Samples/<x>/DownlinkDataSpeed

Status	Tree Occurrence	Format	Min. Access Types
Required	One	float	Get

This node contains the speed of the downlink data of a sample, expressed in kilobytes per second

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	null	Get, Exec

See [DiagMonTS] for description of this node

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node

8. Application Layer

8.1 SMS

8.1.1 SMS Options

8.1.1.1 Introduction

If the device exposes SMS option functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

It is possible for the SMS options to be changed, and since these options are only stored on the device, the DiagMon Server will need to be able to query these options.

This continuously available function will allow the DiagMon Server to determine SMS options, e.g. data coding.

8.1.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/ServerID
<x>/DiagMonConfig
<x>/Operations
<x>/Status

8.1.1.3 Function Description

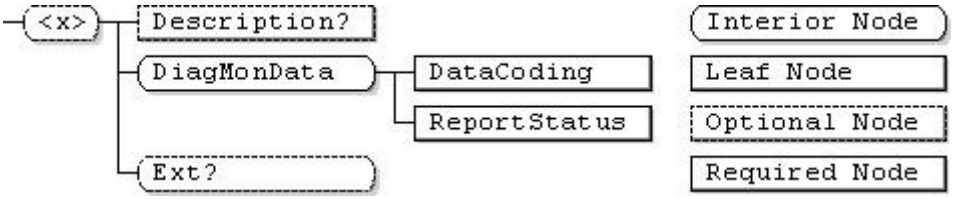

Figure 17 - SMS Options Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the SMS Options MO. Identifier for the SMS Options MO MUST be: "`urn:oma:mo:oma-diag:SMSOptions:1.0`".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/DataCoding

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the data coding method of the short messages. The value MUST be one of the following values (which are case-insensitive) as defined in section 4 “SMS Data Coding Scheme” of [3GPP-TS_23.038]:

Data Coding Scheme	Description
7bit	GSM 7 bit default alphabet.
ucs2	UCS2 (16bit).
8bit	8 bit data.

<x>/DiagMonData/ReportStatus

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node indicates whether the delivery report is switched on. The value MUST be one of the following values which are case-insensitive:

Value	Meaning	Description
1	on	The delivery report option is switched on within Device.
0	off	The delivery report option is switched off within Device.
10	not supported	The delivery report option is not supported by the Device.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.1.2 SMS Usage

8.1.2.1 Introduction

If the device exposes SMS usage functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

There are circumstances where it is very useful for a DiagMon Server to query a device about the number of SMS messages that have been sent and received over a period of time. The SMS Usage function will allow a DiagMon Server to start the DiagMon Client counting the number of SMS messages sent and received, and allow the DiagMon Server to sample the values while the function is running.

The values of SMSSent and SMSReceived SHOULD be available on a real-time basis.

8.1.2.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig
<x>/Operations/Upload

8.1.2.3 Function Description

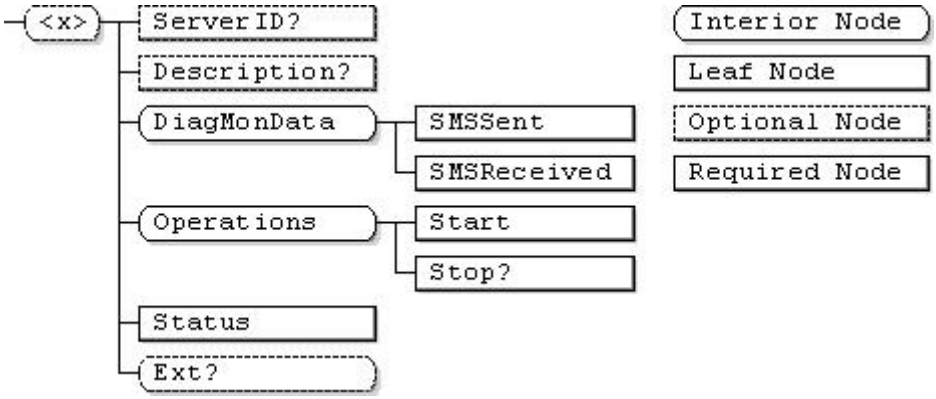

Figure 18 - SMS Usage Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the SMS Usage MO. Identifier for the SMS Usage MO MUST be: "`urn:oma:mo:oma-diag:SMSUsage:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/SMSSent

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the number of short messages sent since the Start was executed. Note that Exec on Start will reset the value.

<x>/DiagMonData/SMSReceived

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the number of short messages received since the Start was executed. Note that Exec on Start will reset the value.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.2 MMS

8.2.1 MMS Usage

8.2.1.1 Introduction

If the device exposes MMS usage functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

There are circumstances where it is very useful for a DiagMon Server to query a device about the number of MMS messages that have been sent and received over a period of time. The MMS Usage function will allow a DiagMon Server to start the DiagMon Client counting the number of MMS messages sent and received, and allow the Server to sample the values while the function is running.

The values of MMSSent and MMSReceived SHOULD be available on a real-time basis.

8.2.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig
<x>/Operations/Upload

8.2.1.3 Function Description

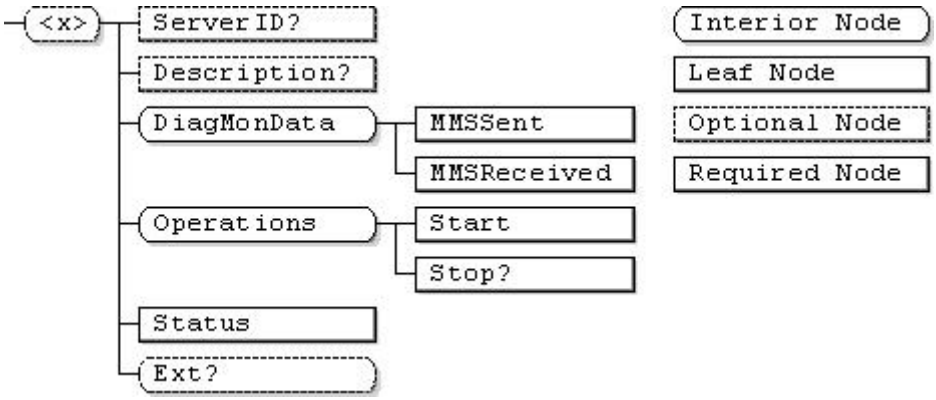

Figure 19 - MMS Usage Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the MMS Usage MO. Identifier for the MMS Usage MO MUST be: "`urn:oma:mo:oma-diag:MMSUsage:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/MMSSent

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the number of MMS sent since the Start was executed. Note that Exec on Start will reset the value.

<x>/DiagMonData/MMSReceived

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the number of MMS received since the Start was executed. Note that Exec on Start will reset the value.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.3 Phone Book

8.3.1 Phone Book Usage

8.3.1.1 Introduction

If the device exposes phonebook functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve device phone book usage information. This value is useful in determining phone book usage status and retrieves associated information.

8.3.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/ServerID
<x>/DiagMonConfig
<x>/Operations
<x>/Status

8.3.1.3 Function Description

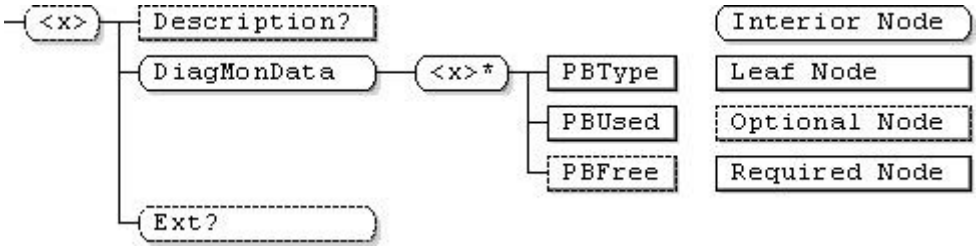

Figure 20 - Phone Book Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Phonebook MO. Identifier for the Phonebook MO MUST be: "urn:oma:mo:oma-diag:phonebook:1.0".

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node is a placeholder for the data nodes.

<x>/DiagMonData/<x>/PBType

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the current phonebook database type, and the valid values are:

Type	Description
0	TotalUsage
1	DeviceInternalMemory
2	SmartCard
3	External (MicroSD Card, etc.)
4-9	Reserved for vendor specific types

<x>/DiagMonData/<x>/PBUsed

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get

This node contains the number of contact records already saved in the current database.

<x>/DiagMonData/<x>/PBFree

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get

This optional node contains the estimated number of additional contact records which could be saved in the current database.

Note: PBFree is optional, because some mobile devices provide practically unlimited storage, for example, internal memory of 16GB or more.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.4 Monitoring

8.4.1 Application Monitoring Log

8.4.1.1 Introduction

If the device exposes application monitoring functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the DiagMon Server to retrieve application usage metrics, e.g. usage frequency, the last usage date, etc. These metrics are useful in determining how often and how long an application has been used. A service provider could use this information to better allocate scarce R&D funds to support the more popular applications. The DiagMon Server will be required to start and stop the function.

This MO is depreciated by Application Execution Information MO (Section 8.4.4).

