Enabler Test Specification for DRM Interoperability

Candidate Version 2.1 – 07 Aug 2007

Open Mobile Alliance

OMA-ETS-DRM_INT-V2_1-20070807-C

Contents

1. Scope

This document describes in detail available test cases for OMA DRM v2.1.

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 technical specifications.

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

This document contains interoperability test cases.

2. References

2.1 Normative References

[DLOTA] "OMA Download version 1.0." Open Mobile Alliance™, OMA-Download-OTA-V1_0, http://www.openmobilealliance.org/

[DRM] "DRM Rights Management". Open Mobile AllianceTM, OMA-DRM-DRM-v1_0, http://www.openmobilealliance.org/

[DRMCF-v2.0] "OMA DRM Content Format V2.1", Open Mobile AllianceTM, OMA-DRM-DCF-V2_0, http://www.openmobilealliance.org/

[DRMCF-v2.1] "OMA DRM Content Format V2.1", Open Mobile AllianceTM, OMA-DRM-DCF-V2_1, http://www.openmobilealliance.org/

[DRMREL-v2.0] "OMA DRM Rights Expression Language V2.1", Open Mobile AllianceTM, OMA-DRM-REL-V2_0, http://www.openmobilealliance.org/

[DRMREL-v2.1] "OMA DRM Rights Expression Language V2.1", Open Mobile AllianceTM, OMA-DRM-REL-V2_1, http://www.openmobilealliance.org/

[DRM-v2.0] "OMA DRM V2.1". Open Mobile AllianceTM, OMA-DRM-DRM-V2_0, http://www.openmobilealliance.org/

[DRM-v2.1] "OMA DRM V2.1". Open Mobile AllianceTM, OMA-DRM-DRM-V2_1, http://www.openmobilealliance.org/

[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

[DRMETS-CON-C-v2.1] "OMA DRM Enabler Test Specification for Client Conformance V2.1", Open Mobile AllianceTM, OMA-ETS-DRM-CON-Client-V2_1, http://www.openmobilealliance.org/

[DRMETS-CON-S-v2.1] "OMA DRM Enabler Test Specification for Server Conformance V2.1", Open Mobile AllianceTM, OMA-ETS-DRM-CON-Server-V2_1, 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-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

Combined Delivery	An OMA DRM Release 1 term defined in [DRM]
Composite Object	A content object that contains one or more Media Objects by means of inclusion.
Content	One or more Media Objects
DRM Agent	The entity in the Device that manages Permissions for Media Objects on the Device.
DRM Message	An OMA DRM Release 1 term defined in [DRM]
Forward Lock	An OMA DRM Release 1 term defined in [DRM]
Media Object	A digital work e.g. a ringing tone, a screen saver, a Java game or a Composite Object.
Permission	Actual usages or activities allowed (by the Rights Issuer) over Protected Content
Protected Content	Media Objects that are consumed according to a set of Permissions in a Rights Object.
Rights Issuer	An entity that issues Rights Objects to OMA DRM Conformant Devices.
Rights Object	A collection of Permissions and other attributes which are linked to Protected Content.
Separate Delivery	A Release 1 term defined in [DRM].
Superdistribution	A mechanism that (1) allows a User to distribute Protected Content to other Devices through potentially insecure channels and (2) enables the User of that Device to obtain a Rights Object for the superdistributed Protected Content.

3.3 Abbreviations

CEK	Content Encryption Key
DCF	DRM Content Format
DRM	Digital Rights Management
HTTP	Hypertext Transfer Protocol
OMA	Open Mobile Alliance
REL	Rights Expression Language
RI	Rights Issuer
RO	Rights Object
ROAP	Rights Object Acquisition Protocol
SCR	Static Conformance Requirement
WAP	Wireless Application Protocol

4. Introduction

The purpose of this document is to provide interoperability test cases for DRM Enabler Release 2.1. These tests are specifically designed to test interoperability between client and server implementations.

Following items are needed to test the DRM 2.1 functionality:

- A Content Issuer configured to support:
  - application/vnd.oma.drm.dcf (DRM Content Format)
  - application/sdp (Session Descriptor Protocol)
- A Rights Issuer configured to support:
  - application/vnd.oma.drm.ro+xml (DRM Rights Object)
  - application/vnd.oma.drm.roap-pdu+xml (DRM ROAP PDUs)
  - application/vnd.oma.drm.roap-trigger+xml (DRM ROAP Trigger)
- An object-packaging tool capable of packaging content to DCF and PDCF.
  - A streaming server and client to support 3GP and/or 3GP2 streaming of PDCF files.
  - A push proxy gateway for delivering ROAP Triggers to the mobile device

Following items are needed for DRM 1.0 backwards compatibility testing (DRM-2.1-int-1, DRM-2.1-int-2, DRM-2.1-int-3):

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.

A push proxy gateway for delivering a rights object to the mobile device.

It is expected that server vendors attending OMA DRM 2.1 Test Fests are capable of acting as both Content Issuers and Rights Issuers and their product will contain an appropriate portal to fulfil these tasks. If the pre-requisite for a test case is that there is a DCF stored on the terminal, then these DCFs will be packaged and delivered by the server vendors. Content Issuers must be able to handle a variety of media formats and should allow client testers to provide their own test content. Server vendors supporting PDCF test cases are expected to provide a 3GP/3GP2 Progressive Download and/or Streaming Server.

Most test cases involve downloading a DRM Rights Object. Within every Rights Object at least one <permission> is usually specified. The test cases do not specify which permission should be used for each test case. The selected permission (e.g. <play> or <execute>) is dependent on the Content format selected to execute the test.

HTTP shall be used as the default transport mechanism for ROAP Trigger and DCF delivery. Content Issuers are encouraged to additionally support OMA Download [DLOTA] and/or MMS to deliver ROAP Triggers and DCF to the device.

4.1 Test Case Deployment

Some test cases can be deployed in multiple configurations. When a Test Case Deployment section is shown as part of the test case description then a single test case may be run in one or more configurations. Each deployment configuration should be considered to be an indendent test case with results recorded separately.

For example:

- Test case DRM-2-1-int-4-a tests backwards compatibility between a DRM 2.0 RI and 2.1 DRM Agent.
- Test case DRM-2-1-int-4-b tests backwards compatibility between a DRM 2.1 RI and 2.0 DRM Agent

5. Conformance Test Cases

Conformance Test Cases are specified in [DRMETS-CON-C-v2.1] and [DRMETS-CON-S-v2.1].

6. Interoperability Test Cases

There are 87 interoperability test cases for the DRM 2.1 Enabler.

6.1 Backward compatibility

6.1.1 Forward Lock

Test Case ID	DRM-2.1-int-1
Test Object	DRM Agent
Test Case Description	To test "Forward Lock" DRM 1.0 functionality.
Specification Reference	[DRM-v2.0] Appendix B, [DRM] Chapter 5.3.
SCR Reference	DRM-CLI-CMN-052
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 DRM Agent. 2. User tries to use 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 DRM Agent 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 DRM Agent does not allow the media object to be forwarded in unprotected form from the device.

6.1.2 Combined Delivery

Test Case ID	DRM-2.1-int-2
Test Object	DRM Agent
Test Case Description	To test DRM 1.0 “Combined Delivery” functionality.
Specification Reference	[DRM-v2.0] Appendix B, [DRM] Chapters 5.4 and 6.
SCR Reference	DRM-CLI-CMN-052
Tools	None
Test Code	None
Preconditions	There is a media object packaged with a rights object in a DRM message.
Test Procedure	1. The DRM message is delivered to the DRM Agent.
Pass-Criteria	1. The DRM message is a) delivered successfully or b) the DRM Agent discards the DRM message (in case Combined Delivery is not supported). 2. In case a) the media object can be used in accordance with the associated rights.

6.1.3 Separate Delivery

Test Case ID	DRM-2.1-int-3
Test Object	DRM Agent
Test Case Description	To test DRM 1.0 "Separate Delivery" functionality in case the DCF file indicates that the server intends to push the rights object separately.
Specification Reference	[DRM-v2.0] Appendix B, [DRM] Chapter 5.5
SCR Reference	DRM-CLI-CMN-052
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 DRM Agent. • The DRM Agent 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 DRM Agent. 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 DRM Agent 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. 2. The rights object is delivered successfully. 3. The media object can be used in accordance with the associated rights. 4. DRM Agent does not allow the rights object to be forwarded from the device. 5. The DRM Agent allows the DCF object to be forwarded

6.1.4 DRM 2.0 Registration and RO Acquisition

Test Case Id	DRM-2.1-int-4
Test Object	DRM Agent, RI Server
Test Case Description	To test that a DRM 2.0 Agent can register, acquire rights and consume content from a DRM 2.1 Rights Issuer. Also to test that a DRM 2.1 Agent can register, acquire rights and consume content from a DRM 2.0 Rights Issuer.
Specification Reference	[DRM-v2.1] Section 5.2.1, 5.4.2.1 [DRMCF-v2.1] Section 5.2.1.1, 6.2.1, 6.2.2
SCR Reference	DRM-CLI-CMN-001, DRM-CLI-CMN-002, DRM-CLI-CMN-005, DRM-CLI-CMN-008 DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-011, DRM-DCF-CLI-5, DRM-DCF-CLI-13
Tool	None
Test code	None
Preconditions	• Equipment: o One terminal with a DRM Agent o One RI server • State: o No RI Context on the DRM Agent with the RI server under test. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o There is a DCF stored on the terminal. For deployment b the DCF should contain a 'udta' box. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent. 2. User gives consent to registration. 3. RI sends RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration. 2. RI and DRM Agent complete 4-pass Registration Protocol. 3. RI and DRM Agent complete 2-pass RO Acquisition Protocol. 4. The DRM Agent grants access to the DCF according to the RO.

