Software and Application Control Management Object Requirements

Approved Version 1.0 – 29 Jul 2014

Open Mobile Alliance
OMA-RD-SACMO-V1_0-20140729-A

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1. Scope (Informative)

This document defines requirements for the SACMO enabler.

2. References

2.1 Normative References

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

2.2 Informative References

[DMPRO] "OMA Device Management Protocol", Version 1.2, Open Mobile Alliance™, OMA-TS-DM_Protocol-V1_2, URL:http://www.openmobilealliance.org/

[DMRD] "Device Management Requirements", Version 1.2, Open Mobile Alliance™, OMA-RD-DM-V1_2, URL:http://www.openmobilealliance.org/

[OMADICT] "Dictionary for OMA Specifications", Version 2.7 Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7, 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

Device	See [OMADICT]
Device Management	See [DMRD]
Device Management System	See [DMRD]
Network Operator	See [OMADICT]
SACMO Operations	Any operation which may be invoked on a MO.
User	See [OMADICT]

3.3 Abbreviations

CCA	Customer Care Agent
DM	Device Management
DMS	Device Management Server
MO	Management Object
OMA	Open Mobile Alliance
SACMO	Software and Application Control Management Object

4. Introduction (Informative)

To address scenarios such as device initiation, or customer care resolution of application issues, Device Management workflows are sometimes applied today, whereby the DM server requests a DM operation to be executed in the device, the result is reported to the DM server, then logic is applied in the DM server to determine which subsequent DM operation to apply and so on.

This can be inefficient for some workflows, leading to a slow execution time and high network load.

The goal of SACMO is to enable DM operations to be applied according to workflow scripts in the device, whereby any combination of operations on existing Management Objects can be applied and conditionally executed, with just the combined result being reported back to the DM server.

This avoids a series of individual client-server interactions, thereby optimising the network traffic and reducing the workflow execution time.

4.1 Version 1.0

SACMO V1.0 covers:

- Download, update, activation, deactivation & removal of SACMO in the device
- Reporting the results of a SACMO workflow
- User confirmation before execution of SACMO workflow operations

Out of scope is:

- Interface between the DM server and a requester such as the Customer Care Agent

5. SACMO release description (Informative)

The SACMO enabler involves the download of a SACMO workflow to a SACMO agent on the device. The SACMO agent may apply conditional logic to execute any combination of DM MOs to lead to the desired result, e.g. initiation of the device or resolution of a known problem with an application.

5.1 End-to-end Service Description

SACMO is intended to build upon existing DM MOs, to allow known tasks involving sequences of DM operations to be applied in a more efficient way to minimise network communication and allow for faster execution. Minimising network communication addresses the need to efficiently use network resources, whereas fast execution will improve user experience.

6. Requirements (Normative)

6.1 High-Level Functional Requirements

Label	Description	Release
SACMO-HLF-1	The SACMO enabler SHALL support the download of SACMO(s) to the device.	SACMO 1.0
SACMO-HLF-2	The SACMO enabler SHALL support the installation of SACMO(s) on the device	Deleted
SACMO-HLF-3	The SACMO enabler SHALL support the update of SACMO(s) on the device.	SACMO 1.0
SACMO-HLF-4	The SACMO enabler SHALL support the activation/deactivation of SACMO(s) on the device.	SACMO 1.0
SACMO-HLF-5	The SACMO enabler SHALL support the removal of SACMO(s) from the device.	SACMO 1.0
SACMO-HLF-6	The SACMO enabler SHALL provide a mechanism that allows the Device to indicate the result of SACMO operations to the DMS.	SACMO 1.0
SACMO-HLF-7	The SACMO enabler SHALL support a mechanism to bind related Management Objects so that they can be processed using a single operation.	SACMO 1.0
SACMO-HLF-8	A failure of a SACMO operation SHALL leave the related Management Object in its original state.	SACMO 1.0
SACMO-HLF-9	The SACMO enabler SHALL support the conditional execution of operations on Management Objects.	SACMO 1.0
SACMO-HLF-10	The SACMO enabler SHALL support the definition of workflows.	SACMO 1.0