8.4.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/ConfigParams
<x>/DiagMonConfig/ReportCondition/ReportChannel
<x>/DiagMonConfig/ReportCondtion/SMSRecipient
<x>/DiagMonConfig/ReportCondition/USSDRecipient
<x>/Operations/Upload

8.4.1.3 Function Description

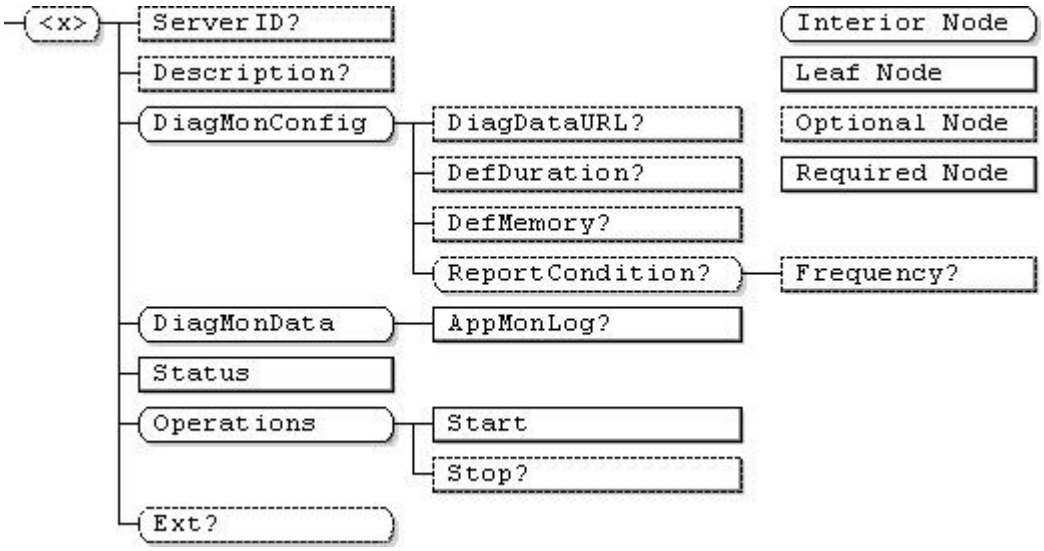

Figure 21 - Application Monitoring Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Application Monitoring MO. Identifier for the Application Monitoring MO MUST be: "`urn:oma:mo:oma-diag:appmonlog:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node**.**

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/AppMonLog

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	xml	Get

This node contains the application usage metrics data (e.g. usage frequency, the last usage date, etc) encapsulated in XML format. The XML schema of the data is left to implementation.

The value of Frequency node defined in [DiagMonTS] specifies the rule when the device needs to report the metrics data to DiagMon Server or data server. The DiagMon Server can also obtain the metrics data using Get command targeting the AppMonLog node.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	null	Get, Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.4.2 Application Data Usage

8.4.2.1 Introduction

The DiagMon Client SHOULD support this function. The DiagMon Server MUST support this function.

The Application Data Usage function will allow a DiagMon Server to retrieve specific information about each installed data application and collect the amount of data and time used by that application. Note that the extra information and the usage of data and time depend upon the support of the specific application.

Additionally, the total data & time used by all supporting applications will optionally be available.

When the DiagMon Server performs an Exec on the `'Operations/Start'` node, the DiagMon Client MUST set the value of DataUsage and TimeUsage (in the DiagMonData subtree) to zero and start collecting the amount of data and time used. When the DiagMon Server performs an Exec on the '`Operations/Stop`' node, the DiagMon Client MUST stop collecting the data.

This function replaces the Browsing Usage function as defined by [DiagMon1_1].

8.4.2.2 Non-applicable nodes from DiagMon MO definition

None.

8.4.2.3 Function Description

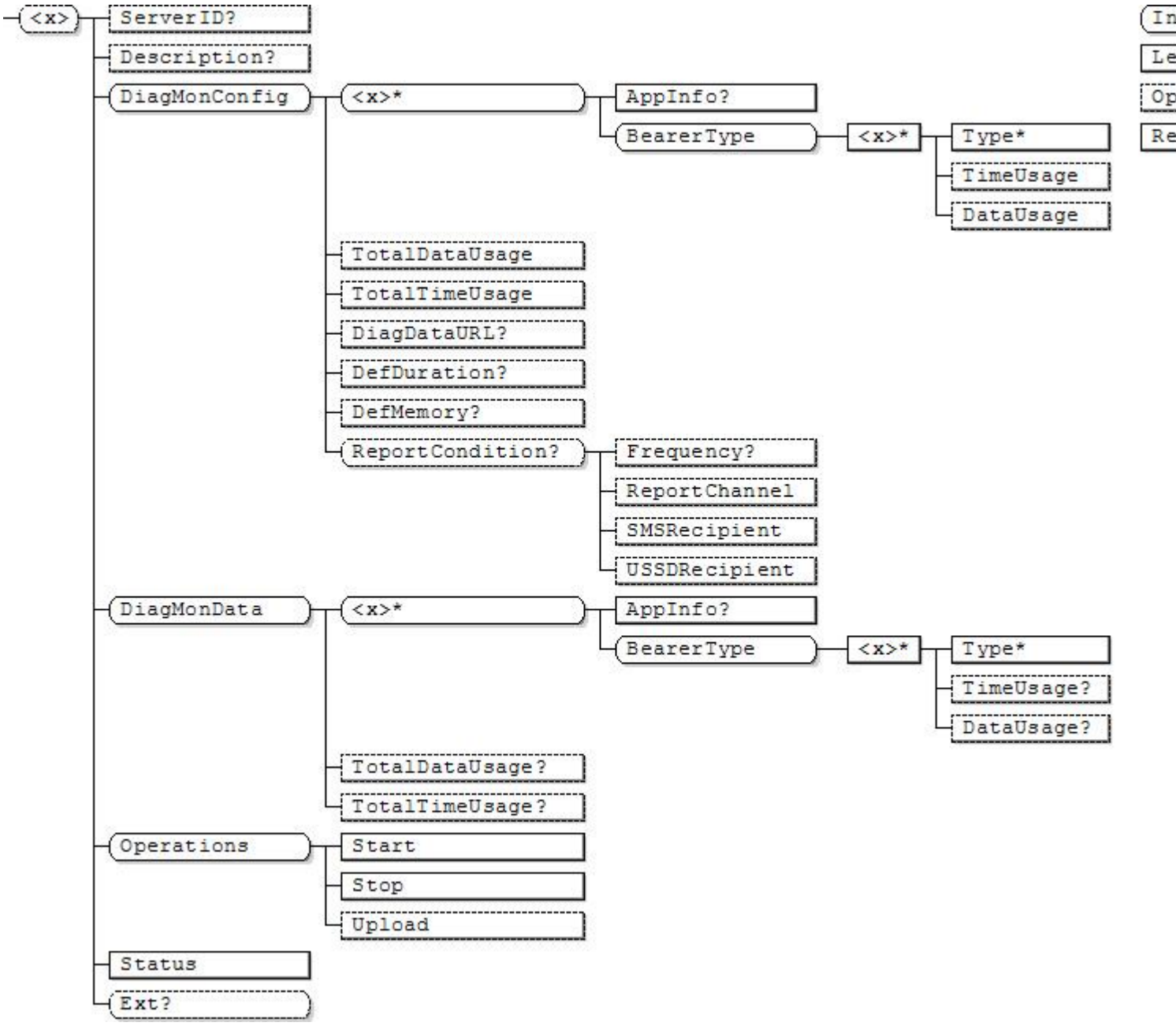

Figure 22 - Application Data Usage Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Application Data Usage MO. Identifier for the Application Data Usage MO MUST be: "`urn:oma:mo:oma-diag:appdatausage:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get, Add, Delete

This interior node is a placeholder for the configuration nodes for monitoring data application usage.

<x>/DiagMonConfig/<x>/AppInfo

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get, Replace

This node specifies which data application defined by application name (e.g. browser, widget, etc), version, or other identifier is specified for data collection. This node is not used if collecting application data usage across all applications.

<x>/DiagMonConfig/<x>/BearerType

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

This node specifies acts as placeholder for bearer type informations.

<x>/DiagMonConfig/<x>/BearerType/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	int	Get, Add, Delete

This node specifies acts as placeholder for set of bearer type configuration.

<x>/DiagMonConfig/<x>/BearerType/<x>/Type

Status	Tree Occurrence	Format	Min. Access Types
Required	One	int	Get, Replace

This node specifies the bearer type information, for which the usage information is to be collected. The values of the BearerType are defined in the DevDetail/CBT leaf node description in [DMSTDOBJ1_3]. If this node has a value of null, data MUST be collected across all bearers.

<x>/DiagMonConfig/<x>/BearerType/<x>/TimeUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	bool	Get, Replace

This optional node specifies whether or not the accumulated amount of time the application keeps any sockets open for the *BearerType*, is to be collected. If the node is missing, no time amount is collected

<x>/DiagMonConfig/<x>/BearerType/<x>/DataUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	bool	Get, Replace

This optional node specifies whether or not the amount of data used by the application for the *BearerType* is to be collected. If the node is missing, no data amount is collected.

<x>/DiagMonConfig/TotalDataUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	bool	Get, Replace

This optional node specifies whether or not the aggregated amount of data used by all the applications and *BearerType*, is to be collected. If the node is missing, no data amount is collected.

<x>/DiagMonConfig/TotalTimeUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	bool	Get, Replace

This optional node specifies whether or not the accumulated amount of time all applications keep any sockets open for all *BearerType*, is to be collected. If the node is missing, no time amount is collected.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node is a placeholder for the data usage nodes for one or more applications..

<x>/DiagMonData/<x>/AppInfo

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the data application specific information such as application name (e.g. browser, widget, etc), version, or other identifier. The specific text formatting and value of the node is left to implementation, but it should uniquely identify the application. This node is not used if collecting data usage across all applications.

