



Enabler Test Specification for DCMO

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1. Scope

This document describes in detail available test cases for DCMO Enabler Release 1.0 [DCMO-ERELED].

The test cases are split in two categories, conformance and interoperability test cases.

The conformance test cases are aimed to verify the adherence to normative requirements described in the DCMO technical specifications [DCMO-TS].

The interoperability test cases are aimed to verify that implementations of the specifications work satisfactory.

If either conformance or interoperability tests do not exist at the creation of the test specification this part should be marked not available.

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>
- [DCMO-TS] “DCMO Technical Specification”, Version 1.0, Open Mobile Alliance, OMA-TS_DCMO-V1_0, URL: <http://www.openmobilealliance.org/>
- [DMPRO] “OMA Device Management Protocol”, Version 1.2, Open Mobile Alliance, OMA-TS-DM_Protocol-V1_2, URL: <http://www.openmobilealliance.org/>
- [DCMO-ERELED] “Enabler Release Document for DCMO”, Version 1.0, Open Mobile Alliance™, OMA-ERELED-DCMO-V1_0, URL: <http://www.openmobilealliance.org/>

2.2 Informative References

- [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”, are normative, unless they are explicitly indicated to be informative.

The following numbering scheme is used:

xxx-y.z-con-number where:

xxx	Name of enabler, e.g. MMS or Browsing
y.z	Version of enabler release, e.g. 1.2 or 1.2.1
'con'	Indicating this test is a conformance test case
number	Leap number for the test case

Or

xxx-y.z-int-number where:

xxx	Name of enabler, e.g. MMS or Browsing
y.z	Version of enabler release, e.g. 1.2 or 1.2.1
'int'	Indicating this test is a interoperability test case
number	Leap number for the test case

3.2 Definitions

DCMO Alert	DCMO specific alerts which convey the result of DCMO Operations or report the discovery of new device capability via DM Generic Alert mechanism [DMPRO].
DCMO Operations	Operations (e.g. enable, disable) which may be invoked on a Device Capability MO.
Device	see [OMADICT]
Device Capability	Physical characteristics and related parameters supported by a device.
Management Object	A data model for information which is a logical part of the interfaces exposed by DM components.
Primitive	Operation that transfers Device Capability to a different state.
DCMO Alert	DCMO specific alerts which convey the result of DCMO Operations or report the discovery of new device capability via DM Generic Alert mechanism [DMPRO].
DCMO Operations	Operations (e.g. enable, disable) which may be invoked on a Device Capability MO.

3.3 Abbreviations

DCMO	Device Capability Management Object
DM	Device Management
MO	Management Object
MOI	Management Object Identifier
OMA	Open Mobile Alliance

4. Introduction

The purpose of this document is to provide test cases for DCMO Enabler Release 1.0 [DCMO-ERELED].

The implementation of some features is optional for the Clients and/or the Servers in the DCMO Enabler. The tests associated with these optional features are marked as "(Includes Optional Features)" in the test specification.

The following items on an overall level are needed to adequately test the DCMO Enabler:

- A DM Client in the device that is configured to interact with a DM Server
- A DM Server capable of accessing, setting the Device Capability Management Object in a device, sending DCMO Operations to the device and receiving DCMO Alerts from the device.
- An SCTS (SyncML Conformance Test Suite), if necessary

Detailed info will be put in the specific test cases description.

The DCMO 1.0 Enabler tests are carried out using OMA DM 1.2 protocol defined in [DMPRO]. The transport protocol used is HTTP.

5. DCMO Conformance Test Cases

None

6. DCMO Interoperability Test Cases

6.1 DCMO-1.0-int-001: Enable Device Capability

Test Case Id	DCMO-1.0-int-001
Test Object	Client and Server device under test
Test Case Description	To test enablement of Device Capabilities on the device
Specification Reference	5.1, 7.2, 8, 9.1
SCR Reference	DCMO-C-001-M DCMO-C-008-M DCMO-S-001-M
ETR Reference	Enable
Tool	None
Test code	None
Preconditions	<ol style="list-style-type: none"> 1. The Device has a device capability that is manageable by DCMO 2. The capability is currently disabled. <p>Note: Examples for manageable device capabilities: camera, voice recorder, GPS, SMS, network connectivity, data connectivity.</p>
Test Procedure	<ol style="list-style-type: none"> 1. In the DM Server, configure to perform enablement of the device capability under test. 2. Establish the connection triggered by DM Server using notification message. 3. Complete the DM session. 4. Check the DM session goes without any errors. 5. Check the whether the selected device capability has been enabled.
Pass-Criteria	<ol style="list-style-type: none"> 1. DM session runs through without any errors. 2. Device capability is enabled and is fully functional. 3. Result code marks success

