Enabler Test Specification for DRM 1.0

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Open Mobile Alliance
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Contents

1. Scope

This document describes in detail interoperability test cases for Digital Rights Management Version 1.0.

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

[DRM] "DRM Rights Management". Open Mobile Alliance™. OMA-Download-DRM-v1_0. URL:http://www.openmobilealliance.com/.

[DRMCF] "DRM Content Format". Open Mobile Alliance™. OMA-Download-DRMCF-v1_0. URL:http://www.openmobilealliance.com/.

[DRMREL] "DRM Rights Expression Language". Open Mobile Alliance™. OMA-Download-DRMRELv1_0. URL:http://www.openmobilealliance.com/.

[OMAIOP] "OMA Interoperability Policies and Process" Open Mobile Alliance™. OMA-IOP-Process-V1_2_0. URL:http://www.openmobilealliance.com/.

2.2. Informative References

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.

The following numbering scheme is used:

xxx-y.z-con/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
con	Indicating this test is a conformance test case
int	Indicating this test is a interoperability test case
number	Leapnumber for the test case

3.2. Definitions

Asset	Content governed by rights. See DRM content.
Combined delivery	Delivery of the rights object and content together in a single message. See DRM message.
Composite object	A media object that contains one or more media objects by means of inclusion e.g. DRM messages, zip files.
Content	A media object
Consuming device	A mobile device consuming DRM content.
DRM agent	A user agent in the device that enforces the rights and controls the consumption of DRM content on the device.
DRM content	Content that is consumed according to a set of rights. DRM content may be in encrypted DRM Content Format or in plaintext delivered inside a DRM message
DRM message	A message containing a media object and an optional rights object. Media objects received inside a DRM message must not leave the device. The optional rights object defines additional consumption rules for the media object.
Forward-lock	A special case of combined delivery method where the DRM message includes only the media object and not a rights object at all. A set of default rights applies for the media object.
Media object	A digital resource e.g. a ringing tone, a screen saver, a Java game or a composite object.
Media type	A MIME media type.
Rights	Permissions and constraints defining under which circumstances access is granted to DRM content.
Rights issuer	An entity who issues rights objects.
Rights object	An instance of rights
Separate delivery	Delivery of the rights object and content via separate transports.
Superdistribution	A mechanism that (1) allows the end user to redistribute the encrypted DRM content to other end users through potentially insecure channels and (2) enables the receipients to obtain initial rights for the superdistributed DRM content.

3.3. Abbreviations

CEK	Content Encryption Key
DCF	DRM Content Format
DRM	Digital Rights Management
HTTP	Hypertext Transfer Protocol
MIME	Multipurpose Internet Mail Extensions
OMA	Open Mobile Alliance
REL	Rights Expression Language
SCR	Static Conformance Requirement
WAP	Wireless Application Protocol
WSP	Wireless Session Protocol

4. Introduction

The purpose of this document is to provide test cases for Digital Rights Management (DRM) Enabler Release 1.0.

Broadly stated, the goals of the interoperability testing effort should be to validate client/server interactions and the readily apparent behaviours and normal working of the mobile device. For instance, it may not be feasible to set up scenarios to test the error conditions for a given specification. The following sections provide more detailed instructions how to test DRM functionality.

Support for the Foundation, Context, and Agreement Models is validated indirectly by other test cases in this document.

Following items are needed to test the DRM functionality:

- An origin server configured to support the DRM content types application/vnd.oma.drm.message (DRM message) and application/vnd.oma.drm.content (DRM content format).
- An origin server configured to support the DRM Rights Objects application/vnd.oma.drm.rights+xml and application/vnd.oma.drm.rights+wbxml.
- An object-packaging tool capable of packaging DRM objects.
- [Optional] A push proxy gateway for delivering a rights object to the mobile device.
- [Optional] Documentation from the mobile device manufacturer as to which rights and constraints are supported by the mobile device.

The DRM enabler tests are carried out using WSP and/or W-HTTP transfer protocols. However, it should be noted that the download functionality is not within the testing scope and should be considered as a pre-condition for DRM tests.