<x>/DiagMonData/<x>/BearerType

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	int	Get

This node contains the bearer type information, for which the usage information has been collected. The values of the BearerType are defined in the DevInfo/CBT leaf node description in [DMSTDOBJ1_3]. If this node has a value of null or is not present, collected data is across all available bearers.

<x>/DiagMonData/<x>/BearerType/TimeUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	float	Get

This optional node contains the accumulated amount of time the specific data application keeps any socket open for the `BearerType`, expressed in seconds.

<x>/DiagMonData/<x>/BearerType/DataUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This optional node contains the amount of data used by this specific data application, expressed in megabytes.

<x>/DiagMonData/TotalDataUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This optional node contains the aggregated amount of data used by all the monitored applications, expressed in megabytes.

<x>/DiagMonData/TotalTimeUsage

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	float	Get

This optional node contains the accumulated amount of time all the monitored applications have had any open socket, expressed in seconds.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.4.3 Web Browsing Monitoring

8.4.3.1 Introduction

If the device exposes Web Browsing Monitoring functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

This function allows the Diagnostics and Monitoring system to determine Web Browsing performances, measuring the Page Rendering Time of downloaded webpages, intended as the time between the last received TCP packet with Page payload and the full visualization of each frame of the Page (except for those elements which are delayed on purpose). This metrics is useful in determining Device's effects on Web Browsing Quality of Experience (e.g. HTML parsing and Javascript execution performances etc). The DiagMon Server will be required to start and stop the function.

8.4.3.2 Non-applicable nodes from DiagMon MO definition

None.

8.3.3.3 Function Description

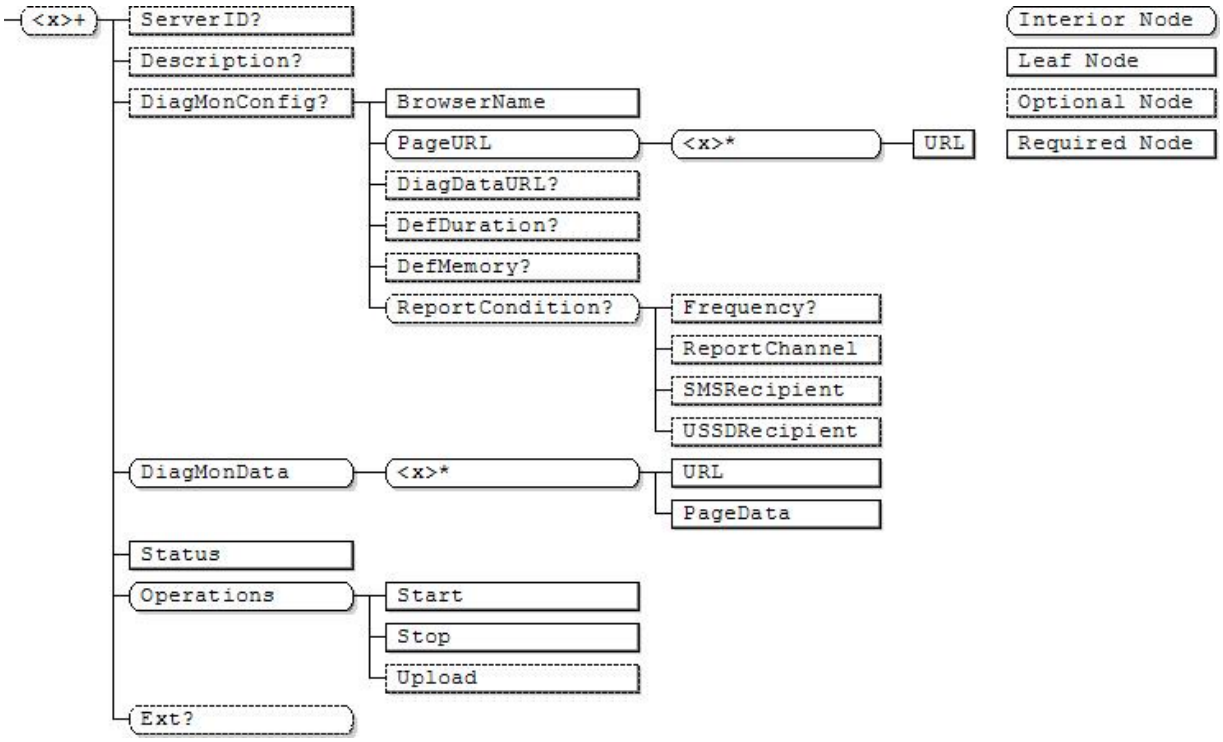

Figure 23 - Web Browsing Monitoring Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	OneOrMore	node	Get

This interior node is a placeholder for the Web Browsing Monitoring Management Object. Identifier for the Web Browsing Monitoring MO MUST be: “urn:oma:mo:oma-diag:webbrowmon:1.0”.

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/BrowserName

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the name of the Browser which Page Rendering Time values refer to.

<x>/DiagMonConfig/PageURL

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

This node acts as placeholder Page URL list. If no URL is provided, the DiagMon Client MUST collects the Page Rendering Time for all Pages rendered by Browser.

<x>/DiagMonConfig/PageURL/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node acts as placeholder Page URL.

<x>/DiagMonConfig/PageURL/<x>/URL

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the URL of the Page whose Rendering Time MUST be collected.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This node acts as placeholder for each page data.

<x>/DiagMonData/<x>/URL

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

This node contains the URL of the page.

<x>/DiagMonData/<x>/PageData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node contains the Page Rendering Time data encapsulated in XML format. The XML schema of the data is left to implementation.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Get, Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Get, Exec

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

8.4.4 Application Execution Information

8.4.4.1 Introduction

The DiagMon Client and Server MUST support this function.

The Application Execution Information function will allow a DiagMon Server to retrieve specific execution information about each installed application. The function exposed in this MO

When the DiagMon Server performs an Exec on the '`Operations/Start`' node, the DiagMon Client MUST set the value of `ExecutionTime`, `InteractiveTime`, `OpenCount` and `MaxMemoryUsage` (in the `DiagMonData` subtree) to zero and start collecting the amount of the execution information. When the DiagMon Server performs an Exec on the '`Operations/Stop`' node, the DiagMon Client MUST stop collecting the data.

8.4.4.2 Non-applicable nodes from DiagMon MO definition

None.

8.4.4.3 Function Description

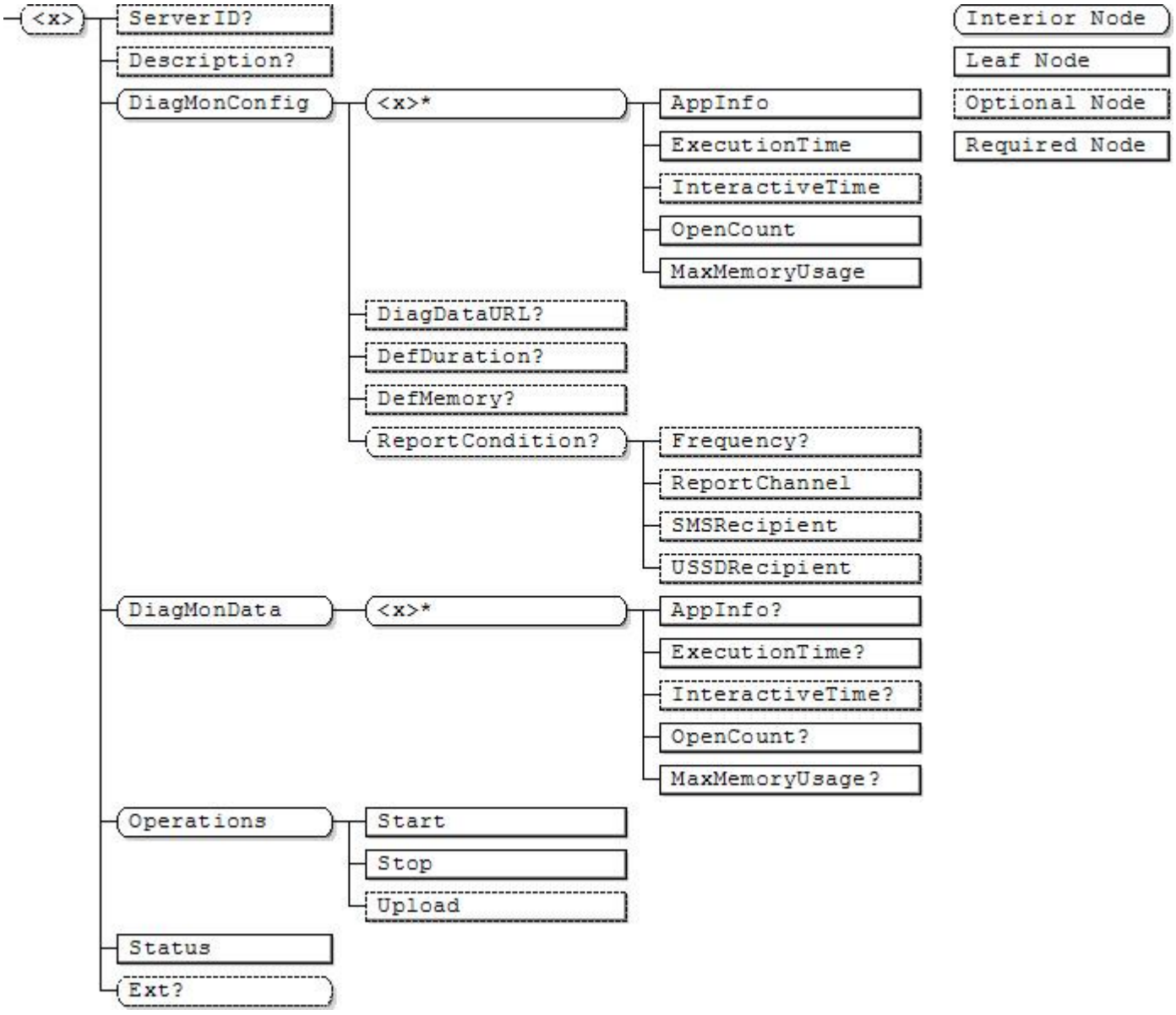

Figure 24 - Application Execution Information Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the Application Execution Information Management Object. Identifier for the Application Execution Information MO MUST be: "`urn:oma:mo:oma-diag:appexeinfo:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get, Add, Delete

This interior node is a placeholder for the configuration nodes for monitoring application execution.