Test Case Deployment			
a	DRM 2.0 Rights Issuer DRM 2.1 DRM Agent	**b**	DRM 2.1 Rights Issuer DRM 2.0 DRM Agent

6.1.5 DRM 2.0 Join Domain and RO Acquisition

Test Case Id	DRM-2.1-int-5
Test Object	DRM Agent, RI Server
Test Case Description	To test that a DRM 2.0 Agent can join a domain, acquire domain rights and consume a DCF from a DRM 2.1 Rights Issuer. Also to test that a DRM 2.1 Agent can join a domain, acquire rights and consume a DCF from a DRM 2.0 Rights Issuer.
Specification Reference	[DRM-v2.1] Sections 5.2.1, 5.4.5, 7.2.3, 8
SCR Reference	DRM-CLI-CMN-001, DRM-CLI-CMN-002, DRM-CLI-CMN-005, DRM-CLI-CMN-015, DRM-CLI-CMN-033, DRM-CLI-CMN-035, DRM-CLI-CMN-042, DRM-CLI-CMN-059 DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-011, DRM-SERVER-012, DRM-SERVER-018, DRM-SERVER-022
Tool	None
Test code	None
Preconditions	• Equipment: o One terminal with a DRM Agent o One RI server • State: o Valid RI Context on the DRM Agent with the RI server under test. o There is no valid Domain Context on the DRM Agent. o There is a DCF stored on the terminal. o An RO to be delivered is a Domain RO. It is stateless or there is no same entry in replay cache on the DRM Agent. • Can be tested in continuation of: o 6.1.4 - DRM 2.0 Registration and RO Acquisition
Test Procedure	1. The DRM Agent receives an ROAcqusition trigger (for a Domain RO for the DCF on the terminal) from the RI. 2. User tries to access the DCF.
Pass-Criteria	1. RI and DRM Agent complete the 2-pass Join Domain Protocol and the 2-pass RO Acquisition protocol for the Domain RO. 2. The DRM Agent grants access to the DCF according to the Domain RO.

Test Case Deployment			
a	DRM 2.0 Rights Issuer DRM 2.1 DRM Agent	**b**	DRM 2.1 Rights Issuer DRM 2.0 DRM Agent

6.1.6 Domain RO Superdistribution

Test Case Id	DRM-2.1-int-6
Test Object	DRM Agent
Test Case Description	To test that a DRM 2.0 Domain Rights Object can be superdistributed and used between a DRM 2.0 and DRM 2.1 DRM Agent. Similiary to test that a DRM 2.1 Domain Rights Object can be superdistributed between a DRM 2.0 and DRM 2.1 Agent.
Specification Reference	[DRM-v2.1] Section 8.7.2.2 [DRMCF-v2.1] Section 5.2.4.2
SCR Reference	DRM-CLI-CMN-006, DRM-CLI-CMN-015, DRM-CLI-CMN-035, DRM-CLI-CMN-042 DRM-DCF-CLI-9, DRM-DCF-CLI-11
Tool	None
Test code	None
Preconditions	• Equipment o RI Server o Two terminals (A & B) each with a DRM Agent (see deployment) • State: o There is a DCF stored on terminal A that contains a Domain Rights Object. o Both terminals have a valid domain context. • Can be tested in continuation of: o 6.1.5 - DRM 2.0 Join Domain in which case the RO should have been inserted into the DCF by the DRM Agent.
Test Procedure	1. Terminal A: The user tries to use the DCF 2. The DCF is superdistributed from Terminal A to Terminal B. 3. Terminal B: The user tries to use the DCF
Pass-Criteria	1. The DRM Agent grants access to the DCF according to the Domain RO. 2. The DCF is successfully superdistributed to the second DRM Agent. The DCF contains a copy of the Domain RO. 3. The DRM Agent grants access to the DCF according to the Domain RO.

Test Case Deployment			
a	Device A: DRM 2.0 Device B: DRM 2.1	**b**	Device A: DRM 2.1 Device B: DRM 2.0

6.1.7 DRM 2.0 Leave Domain

Test Case Id	DRM-2.1-int-7
Test Object	DRM Agent, Rights Issuer
Test Case Description	To test that a DRM 2.0 Agent can leave a domain from a DRM 2.1 Rights Issuer. Also to test that a DRM 2.1 Agent can leave a domain from a DRM 2.0 Rights Issuer.
Specification Reference	[DRM-v2.1] Sections 5.2.1, 5.4.5, 8
SCR Reference	DRM-CLI-CMN-001, DRM-CLI-CMN-002, DRM-CLI-CMN-005, DRM-CLI-CMN-011, DRM-CLI-CMN-015, DRM-CLI-CMN-033, DRM-CLI-CMN-060 DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-011, DRM-SERVER-012, DRM-SERVER-014, DRM-SERVER-019
Tool	None
Test code	None
Preconditions	• Equipment: o One terminal with a DRM Agent o One RI server • State: o DRM Agent has a valid RI Context with RI under test. o DRM Agent has a valid Domain Context for the domain it is about to leave. o At least one DCF is stored on the DRM Agent for which it has a Domain RO belonging to the domain it is about to leave. • Can be tested in continuation of: o 6.1.6 - Domain RO Superdistribution
Test Procedure	1. DRM Agent receives a Leave Domain trigger from the RI. 2. User tries to use the DCF
Pass-Criteria	1. DRM Agent and RI complete 2-pass Leave Domain protocol. 2. The DRM agent denies access to the DCF.

Test Case Deployment			
a	DRM 2.0 Rights Issuer DRM 2.1 DRM Agent	**b**	DRM 2.1 Rights Issuer DRM 2.0 DRM Agent

6.2 ROAP

6.2.1 Registration and RO Acquisition

Test Case Id	DRM-2.1-int-8
Test Object	DRM Agent, RI Server
Test Case Description	Test the 4-pass ROAP Registration protocol. The DRM Agent will register with the RI and then complete 2-pass RO Acquisition to prove that the registration was processed successfully.
Specification Reference	[DRM-v2.0] Chapter 5.1 and section 5.2.1
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-025, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-UD-065
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o No RI Context on the DRM Agent with the RI server under test. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o There is a DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent. 2. User gives consent to registration. 3. RI sends RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass Registration Protocol. 3. RI and DRM Agent complete 2-pass RO Acquisition Protocol. 4. The DRM Agent grants access to the DCF according to the RO.

6.2.2 Registration with existing RI Context

Test Case Id	DRM-2.1-int-9
Test Object	DRM Agent, RI Server
Test Case Description	Test the 4-pass Registration protocol when there is already an RI Context stored on the device, and a device context stored on the RI. RO Acquisition is used to prove that the re-registration is succesfull.
Specification Reference	[DRM-v2.0] Chapter 5.1 and section 5.2.1
SCR Reference	DRM-CLI-CMN-037, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-UD-065
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o There exists a valid Device Context on the Rights Issuer with the DRM Agent under test. o There is a DCF stored on the terminal. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent 2. User gives consent to registration 3. RI sends an RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent successfully complete 4-pass Registration Protocol. 3. RI and DRM Agent successfully complete 2-pass RO Acquisition Protocol. 4. DRM Agent grants access to the DCF according to the RO.

6.2.3 RO Acquisition without existing RI Context

Test Case Id	DRM-2.1-int-10
Test Object	DRM Agent, RI Server
Test Case Description	RO Acquisition without existing RI Context
Specification Reference	[DRM-v2.0] Chapter 5.1, section 5.1.7 and section 5.2.1
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-025, DRM-CLI-CMN-037, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-UD-065
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o No valid RI Context with the RI server under test exists on the DRM Agent. o There is a DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI.
Test Procedure	1. The DRM Agent receives a RO Acquisition trigger from the RI. 2. User gives consent to registration/RO acquisition. 3. User tries to access the DCF.
Pass-Criteria	1. The DRM Agent prompts the user for registration/RO acquisition. 2. The DRM Agent sends Device Hello to roapURL in the RO Acquisition trigger, and RI and DRM Agent complete 4-pass Registration Protocol. The DRM Agent sends RO-Request to roapURL in the RO Acquisition trigger, and RI and DRM Agent complete 4-pass Registration Protocol. 3. DRM Agent grants access to the DCF according to the RO.

6.2.4 1-pass RO Acquisition with existing RI Context.

Test Case Id	DRM-2.1-int-11
Test Object	DRM Agent, RI Server
Test Case Description	1-pass RO Acquisition with existing RI Context.
Specification Reference	[DRM-v2.0] 5.4.3.2
SCR Reference	DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-058, DRM-CLI-UD-065
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o There is a DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends a RO Response message. 2. User tries to access the DCF.
Pass-Criteria	1. n/a 2. DRM Agent grants access to the DCF according to the RO.