5. Conformance Test Cases

This chapter contains Conformance test cases for DRM 1.0. There are 11 conformance test cases for DRM 1.0 Enabler.

According to [OMAIOP] the responsibility for conformance testing is left for vendors. Vendor companies SHOULD file Test Session Reports from their conformance testing. The Trusted Zone handles these reports anonymously and they SHALL NOT be made visible to other OMA member companies. A Test Session Report from conformance testing needs to be issued only once per implementation. The Trusted Zone SHALL maintain a repository of all submitted Conformance Test Session Reports.

Conformance testing is required for DRM 1.0 enabler. A cross check is made before the Test Fest, to verify that a Test Session Report exists for each registered implementation. Test Session Reports SHALL be submitted before the registration closes; otherwise participation to the Test Fest is rejected. Results from Conformance Test Session Reports are included in the Enabler Test Report that comes out from the Test Fest.

DRM 1.0 conformance testing is implemented using reference content that can be found from the OMA DRM content repository:

http://member.openmobilealliance.org/ftp/iop/iop-Browsing/gen_info/DRM-Content.shtml

Vendors may also use their own reference content, if this material is first made available to other vendors using the test content repository above. Please contact OMA staff or OMA IOP Browsing WG for further details.

OMA does not provide a download server or tools to deliver reference content to client devices. Each vendor can use whatever tools or means they have available for their internal testing, as long as the required conformance test cases can be realized. The delivery mechanism of reference content is considered to be out of scope of DRM 1.0 testing.

5.1. Separate Delivery

5.1.1. Unsupported headers in the DCF file

Test Case ID	DRM-1.0-con-1
Test Object	Consuming device
Test Case Description	To test behaviour in the case there are unsupported headers in the *Headers* field.
Specification Reference	[DRMCF] Chapter 5.2.4.7
SCR Reference	DRMCF-GEN-10
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format. There is a push proxy gateway for delivering a rights object to the consuming device. The DCF file contains such additional headers in the *Headers* field that are not supported by the consuming device. The consuming device supports Separate Delivery and the delivery of the rights object using WAP Push (i.e. using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push).
Test Procedure	1. An encrypted media object packaged in a DRM content format message is delivered to the consuming device. The DCF file contains headers that are not supported by the consuming device. 2. The rights object is delivered to the consuming device using WAP push technology (using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push). 3. User tries to use (display/play/execute/print) the media object.
Pass-Criteria	1. The DCF file is delivered successfully. The consuming device includes application/vnd.oma.drm.rights+xml, application/vnd.oma.drm.rights+wbxml and application/vnd.oma.drm.content in the Accept header of the HTTP request. The consuming device ignores all unsupported headers. 2. The rights object is successfully delivered to the consuming device. 3. The media object can be used in accordance with the associated rights.

5.2. Permission Model

5.2.1. Wrong permissions for a image object

Test Case ID	DRM-1.0-con-2
Test Object	Consuming device
Test Case Description	To test wrong permissions for image files.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-012, DRMREL-GEN-014
Tools	None
Test Code	None
Preconditions	There is a DRM message containing an image media object packaged with a rights object: The rights object contains <play> and <execute> permissions but it does not contain <display> or <print> permissions. Consuming device supports Combined Delivery. Consuming device supports the used image file type.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to display the image media object. 3. User tries to print the image media object (if supported by device).
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to display the image. 3. The consuming device does not allow the user to print the image (if supported by device).

5.2.2. Unknown permissions for a image object

Test Case ID	DRM-1.0-con-3
Test Object	Consuming device
Test Case Description	To test an unknown permission for an image file.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-009, DRMREL-GEN-010, DRMREL-GEN-012, DRMREL-GEN-014
Tools	None
Test Code	None
Preconditions	There is a DRM message containing an image media object packaged with a rights object: In the DRM message the rights object contains <display> and <print> permissions. The rights object also contains an unknown permission (e.g. <delete>). Consuming device supports Combined Delivery. Consuming device supports the used image file type.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to display the image media object. 3. User tries to print the image media object (if supported by device).
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device allows the user to display the image. 3. The consuming device allows the user to print the image (if supported by device).