<x>/DiagMonConfig/<x>/AppInfo

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, Replace

This node specifies which application defined by application name (e.g. browser, widget, etc), version, or other identifier is specified for data collection.

<x>/DiagMonConfig/<x>/ExecutionTime

Status	Tree Occurrence	Format	Min. Access Types
Required	One	bool	Get, Replace

This node specifies whether or not the accumulated amount of the application execution time is to be collected.

<x>/DiagMonConfig/<x>/InteractiveTime

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	bool	Get, Replace

This optional node specifies whether or not the accumulated amount of the application interactive time is to be collected. The interactive time is accumulated when the application doesn't run in the background. If the node is missing, no data amount is collected

<x>/DiagMonConfig/<x>/OpenCount

Status	Tree Occurrence	Format	Min. Access Types
Required	One	bool	Get, Replace

This node specifies whether or not to record how many times the application is opened.

<x>/DiagMonConfig/<x>/MaxMemoryUsage

Status	Tree Occurrence	Format	Min. Access Types
Required	One	bool	Get, Replace

This node specifies whether or not the maximum memory usage by the application is to be recorded.

<x>/DiagMonConfig/DiagDataURL

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefDuration

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/DefMemory

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/Frequency

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/ReportChannel

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/SMSRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ReportCondition/USSDRecipient

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	chr	Get, Replace

See [DiagMonTS] for description of this node.

<x>/DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonData/<x>

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrMore	node	Get

This interior node is a placeholder for the execution information of one or more applications.

<x>/DiagMonData/<x>/AppInfo

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	chr	Get

This node contains the data application specific information such as application name (e.g. browser, widget, etc), version, or other identifier. The specific text formatting and value of the node is left to implementation, but it should uniquely identify the application.

<x>/DiagMonData/<x>/ExecutionTime

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	int	Get

This node contains the accumulated amount of execution time of the monitored application, expressed in seconds.

<x>/DiagMonData/<x>/InteractiveTime

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	int	Get

This optional node contains the accumulated amount of interactive time of the monitored application, expressed in seconds

<x>/DiagMonData/<x>/OpenCount

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	int	Get

This node contains how many times the monitored application is opened.

<x>/DiagMonData/<x>/MaxMemoryUsage

Status	Tree Occurrence	Format	Min. Access Types
Required	ZeroOrOne	float	Get

This node contains the maximum memory usage by the monitored application, expressed in kilobytes.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Start

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Stop

Status	Tree Occurrence	Format	Min. Access Types
Required	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Operations/Upload

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Exec

See [DiagMonTS] for description of this node.

<x>/Status

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get

See [DiagMonTS] for description of this node.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

9. User Interface Layer

9.1 Settings

9.1.1 User Equipment Setting

9.1.1.1 Introduction

If the device exposes equipment setting functionality to the DiagMon Client, then the DiagMon Client MUST support this function. The DiagMon Server MUST support this function.

The User Equipment Setting function is useful, when a customer care staff will examine the user configurable setting (e.g. 'LCD brightness', 'ring tone volume', and etc.), and determine any issues, and may update the setting if needed.

The User Equipment settings information can be retrieved in full or partial with specifying its category.

Since this function is always available, no start/stop operations are allowed.

A typical use case for this function is:

1. The DiagMon Client updates the value of '`UESetting`' as per the '`Category`' on a regular basis as per the '`RefreshInterval`'
2. The DiagMon Server retrieves the user setting values from the '`UESetting`' node from the DiagMon Client.
3. The DiagMon Server puts the new values in '`ReplacementSetting`', then performs an Exec command on '`Operations/Modify`' node. The DiagMon Client replaces the user configurable setting with them.

9.1.1.2 Non-applicable nodes from DiagMon MO definition

The following nodes SHOULD NOT be used for this function
<x>/DiagMonConfig/DefDuration
<x>/DiagMonConfig/DefMemory
<x>/DiagMonConfig/ReportCondition
<x>/Operations/Start
<x>/Operations/Stop
<x>/Operations/Upload
<x>/Status

9.1.1.3 Function Description

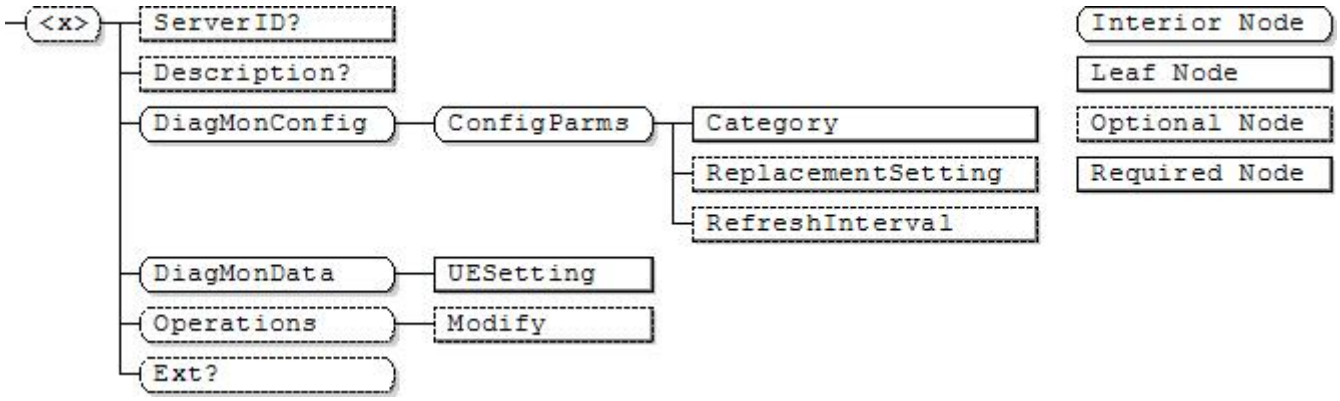

Figure 25 - User Equipment Setting Function

…/<x>

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

This interior node is a placeholder for the User Equipment Settings Management Object. Identifier for the User Equipment Settings MO MUST be: "`urn:oma:mo:oma-diag:UESetting:1.0`".

<x>/ServerID

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/Description

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	chr	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/DiagMonConfig/ConfigParms/Category

Status	Tree Occurrence	Format	Min. Access Types
Required	One	chr	Get, Replace

This node specifies the category of the group of setting to be retrieved. The value of the string is up to implementation

<x>/DiagMonConfig/ConfigParms/ReplacementSetting

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	xml	Replace

This optional node specifies the replacing setting values. This node contains the replacing setting key and value pairs encapsulated in XML format. The XML schema of this value is left to implementation.

Replacement MUST be done when an Exec command on `Operations/Modify` node is issued. If this replacement functionality is supported by the device, then the nodes '`Operations`', '`Operations/Modify`', and '`DiagMonConfig/ConfigParams/ReplacementSetting`' MUST be present.

<x>/DiagMonConfig/ConfigParms/RefreshInterval

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	int	Get, Replace

This optional node indicates the delay of synchronizing device data with the value of `UESetting` node. If the node exists, a value of 0 indicates that the values are always in sync. If the node is not present, the synchronization is left to implementation. The value is expressed in minutes.

<x>/ DiagMonData

Status	Tree Occurrence	Format	Min. Access Types
Required	One	node	Get

See [DiagMonTS] for description of this node.

<x>/ DiagMonData/UESetting

Status	Tree Occurrence	Format	Min. Access Types
Required	One	xml	Get

This node contains the current User Equipment setting data encapsulated in XML format describing user configurable setting values (e.g. setting name, setting value, etc.) The XML schema of the value is left to implementation.

<x>/Operations

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	node	Get

See [DiagMonTS] for description of this node.

<x>/Operations/Modify

Status	Tree Occurrence	Format	Min. Access Types
Optional	One	null	Get,Exec

After the DiagMon Client performs an Exec on the `Modify` node, the DiagMon Client MUST set the UE setting with the values of `ConfigParms/ReplacementSetting`.