6.2.5 1-pass RO Acquisition without existing RI Context.

Test Case Id	DRM-2.1-int-12
Test Object	DRM Agent, RI Server
Test Case Description	1-pass RO Acquisition without existing RI Context.
Specification Reference	[DRM-v2.0] 5.1.8, 5.4.3.2
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-058, DRM-CLI-UD-065
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o No RI Context with the RI server under test exists on the DRM Agent. o The RI has a Device Context. o There is a DCF stored on the terminal. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends a RO Response message. 2. User gives consent to registration. 3. If an xHTML page is presented the user selects a trigger to download. 4. User tries to access the DCF. OR 1. RI sends a RO Response m essage. 2. User tries to access the DCF.
Pass-Criteria	1. The DRM Agent prompts the user for registration. 2. Upon positive user interaction; the DRM Agent sends an HTTP GET message to riURL in the ROPayload. The RI responds with a ROAP RegistrationTrigger or an XHTML page allowing the user to initiate registration. 3. The RI and DRM Agent complete 4-pass Registration Protocol. The DRM Agent installs successfully the received the RO Response. 4. The DRM Agent grants access to the DCF according to the RO. OR 1. DRM Agent discards the RO. 2. The DRM Agent does not grant access to the DCF.

6.2.6 RO Acquisition with confirmation (4-pass) with existing RI context

Test Case Id	DRM-2.1-int-13
Test Object	DRM Agent, RI Server
Test Case Description	Test the 4-pass confirmed ROAP RO acquisition protocol. The DRM Agent will receive an RO from the RI via the 2-pass protocol and then confirm receipt of the RO using an additional 2 steps.
Specification Reference	[DRM-v2.1] Chapter 5.1.2 and section 5.2.1
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-025, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-UD-065, DRM-CLI-UD-072
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o RI Context on the DRM Agent with the RI server under test. o There is a DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends RO Acquisition trigger to the DRM Agent. 2. RI and DRM agent complete the 2-pass RO acquisition protocol 3. The RO Response returned by the RI contains the ConfirmROInstallation extension. 4. The device sends a ROAP ROConfirmRequest to the RI. 5. The RI returns and ROConfirm Response to the device.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass confirmed RO Acquisition Protocol. 3. The DRM Agent grants access to the DCF according to the RO.

6.2.7 RO acquisition with confirmation (3-pass) with existing RI context

Test Case Id	DRM-2.1-int-14
Test Object	DRM Agent, RI Server
Test Case Description	Test the 4-pass confirmed ROAP RO acquisition protocol. The DRM Agent will receive an RO from the RI via the 2-pass protocol and then confirm receipt of the RO using an additional 2 steps.
Specification Reference	[DRM-v2.0] Chapter 5.1.2 and section 5.2.1
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-025, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-UD-065, DRM-CLI-UD-072
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o RI Context on the DRM Agent with the RI server under test. o There is a DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. RI sends a 1-pass ROResponse to the device.The RO Response returned contains the ConfirmROInstallation extension. 2. The device sends a ROAP ROConfirmRequest to the RI. 3. The RI returns an ROConfirm Response to the device.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass confirmed RO Acquisition Protocol. 3. The DRM Agent grants access to the DCF according to the RO.

6.2.8 RO Acquisition for multiple ROs

Test Case Id	DRM-2.1-int-15
Test Object	DRM Agent, RI Server
Test Case Description	To test RO Acquistion in the case that the ROAP Trigger refers to multiple Rights Objects.
Specification Reference	[DRM-v2.0] Chapter 5.1, section 5.1.3, section 5.2.1 and section 5.4.4
SCR Reference	DRM-CLI-CMN-001, DRM-CLI-CMN-002, DRM-CLI-CMN-005, DRM-CLI-CMN-006, DRM-CLI-CMN-014, DRM-CLI-CMN-041, DRM-CLI-CD-056, DRM-CLI-CD-057 DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-011, DRM-SERVER-013, DRM-SERVER-016, DRM-SERVER-021, DRM-SERVER-028
Tool	None
Test code	None
Preconditions	• Equipment: o A terminal with a DRM Agent o RI Server • State: o A valid RI Context with the RI server under test exists on the DRM Agent. o There are two DCFs (X and Y) stored on the terminal. There are no rights on the terminal for these DCFs. o There are two ROs to be delivered to the device. Each RO independently gives rights to use each DCF X and Y. o The ROs are stateless. o There is a single ROAcquisition Trigger for the two ROs; i.e. a trigger containing multiple <roID> elements.
Test Procedure	1. The DRM Agent receives the RO Acquisition trigger from the RI. 2. User tries to access each DCF.
Pass-Criteria	1. The DRM Agent and the RI complete the 2-pass RO Acquisition protocol. Both Rights Objects must be delivered in a single execution of the protocol; i.e. the ROResponse must contain two <protectedRo> elements. 2. DRM Agent grants access to each DCF according to the ROs.

6.2.9 Device Identification

Test Case Id	DRM-2.1-int-16
Test Object	DRM Agent, RI server
Test Case Description	To test the 2-pass Device Identification protocol
Specification Reference	[DRM-v2.1] 5.2.1, 5.4.3
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-070, DRM-SERVER-011, DRM-SERVER-041
Tool	None
Test code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o Unspecified
Test Procedure	1. The DRM Agent receives an Identification trigger from the RI.
Pass-Criteria	1. The DRM Agent and RI successfully complete the 2-pass Identification protocol.

6.2.10 Device Time Synchronization

Test Case ID	DRM-2.1-int-17
Test Object	DRM Agent, RI Server
Test Case Description	Server-initiated Device Time Synchronization
Specification Reference	[DRMDRM] 5.1.8, 6.4
SCR Reference	DRM-CLI-CD-53, DRM-CLI-CD-54
Tool	None
Test code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server o One OCSP Responder • State: o The terminal's DRM Time is incorrect (i.e. different from the server time). o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o There is a DCF stored on the terminal. o There is no RO stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. • Can be tested at the same time as: o RO Acquisition
Test Procedure	1. The DRM Agent receives a RO Acquisition trigger. 2. User tries to access the DCF.
Pass-Criteria	1. The DRM Agent sends a RO Request message containing its DRM Time. The RI responds with a RO Response message whose status attribute is set to "DeviceTimeError". The DRM Agent starts the 4-pass Registration Protocol. After receiving the RegistrationRequest message as part of the 4-pass Registration, the RI sends a nonce-based OCSP Request to its OCSP Responder, including the nonce provided by the terminal in the RegistrationRequest message. The RI includes the OCSP Response in the RegistrationResponse message. After 4-pass Registration is completed, the DRM Agent and RI successfully complete 2-pass RO Acquisition Protocol. 2. The DRM Agent grants access to the DCF according to the RO (which implies that the device time update was successful).

6.3 RO Upload

6.3.1 RO Upload for stateless ROs

Test Case Id	DRM-2.1-int-18
Test Object	DRM Agent, RI Server
Test Case Description	To test that a DRM Agent can correctly upload a stateless RO to an RI by a device initiated 2-pass RO Upload protocol and that the RI can correctly re-issue such RO to another device belonging to the same user.
Specification Reference	[DRM-v2.1] Section 5.1.10, section 5.4.7 and Chapter 12
SCR Reference	DRM-CLI-UD-070, DRM-SERVER-037
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o Two terminals (A and B) each with a DRM Agent. The terminals belong to the same user. State: o Both DRM Agents have a valid RI Context with the RI Server under test. o There is a DCF stored on terminal A and B (the same DCF). o There are no existing ROs on either terminal for this DCF. o An RO to be delivered is stateless but contains a Date Time constraint
Test Procedure	1. An ROAcquisition trigger is delivered to terminal A. 2. Terminal A: User tries to consume the DCF. 3. Terminal A: User initiates the upload of the RO to the RI using a terminal specific interface. 4. Terminal A: User tries to consume the DCF. 5. An ROAcquisition trigger is delivered to terminal B. 6. Terminal B: User tries to consume the DCF
Pass-Criteria	1. Terminal A and the RI complete 2-pass RO Acquisition. 2. The DRM Agent grants access to the DCF according to the RO. 3. Terminal A and the RI complete the 2-pass RO Upload protocol. The RI indicates that an uploaded RO is available for download to another device. 4. The DRM Agent does NOT grant access to the DCF 5. Terminal B and the RI complete 2-pass RO Acquisition 6. The DRM Agent grants access to the DCF according to the RO

6.3.2 RO Upload for stateful ROs

Test Case Id	DRM-2.1-int-19
Test Object	DRM Agent, RI Server
Test Case Description	To test that a DRM Agent can correctly upload a stateful RO (including current State Information) to an RI by a device initiated 2-pass RO Upload protocol and that the RI can correctly re-issue such RO (including current State Information) to another device belonging to the same user. The test uses an RO with multiple permissions and multiple assets to test the correct assosciation of constraints and their state information during upload and re-issue..
Specification Reference	[DRM-v2.1] 5.1.10, 5.4.7, 12 [DRMREL-v2.1] 5.6.1.1
SCR Reference	DRM-CLI-UD-070, DRM-SERVER-037 DRM-REL-GEN-C016
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o Two terminals (A and B) each with a DRM Agent. The terminals belong to the same user. • State: o Both DRM Agents have a valid RI Context with the RI Server under test. o There are three DCFs (X, Y and Z) stored on each terminal A and B (the same DCFs). o There are no existing ROs on either terminal for these DCFs. o A single RO to be delievered contains independent permissions for each DCF: ▪ Permission for DCF X has an <interval> (e.g. 15 min) constraint. ▪ Permission for DCF Y has a <count> (3) constraint. ▪ Permission for DCF Z does not contain any constraints.
Test Procedure	1. An ROAcquisition trigger is delivered to terminal A. 2. Terminal A: User tries to consume DCF X. Note the current time as it will be required to verify step 7. 3. Terminal A: User tries to consume DCF Y. 4. Terminal A: User tries to consume DCF Z. 5. Terminal A: User initiates the upload of the RO to the RI using a terminal specific interface. 6. Terminal A: User tries to consume the DCF X, Y and Z 7. An ROAcquisition trigger is delivered to terminal B. 8. Terminal B: User tries to consume the DCF X. 9. Terminal B: User tries to consume the DCF Y two times. 10. Terminal B: User tries to consume the DCF Z.