Table 1: High-Level Functional Requirements

6.1.1 Security

Label	Description	Release
N/A	N/A	N/A

Table 2: High-Level Functional Requirements – Security Items

6.1.1.1 Authentication

Label	Description	Release
SACMO-ATHEN-1	Only authenticated DMS SHALL be able to perform SACMO operations on the device.	SACMO 1.0

Table 3: High-Level Functional Requirements – Authentication Items

6.1.1.2 Authorization

Label	Description	Release
SACMO-ATHOR-1	Only authorized DMS SHALL be able to perform SACMO operations on the device.	SACMO 1.0

Table 4: High-Level Functional Requirements – Authorization Items

6.1.1.3 Data Integrity

Label	Description	Release
N/A	N/A	N/A

Table 5: High-Level Functional Requirements – Data Integrity Items

6.1.1.4 Confidentiality

Label	Description	Release
N/A	N/A	N/A

Table 6: High-Level Functional Requirements – Confidentiality Items

6.1.2 Charging Events

Label	Description	Release
N/A	N/A	N/A

Table 7: High-Level Functional Requirements – Charging Items

6.1.3 Administration and Configuration

Label	Description	Release
N/A	N/A	N/A

Table 8: High-Level Functional Requirements – Administration and Configuration Items

6.1.4 Usability

Label	Description	Release
SACMO-USE-1	The SACMO enabler SHALL support a mechanism to inform the user about SACMO operations and any other related information.	SACMO 1.0
SACMO-USE-2	The SACMO SHALL be able to indicate specific operations in a workflow which need user confirmation or action, and specific operations in a workflow which do not need user confirmation or action.	SACMO 1.0
SACMO-USE-3	The SACMO enabler SHALL support a mechanism that requests user confirmation before the indicated operations are conducted on the device.	SACMO 1.0
SACMO-USE-4	The SACMO enabler SHOULD support a mechanism to inform the user that the SACMO operation has been completed successfully or unsuccessfully.	SACMO 1.0

Table 9: High-Level Functional Requirements – Usability Items

6.1.5 Interoperability

Label	Description	Release
N/A	N/A	N/A

Table 10: High-Level Functional Requirements – Interoperability Items

6.1.6 Privacy

Label	Description	Release
N/A	N/A	N/A

Table 11: High-Level Functional Requirements – Privacy Items

6.2 Overall System Requirements

Label	Description	Release
SACMO-OSR-01	The SACMO enabler SHALL rely on features as described in OMA DM v1.2 specifications [DMPRO] or higher.	SACMO 1.0
SACMO-OSR-02	The SACMO enabler SHALL support implementation specific extensions.	SACMO 1.0

Table 12: High-Level System Requirements

6.2.1 Device Management Server

Label	Description	Release
SACMO-DMS-01	The DMS SHALL support download of SACMO(s) using OMA DM and/or at least one Alternate Download protocol.	SACMO 1.0
SACMO-DMS-02	The DMS SHALL be able to install SACMO(s) on the device.	Deleted
SACMO-DMS-03	The DMS SHALL be able to update SACMO(s) on the device.	SACMO 1.0
SACMO-DMS-04	The DMS SHALL be able to activate/deactivate SACMO(s) on the device.	SACMO 1.0
SACMO-DMS-05	The DMS SHALL be able to remove SACMO(s) from the device.	SACMO 1.0
SACMO-DMS-06	The DMS SHALL be able to query the result of SACMO(s) on the device.	SACMO 1.0
SACMO-DMS-07	The DMS SHALL be able to receive notifications about the result of SACMO operations from the device.	SACMO 1.0