<x>/Ext

Status	Tree Occurrence	Format	Min. Access Types
Optional	ZeroOrOne	node	Get

See [DiagMonTS] for description of this node.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 1.2 History

Document Identifier	Date	Sections	Description
Draft versions OMA-TS-DiagMon_Functions-V1_2	7 October 2010	All	Initial baseline document as agreed in OMA-DM-Diag-2010-0120-INP_DiagMon_Functions_v1_2_Baseline
	26 Nov 2010	5.1.13, 8.1.1.3, 9.1.1.3	Agreed CR applied: OMA-DM-Diag-2010-0127-CR_1.2_Funcs_chr_to_int
	2 Mar 2011	8.3,8.4	Agreed CR applied: OMA-DM-Diag-2011-0006R04-CR_Browsing_Usage_DiagMon_Function_Revisions. The section 8.3 is removed, and section 8.4 is reorganized as 8.3
	2 May 2011	B.27,B28, 8.3.2.1, 8.3.2.2.	Agreed CR applied: OMA-DM-Diag-2011-0008R01-CR_DiagMonFunctions_SCR_revisions OMA-DM-Diag-2011-0010R03-CR_AppDataUsage_Function_Application_Info OMA-DM-Diag-2011-0011-CR_AppDataUsage_function_clarification
	13 May 2011	3.2, 5.3.2	Applied agreed CR: OMA-DM-Diag-2011-0012R01-CR_BuiltinTestMO Re-numbering of figures
	31 May 2011	5.3.3(new), 5.3.2.1, 5.3.2.3, All(operations/Start(Stop))	Applied agreed CRs: OMA-DM-Diag-2011-17R02-CR_TraceLogMO OMA-DM-Diag-2011-20-CR_BultinTestMO_Editorial OMA-DM-Diag-2011-21-CR_Operations_node_minimum_access_type_update
	11 Jul 2011	5.3.2.3	Applied agreed CR: OMA-TS-DiagMon_Functions-V1_2-20120405-D cb.doc
	12 Dec 2011	6.1.1.3,6.1.2.3,6.1.3.3, 6.2.1.3	Applied agreed CR: OMA-DM-Diag-2011-0035-CR_CellID_Cleanup
	1 Mar 2012	6.1.1.3,6.1.2.3,6.1.3.3, 7.1.1.3,	Applied 2012 template Applied agreed CRs: OMA-DM-Diag-2011-0033R03-CR_baseline_for_service_QoS_metrics_function OMA-DM-Diag-2012-0017R02-CR_QoS_treshold_for_RF_metrics OMA-DM-Diag-2012-0018R01-CR_Data_Call_Session_New_Metrics
	5 Mar 2012	All	Applied agreed CR: OMA-DM-Diag-2012-0003R01-CR_Functions_TS_Fix OMA-DM-Diag-2012-0012R02-CR_baseline_for_sensor_function
	22 Mar 2012	5.1.3(new)	Applied agreed CR: OMA-DM-Diag-2012-0001R02-CR_DeviceLocation_Func
	5 Apr 2012	8.3.3(new)	Applied agreed CR: OMA-DM-Diag-2012-0019R01-CR_Web_Browsing_Monitoring
	17 Apr 2012	7.1.1.3,8.3.2.2	Applied agreed CR: OMA-DM-Diag-2012-0028-CR_CBT_in_DiagMon_function

Document Identifier	Date	Sections	Description
	27 Apr 2012	2, 5.2.1.1,5.2.1.4,5.2.2.1,5.2.3.1,5.2.3.3,5.2.5.3,5.4.1.1, 6.1.1.3, 6.1.2.3, 6.1.3.3,6.3,7.1.1.3,8.3, 8.3.1.1,8.3.2.2,8.3.4(new), Appendix B	Applied agreed CR: OMA-DM-Diag-2012-0025R02-CR_Functions_fix OMA-DM-Diag-2012-0031R01-CR_Application_Execution_Information_MO
	28 Apr 2012	5.2.3.3, 6.1.2	Missing part of OMA-DM-Diag-2012-0025R02 is corrected.
	10 May 2012	8.3.3, B 43 and B 44	Applied agreed CR: OMA-DM-Diag-2012-0039R01-CR_Web_Browsing_in_Functions_TS
	12 Jun 2012	All	Applied agreed CRs: OMA-DM-Diag-2012-0043-CR__DiagMon_function_SCR OMA-DM-Diag-2012-0048R01-CR_CONRR_Functions_fix OMA-DM-Diag-2012-0055-CR_Functions_TS_DM_Version OMA-DM-Diag-2012-0059-CR_CONR_FuncTS_B005_B006
	22 Jun 2012	5.2.1.1,5.2.1.3	Applied agreed CR: OMA-DM-Diag-2012-0070R01-CR_CONR_Trap_Event_Log
	29 Jun 2012		Applied agreed CRs: OMA-DM-Diag-2012-0067R02-CR_Functions_optional_nodes_consistency_B027 OMA-DM-Diag-2012-0071R01-CR_Trap_Event_Log_Format
	9 Jul 2012	5.2.1.2, 5.2.1.3	Applied agreed CR: OMA-DM-Diag-2012-0079-CR_Trap_Event_Inconsistency_Fix
	10 Jul 2012	8.4.1.2, 8.4.1.3, 5.1.3.3, 6.1.1, 6.1.2, 6.1.3	Applied agreed CRs: OMA-DM-Diag-2012-0078R03-CR_FixOnAppmonMO OMA-DM-Diag-2012-0080R01-CR_FuncTS_Loc_Format_CONRR_B021
	11 Jul 2012	5.1.3.1, 5.1.3.2, 5.1.3.3 Appendix C (removed)	Applied agreed CR: OMA-DM-Diag-2012-0062R04-CR_CONR_Dev_Location OMA-DM-Diag-2012-0087-CR_Remove_XML_Schema_from_Function_TS Added Bookmark for normative references by Editor
	12 Jul 2012	5.4.1.3	Applied agreed CR: OMA-DM-Diag-2012-0063R01-CR_SensorData_Correction
	16 Jul 2012	All	Fixed cover page Renumbering of figures Language set to English UK.
Candidate Version OMA-TS-DiagMon_Functions-V1_2	09 Oct 2012	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2012-0367-INP_DiagMon_V1_2_ERP_for_Candidate_Approval

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [SCRRULES].

B.1 SCR for DiagMon Client (batteryInfo)

Item	Function	Reference	Requirement
DIAG-BI-C-001-O	Device contains a battery	Section 5.1.1	DIAG-BI-C-002 AND DIAG-BI-C-003
DIAG-BI-C-002-O	Support for the BatteryInfo MO	Section 5.1.1	
DIAG-BI-C-003-O	Allows retrieval of DiagMonData nodes	Section 5.1.1	

B.2 SCR for DiagMon Server (batteryInfo)

Item	Function	Reference	Requirement
DIAG-BI-S-001-M	Support for the BatteryInfo MO	Section 5.1.1	
DIAG-BI-S-002-M	Retrieves the DiagMonData nodes using Get command	Section 5.1.1	

B.3 SCR for DiagMon Client (memory)

Item	Function	Reference	Requirement
DIAG-MEM-C-001-M	Support for the Memory MO	Section 5.1.2	
DIAG-MEM-C-002-M	Support for all mandatory nodes	Section 5.1.2	

B.4 SCR for DiagMon Server (memory)

Item	Function	Reference	Requirement
DIAG-MEM-S-001-M	Support for the Memory MO	Section 5.1.2	
DIAG-MEM-S-002-M	Retrieve the DiagMonData nodes using Get command	Section 5.1.2	

B.5 SCR for DiagMon Client (devloc)

Item	Function	Reference	Requirement
DIAG-DEVLOC-C-001-M	Support for the Device Location MO	Section 5.1.3.3	
DIAG-DEVLOC-C-002-M	Support for all mandatory nodes	Section 5.1.3.3	

B.6 SCR for DiagMon Server(devloc)

Item	Function	Reference	Requirement
DIAG-DEVLOC-S-001-M	Support for the Device Location MO	Section 5.1.3.3	

Item	Function	Reference	Requirement
DIAG-DEVLOC-S-002-M	Retrieve the DiagMonData nodes using Get command	Section 5.1.3.3	

B.7 SCR for DiagMon Client (trap event logging)

Item	Function	Reference	Requirement
DIAG-TEL-C-001-O	Device exposes trap event functionality to DiagMon Client	Section 5.2.1	DIAG-TEL-C-002-O AND DIAG-TEL-C-003-O AND DIAG-TEL-C-004-O AND (DIAG-TEL-C-005-O OR DIAG-TEL-C-006-O) AND DIAG-TEL-C-007-O
DIAG-TEL-C-002-O	Support for the trapeventlogging MO	Section 5.2.1	
DIAG-TEL-C-003-O	Support for all mandatory nodes	Section 5.2.1	
DIAG-TEL-C-004-O	Allow setting of DiagMonConfig data	Section 5.2.1	
DIAG-TEL-C-005-O	Function is executed asynchronously and result is returned using Generic Alert	Section 5.2.1	
DIAG-TEL-C-006-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 5.2.1	
DIAG-TEL-C-007-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config Parms nodes	Section 5.2.1	

B.8 SCR for DiagMon Server (trap event logging)

Item	Function	Reference	Requirement
DIAG-TEL-S-001-M	Support for the trapeventlogging MO	Section 5.2.1	
DIAG-TEL-S-002-M	Invoke trapeventlogging function via Start Primitive	Section 5.2.1	
DIAG-TEL-S-003-M	Retrieve the DiagMonData nodes	Section 5.2.1	
DIAG-TEL-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 5.2.1	
DIAG-TEL-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 5.2.1	
DIAG-TEL-S-006-M	Stop function via Stop Primitive	Section 5.2.1	

Item	Function	Reference	Requirement
DIAG-TEL-S-007-M	Retrieve the Status data	Section 5.2.1	
DIAG-TEL-S-008-M	Modify behaviour of function by modifying values of DiagMonConfig/Config Parms nodes	Section 5.2.1	

B.9 SCR for DiagMon Client (builtin_device_test)