Pass-Criteria	1. Terminal A and the RI complete 2-pass RO Acquisition. 2. The DRM Agent grants access to DCF X. 3. The DRM Agent grants access to DCF Y. 4. The DRM Agent grants access to DCF Z. 5. Terminal A and the RI complete the 2-pass RO Upload protocol. The RI indicates that an uploaded RO is available for download to another device. 6. The DRM Agent does NOT grant access to any of the DCFs (X, Y, Z) 7. Terminal B and the RI complete 2-pass RO Acquisition. After RO Acquisition the rights available on Terminal B should reflect the updated state of the rights after the content consumption in steps 2 and 3. If possible this should be verified through the terminal UI. 8. The DRM Agent grants access to DCF X within the time period of the interval that started in step 2. 9. The DRM Agent grants access to DCF Y exactly two times. 10. The DRM Agent grants unlimited access to DCF Z.

6.3.3 RO Upload for multiple ROs

Test Case Id	DRM-2.1-int-20
Test Object	DRM Agent, RI Server
Test Case Description	To test that a DRM Agent can correctly upload multiple ROs (stateful and stateless) to an RI by a device initiated 2-pass RO Upload protocol and that the RI can correctly re-issue such ROs and corresponding State Information to another device belonging to the same user.
Specification Reference	[DRM-v2.1] 5.1.10, 5.4.7, 12 [DRMREL-v2.1] 5.6.1.1
SCR Reference	DRM-CLI-UD-070, DRM-SERVER-037 DRM-REL-GEN-C016
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o Two terminals (A and B) each with a DRM Agent. The terminals belong to the same user. • State: o Both DRM Agents have a valid RI Context with the RI Server under test. o There are three DCF (X, Y and Z) stored on each terminal A and B (the same DCFs). o There are no existing ROs on either terminal for these DCFs. o There are three ROs to be delivered (with three unique ROIds). Each RO grants permission to use each DCF. One of the ROs must contain stateful rights. Another one of the ROs must contain stateless rights.
Test Procedure	1. The three ROs are delivered to terminal A. 2. Terminal A: User tries to consume each of the DCFs. 3. Terminal A: User initiates the upload of two or more ROs to the RI using a terminal specific interface. 4. Terminal A: User tries to use DCFs for which an RO was uploaded. 5. The uploaded ROs are delivered to terminal B 6. Terminal B: User tries to use DCFs for which an RO was delivered.
Pass-Criteria	1. Rights are successfully delivered to Terminal A. 2. The DRM Agent grants access to each of the DCF in accordance with the provided rights objects. 3. Terminal A and the RI complete the 2-pass RO Upload protocol. The RI indicates that the uploaded ROs are available for download to another device. 4. The DRM Agent does NOT grant access to any of the DCFs for which an RO was uploaded. 5. The uploaded rights are successfully delivered to Terminal B. After RO Acquisition the rights available on Terminal B should reflect the updated state of the rights after the content consumption in step 2. If possible this should be verified through the terminal UI. 6. The DRM Agent grants access to each of the DCFs in accordance with the delivered rights.

6.3.4 Trigger initiated RO Upload

Test Case Id	DRM-2.1-int-21
Test Object	DRM Agent, RI Server
Test Case Description	To test that an RI can issue an roUpload Trigger and that the DRM Agent can initiate the 2-pass RO Upload protocol in accordace with the trigger. The DRM Agent should upload all valid ROs to the RI.
Specification Reference	[DRM-v2.1] 5.1.10, 5.1.13, 5.2.1, 5.4.7, 12
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-025, DRM-CLI-UD-070 DRM-SERVER-011, DRM-SERVER-037
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o One terminal with a DRM Agent • State: o DRM Agent has a valid RI Context with the RI Server under test. o There are two DCFs (X and Y) stored on the terminal o There are no existing ROs on either terminal for these DCFs. o There are at least 3 ROs to be delivered to the device: RO1 is for DCF X and contains a count (1) constraint RO2 is for DCF Y and contains an accumulated (2 hrs) constraint RO3 is for DCF X and contains no constraints
Test Procedure	1. RO1 is delivered to the teminal. 2. User tries to consume DCF X. 3. RO2 and RO2 are delivered to the terminal. 4. User tries to consume DCF X and DCF Y. Do not allow RO2 to expire. 5. An ROUpload Trigger is delivered from RI to the terminal. 6. User gives consent to the RO Upload 7. User tries to consume DCF X and DCF Y.
Pass-Criteria	1. RO1 is successfully delivered 2. The DRM Agent grants access to DCF X exactly one time. 3. RO2 and RO3 are successfully delivered to the terminal. 4. The DRM Agent grants access to DCF X and DCF Y in accordance with RO2 and RO3. 5. DRM Agent prompts the user for consent to RO Upload 6. Terminal and RI complete the 2-pass RO Upload protocol. The RI indicates that RO2 and RO3 are available for download to another device. RO1 should not have been uploaded. 7. The DRM Agent does NOT grant access to either DCF.

6.4 Device Rights Object included in DCF

Test Case ID	DRM-2.1-int-22
Test Object	DRM Agent
Test Case Description	To test a situation where an RO is included in the DCF.
Specification Reference	[DRMCF-v2.0] 5.2.4.2 [DRMDRM] 9.3.1.3
SCR Reference	DRM-DCF-CLI-11
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One Content/RI Server. o DCF with integrated Device RO. • State: o The DRM Agent has a valid RI Context with the RI. o The RO is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The DCF is delivered to the DRM Agent. 2. User tries to use the DCF according to associated rights.
Pass-Criteria	1. The DCF is delivered successfully. 2. The DCF can be used in accordance with the associated rights. Note that this includes that the DCF cannot be used beyond what the specified rights permit.

6.5 Group ID

6.5.1 Rights Object for Group ID DCFs

Test Case ID	DRM-2.1-int-23
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour in the presence of a group RO for multiple DCFs, using the Group ID mechanism.
Specification Reference	[DRMCF-v2.0] 5.2.3.1.
SCR Reference	DRM-DCF-CLI-8
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There are two DCFs with the same GroupID stored on the terminal. o The RI has issued an RO for this group, which contains a permission with an associated count constraint set to 3. o There is no same entry as the RO in replay cache on the DRM Agent. o There is no entry of this RO in DRM Agent replay cache.
Test Procedure	1. User requests a RO for the DCFs residing on the terminal. 2. User tries to use both DCFs belonging to the group.
Pass-Criteria	1. DRM Agent and RI successfully complete the 2-pass RO Acquisition Protocol. A group RO is delivered to the terminal. 2. The DCFs can be used in accordance with the associated RO; i.e. the two DCFs can be accessed a total of 3 times (for example one of them once and the other twice).

6.5.2 Individual Rights Object for Group ID DCF

Test Case ID	DRM-2.1-int-24
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour in the presence of an individual RO for a content item which has a Group ID.
Specification Reference	[DRMCF-v2.0] 5.2.3.1.
SCR Reference	DRM-DCF-CLI-8
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There are two DCFs with the same GroupID stored on the terminal: DCF A and DCF B o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for one of the DCFs residing on the terminal. 2. User tries to use DCF A 3. User tries to use DCF B.
Pass-Criteria	1. DRM Agent and RI successfully complete the 2-pass RO Acquisition Protocol. An individual RO containing the CID or the content item in DCF A (not to the group) is delivered. 2. DCF A can be used in accordance with the associated RO. 3. DCF B cannot be used.

6.6 Multiple Rights Objects for single DCF

6.6.1 Multiple ROs with satisfied constraints

Test Case ID	DRM-2.1-int-25
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour in the presence of several rights objects for one piece of content.
Specification Reference	[DRM] 5.5
SCR Reference	None
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There is a DCF stored on the terminal. o ROs to be delivered are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. Several ROs are delivered to the device using 1-pass or 2-pass RO Acquisition Protocol, where there are several RO Responses and each RO Response contains one RO. All ROs contain satisfied conditions, i.e., individually grant use of the content. 2. User tries to use the DCF.
Pass-Criteria	1. The ROs are successfully delivered to the DRM Agent. 2. The DCF can be used in accordance with the rights of exactly one of the rights objects. If those rights expire the DCF can be used in accordance with the rights of exactly one of the other rights objects. The process should continue until all of the rights are consumed (if they are consumable).