5.2.3. Wrong permissions for a sound object

Test Case ID	DRM-1.0-con-4
Test Object	Consuming device
Test Case Description	To test wrong permissions for a sound file.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-011
Tools	None
Test Code	None
Preconditions	There is a DRM message containing a sound media object packaged with a rights object: The rights object contains <display>, <print> and <execute> permissions but it does not contain <play> permissions. Consuming device supports Combined Delivery. Consuming device supports the used sound file format.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to play the sound media object.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to play the sound.

5.2.4. Unknown permissions for a sound object

Test Case ID	DRM-1.0-con-5
Test Object	Consuming device
Test Case Description	To test an unknown permission for a sound file.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-009, DRMREL-GEN-010, DRMREL-GEN-011
Tools	None
Test Code	None
Preconditions	There is a DRM message containing an image media object packaged with a rights object: In the DRM message the rights object contains <play> permissions. The rights object also contains an unknown permission (e.g. <delete>). Consuming device supports Combined Delivery. Consuming device supports the used sound file format.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. The user tries to play the sound media object.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device allows the user to play the sound.

5.2.5. Application object delivery

Test Case ID	DRM-1.0-con-6
Test Object	Consuming device
Test Case Description	To test <execute> permission for an application.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-013
Tools	None
Test Code	None
Preconditions	There are two DRM messages containing a application media object packaged with a rights object: • In the first DRM message the rights object does not contain <execute> permissions. • In the second DRM message the rights object contains <execute> permissions. Consuming device supports Combined Delivery. Consuming device supports the used application type.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to execute the application. 3. The second DRM message is delivered to the consuming device. 4. User tries to execute the application.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to execute the application. 3. The DRM message is delivered successfully. 4. The consuming device allows the user to execute the application.

5.2.6. Wrong permissions for a application object

Test Case ID	DRM-1.0-con-7
Test Object	Consuming device
Test Case Description	To test wrong permissions for an application.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-013
Tools	None
Test Code	None
Preconditions	There is a DRM message containing an application media object packaged with a rights object: The rights object contains <display>, <print> and <play> permissions but it does not contain <execute> permissions. Consuming device supports Combined Delivery. Consuming device supports the used application type.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to execute the application.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to execute the application.

5.2.7. Unknown permissions for a application object

Test Case ID	DRM-1.0-con-8
Test Object	Consuming device
Test Case Description	To test an unknown permission for an application.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-009, DRMREL-GEN-010, DRMREL-GEN-013
Tools	None
Test Code	None
Preconditions	There is a DRM message containing an application media object packaged with a rights object: In the DRM message the rights object contains <execute> permissions. The rights object also contains an unknown permission (e.g. <delete>). Consuming device supports Combined Delivery. Consuming device supports the used application type.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to execute the application.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device allows the user to execute the application.

5.3. Constraint Model

5.3.1. Erroneous count constraint

Test Case ID	DRM-1.0-con-9
Test Object	Consuming device
Test Case Description	To test erroneous <count> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-017
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The usage of the media object file is limited by the <count> element in the rights object file. The value of the <count> element is a negative or zero. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use the media object file.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media object file.

5.3.2. Erroneous datetime constraint

Test Case ID	DRM-1.0-con-10
Test Object	Consuming device
Test Case Description	To test erroneous <datetime> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-018, DRMREL-GEN-019, DRMREL-GEN-020
Tools	None
Test Code	None
Preconditions	There are three DRM messages containing an application media object packaged with a rights object. In both messages the usage of the media object file is limited by the <datetime> element in the rights object file. In the first message the value of the <end> element is smaller than the value of the <start> element. In the second message the format of the <start> element is faulty. In the third message the format of the <end> element is faulty. Consuming device supports Combined Delivery.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to use the media object file. 3. The second DRM message is delivered to the consuming device. 4. User tries to use the media object file. 5. The third DRM message is delivered to the consuming device. 6. User tries to use the media object file.
Pass-Criteria	1. The first DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media object file. 3. The second DRM message is delivered successfully. 4. The consuming device does not allow the user to use the media object file. 5. The third DRM message is delivered successfully. 6. The consuming device does not allow the user to use the media object file.