Table 1: Test Information for Enable Capability Interoperability Test

6.2 DCMO-1.0-int-002: Disable Device Capability

Test Case Id	DCMO-1.0-int-002
Test Object	Client and Server device under test
Test Case Description	To test disablement of Device Capabilities on the device
Specification Reference	5.1, 7.2, 8, 9.1
SCR Reference	DCMO-C-002-M DCMO-C-008-M DCMO-S-001-M
ETR Reference	Disable
Tool	None
Test code	None

Preconditions	<ol style="list-style-type: none"> 1. The Device has a device capability that is manageable by DCMO 2. The device capability is currently enabled <p>Note: for examples of device capabilities, see test use 001 above..</p>
Test Procedure	<ol style="list-style-type: none"> 1. In the DM Server, configure to perform disablement of the selected device capability on the Device. 2. Establish the connection triggered by DM Server using notification message. 3. Complete the DM session. 4. Check the DM session goes without any errors. 5. Check the whether the selected device capability has been disabled.
Pass-Criteria	<ol style="list-style-type: none"> 1. DM session runs through without any errors. 2. Selected device capability has been disabled. 3. Result code marks success

Table 2: Test Information for Disable Capability IOT

6.3 DCMO-1.0-int-003: Detect Attaching a Peripheral

Test Case Id	DCMO-1.0-int-003
Test Object	Client and Server device under test
Test Case Description	To test exposure of Device Capabilities on the device when external devices are attached
Specification Reference	5.1, 7.2, 8, 9.2
SCR Reference	DCMO-C-009-M DCMO-C-010-M DCMO-S-001-M
ETR Reference	Attach
Tool	None
Test code	None
Preconditions	<ol style="list-style-type: none"> 1. The Device supports attaching and detaching an external peripheral. 2. This peripheral attached/detached status is reflected in the management tree 3. The external peripheral was detached from the Device and there are no nodes associated with this external peripheral on the management tree. <p>Note: Examples of such a peripheral: external storage, Bluetooth headset.</p>

Test Procedure	<ol style="list-style-type: none"> 1. User attaches the external peripheral into the Device. 2. In the DM Server, configure to perform get value of “Attached” node for the Device Capability with name “<EPD>” where <EPD> is replaced by the predefined name for the specific peripheral (e.g. “ExternalMemory” for an external memory). 3. Establish the connection triggered by DM Server using notification message. 4. Complete the DM session. 5. Check the DM session goes without any errors. 6. Check the whether the value of “Attached” node is “true” for the Device Capability with name “<EPD>”.
Pass-Criteria	<ol style="list-style-type: none"> 1. DM session runs through without any errors. 2. The value of “Attached” node is “true” for the Device Capability with name “<EPD>”. 3. Result code marks success

Table 3: Test Information for Detect Attaching Interoperability Test

6.4 DCMO-1.0-int-004: Detect Detaching a Peripheral

Test Case Id	DCMO-1.0-int-004
Test Object	Client and Server device under test
Test Case Description	To test that Device Capabilities on the device are updated when an external peripheral is detached
Specification Reference	5.1, 7.2, 8, 9.2
SCR Reference	DCMO-C-009-M DCMO-S-001-M
ETR Reference	Detach
Tool	None
Test code	None
Preconditions	<ol style="list-style-type: none"> 1. The Device supports an attachable external peripheral. 2. The external storage was attached into the Device. 3. External peripheral appears as attached in the relevant node
Test Procedure	<ol style="list-style-type: none"> 1. User detaches the external peripheral from the Device. 2. In the DM Server, configure to perform get value of “Attached” node for the Device Capability with name “<EPD>”, where <PD> is replaced with the predefined name of the specific peripheral. 3. Establish the connection triggered by DM Server using notification message. 4. Complete the DM session. 5. Check the DM session goes without any errors. 6. Check the whether the value of “Attached” node is “false” for the Device Capability with name “<EPD>”.