6.6.2 Multiple ROs with satisfied and unsatisfied constraints

Test Case ID	DRM-2.1-int-26
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour in the presence of several rights objects for one piece of content.
Specification Reference	[DRM] 5.5
SCR Reference	None
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There is a DCF stored on the terminal. o ROs to be delivered are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. Several ROs are delivered to the device using 1-pass or 2-pass RO Acquisition Protocol, where there are several RO Responses and each RO Response contains one RO. At least one RO contains satisfied conditions, i.e., individually grants use of the content. At least one RO contains unsatisfied conditions, i.e. does not grant use of the content. 2. User tries to use the DCF.
Pass-Criteria	1. The ROs are successfully delivered to the DRM Agent. 2. The DCF can be used in accordance with the associated rights of exactly one of the rights objects for which the usage conditions are satisfied. Once the rights in the satisfied RO are exhausted the DCF can be used in accordance with another RO with satisfied constraints; if all ROs with satisfied constraints are exhausted it should no longer be possible to access the content.

6.7 Multipart DCF

6.7.1 Single RO for Multipart DCF

Test Case ID	DRM-2.1-int-27
Test Object	DRM Agent
Test Case Description	To test DRM Agent's capability to process Multipart DCFs from the RI.
Specification Reference	[DRMCF-v2.0] 6.4, [DRM-v2.0] 9.2
SCR Reference	DRM-DCF-CLI-19, DRM-REL-GEN-C-003
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There is a Multipart DCF stored on the terminal. o The RI has created a multi-asset RO that grants permissions to use every container in the Multipart DCF. o The RO is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use all the media objects contained in the Multipart DCF.
Pass-Criteria	1. DRM Agent and RI successfully complete the 2-pass RO Acquisition Protocol. 2. The DCFs can be used in accordance with the associated RO.

6.7.2 Multiple ROs for Multipart DCF

Test Case ID	DRM-2.1-int-28
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour in the presence of multiple ROs for a multipart DCF.
Specification Reference	[DRMCF-v2.0] 6.4, [DRM-v2.0] 9.2.1.1
SCR Reference	DRM-DCF-CLI-19
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There is a Multipart DCF containing separate media objects stored on the terminal. o The RI is capable of generating separate ROs for all the media objects in the Multipart DCF. o The ROs are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. One RO per each media object is delivered to the DRM Agent using 1-pass or 2-pass RO Acquisition Protocol. 2. User tries to use the media objects.
Pass-Criteria	1. The ROs are successfully delivered to the DRM Agent. 2. The media objects can be used in accordance with the associated ROs.

6.7.3 Different group IDs in multipart DCF

Test Case ID	DRM-2.1-int-29
Test Object	DRM Agent, RI Server
Test Case Description	To test behaviour when different content items in a multipart DCF are associated with different groups
Specification Reference	[DRMCF-v2.0] 5.2.3.1.
SCR Reference	DRM-DCF-CLI-8
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI. o There is multipart DCF on the device containing content item A and B (which both have the same group ID) and content item C (which has a different group ID or no group ID). o ROs to be delivered are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests ROs for content items A and B. 2. The device receives a group RO for the group containing content item A and B. 3. User tries to use content item A 4. User tries to use content item B. 5. User tries to use content item C
Pass-Criteria	1. DRM Agent and RI successfully complete the 2-pass RO Acquisition Protocol. 2. Content item A can be used in accordance with the associated RO. 3. Content item B can be used in accordance with the rights in the RO. 4. Content item C cannot be used.

6.7.4 Referencing Multipart Objects – CID mechanism

Test Case Id	DRM-2.1-int-30
Test Object	DRM Agent, RI server
Test Case Description	To test the CID referencing mechanism when referencing multipart objects. The DCF user data CoverURI or LyricsURI are used as a reference point for the test.
Specification Reference	[DRM-DCF-v2.1] 6.3.2.4, 6.4.1
SCR Reference	DRM-DCF-CLI-1, DRM-DCF-CLI-17, DRM-DCF-CLI-19
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o One terminal with a DRM Agent • State o The DRM agent has a valid RI context with the RI server under test o There is a multipart DCF which contains at least two objects. The first object contains a CoverURI and/or a LyricsURI. The URI is a CID reference [RFC2557] to the second object in the DCF. The Cover/Lyrics object is not encrypted. o An RO to be delievered for the first content object is stateless or there is no same entry in the DRM Agent's replay cache.
Test Procedure	1. An ROAcquisition trigger is delivered from the RI to the DRM Agent 2. User tries to use the first content object in the DCF. During consumption the DRM Agent should provide a means for the user to view the referenced CoverArt and/or Lyrics 3. User tries to view the Cover Art and/or Lyrics NOTE: The CoverURI and/or LyricsURI from the first content object must be used to reference the Cover Art / Lyrics.
Pass-Criteria	1. DRM Agent and RI successfully complete 2-pass RO Acquisition 2. The DRM agent allows access to the content in accordance with the issued rights. 3. The DRM agent finds and allows rendering of the Cover Art / Lyrics.

6.7.5 Referencing Multipart Objects – Content Location mechanism

Test Case Id	DRM-2.1-int-31
Test Object	DRM Agent, RI server
Test Case Description	To test the Content Location referencing mechanism when referencing multiple objects in a multipart DCF. The DCF preview-header with a method of "instant" is used a reference point for this test.
Specification Reference	[DRM-v2.1] Section 15.2 [DRM-DCF-v2.1] Section 5.2.2.2 and section 6.4.1
SCR Reference	DRM-CLI-CMN-063 DRM-DCF-CLI-1, DRM-DCF-CLI-7, DRM-DCF-CLI-19
Tool	None
Test code	None
Preconditions	• Equipment o One RI Server o One terminal with a DRM Agent • State o The DRM agent has a valid RI context with the RI server under test o There is a multipart DCF which contains at least two objects. The first object contains a Preview header with preview-method of "instant". The `preview-element-uri` uses the Content Location referencing mechanism [RFC2616] to refer to another object in the same DCF. The instant preview object is not encrypted. o There are no rights on the terminal for the DCF.
Test Procedure	1. The user tries to use the first object in the DCF.
Pass-Criteria	1. The terminal enables the user to use the instant preview object. NOTE: The instant preview object must be accessed via the first object in the DCF using the `preview-element-uri`. The DRM agent may open the instant preview object automatically or may do so with user interaction.

6.8 Superdistribution

6.8.1 DCF-initiated RO Acquisition

Test Case ID	DRM-2.1-int-32
Test Object	DRM Agent (client device B)
Test Case Description	To test "Superdistribution" functionality. The protected content is sent from one DRM Agent to another. The rights object is obtained by ROAP session to the rights issuing service.
Specification Reference	[DRM-v2.0] Section 12
SCR Reference	DRM-CLI-CMN- 024, DRM-CLI-CMN- 045, DRM-CLI-CMN-046, DRM-DCF-CLI-7
Tools	None
Test Code	None
Preconditions	• Equipment: o Two terminals (A and B) each with a DRM Agent. o One RI Server • State: o DRM Agent B has a valid RI Context with the RI. o DRM Agent A has stored a DCF, which contains neither silent-header, preview-header nor any ROs, on the terminal. The DCF contains a RightsIssuerURL. The RightsIssuerURL points to the RI and will return an RO Acquisition trigger or an xHTML page. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. Client device A sends the DCF to client device B. 2. Client device B tries to use the DCF. 3. User requests a RO for the superdistributed DCF. 4. If an xHTML page is presented the user selects a trigger to download. 5. User tries to access the DCF.
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 DCF and gives the user an option of obtaining the rights object. 3. The DRM Agent connects to the DCF RightsIssuerURL. This either returns an RO Acquisition trigger; or an xHTML page which allows the user to obtain a ROAP trigger. 4. RI and DRM Agent successfully complete the 2-pass RO Acquisition Protocol and the RO is delivered successfully to the DRM Agent. 5. The DCF can be used in accordance with the associated rights.