5.3.3. Erroneous interval constraint

Test Case ID	DRM-1.0-con-11
Test Object	Consuming device
Test Case Description	To test erroneous <interval> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-021
Tools	None
Test Code	None
Preconditions	There are two DRM messages containing an application media object packaged with a rights object. In both messages the usage of the media object file is limited by the <interval> element in the rights object file. In the first message the value of the <interval> constraint is zero. In the second message the format of the <interval> constraint is faulty. Consuming device supports Combined Delivery.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to use the media object file. 3. The second DRM message is delivered to the consuming device. 4. User tries to use the media object file.
Pass-Criteria	1. The first DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media object file. 3. The second DRM message is delivered successfully. 4. The consuming device does not allow the user to use the media object file.

6. Interoperability Test Cases

There are 17 interoperability test cases for DRM 1.0 Enabler.

6.1. Forward Lock

6.1.1. Binary Content-Transfer-Encoding

Test Case ID	DRM-1.0-int-1
Test Object	Consuming device
Test Case Description	To test “Forward Lock” DRM functionality with “binary” encoding.
Specification Reference	[DRM] Chapters 5.3 and 6.
SCR Reference	DRM-GEN-C-001, DRM-GEN-C-004 and DRM-GEN-C-006
Tools	None
Test Code	None
Preconditions	There is a DRM message “binary” Content-Transfer-Encoding for the DRM message body part.
Test Procedure	1. The DRM message (binary) is delivered to the consuming device. 2. User tries to use (display/play/execute/print) the media object. 3. User tries to forward the received media object using all available means (IrDA, Bluetooth, MMS, email, unprotected storage on removable media or other data storage etc.)
Pass-Criteria	1. The DRM message (binary) is delivered successfully. The consuming device includes application/vnd.oma.drm.message in the Accept header of the HTTP request. 2. The media object can be consumed without any constraints. 3. The consuming device does not allow the media object to be forwarded from the device.

6.1.2. Base64 Content-Transfer-Encoding

Test Case ID	DRM-1.0-int-2
Test Object	Consuming device
Test Case Description	To test “Forward Lock” DRM functionality with “base64” encoding.
Specification Reference	[DRM] Chapters 5.3 and 6.
SCR Reference	DRM-GEN-C-001, DRM-GEN-C-004 and DRM-GEN-C-007
Tools	None
Test Code	None
Preconditions	There is a DRM message using “base64” Content-Transfer-Encoding for the DRM message body parts.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use (display/play/execute/print) the media object. 3. User tries to forward the media object contained inside the DRM message using all available means (IrDA, Bluetooth, MMS, email, unprotected storage on removable media or other data storage etc.)
Pass-Criteria	1. The DRM message is delivered successfully. The consuming device includes application/vnd.oma.drm.message in the Accept header of the HTTP request. 2. The media object can be consumed without any constraints. 3. The consuming device does not allow the media object to be forwarded from the device.

6.2. Combined Delivery

6.2.1. Combined Delivery supported

Test Case ID	DRM-1.0-int-3
Test Object	Consuming device
Test Case Description	To test "Combined Delivery" functionality.
Specification Reference	[DRM] Chapters 5.4 and 6.
SCR Reference	DRM-GEN-C-002, DRM-GEN-C-005
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use (display/play/execute/print) the media object. 3. User tries to forward the content and/or the rights contained in received DRM message using all available means (IrDA, Bluetooth, MMS, email, unprotected storage on removable media or other data storage etc.).
Pass-Criteria	1. The DRM message is delivered successfully. The consuming device includes application/vnd.oma.drm.message and application/vnd.oma.drm.rights+xml in the Accept header of the HTTP request. 2. The media object can be used in accordance with the associated rights. Note that this includes that the media object cannot be used beyond what the specified rights permit. 3. Consuming device does not allow the media object or rights object to be forwarded from the device.