Item	Function	Reference	Requirement
DIAG-BDT-C-001-O	Support for the paniclog MO	Section 5.2.1.4	DIAG-BDT-C-003-O AND (DIAG-BDT-C-003-O OR DIAG-BDT-C-004-O)
DIAG-BDT-C-002-O	Invoke trapeventlogging function via Start Primitive	Section 5.2.1.4	
DIAG-BDT-C-003-O	Function is executed asynchronously and result is returned using Generic Alert	Section 5.2.1.4	
DIAG-BDT-C-004-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 5.2.1.4	

B.10 SCR for DiagMon Server (builtin_device_test)

Item	Function	Reference	Requirement
DIAG- BDT-S-001-M	Support for the builtintest MO	Section 5.2.1.4	
DIAG- BDT-S-002-M	Invoke function via Start Primitive	Section 5.2.1.4	
DIAG- BDT-S-003-M	Retrieve the DiagMonData nodes	Section 5.2.1.4	
DIAG- BDT-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 5.2.1.4	
DIAG- BDT-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 5.2.1.4	
DIAG-BDT-S-006-M	Stop function via Stop Primitive	Section 5.2.1.4	
DIAG-DBT-S-007-M	Retrieve the Status data	Section 5.2.1.4	

B.11 SCR for DiagMon Client (trace_logs)

Item	Function	Reference	Requirement
DIAG-TL-C-001-O	Support for the tracelog MO	Section 5.2.3	DIAG-TL-C-002-O AND (DIAG-TL-C-003-O OR DIAG-TL-C-004-O)
DIAG-TL-C-002-O	Support for all mandatory nodes	Section 5.2.3	

Item	Function	Reference	Requirement
DIAG-TL-C-003-O	Function is executed asynchronously and result is returned using Generic Alert	Section 5.2.3	
DIAG-TL-C-004-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 5.2.3	

B.12 SCR for DiagMon Server (trace_logs)

Item	Function	Reference	Requirement
DIAG-TL-S-001-M	Support for the tracelog MO	Section 5.2.3	
DIAG-TL-S-002-M	Invoke function via Start Primitive	Section 5.2.3	
DIAG-TL-S-003-M	Retrieve the DiagMonData nodes	Section 5.2.3	
DIAG-TL-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 5.2.3	
DIAG-TL-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 5.2.3	
DIAG-TL-S-006-M	Stop function via Stop Primitive	Section 5.2.3	
DIAG-TL-S-007-M	Retrieve the Status data	Section 5.2.3	

B.13 SCR for DiagMon Client (panic log)

Item	Function	Reference	Requirement
DIAG-PL-C-001-O	Device exposes panic log functionality to DiagMon Client	Section 5.2.4	DIAG-PL-C-002-O AND DIAG-PL-C-003-O AND DIAG-PL-C-004-O AND (DIAG-PL-C-004-O OR DIAG-PL-C-005-O)
DIAG-PL-C-002-O	Support for the paniclog MO	Section 5.2.4	
DIAG-PL-C-003-O	Support for all mandatory nodes	Section 5.2.4	
DIAG-PL-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 5.2.4	
DIAG-PL-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 5.2.4	

B.14 SCR for DiagMon Server (panic log)

Item	Function	Reference	Requirement
DIAG-PL-S-001-M	Support for the paniclog MO	Section 5.2.4	
DIAG-PL-S-002-M	Invoke function via Start Primitive	Section 5.2.4	
DIAG-PL-S-003-M	Retrieve the DiagMonData nodes	Section 5.2.4	
DIAG-PL-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 5.2.4	
DIAG-PL-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 5.2.4	
DIAG-PL-S-006-M	Stop function via Stop Primitive	Section 5.2.4	
DIAG-PL-S-007-M	Retrieve the Status data	Section 5.2.4	

B.15 SCR for DiagMon Client (nfc)

Item	Function	Reference	Requirement
DIAG-NFC-C-001-O	Device exposes NFC functionality to DiagMon Client	Section 5.2.5	DIAG-NFC-C-002-O AND DIAG-NFC-C-003-O AND (DIAG-NFC-C-004-O OR DIAG-NFC-C-005-O)
DIAG-NFC-C-002-O	Support for the NFC MO	Section 5.2.5	
DIAG-NFC-C-003-O	Support for all mandatory nodes	Section 5.2.5	
DIAG-NFC-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 5.2.5	
DIAG-NFC-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 5.2.5	

B.16 SCR for DiagMon Server (nfc)

Item	Function	Reference	Requirement
DIAG-NFC-S-001-M	Support for the NFC MO	Section 5.2.5	
DIAG-NFC-S-002-M	Retrieve the NFC/DiagMonData nodes	Section 5.2.5	
DIAG-NFC-S-003-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 5.2.5	
DIAG-NFC-S-004-M	Function is executed synchronously and result is retrieved by Get	Section 5.2.5	

Item	Function	Reference	Requirement
	command		
DIAG-NFC-S-005-M	Stop function via Stop Primitive	Section 5.2.5	
DIAG-NFC-S-006-M	Retrieve the Status data	Section 5.2.5	

B.17 SCR for DiagMon Client (restart)

Item	Function	Reference	Requirement
DIAG-RST-C-001-O	Device supports restart functionality	Section 5.3	DIAG-RST-C-002-O AND DIAG-RST-C-003-O AND DIAG-RST-C-004-O AND DIAG-RST-C-005-O AND (DIAG-RST-C-006-O OR DIAG-RST-C-007-O) AND DIAG-RST-C-008-O
DIAG-RST-C-002-O	Support for the restart MO	Section 5.3	
DIAG-RST-C-003-O	Allow retrieval of DiagMonConfig data	Section 5.3	
DIAG-RST-C-004-O	Allow setting of DiagMonConfig data	Section 5.3	
DIAG-RST-C-005-O	Support of invocation of function by the server via Start Primitive	Section 5.3	
DIAG-RST-C-006-O	Asynchronous reporting of result using Generic Alert	Section 5.3	
DIAG-RST-C-007-O	Synchronous reporting of result by processing a subsequent Get command	Section 5.3	
DIAG-RST-C-008-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config Parms nodes	Section 5.3	

B.18 SCR for DiagMon Server (restart)

Item	Function	Reference	Requirement
DIAG-RST-S-001-M	Support for the restart MO	Section 5.3	
DIAG-RST-S-002-M	Support retrieval of DiagMonConfig data	Section 5.3	
DIAG-RST-S-003-M	Support setting of DiagMonConfig data	Section 5.3	
DIAG-RST-S-004-M	Invoke function via Start Primitive	Section 5.3	
DIAG-RST-S-005-M	Asynchronous reporting of result which is retrieved by receiving Generic Alert	Section 5.3	
DIAG-RST-S-006-M	Synchronous reporting of result which is retrieved by Get	Section 5.3	

Item	Function	Reference	Requirement
	command		
DIAG-RST-S-007-M	Modify behaviour of function by modifying values of DiagMonConfig/Config Parms nodes	Section 5.3	

B.19 SCR for DiagMon Client (sensor)

Item	Function	Reference	Requirement
DIAG-SENSOR-C-001-O	Device contains sensor	Section 5.4.1	DIAG-SENSOR-C-002-O AND DIAG-SENSOR-C-003-O
DIAG-SENSOR-C-002-O	Support for the Sensor MO	Section 5.4.1	
DIAG-SENSOR-C-003-O	Support for all mandatory nodes	Section 5.4.1	

B.20 SCR for DiagMon Server (sensor)

Item	Function	Reference	Requirement
DIAG-SENSOR-S-001-M	Support for the Sensor MO	Section 5.4,1	
DIAG-SENSOR-S-002-M	Retrieve the DiagMonData nodes using Get command	Section 5.4.1	

B.21 SCR for DiagMon Client (RFParams_3GPP_GSM)

Item	Function	Reference	Requirement
DIAG-GSM-C-001-O	Device exposes GSM RF functionality to DiagMon Client	Section 6.1.1	DIAG-GSM-C-002-O AND DIAG-GSM-C-003-O AND DIAG-GSM-C-004-O AND (DIAG-GSM-C-005-O OR DIAG-GSM-C-006-O) AND DIAG-GSM-C-007-O
DIAG-GSM-C-002-O	Support for the RFParms_3GPP_GSM MO	Section 6.1.1	
DIAG-GSM-C-003-O	Support for all mandatory nodes	Section 6.1.1	
DIAG-GSM-C-004-O	Allow setting of DiagMonConfig data	Section 6.1.1	
DIAG-GSM-C-005-O	Function is executed asynchronously and result is returned using Generic Alert	Section 6.1.1	
DIAG-GSM-C-006-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 6.1.1	
DIAG-GSM-C-007-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config	Section 6.1.1	

Item	Function	Reference	Requirement
	Parms nodes		
DIAG-GSM-C-001-O	Device exposes GSM RF functionality to DiagMon Client	Section 6.1.1	DIAG-GSM-C-002-O AND DIAG-GSM-C-003-O AND DIAG-GSM-C-004-O AND (DIAG-GSM-C-005-O OR DIAG-GSM-C-006-O) AND DIAG-GSM-C-007-O

B.22 SCR for DiagMon Server (RFParms_3GPP_GSM)