6.8.2 RO acquisition with TransactionID

Test Case ID	DRM-2.1-int-33
Test Object	DRM Agent (client device B)
Test Case Description	To test the TransactionID mechanism in connection with Superdistribution.
Specification Reference	[DRM-v2.0] Section 12.3, [DRMCF-v2.0] 5.2.4.1
SCR Reference	DRM-CLI-CMN- 024, DRM-CLI-CMN- 045, DRM-CLI-CMN-046, DRM-DCF-CLI-7, DRM-DCF-CLI-10
Tools	None
Test Code	None
Preconditions	• Equipment: o Two terminals (A and B) each with a DRM Agent. o One RI Server. • State: o DRM Agents A and B have a valid RI Context with the RI. o DRM Agent A has stored a DCF, which contains neither silent-header, preview-header nor any ROs, with a Transaction ID on the terminal. The DCF contains a RightsIssuerURL. The RightsIssuerURL points to the RI and will return an RO Acquisition trigger or an xHTML page. o DRM Agents A and B do not yet have a RO for the content in the DCF. o ROs to be delivered are stateless or there is no same entry in the replay cache on the DRM Agents.
Test Procedure	1. Client device A tries to use the DCF. 2. User (device A) requests a RO for the DCF. 3. If an xHTML page is presented the user selects a trigger to download. 4. User forwards DCF from terminal A to terminal B. 5. On device B repeat steps 1 – 3. 6. User (device B) tries to use the DCF.
Pass-Criteria	1. The device A does not render the DCF and gives the user an option of obtaining the rights object. The device must also have consent to perform transaction tracking operations. This may be a global setting, an individual setting for this RI; or an explicit consent. 2. The DRM Agent A connects to the DCF RightsIssuerURL. This either returns an RO Acquisition trigger; or an xHTML page which allows the user to obtain a ROAP trigger. 3. DRM Agent A sends RO Request, containing the TransactionID it found in the DCF. The RI sends ROResponse message containing the new RO and a new TransactionID. DRM Agent A replaces the TransactionID in the DCF. 4. Client device A is able to forward the DCF. Client device B receives the DCF. 5. The user initiates the RO acquisition, transaction tracking consent is given. The transaction ID sent in the RO Request must be the same as the Transaction Id received in the RO Response on device A. 6. On device B, the DCF can be used in accordance with the associated rights.

6.9 REL Semantics

6.9.1 Count constraint

Test Case ID	DRM-2.1-int-34
Test Object	DRM Agent, RI Server
Test Case Description	To test <count> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Section 5.5.2
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-017
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing only a permission with an associated count constraint set to 2. o There is no same entry as the RO in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use the DCF three times.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows accessing the DCF according to the permission in the RO for two times. On the third time, the DRM Agent does not grant access to the DCF.

6.9.2 Timed-Count constraint

Test Case ID	DRM-2.1-int-35
Test Object	DRM Agent, RI Server
Test Case Description	To test <timed-count> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Section 5.5.3
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-018
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing only a permission with an associated "timed-count" constraint set to 2 and a "timer" element set to 20 seconds. o There is no same entry as the RO in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User uses the DCF a for a time period that is shorter than defined by the "timer" element. 3. User uses the DCF three times a for a time period that is longer than defined by the "timer" element.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows the user to use the DCF. The "timed-count" element is not decreased. 3. The DRM Agent allows the user to use the DCF 2 times. The "timed-count" element is decreased. On the third time, the DRM Agent does not allow the user to use the DCF.

6.9.3 Datetime constraint

Test Case ID	DRM-2.1-int-36
Test Object	DRM Agent; RI Server
Test Case Description	To test <datetime> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Section 5.5.4
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-019, DRM-REL-GEN-C-020, DRM-REL-GEN-C-021
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing only a permission with an associated datetime constraint, which defines a start and end time.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use the DCF before the defined start time. 3. User tries to use the DCF within the permitted time period. 4. User tries to use the DCF after the defined end time.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent does not allow the user to use the DCF before the defined start time. 3. The DRM Agent allows the user to use the DCF within the permitted time period. 4. The DRM Agent does not allow the user to use the DCF after the defined end time.

6.9.4 Interval constraint

Test Case ID	DRM-2.1-int-37
Test Object	DRM Agent, RI Server
Test Case Description	To test <interval> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Chapter 5.5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-022
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing only a permission with an associated interval constraint. o There is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal 2. User tries to use the DCF within the permitted time period. 3. User tries to use the DCF after the permitted time period is over.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows the user to use the DCF within the permitted time period. 3. The DRM Agent does not allow the user to use the DCF after the permitted time period is over.

6.9.5 Accumulated constraint

Test Case ID	DRM-2.1-int-38
Test Object	DRM Agent, RI Server
Test Case Description	To test <accumulated> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Chapter 5.5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-023
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing only a permission with an associated accumulated constraint. o There is no same entry as the RO in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use the DCF in several discrete sessions adding up to the accumulated time allowed. 3. User tries to use the DCF after the accumulative period has elapsed.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows the user to use the DCF during each session until the total accumulated time is exhausted. 3. The DRM Agent does not allow the user to use the DCF.

6.9.6 Individual constraint

Test Case ID	DRM-2.1-int-39
Test Object	DRM Agent, RI Server
Test Case Description	To test <individual> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Chapter 5.5.7
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-024
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o It is possible to change the user identity element (e.g. SIM Card) in the terminal. o The RI has issued an RO containing only a permission with an associated individual constraint. o The RO is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use the DCF. 3. User changes the ID element (e.g. SIM Card) and tries to use the DCF.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows the user to use the DCF with the correct ID element inserted. 3. The DRM Agent does not allow the user to use the DCF with the wrong ID element inserted.

6.9.7 System constraint

Test Case ID	DRM-2.1-int-40
Test Object	DRM Agent, RI Server
Test Case Description	To test <system> constraint for a DCF.
Specification Reference	[DRMREL-v2.0] Chapter 5.5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-025
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has generated two ROs, both containing a permission with an associated system constraint. o The ROs are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. In the first RO the usage is constrained to a system, which is not used by the DRM Agent. 2. User tries to use the DCF. 3. User requests a RO for the DCF residing on the terminal. In the second RO, the usage is constrained to a system, which is used by the DRM Agent. 4. User tries to use the DCF.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the first RO is delivered successfully to the DRM Agent. 2. The DRM Agent does NOT allow the user to use the DCF. 3. RI and DRM Agent successfully complete the 2-pass ROAP and the second RO is delivered successfully to the DRM Agent. 4. The DRM Agent allows the user to use the DCF.

6.9.8 Multiple constraints

Test Case ID	DRM-2.1-int-41
Test Object	DRM Agent, RI Server
Test Case Description	To test the effect of having multiple constraints.
Specification Reference	[DRMREL-v2.0] Section 5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-017, DRM-REL-GEN-C-019, DRM-REL-GEN-C-020, DRM-REL-GEN-C-021, DRM-REL-GEN-C-022
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing a permission with associated count, datetime and interval constraints. o There is no same entry as the RO in replay cache on the DRM Agent.
Test Procedure	1. User requests a RO for the DCF residing on the terminal. 2. User tries to use the DCF 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 DCF 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 DCF after the permitted <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 DCF after the end time of the <datetime> element. The number of tries defined by the <count> element has not been reached.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent does not allow the user to use the DCF. 3. The DRM Agent allows the user to use the DCF. 4. The DRM Agent does not allow the user to use the DCF. 5. The DRM Agent does not allow the user to use the DCF.

6.9.9 Top-level constraints

Test Case ID	DRM-2.1-int-42
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL Permission Model in the case that the rights include a stateful top level constraint.
Specification Reference	[DRMREL-v2.0] Section 5.4, 5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-017, DRM-REL-GEN-C-019, DRM-REL-GEN-C-020, DRM-REL-GEN-C-021, DRM-REL-GEN-C-022
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored on the terminal. o The RI has issued an RO containing a top level “count” constraint set to 2. Additionally the RO has a permission containing a <datetime> constraint valid now. o The RO is not in the replay cache on the DRM Agent.
Test Procedure	1. User requests the RO for the DCF residing on the terminal. 2. User tries to use the DCF . 3. The user tries to use the DCF again. 4. The user tries to use the DCF again.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent allows the user to use the DCF. 3. The DRM Agent allows the user to use the DCF. 4. The DRM Agent does not allow the user to use the DCF.

6.9.10 Expression Linking

Test Case ID	DRM-2.1-int-43
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL Expression Linking method.
Specification Reference	[DRMREL-v2.1] Section 5.2.2, section 5.4.1, and section 5.10
SCR Reference	DRM-REL-GEN-C003, DRM-REL-GEN-C-004, DRM-REL-GEN-C-038 DRM-REL-GEN-S001
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There are three DCF (X, Y, Z) stored on the terminal. o There is one RO available whose <agreement> element contains multiple (at least 3) <asset> elements and multiple (at least 3) <permission> elements. The RO should have the following properties: ▪ Each <asset> in the <agreement> refers to one of the DCFs (X, Y & Z) ▪ One <permission> does not contain any <asset> elements. ▪ One <permission> contains exactly one <asset> element. ▪ One <permission> contains exactly two <asset> elements. ▪ The permissions should all contain the same sub-permission (e.g. play) with stateful constraints that can be expired during the test procedure. o The RO is not in the replay cache on the DRM Agent. • Suggested RO configuration: o <asset>s in the <agreement>: ▪ Asset 1 (id=”a1”) refers to DCF X ▪ Asset 2 (id=”a2”) refers to DCF Y ▪ Asset 3 (id=”a3”) refers to DCF Z o <permission>s in the agreement ▪ Permisison 1 (id=”p1”) contains no asset link. Its contained permission is constrained with an interval (5 minutes) constraint. ▪ Permission 2 (id=”p2”) contains an asset link to “a2”. Its contained permission is constrained with an accumulated (2 minutes) constraint. ▪ Permission 3 (id=”p3”) contains an asset link to “a2” and “a3”. Its contained permission is constrained with a count (3) constraint.
Test Procedure	1. An RO Acquisition trigger is delivered from the RI to the DRM agent 2. User tries to use the DCFs (X, Y and Z) until all of the issued rights have been consumed.
Pass-Criteria	1. RI and DRM Agent successfully complete the 2-pass ROAP and the RO is delivered successfully to the DRM Agent. 2. The DRM Agent grants access to each of the content objects in accordance with the rights specified in the issued RO. In the case of the “suggested RO configuration” the allowed usage should be as follows:

	○ During the first 5 minute interval (“p1”) each DCF (X, Y and Z) may be consumed unlimitedly. After 5 minutes: ○ DCF X becomes unusable. ○ DCF Y can be used for an accumulated period of 2 minutes (“p2”). Additionally DCF Y shares the 3 counts from “p3” with DCF Z. ○ DCF Z can be used up to 3 times (“p3”). ○ The order in which “p2” and “p3” are consumed is not specified therefore when consuming DCF Y the DRM agent is correct to choose either “p2” or “p3” to enable content access.