Pass-Criteria	<ol style="list-style-type: none"> DM session runs through without any errors. The value of “Attached” node is “false” for the Device Capability with name “<EPD>”. Result code marks success
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Table 4: Test Information for Detect Detaching Interoperability Test

6.5 DCMO-1.0-int-005: Result Reporting

Test Case Id	DCMO-1.0-int-005
Test Object	Client and Server device under test
Test Case Description	To test reporting results of DCMO Operations
Specification Reference	5.1, 7.2, 8, 9.1, 9.3, 9.5
SCR Reference	DCMO-C-009-M DCMO-S-001-M
ETR Reference	Report
Tool	None
Test code	None
Preconditions	Select a DCMO operation where the DM Client is expected to return a result.
Test Procedure	<ol style="list-style-type: none"> In the DM Server, configure to perform a DCMO operation that will return a result Establish the connection triggered by DM Server using notification message. Complete the DM session. Check the DM session goes without any errors. If the DM Client is expected to work synchronously, check whether the result code returned by the Device in <Status> message is “1200 Operation Succeeds”. If the DM Client is expected to work asynchronously, check whether the result code returned by the Device in <Generic Alert> message is “1200 Operation Succeeds”.
Pass-Criteria	<ol style="list-style-type: none"> DM session runs through without any errors. The result code returned by the Device in <Status> or <Generic Alert> message is “1200 Operation Succeeds”. Verify that the device has indeed performed the requested DCMO operation Result code marks success

Table 5: Test Information for Result Reporting Interoperability Test

6.6 DCMO-1.0-int-006: Deny User Enablement

Test Case Id	DCMO-1.0-int-006
Test Object	Client and Server device under test
Test Case Description	To test user enablement of Device Capability when it is blocked by DCMO Server

Specification Reference	5.1, 7.2, 8, 9.1, 9.3, 9.4, 9.5
SCR Reference	DCMO-C-003-O DCMO-C-004-O DCMO-C-005-O DCMO-S-001-M
ETR Reference	Deny User-initiated Enablement
Tool	None
Test code	None
Preconditions	A device capability was disabled by the DM Server.
Test Procedure	<ol style="list-style-type: none"> 1. In the DM Server, configure to perform set value of “DenyUserEnable” node to “true” for the Device Capability with name “<EPD>” where <EPD> is the predefined name for the device capability under test. 2. Establish the connection from the client or triggered by DM Server using notification message. 3. Complete the DM session. 4. Check the DM session goes without any errors. 5. Verify that the user can not enable the device capability.
Pass-Criteria	<ol style="list-style-type: none"> 1. DM session runs through without any errors. 2. When user tries to manually enable the device capability under test the operation will be denied and the peripheral/capability will remain disabled. 3. Result code marks success

Table 6: Test Information for Deny User Enablement Interoperability Test

6.7 DCMO-1.0-int-007: User Notification

Test Case Id	DCMO-1.0-int-007
Test Object	Client and Server device under test
Test Case Description	To test user notification when a DCMO Operation is completed
Specification Reference	5.1, 7.2, 8, 9.1, 9.3, 9.4, 9.5
SCR Reference	DCMO-S-001-M
ETR Reference	User Notification
Tool	None
Test code	None
Preconditions	DCMO supports notification to the user about the disable operation on the selected device capability

Test Procedure	<ol style="list-style-type: none"> 1. In the DM Server, configure to perform set value of “NotifyUser” node for the Device Capability with name “<EPD>” where <EPD> is the predefined name of the device capability under test. 2. In the DM Server, configure to perform disablement of the device capability on the Device. 3. Establish the connection from the client or triggered by DM Server using notification message. 4. Complete the DM session. 5. Check the DM session goes without any errors. 6. Verify that the user has received a notification on the display about the disablement operation that was performed 7. Check the whether the value of “Attached” node is “false” for the Device Capability with name “<EPD>”.
Pass-Criteria	<ol style="list-style-type: none"> 1. DM session runs through without any errors. 2. The notification is shown on the Device 3. The value of “Attached” node is “false” for the Device Capability with name “<EPD>”. 4. Result code marks success

Table 7: Test Information for User Notification Interoperability Test

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 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-ETS-DM_DCMO-V1_0	05 Dec 2008	All	First draft
	03 Feb 2009	All	Major changes
Candidate Versions OMA-ETS-DM_DCMO-V1_0	15 Sep 2009	n/a	TP approved : OMA-TP-2009-0422-INP_DCMO_1.0_ETS_for_Candidate_approval