Item	Function	Reference	Requirement
DIAG-GSM-S-001-M	Support for the RFParms_3GPP_GSM MO	Section 6.1.1	
DIAG-GSM-S-002-M	Invoke function via Start Primitive	Section 6.1.1	
DIAG-GSM-S-003-M	Retrieve the DiagMonData nodes	Section 6.1.1	
DIAG-GSM-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 6.1.1	
DIAG-GSM-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 6.1.1	
DIAG-GSM-S-006-M	Stop function via Stop Primitive	Section 6.1.1	
DIAG-GSM-S-007-M	Retrieve the Status data	Section 6.1.1	
DIAG-GSM-S-008-M	Modify behaviour of function by modifying values of DiagMonConfig/Config Parms nodes	Section 6.1.1	

B.23 SCR for DiagMon Client (RFParms_3GPP_UMTS)

Item	Function	Reference	Requirement
DIAG-UMTS-C-001-O	Device exposes UMTS RF functionality to DiagMon Client	Section 6.1.2	DIAG-UMTS-C-002-O AND DIAG-UMTS-C-003-O AND DIAG-UMTS-C-004-O AND (DIAG-C-UMTS-005-O OR DIAG-C-UMTS-006-O) AND DIAG-UMTS-C-007-O
DIAG-UMTS-C-002-O	Support for the RFParms_3GPP_UMTS MO	Section 6.1.2	
DIAG-UMTS-C-003-O	Support for all mandatory nodes	Section 6.1.2	
DIAG-UMTS-C-004-O	Allow setting of DiagMonConfig data	Section 6.1.2	
DIAG-UMTS-C-005-O	Function is executed asynchronously and result is returned using Generic Alert	Section 6.1.2	

Item	Function	Reference	Requirement
DIAG-UMTS-C-006-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 6.1.2	
DIAG-UMTS-C-007-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config Parms nodes	Section 6.1.2	

B.24 SCR for DiagMon Server (RFParms_3GPP_UMTS)

Item	Function	Reference	Requirement
DIAG-UMTS-S-001-M	Support for the RFParms_3GPP_UMTS MO	Section 6.1.2	
DIAG-UMTS-S-002-M	Invoke function via Start Primitive	Section 6.1.2	
DIAG-UMTS-S-003-M	Retrieve the DiagMonData nodes	Section 6.1.2	
DIAG-UMTS-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 6.1.2	
DIAG-UMTS-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 6.1.2	
DIAG-UMTS-S-006-M	Stop function via Stop Primitive	Section 6.1.2	
DIAG-UMTS-S-007-M	Retrieve the Status data	Section 6.1.2	
DIAG-UMTS-S-008-M	Modify behaviour of function by modifying values of DiagMonConfig/Config Parms nodes	Section 6.1.2	

B.25 SCR for DiagMon Client (RFParms_3GPP_LTE)

Item	Function	Reference	Requirement
DIAG-LTE-C-001-O	Device exposes LTE RF functionality to DiagMon Client	Section 6.1.3	DIAG-LTE-C-002-O AND DIAG-LTE-C-003-O AND DIAG-LTE-C-004-O AND (DIAG-C-LTE-005-O OR DIAG-C-LTE-006-O) AND DIAG-LTE-C-007-O
DIAG-LTE-C-002-O	Support for the RFParms_3GPP_LTE MO	Section 6.1.3	
DIAG-LTE-C-003-O	Support for all mandatory nodes	Section 6.1.3	
DIAG-LTE-C-004-O	Allow setting of DiagMonConfig data	Section 6.1.3	
DIAG-LTE-C-005-O	Function is executed	Section 6.1.3	

Item	Function	Reference	Requirement
	asynchronously and result is returned using Generic Alert		
DIAG-LTE-C-006-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 6.1.3	
DIAG-LTE-C-007-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config Parms nodes	Section 6.1.3	

B.26 SCR for DiagMon Server (RFParms_3GPP_LTE)

Item	Function	Reference	Requirement
DIAG-LTE-S-001-M	Support for the RFParms_3GPP_LTE MO	Section 6.1.3	
DIAG-LTE-S-002-M	Invoke RFParms_3GPP_LTE function via Start Primitive	Section 6.1.3	
DIAG-LTE-S-003-M	Retrieve the DiagMonData nodes	Section 6.1.3	
DIAG-LTE-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 6.1.3	
DIAG-LTE-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 6.1.3	
DIAG-LTE-S-006-M	Stop function via Stop Primitive	Section 6.1.3	
DIAG-LTE-S-007-M	Retrieve the Status data	Section 6.1.3	
DIAG-LTE-S-008-M	Modify behaviour of function by modifying values of DiagMonConfig/Config Parms nodes	Section 6.1.3	
DIAG-LTE-S-001-M	Support for the RFParms_3GPP_LTE MO	Section 6.1.3	

B.27 SCR for DiagMon Client (mobility_management_rejection)

Item	Function	Reference	Requirement
DIAG-MMR-C-001-O	Device operates on a 3G network	Section 6.2.1	DIAG-MMR-C-002-O AND DIAG-MMR-C-003-O AND (DIAG-MMR-C-004-O OR DIAG-MMR-C-005-O)
DIAG-MMR-C-002-O	Support for the	Section 6.2.1	

Item	Function	Reference	Requirement
	mobility_management_rejection MO		
DIAG-MMR-C-003-O	Support for all mandatory nodes	Section 6.2.1	
DIAG-MMR-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 6.2.1	
DIAG-MMR-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 6.2.1	

B.28 SCR for DiagMon Server (mobility_management_rejection)

Item	Function	Reference	Requirement
DIAG-MMR-S-001-M	Support for the mobility_management_rejection MO	Section 6.2.1	
DIAG-MMR-S-002-M	Invoke function via Start Primitive	Section 6.2.1	
DIAG-MMR-S-003-M	Retrieve the DiagMonData nodes	Section 6.2.1	
DIAG-MMR-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 6.2.1	
DIAG-MMR-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 6.2.1	
DIAG-MMR-S-006-M	Stop function via Stop Primitive	Section 6.2.1	
DIAG-MMR-S-007-M	Retrieve the Status data	Section 6.2.1	

B.29 SCR for DiagMon Client (qos)

Item	Function	Reference	Requirement
DIAG-QOS-C-001-O	Device exposes QoS metrics functionality	Section 6.3.1	DIAG-QOS-C-002-O AND DIAG-QOS-C-003-O
DIAG-QOS-C-002-O	Support for the QoS MO	Section 6.3.1	
DIAG-QOS-C-003-O	Support for all mandatory nodes	Section 6.3.1	

B.30 SCR for DiagMon Server (qos)

Item	Function	Reference	Requirement
DIAG-QOS-S-001-M	Support for the QoS MO	Section 6.3.1	
DIAG-QOS-S-002-M	Retrieve the DiagMonData nodes using Get command	Section 6.3.1	

B.31 SCR for DiagMon Client (dataCall and dataSession)

Item	Function	Reference	Requirement
DIAG-DCDS-C-001-O	Device supports data calls	Section 7.1.1	DIAG-DCDS-C-002-O AND DIAG-DCDS-C-003-O AND (DIAG-DCDS-C-004-O OR DIAG-DCDS-C-005-O) AND DIAG-DCDS-C-006-O AND DIAG-DCDS-C-007-O
DIAG-DCDS-C-002-O	Support for the DataCallAndDataSession MO	Section 7.1.1	
DIAG-DCDS-C-003-O	Support for all mandatory nodes	Section 7.1.1	
DIAG-DCDS-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 7.1.1	
DIAG-DCDS-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 7.1.1	
DIAG-DCDS-C-006-O	Allow setting of DiagMonConfig data	Section 7.1.1	
DIAG-DCDS-C-007-O	Function behaviour and collected data are affected by setting of DiagMonConfig/Config Parms nodes	Section 7.1.1	

B.32 SCR for DiagMon Server (dataCall and dataSession)

Item	Function	Reference	Requirement
DIAG-DCDS-S-001-M	Support for the DataCallAndDataSession MO	Section 7.1.1	
DIAG-DCDS-S-002-M	Invoke DataCallAndDataSession function via Start Primitive	Section 7.1.1	
DIAG-DCDS-S-003-M	Retrieve the DiagMonData nodes	Section 7.1.1	
DIAG-DCDS-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 7.1.1	
DIAG-DCDS-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 7.1.1	
DIAG-DCDS-S-006-M	Stop function via Stop Primitive	Section 7.1.1	
DIAG-DCDS-S-007-M	Retrieve the Status data	Section 7.1.1	
DIAG-DCDS-S-008-M	Modify behaviour of	Section 7.1.1	

Item	Function	Reference	Requirement
	function by modifying values of DiagMonConfig/Config Parms nodes		

B.33 SCR for DiagMon Client (sms options)

Item	Function	Reference	Requirement
DIAG-SO-C-001-O	Device exposes SMS option functionality to DiagMon Client	Section 8.1.1	DIAG-SO-C-002-O AND DIAG-SO-C-003-O
DIAG-SO-C-002-O	Support for the SmsOptions MO	Section 8.1.1	
DIAG-SO-C-003-O	Allows retrieval of DiagMonData nodes	Section 8.1.1	

B.34 SCR for DiagMon Server (sms options)

Item	Function	Reference	Requirement
DIAG-SO-S-001-M	Support for the SmsOptions MO	Section 8.1.1	
DIAG-SO-S-002-M	Retrieve the DiagMonData nodes using Get command	Section 8.1.1	

B.35 SCR for DiagMon Client (sms usage)