6.10 Metering

6.10.1 Metering Reporting for a single DCF

Test Case ID	DRM-2.1-int-44
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL <tracked> element and the 2-pass Metering Report protocol.
Specification Reference	[DRM-v2.1] Sections 5.1.13, 5.2.1, 5.4.6 and 11 [DRMREL-v2.1] Section 5.5
SCR Reference	DRM-CLI-CMN-025, DRM-CLI-CMN-069 DRM-REL-GEN-C039, DRM-REL-GEN-S-020
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o The DRM Agent's User Confirmation Whitelist does NOT contain an entry for this RI. o User consent to collect Metering Information Metering has not been given for this RI. o There is a DCF stored on the Device for which it does not have any valid ROs o An RO to be delivered is stateless but contains a <tracked> element.
Test Procedure	1. An RO Acquisition trigger is delivered to the device from the RI. 2. User tries to consume the DCF multiple (2 or more) times. 3. The user gives consent to collect Metering Information. 4. A MeteringReport Trigger is delivered to the device from the RI 5. Repeat steps 2-4.
Pass-Criteria	1. Device and RI successfully complete 2-pass RO Acquisition. 2. The device prompts the user for consent to collect Metering Information. 3. The Device is able to consume the DCF multiple times 4. The DRM Agent and RI successfully complete the 2-pass MeteringReport protocol. The Metering Data recorded by the RI must indicate the content with a contentID corresponding to that of the DCF has been consumed the correct number of times (as per step 2). 5. The metering data reported the second time must contain only the consumption from the second set of usage attempts. User consent for collection of Metering Information must not be requested the second time.

6.10.2 REL <tracked> contentAccessGranted attribute

Test Case ID	DRM-2.1-int-45
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL <tracked> contentAccessGranted attribute.
Specification Reference	[DRM-v2.1] Chapter 5.1.13 and Chapter 11 [DRMREL-v2.1] Chapter 5.5.1.2
SCR Reference	DRM-CLI-CMN-025, DRM-CLI-CMN-047, DRM-CLI-CMN-057,,DRM-CLI-CMN-069, DRM-REL-GEN-S-020
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o User consent to collect Metering Information has been given for this RI. o There is at least on DCF stored on the Device for which it does not have any valid ROs. o An RO to be delivered contains a <tracked> element with a contentAccessGranted attribute equal to “true”. • Can be tested as a continuation of: o 6.10.1 - Metering Reporting for a single DCF
Test Procedure	1. An RO Acquisition trigger is delivered to the DRM Agent from the RI 2. User tries to consume the the DCF. 3. User disables the collection of Metering Information for this RI (on the device) 4. User tries to consume the DCF 5. A MeteringReport Trigger is delivered to the device from the RI
Pass-Criteria	1. The DRM Agent and the RI complete 2-pass RO Acquisition. 2. The DRM agent grants access to the DCF in accordance with the issued rights. 3. The User is able to Disable Metering for this RI 4. The DRM agent allows the user to consume consume content even though Metering is disabled 5. The DRM Agent and RI successfully complete the 2-pass MeteringReport protocol. The Metering Data reported must contain only the consumption from step 2.

6.10.3 REL <tracked> timed attribute

Test Case ID	DRM-2.1-int-46
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL <tracked> timed attribute.
Specification Reference	[DRMREL-v2.1] Chapter 5.5.1.1
SCR Reference	DRM-CLI-CMN-025, DRM-CLI-CMN-047, DRM-CLI-CMN-057,,DRM-CLI-CMN-069 DRM-REL-GEN-S-020
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o The DRM Agent's User Confirmation Whitelist MAY contain an entry for this RI. o User consent to collect Metering Information Metering has NOT been given for this RI. o There is at least 1 DCF stored on the Device for which it does not have any valid ROs o An RO to be delivered contains a <tracked> element and a "timed" attributed equal to 20.
Test Procedure	1. An RO Acquisition trigger is delivered to the device from the RI. 2. Consume a DCF 3. [OPTION] User gives consent to collect metering information. Consume the DCF for less than 20 seconds. 4. Consume the same DCF for less than 20 seconds 5. Consume the same DCF for greater than 20 seconds 6. Consume the same DCF for greater than 20 seconds 7. The DRM Agent receives an MeteringReport ROAP trigger
Pass-Criteria	1. The DRM Agent and the RI complete 2-pass RO Acquisition. 2. The DRM Agent prompts for consent to collect metering information. NOTE: If the User Confirmation Whitelist on the device contains an entry for this RI then user consent at this step is not required. 3. The Device is able to consume the DCF for less than 20 seconds. 4. The Device is able to consume the DCF for less than 20 seconds. 5. The Device is able to consume the DCF for greater than 20 seconds 6. The Device is able to consume the DCF for greater than 20 seconds. 7. The DRM Agent and RI successfully complete the 2-pass MeteringReport protocol. The Metering Data recorded by the RI will indicate the content with a contentID corresponding to that of the DCF has been consumed 2 times.

6.10.4 Metering Report initiated via onExpiredURL

Test Case ID	DRM-2.1-int-47
Test Object	DRM Agent, RI Server
Test Case Description	To test the REL <permission>s onExpiredURL's usage to initiate sending of a Metering Report.
Specification Reference	[DRMREL-v2.1] Chapter 5.4.1.1
SCR Reference	DRM-CLI-CMN-025, DRM-CLI-CMN-047, DRM-CLI-CMN-057,,DRM-CLI-CMN-069
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o User consent to collect Metering Information Metering has been given for this RI. o There is at least 1 DCF stored on the Device for which it does not have any valid ROs. o An RO to be delivered contains a permission with: ▪ An onExpiredURL attribute set to a URL on the Rights Issuer server from which a MeteringReport ROAP Trigger will be issued. ▪ A count (1) constraint
Test Procedure	1. An RO Acquisition trigger is delivered to the DRM Agent from the RI 2. User tries to consume the the DCF one time. 3. User tries to consume the the DCF one time.
Pass-Criteria	1. The DRM Agent and the RI complete 2-pass RO Acquisition. 2. The DRM agent grants access to the DCF 3. The DRM agent is not able to consume the DCF and sends a HTTP GET request to the onExpiredURL. A MeteringReport ROAP Trigger is returned and the DRM Agent and the RI successfully complete 2-pass Metering Report protocol. The metering data recorded in the RI will indicate that the content with a ContentID corresponding to that of the DCF has been consumed 1 time.

6.10.5 Metering enabled via a Parent Rights Object

Test Case ID	DRM-2.1-int-48
Test Object	DRM Agent, RI Server
Test Case Description	To test that the RI can issue Parent Rights with <tracked> requirement; and that the DRM agent can accurately record metering information for the relevant metered content – as referenced by the child ROs.
Specification Reference	[DRM-v2.1] Chapter 5.46 and Chapter 11 [DRM-REL-v2.1] Section 5.5.1
SCR Reference	DRM-CLI-CMN-025, DRM-CLI-CMN-047, DRM-CLI-CMN-057, DRM-CLI-CMN-069 DRM-REL-GEN-C-026, DRM-REL-GEN-C-039, DRM-REL-GEN-S-012, DRM-REL-GEN-S-020
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server • State: o The DRM Agent has a valid RI Context with the RI which is valid for both the DRM Agent and the RI. o Metering is enabled on the Device. o There is are two DCFs (DCF#1 & DCF#2) stored on the Device for which the device does not have any valid ROs o A Parent RO to be delivered contains a valid stateless permission and a <tracked> element. o Two child ROs to be delivered reference DCFs #1 and #2 but do not contain any permissions.
Test Procedure	1. The three rights objects are delivered to the device. 2. User consumes DCF#1 3 times 3. User consumes DCF#2 2 times 4. The DRM Agent receives an MeteringReport ROAP trigger
Pass-Criteria	1. The rights objects are successfully acquired by the device. 2. The Device is able to consume DCF#1. 3. The Device is able to consume DCF#2. 4. The DRM Agent will and RI complete the 2-pass MeteringReport protocol. The Metering Data recorded by the RI will indicate the content with a contentID corresponding to that of the DCF#1 has been consumed 3 times AND that the content with a contentID corresponding to that of the DCF#2 has been consumed 2 times.