Table 13: DMS Requirements

6.2.2 Device

Label	Description	Release
SACMO-Device-01	The Device SHALL support download of SACMO(s) using OMA DM and/or at least one Alternate Download protocol.	SACMO 1.0
SACMO-Device -02	The Device SHALL support installation of SACMO(s).	Deleted
SACMO-Device -03	The Device SHALL support updating of SACMO(s).	SACMO 1.0
SACMO-Device -04	The Device SHALL support activation/deactivation of SACMO(s).	SACMO 1.0
SACMO-Device -05	The Device SHALL support removal of SACMO(s).	SACMO 1.0
SACMO-Device -06	The Device SHALL be able to send notifications about the result of SACMO operations to the DMS.	SACMO 1.0
SACMO-Device -07	The Device SHOULD be able to initiate a session for SACMO operations.	SACMO 1.0

Table 14: Device Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-RD-SACMO-V1_0-20140729-A	29 Jul 2014	Status changed to Approved by TP TP Ref # OMA-TP-2014-0159-INP_SACMO_V1_0_ERP_for_final_Approval

Appendix B. Use Cases (Informative)

B.1 Application problem resolution by Customer care

B.1.1 Short Description

A Customer Care Agent (CCA) receives a request from a user to fix a problem with an application on the user's device.

The CCA identifies an available control workflow to be processed on the device, which is downloaded & activate via the DM server.

The workflow checks the firmware level needed to run this application, no customer confirmation is needed for this step. The workflow identifies that a firmware update is needed, and updates the firmware following confirmation by the customer.

The workflow confirms that the application version is the current one, however it checks the software components needed to support the application and identifies that the software component for the web runtime environment is not installed. It then installs following confirmation by the customer.

The workflow then initiates a full device restart, after having received customer confirmation.

The overall result of the workflow is then reported back to the CCA.

Alternative flows

(a) The device itself initiates the DM session, leading to the download & installation of the SACMO workflow.

When the workflow identifies that the software component needed for the web runtime environment is not installed, it rejects the installation and sends the result to the DMS to obtain specialised instructions.

B.1.2 Market benefits

The use of a device workflow avoids a series of individual client-server interactions - thereby optimising the network traffic & the reducing the workflow execution time.

B.2 Enhanced maintenance

B.2.1 Short Description

The user has a device with an enhanced maintenance service. In order to provide the desired enhanced maintenance service a specialised control workflow has been installed and pre-configured.

The customer accidentally deletes a needed software component and changes the email server address & associated APN so that a critical application will no longer work.

The maintenance service workflow executes daily, and identifies that the software components and configuration parameters needed to run the critical application are no longer available, and with customer confirmation re-installs the software component & resets the email server address & associated APN.

B.2.2 Market benefits

The critical application continues to run without the need for customer care intervention.

B.3 New device installation

B.3.1 Short Description

A customer buys a second hand device and wishes to use that device with their network operator.

The network operator downloads a workflow to the device, which installs the latest version of the web runtime environment used by the operator, adds key applications provided by the operator such as their address book, messaging & social networking clients, and sets the configuration settings for SMSC, MMSC, email server, IMS bearer environment, and APNs.

B.3.2 Market benefits

The operator can create and apply a script for each device type to initialise it and provide it with the operator specific key services and applications

B.4 Sideband Device Update

B.4.1 Short Description

A Mobile Network Operator has an agreement with an OEM that firmware updates to devices from that vendor will be processed over the web, using the vendor's proprietary mechanism. The MNO initiates the firmware update process by using the SACMO enabler to download a workflow (script file) to the device that instructs the User to tether her device to her PC for the update. The script file contains the URL of the vendor's server and any additional information necessary to enable the update (such as User confirmation messages, instructions, connection re-try algorithms, etc.). The User tethers her device, the firmware update is installed, and results reported to the SACMO client and then ultimately to the MNO's DM Server.

B.4.2 Market Benefits

Mobile Network Operators can maintain control of firmware update campaigns and configuration awareness of devices in their networks while allowing vendors to employ proprietary update mechanisms where necessary or appropriate. Additionally, out-of-band updates can conserve mobile network resources when dealing with large update packages.