Item	Function	Reference	Requirement
DIAG-SU-C-001-O	Device exposes SMS usage functionality to DiagMon Client	Section 8.1.2	DIAG-SU-C-002-O AND DIAG-SU-C-003-O AND (DIAG-SU-C-004-O or DIAG-SU-C-005-O)
DIAG-SU-C-002-O	Support for the SmsUsage MO	Section 8.1.2	
DIAG-SU-C-003-O	Allows retrieval of DiagMonData nodes	Section 8.1.2	
DIAG-SU-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 8.1.2	
DIAG-SU-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 8.1.2	

B.36 SCR for DiagMon Server (sms usage)

Item	Function	Reference	Requirement
DIAG-SU-S-001-M	Support for the SmsUsage MO	Section 8.1.2	
DIAG-SU-S-002-M	Invoke SmsUsage function via Start Primitive	Section 8.1.2	
DIAG-SU-S-003-M	Retrieve the	Section 8.1.2	

Item	Function	Reference	Requirement
	DiagMonData nodes		
DIAG-SU-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 8.1.2	
DIAG-SU-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 8.1.2	
DIAG-SU-S-006-M	Stop function via Stop Primitive	Section 8.1.2	
DIAG-SU-S-007-M	Retrieve the Status data	Section 8.1.2	

B.37 SCR for DiagMon Client (mms usage)

Item	Function	Reference	Requirement
DIAG-MU-C-001-O	Device exposes MMS usage functionality to DiagMon Client	Section 8.2.1	DIAG-MU-C-002-O AND DIAG-MU-C-003-O AND (DIAG-MU-C-004-O OR DIAG-MU-C-005-O)
DIAG-MU-C-002-O	Support for the MMSUsage MO	Section 8.2.1	
DIAG-MU-C-003-O	Allows retrieval DiagMonData nodes	Section 8.2.1	
DIAG-MU-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 8.2.1	
DIAG-MU-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 8.2.1	

B.38 SCR for DiagMon Server (mms usage)

Item	Function	Reference	Requirement
DIAG-MU-S-001-M	Support for the MMSUsage MO	Section 8.2.1	
DIAG-MU-S-002-M	Invoke MMSUsage function via Start Primitive	Section 8.2.1	
DIAG- MU-S-003-M	Retrieve the DiagMonData nodes	Section 8.2.1	
DIAG- MU-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 8.2.1	
DIAG- MU-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 8.2.1	
DIAG- MU-S-006-M	Stop function via Stop Primitive	Section 8.2.1	

Item	Function	Reference	Requirement
DIAG- MU-S-007-M	Retrieve the Status data	Section 8.2.1	

B.39 SCR for DiagMon Client (app_mon_log)

Item	Function	Reference	Requirement
DIAG-AML-C-001-O	Device exposes application monitoring functionality to DiagMon Client	Section 8.4.1	DIAG-AML-C-002-O AND DIAG-AML-C-003-O AND (DIAG-AML-C-004-O OR DIAG-AML-C-005-O)
DIAG-AML-C-002-O	Support for the AppMonLog MO	Section 8.4.1	
DIAG-AML-C-003-O	Allows retrieval of DiagMonData nodes	Section 8.4.1	
DIAG-AML-C-004-O	Function is executed asynchronously and result is returned using Generic Alert	Section 8.4.1	
DIAG-AML-C-005-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 8.4.1	

B.40 SCR for DiagMon Server (app_mon_log)

Item	Function	Reference	Requirement
DIAG-AML-S-001-M	Support for the AppMonLog MO	Section 8.4.1	
DIAG-AML-S-002-M	Invoke AppMonLog function via Start Primitive	Section 8.4.1	
DIAG-AML-S-003-M	Retrieve the DiagMonData nodes	Section 8.4.1	
DIAG-AML-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 8.4.1	
DIAG-AML-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 8.4.1	
DIAG-AML-S-006-M	Stop function via Stop Primitive	Section 8.4.1	
DIAG-AML-S-007-M	Retrieve the Status data	Section 8.4.1	

B.41 SCR for DiagMon Client (app data usage)

Item	Function	Reference	Requirement
DIAG-ADU-C-001-O	Support for the AppDataUsage MO	Section 8.4.2	DIAG-ADU-C-002-O AND (DIAG-ADU-C-003-O OR DIAG-ADU-C-004-O)
DIAG-ADU-C-002-O	Support for all mandatory nodes	Section 8.4.2	
DIAG-ADU-C-003-O	Function is executed	Section 8.4.2	

Item	Function	Reference	Requirement
	asynchronously and result is returned using Generic Alert		
DIAG-ADU-C-004-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 8.4.2	

B.42 SCR for DiagMon Server (app data usage)

Item	Function	Reference	Requirement
DIAG-ADU-S-001-M	Support for the AppDataUsage MO	Section 8.4.2	
DIAG-ADU-S-002-M	Invoke AppDataUsage function via Start Primitive	Section 8.4.2	
DIAG-ADU-S-003-M	Retrieve the DiagMonData nodes	Section 8.4.2	
DIAG-ADU-S-004-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 8.4.2	
DIAG-ADU-S-005-M	Function is executed synchronously and result is retrieved by Get command	Section 8.4.2	
DIAG-ADU-S-006-M	Stop function via Stop Primitive	Section 8.4.2	
DIAG-ADU-S-007-M	Retrieve the Status data	Section 8.4.2	

B.43 SCR for DiagMon Client (Web Browsing Monitoring)

Item	Function	Reference	Requirement
DIAG-WEBBROSER-C-001-O	Device exposes Web Browsing Monitoring functionality	Section 8.4.3	DIAG-WEBBROSER-C-002-O AND DIAG-WEBBROSER-C-003-O
DIAG-WEBBROSER-C-002-O	Support for the Web Browsing Monitoring MO	Section 8.4.3	
DIAG- WEBBROSER -C-003-O	Support for all mandatory nodes	Section 8.4.3	

B.44 SCR for DiagMon Server (Web Browseing Monitoring)

Item	Function	Reference	Requirement
DIAG- WEBBROSER -S-001-M	Support for the Web Browsing Monitoring MO	Section 8.4.3	
DIAG- WEBBROSER -S-002-M	Retrieve the DiagMonData nodes using Get command	Section 8.4.3	

B.45 SCR for DiagMon Client (app exe info)

Item	Function	Reference	Requirement
DIAG-AEI-C-001-M	Support for the Application Execution Information MO	Section 8.4.4	
DIAG-AEI-C-002-O	Function is executed asynchronously and result is returned using Generic Alert	Section 8.4.4	
DIAG-AEI-C-003-O	Function is executed synchronously and result is returned by receiving a subsequent Get command	Section 8.4.4	

B.46 SCR for DiagMon Server (app exe info)

Item	Function	Reference	Requirement
DIAG-AEI-S-001-M	Support for the Application Execution Information MO	Section 8.4.4	
DIAG-AEI-S-002-M	Function is executed asynchronously and result is retrieved by receiving Generic Alert	Section 8.4.4	
DIAG-AEI-S-003-M	Function is executed synchronously and result is retrieved by Get command	Section 8.4.4	

B.47 SCR for DiagMon Client (ue setting)

Item	Function	Reference	Requirement
DIAG-UES-C-001-O	Device exposes user equipment setting functionality to DiagMon Client	Section 9.1.1	DIAG-UES-C-002-O AND DIAG-UES-C-003-O AND DIAG-UES-C-004-O AND (DIAG-UES-C-005-O OR DIAG-UES-C-006-O)
DIAG-UES-C-002-O	Support for the UESetting MO	Section 9.1.1	
DIAG-UES-C-003-O	Allows Retrieval of DiagMonConfig/UESetting	Section 9.1.1	
DIAG-UES-C-004-O	Allows Setting of DiagMonConfig/ConfigParms/Category data	Section 9.1.1	
DIAG-UES-C-005-O	Allows modification on UE Setting with ReplacementSetting and subsequent execution of Operations/Modify	Section 9.1.1	
DIAG-UES-C-006-O	Allows Retrieval of DiagMonConfig/ConfigParms/RefreshInterval data	Section 9.1.1	

B.48 SCR for DiagMon Server (ue setting)

Item	Function	Reference	Requirement
DIAG-UES-S-001-M	Support for the UESetting MO	Section 9.1.1	
DIAG-UES-S-002-M	Retrieve the DiagMonConfig/UESetting using Get command	Section 9.1.1	
DIAG-UES-S-003-M	Set the DiagMonConfig/ConfigParms/Category using Replace command	Section 9.1.1	
DIAG-UES-S-004-M	Set the DiagMonConfig/ConfigParms/ReplacementSetting using Replace command	Section 9.1.1	
DIAG-UES-S-005-M	Retrieve the DiagMonConfig/ConfigParms/ RefreshInterval data	Section 9.1.1	
DIAG-UES-S-006-M	Modify the UE Setting via the Modify primitive	Section 9.1.1	

B.49 SCR for DiagMon Client (phonebook)

Item	Function	Reference	Requirement
DIAG-PB-C-001-O	Device exposes phonebook functionality to DiagMon Client	Section **Error! Reference source not found.**	DIAG-PB-C-002-O AND DIAG-PB-C-003-O
DIAG-PB-C-002-O	Support for the Phonebook MO	Section **Error! Reference source not found.**	
DIAG-PB-C-003-O	Allows retrieval of DiagMonData nodes by a Get command	Section **Error! Reference source not found.**	

B.50 SCR for DiagMon Server (phonebook)

Item	Function	Reference	Requirement
DIAG-PB-S-001-M	Support for the Phonebook MO	Section **Error! Reference source not found.**	
DIAG-PB-S-002-M	Retrieve the DiagMonData nodes using a Get command	Section **Error! Reference source not found.**	