6.2.2. Combined Delivery not supported

Test Case ID	DRM-1.0-int-4
Test Object	Consuming device
Test Case Description	To test the behaviour when the consuming device does not support "Combined Delivery" functionality.
Specification Reference	[DRM] Chapter 5.3.
SCR Reference	DRM-GEN-C-001
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The consuming device does not support Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device.
Pass-Criteria	1. The consuming device discards the DRM message.

6.3. Separate Delivery

6.3.1. Immediate delivery of the rights object

6.3.1.1. Non-forward-locked DCF package

Test Case ID	DRM-1.0-int-5
Test Object	Consuming device
Test Case Description	To test "Separate Delivery" functionality in case the DCF file indicates that the server intends to push the rights object separately. The DCF containing the content is not forward-locked.
Specification Reference	[DRM] Chapter 5.5.
SCR Reference	DRMCF-GEN-1, DRMCF-GEN-2, DRMCF-GEN-3, DRMCF-GEN-4, DRM-GEN-C-003, DRM-GEN-C-009
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format and an associated rights object. There is a push proxy gateway for delivering a rights object to the consuming device. The consuming device supports Separate Delivery and the delivery of the rights object using WAP Push.
Test Procedure	1. An encrypted media object packaged in a DRM content format package is delivered to the consuming device. The DCF file indicates with the X-Oma-Drm-Separate-Delivery header that the server intends to push the rights object separately. 2. The rights object is delivered to the consuming device using WAP push technology (using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push). 3. User tries to use (display/play/execute/print) the media object. 4. User tries to forward the received rights object using all available means (IrDA, Bluetooth, MMS, email, storage on unprotected removable media etc.). 5. User tries to forward the DCF object using all available means (IrDA, Bluetooth, MMS, email, storage on unprotected removable media etc.).
Pass-Criteria	1. The DRM content format package is delivered successfully. The consuming device includes application/vnd.oma.drm.rights+xml, application/vnd.oma.drm.rights+wbxml and application/vnd.oma.drm.content in the Accept header of the HTTP request. .

	2. The rights object is delivered successfully. 3. The media object can be used in accordance with the associated rights. 4. Consuming device does not allow the rights object to be forwarded from the device. 5. The consuming device allows the DCF object to be forwarded

6.3.1.2. Forward-locked DCF package

Test Case ID	DRM-1.0-int-6
Test Object	Consuming device
Test Case Description	To test "Separate Delivery" functionality in case the DCF file indicates that the server intends to push the rights object separately. The DCF containing the content is forward-locked (i.e. wrapped inside a DRM message).
Specification Reference	[DRM] Chapter 5.5.
SCR Reference	DRMCF-GEN-1, DRMCF-GEN-2, DRMCF-GEN-3, DRMCF-GEN-4, DRM-GEN-C-003, DRM-GEN-C-009
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format and an associated rights object. The DCF containing the content is forward-locked (i.e. wrapped inside a DRM message). There is a push proxy gateway for delivering a rights object to the consuming device. The consuming device supports Separate Delivery and the delivery of the rights object using WAP Push.
Test Procedure	1. An encrypted media object packaged in a DRM content format package is delivered to the consuming device. The DCF file indicates that the server intends to push the rights object separately. 2. The rights object is delivered to the consuming device using WAP push technology (using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push). 3. User tries to use (display/play/execute/print) the media object. 4. User tries to forward the received rights object using all available means (IrDA, Bluetooth, MMS, email, storage on unprotected removable media etc.). 5. User tries to forward the DCF object using all available means (IrDA, Bluetooth, MMS, email, storage on unprotected removable media etc.).
Pass-Criteria	1. The DRM content format package is delivered successfully. The consuming device includes application/vnd.oma.drm.rights+xml, application/vnd.oma.drm.rights+wbxml and application/vnd.oma.drm.content in the Accept header of the HTTP request. 2. The rights object is delivered successfully. 3. The media object can be used in accordance with the associated

	rights. 4. Consuming device does not allow the rights object to be forwarded from the device. 5. The consuming device does not allow the DCF object to be forwarded from the device.

6.3.2. Superdistribution

6.3.2.1. Successful Superdistribution

Test Case ID	DRM-1.0-int-7
Test Object	Consuming device (client device B)
Test Case Description	To test "Superdistribution" functionality. The protected content is sent from one consuming device to another. The rights object is obtained by opening a browsing session to the rights issuing service.
Specification Reference	[DRM] Chapter 5.5.
SCR Reference	DRM-CF-GEN-5, DRM-GEN-C-003, DRM-GEN-C-009 and DRM-GEN-010
Tools	None
Test Code	None
Preconditions	There are two client devices: client device A and client device B. Client device A will be sending the protected content to client device B. There is an encrypted media object packaged in a DRM content format and an associated rights object. The DCF containing the content is not forward-locked (i.e. wrapped inside a DRM message). This DCF already resides on client device A. There is a push proxy gateway for delivering a rights object to the consuming device. Both client devices support Separate Delivery and the delivery of the rights object using WAP Push (i.e. using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push).
Test Procedure	1. Client device A sends an encrypted media object packaged in a DRM content format (DCF) message to client device B. The DCF file contains the URL of the Rights-Issuer. The client device A may use any available means to forward the DCF (IrDA, Bluetooth, MMS, email etc.). 2. Client device B user tries to use (display/play/execute/print) the media object. 3. Client device B requests the rights object, using HTTP GET request to the URL defined in the Rights-Issuer field of the DCF object. 4. User tries to use (display/play/execute/print) the media object. 5. User tries to forward the received rights object using available means (IrDA, Bluetooth, MMS, email, storage on unprotected removable media etc.).
Pass-Criteria	1. Client device A is able to forward the DCF. Client device B receives the DCF. 2. The device B does not render the media object and gives the user an

	option of obtaining the rights object. 3. The rights object is successfully delivered to the device B using WAP push technology. 4. The media object can be used in accordance with the associated rights. 5. Device B does not allow the rights object to be forwarded from the device.

6.3.2.2. Unknown MIME type

Test Case ID	DRM-1.0-int-8
Test Object	Consuming device (client device B)
Test Case Description	To test "Superdistribution" functionality in case of an unknown MIME type. The consuming device uses the Content-Type field to determine whether the content is suitable for it.
Specification Reference	[DRM] Chapter 5.5.2.
SCR Reference	DRM-GEN-C-003, DRM-GEN-C-009 and DRM-GEN-C-010
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format and an associated rights object. The DCF containing the content is not forward-locked (i.e. wrapped inside a DRM message). This DCF already resides on the client device. The content type, defined by the ContentType field in the DCF file, is not supported by the device (e.g. non-existing content type can be used). Client device supports Separate Delivery and the delivery of the rights object using WAP Push (i.e. using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push).
Test Procedure	1. Client device user tries to use (display/play/execute/print) the media object. 2. Client device requests the rights object, using HTTP GET request to the URL defined in the Rights-Issuer field of the DCF object.
Pass-Criteria	1-2. The device does not render the media object. The device MUST use the Content-Type field to determine whether the content is suitable for the device before using the Rights-Issuer URL field to obtain the rights. The device SHOULD present a warning or error to the user, and SHOULD present a warning before navigating to the Rights-Issuer URL.

6.3.3. Multiple rights objects

6.3.3.1. Multiple rights objects with satisfied constraints

Test Case ID	DRM-1.0-int-9
Test Object	Consuming device
Test Case Description	To test behaviour in the presence of several rights objects for one piece of content.
Specification Reference	[DRM] Chapter 5.5.
SCR Reference	DRM-GEN-C-003, DRM-GEN-C-009
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format. There is a push proxy gateway for delivering a rights object to the consuming device. Several rights objects for the DCF are delivered to the device. The consuming device supports Separate Delivery and the delivery of the rights object using WAP Push (i.e. using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push).
Test Procedure	1. An encrypted media object packaged in a DRM content format message is delivered to the consuming device. 2. Several rights objects are delivered to the device (either via push, or via HTTP GET request to the URL defined in the Rights-Issuer field of the DCF object). All rights objects contain satisfied conditions, i.e., individually grant use of the content. 3. User tries to use (display/play/execute/print) the media object.
Pass-Criteria	1. The DCF file is delivered successfully. The consuming device includes application/vnd.oma.drm.rights+xml, application/vnd.oma.drm.rights+wbxml and application/vnd.oma.drm.content in the Accept header of the HTTP request. 2. The rights objects are successfully delivered to the consuming device. 3. The media object can be used in accordance with the associated rights of exactly one of the rights objects.

6.3.3.2. Multiple rights objects with satisfied and unsatisfied constraints

Test Case ID	DRM-1.0-int-10
Test Object	Consuming device
Test Case Description	To test behaviour in the presence of several rights objects for one piece of content.
Specification Reference	[DRM] Chapter 5.5.
SCR Reference	DRM-GEN-C-003, DRM-GEN-C-009
Tools	None
Test Code	None
Preconditions	There is an encrypted media object packaged in a DRM content format. There is a push proxy gateway for delivering a rights object to the consuming device. Several rights objects for the DCF are delivered to the device. The consuming device supports Separate Delivery and the delivery of the rights object using WAP Push (i.e. using unconfirmed push over connectionless session service using the Push OTA Protocol service primitive Po-Unit-Push).
Test Procedure	1. An encrypted media object packaged in a DRM content format message is delivered to the consuming device. 2. Several rights objects are delivered to the device (either via push, or via HTTP GET request to the URL defined in the Rights-Issuer field of the DCF object). At least one right objects contains satisfied conditions, i.e., individually grants use of the content. At least one rights object contains unsatisfied conditions, i.e., does not grant use of the content. 3. User tries to use (display/play/execute/print) the media object.
Pass-Criteria	1. The DCF file is delivered successfully. The consuming device includes application/vnd.oma.drm.rights+xml, application/vnd.oma.drm.rights+wbxml and application/vnd.oma.drm.content in the Accept header of the HTTP request. 2. The rights objects are successfully delivered to the consuming device. 3. The media object can be used in accordance with the associated rights of exactly one of the rights objects for which the usage conditions are satisfied.

6.4. Permission Model

6.4.1. Image object delivery

Test Case ID	DRM-1.0-int-11
Test Object	Consuming device
Test Case Description	To test <display> and <print> permissions for image files.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-012, DRMREL-GEN-014
Tools	None
Test Code	None
Preconditions	There are two DRM messages containing an image media object packaged with a rights object: • In the first DRM message the rights object contains <display> permission and does not contain <print> permission. • In the second DRM message the rights object contains <print> permission and does not contain <display> permission. Consuming device supports Combined Delivery. Consuming device supports the used image file type.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to display the image media object. 3. User tries to print the image media object (if supported by device). 4. The second DRM message is delivered to the consuming device. 5. User tries to display the image media object. 6. User tries to print the image media object (if supported by device).
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device allows the user to display the image. 3. The consuming device does not allow the user to print the image (if supported by device). 4. The DRM message is delivered successfully. 5. The consuming device does not allow the user to display the image. 6. The consuming device allows the user to print the image (if supported by device).

6.4.2. Sound object delivery

Test Case ID	DRM-1.0-int-12
Test Object	Consuming device
Test Case Description	To test <play> permission for a sound file.
Specification Reference	[DRMREL] Chapter 5.4.
SCR Reference	DRMREL-GEN-010, DRMREL-GEN-011
Tools	None
Test Code	None
Preconditions	There are two DRM messages containing a sound media object packaged with a rights object: • In the first DRM message the rights object does not contain <play> permissions. • In the second DRM message the rights object contains <play> permissions. Consuming device supports Combined Delivery. Consuming device supports the used sound file format.
Test Procedure	1. The first DRM message is delivered to the consuming device. 2. User tries to play the sound media object. 3. The second DRM message is delivered to the consuming device. 4. User tries to play the sound media object.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to play the sound. 3. The DRM message is delivered successfully. 4. The consuming device allows the user to play the sound.

6.5. Constraint Model

6.5.1. Count constraint

Test Case ID	DRM-1.0-int-13
Test Object	Consuming device
Test Case Description	To test <count> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-017
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The usage of the media object file is limited by the <count> element in the rights object file to a predefined number of times. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use the media object file several times. 3. User tries to use the media object file after the maximum number of tries has been reached.
Pass-Criteria	1. The DRM message is delivered successfully. 2. While the number of tries defined by the <count> element has not been exceeded, the consuming device allows the user to use the media object file. 3. The consuming device does not allow the user to use the media object file.

6.5.2. Datetime constraint

Test Case ID	DRM-1.0-int-14
Test Object	Consuming device
Test Case Description	To test <datetime> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-018, DRMREL-GEN-019, DRMREL-GEN-020
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The usage of the media object file is limited by the <datetime> element in the rights object file to a set time period. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use the media object file before the defined start time. 3. User tries to use the media object file within the permitted time period. 4. User tries to use the media object file after the defined end time.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media object file. 3. The consuming device allows the user to use the media object file. 4. The consuming device does not allow the user to use the media object file.

6.5.3. Interval constraint

Test Case ID	DRM-1.0-int-15
Test Object	Consuming device
Test Case Description	To test <interval> constraint for a media object file.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-021
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The usage of the media object file is limited by the <interval> constraint. Consuming device supports Combined Delivery. The consuming device has access to a time source.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use the media object file within the permitted time period. 3. User tries to use the media object file after the permitted time period is over.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device allows the user to use the media object file. 3. The consuming device does not allow the user to use the media object file.

6.5.4. Multiple constraints

Test Case ID	DRM-1.0-int-16
Test Object	Consuming device
Test Case Description	To test the effect of having multiple constraints.
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-017, DRMREL-GEN-018, DRMREL-GEN-019, DRMREL-GEN-020 and DRMREL-GEN-021.
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The rights object contains following constraints for the media object: • The usage is limited by the <count> element to a predefined number of times. The value of the <count> element is relatively high (more than the number of tries needed in this test). • The usage is limited by the <datetime> element to a set time period. • The usage is limited by the <interval> constraint. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. User tries to use the media object file before the start time of the <datetime> element. The end of the <interval> constraint has not been reached. The number of tries defined by the <count> element has not been reached. 3. User tries to use the media object file after the start time, but before the end time, of the <datetime> element. The end of the <interval> constraint has not been reached. The number of tries defined by the <count> element has not been reached. 4. User tries to use the media object file after the permited <interval> is over but before the end time of the <datetime> element. The number of tries defined by the <count> element has not been reached. 5. User tries to use the media object file after the end time of the <datetime> element. The number of tries defined by the <count> element has not been reached.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media

	object file. 3. The consuming device allows the user to use the media object file. 4. The consuming device does not allow the user to use the media object file. 5. The consuming device does not allow the user to use the media object file.

6.5.5. Consuming Device without a Time Source

Test Case ID	DRM-1.0-int-17
Test Object	Consuming device
Test Case Description	To test Interval and Datetime constraints with a mobile that does not have a time source (i.e. a situation where the constraint is not understood and cannot be enforced).
Specification Reference	[DRMREL] Chapter 5.5.
SCR Reference	DRMREL-GEN-016, DRMREL-GEN-018, DRMREL-GEN-019, DRMREL-GEN-020 and DRMREL-GEN-021.
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message. The rights object contains following constraints for the media object: • The usage is limited by the <datetime> element to a set time period. • The usage is limited by the <interval> constraint. Time periods for <datetime> and <interval> constraints are overlapping. The Consuming device does not have a time source. Consuming device supports Combined Delivery.
Test Procedure	1. The DRM message is delivered to the consuming device. 2. The user tries to use the media object file within a time period when it should be possible by the <datetime> and <interval> constraints.
Pass-Criteria	1. The DRM message is delivered successfully. 2. The consuming device does not allow the user to use the media object file.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	09-Sep-2003	Initial version used at Test Fest #4.
	17-Feb-2004	Approved
	05-May-2004	Updated according to Test Fest #5 findings. Approved.
	17-Sep-2004	Updated according to Test Fest #6 findings. Approved.