6.11 DCF Textual Headers

6.11.1 Preview Header - Not in the Domain Name Whitelist

Test Case ID	DRM-2.1-int-49
Test Object	DRM Agent, RI Server
Test Case Description	Initiate ROAP from DCF Preview Header with existing RI Context & domain name NOT in Domain Name Whitelist.
Specification Reference	[DRM-v2.0] Section 5.1.8, 5.2.2, [DRMCF-v2.0] Section 5.2.2
SCR Reference	DRM-DCF-CLI-7, DRM-CLI-CMN-015, DRM-CLI-CMN-026, DRM-CLI-CMN-031, DRM-CLI-CMN-063, DRM-DCF-CLI-6
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o One RI Server. • State: o There is a DCF stored in the terminal, containing a preview header, where the "preview-method" is "preview-rights", with a "preview-rights-url" element. The DCF contains neither a silent-header nor any ROs. o The DRM Agent has an existing RI Context with the RI server under test. o The Preview-URL contained in the DCF is not contained in the DomainNameWhitelist of the Rights Issuer Context on the DRM Agent. o A Preview RO to be delivered is stateless or there is no same entry in the replay cache on the DRM Agent.
Test Procedure	1. User tries to access the DCF. 2. User wishes to acquire a Preview RO. 3. After successful completion of the ROAP, the user tries to use the content.
Pass-Criteria	1. The DRM Agent prompts the user whether she wishes to acquire a Preview RO. 2. Upon positive user interaction; the DRM Agent sends a HTTP GET message to the Preview-Rights-URL. The RI responds with a ROAP Trigger containing an ROAcquisition element, Download Descriptor or a bundled ROAP trigger and Download Descriptor. RI and DRM Agent complete 2-pass RO Acquisition Protocol. The DRM Agent adds the Fully Qualified Domain Name of the Preview-Rights-URL of the stored RI Context (see 6.11.2 for validation) 3. DRM Agent grants access to DCF according to the Preview RO.

6.11.2 Preview Header – In the Domain Name Whitelist

Test Case ID	DRM-2.1-int-50
Test Object	DRM Agent, RI Server
Test Case Description	Initiate ROAP from DCF Preview Header with existing RI Context & domain name in the Domain Name Whitelist.
Specification Reference	[DRM-v2.0] Section 5.1.8, 5.2.2, [DRMCF-v2.0] Section 5.2.2
SCR Reference	DRM-DCF-CLI-7, DRM-CLI-CMN-015, DRM-CLI-CMN-026, DRM-CLI-CMN-031, DRM-CLI-CMN-063, DRM-DCF-CLI-6
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server • State: o There is a DCF stored in the terminal, containing a preview header, where the "preview-method" is "preview-rights", with a "preview-rights-url" element. The DCF contains neither a silent-header nor any ROs. o The DRM Agent has an existing RI Context with the RI server under test. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o The Preview-URL contained in the DCF is in the DomainNameWhitelist of the DRM Agent's stored Rights Issuer context. o A Preview RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. • Continuation of / Can be tested at the same time as: o 6.11.1 Preview rights acquisition, domain name not in the Whitelist
Test Procedure	1. User tries to access the DCF. 2. After successful completion of the ROAP, the user tries to use the content.
Pass-Criteria	1. DRM Agent silently sends an HTTP GET to the Preview-URL 2. DRM Agent grants access to DCF according to the Preview RO.

6.11.3 Silent Header – In the Domain Name Whitelist

Test Case Id	DRM-2.1-int-51
Test Object	DRM Agent, RI Server
Test Case Description	Initiate ROAP from DCF Silent Header with existing RI Context and domain name is in the Domain Name Whitelist.
Specification Reference	[DRMDRM] Chapter 5.2.2, [DRMDCF] Chapter 5.2.2
SCR Reference	DRM-DCF-CLI-007, DRM-CLI-CMN-026, DRM-CLI-CMN-031, DRM-CLI-CMN-063, DRM-DCF-CLI-6
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent does NOT have existing RI Context with the RI server under test. o There is a DCF stored on the terminal. The DCF contains a Silent Header with a silent-method of "on-demand". o The Rights Issuer is configured with a Domain Name Whitelist which contains a domain name that is equal to the Silent-Rights-URL in the DCF. o The DRM Agent's User Confirmation Whitelist contains no entry for this RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. ROAP Registration Trigger is deliverd is delivered to the device. 2. The user tries to access the DCF. 3. After successful completion of the ROAP, the user tries to use the content.
Pass-Criteria	1. DRM Agent and Rights Issuer complete 4-pass Registration. The roap:RegistrationResponse contains the Domain Name Whitelist extension and specifies the domain name of the Silent-Rights-URL specified in the DCF. 2. DRM Agent silently (without user interaction) sends an HTTP GET to the Silent-Rights-URL found in DCF. 3. DRM Agent grants access to the DCF according to the acquired RO.

6.12 Inheritance model

6.12.1 Inheritance with Stateful Rights

Test Case ID	DRM-2.1-int-52
Test Object	DRM Agent
Test Case Description	To test inheritance model when stateful constraints are involved.
Specification Reference	[DRM-v2.0] Section 9.5.2, [DRMREL-v2.0] Section 5.6
SCR Reference	DRM-CLI-CMN-030, DRM-CLI-CMN-047, DRM-REL-GEN-C-026
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server • State: o There are two DCFs stored on the terminal. o The RI has issued three ROs containing a permission and following constraints: ▪ One RO is the Parent RO contains a <count> constraint (stateful). The Parent RO does not reference any DCF. ▪ The other two ROs are Child ROs where the <uid> element of the <context> element in the <inherit> element matches the <uid> element of the <context> element of the <asset> element of the parent RO. The child ROs contains no rights. ▪ Both Child ROs are associated with one of the DCFs (different one). o The same Rights Issuer has issued all rights objects. o All ROs to be delivered are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The Parent rights object is delivered to the DRM Agent. 2. The Child rights objects are delivered to the DRM Agent. 3. The DRM Agent tries to use the received contents.
Pass-Criteria	1. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the Parent RO is successfully delivered to the DRM Agent. 2. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the Child ROs are successfully delivered to the DRM Agent. 3. The DRM Agent is allowed to use the delivered contents maintaining the state of the Parent RO i.e. the <count> element is decremented when either of the contents is used.

6.12.2 Multiple Parent Rights Objects

Test Case ID	DRM-2.1-int-53
Test Object	DRM Agent, RI Server
Test Case Description	To test a case where the Parent Rights Object
Specification Reference	[DRM-v2.0] Section 9.5, [DRMREL-v2.0] Section 5.6
SCR Reference	DRM-CLI-CMN-047, DRM-REL-GEN-C-026
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server • State: o There is a DCF stored on the terminal. o The RI has issued three ROs containing a permission and following constraints: ▪ The first RO is a Parent RO and contains a <datetime> constraint for the use of the content. The Parent RO does not reference any DCF. ▪ The second rights object is the Child rights object where the <uid> element of the <context> element in the <inherit> element matches the <uid> element of the <context> element of the <asset> element of the parent RO. The child RO refers the DCF and contains no rights. ▪ The third rights object is another Parent RO where the <uid> element of the <context> element of the <asset> element is the same as in the first Parent RO and it includes another <datetime> permission. o The same Rights Issuer has issued all three rights objects. o The ROs are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The first Parent rights object and the Child RO are delivered to the DRM Agent. 2. The user tries to use the received content during the time the <datetime> constraint allows to do it. 3. The second Parent rights object is delivered to the DRM Agent. 4. The user tries to use the received content during the <datetime> period of the first Parent rights object. 5. The DRM Agent tries to use the content during the time the new <datetime> constraint allows to do it.
Pass-Criteria	1. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the first Parent RO and the Child ROs are successfully delivered to the DRM Agent. 2. The DRM Agent only allows usage of the delivered content during the time specified by the <datetime> constraint. 3. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the second Parent RO is successfully delivered to the DRM Agent. 4. The DRM Agent allows using the delivered content during either of the <datetime> periods specified in either of the parent rights objects.

6.12.3 Parent RO with a group child RO

Test Case ID	DRM-2.1-int-54
Test Object	DRM Agent
Test Case Description	To test inheritance model when a child RO is a group RO
Specification Reference	[DRM-v2.0] Section 9.5.2, [DRMREL-v2.0] Section 5.6
SCR Reference	DRM-CLI-CMN-030, DRM-CLI-CMN-047, DRM-REL-GEN-C-026
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server • State: o There are two DCFs stored on the terminal which have the same group ID (DCF A and B) and another DCF which is not part of the group (DCF C). o The RI has issued two ROs containing a permission and following constraints: ▪ One RO is the Parent RO contains a <count> constraint (stateful). The Parent RO does not reference any DCF. ▪ The child RO is a group RO where the <uid> element of the <context> element in the <inherit> element matches the <uid> element of the <context> element of the <asset> element of the parent RO. The child ROs contains no rights and contains the group ID and CEK associated with the DCFs. o The same Rights Issuer has issued all rights objects. o All ROs are stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The Parent rights object is delivered to the DRM Agent. 2. The Child rights object is delivered to the DRM Agent. 3. The DRM Agent tries to use the received contents.
Pass-Criteria	1. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the Parent RO is successfully delivered to the DRM Agent. 2. RI and DRM Agent complete either 1-pass (server push) or 2-pass (user initiated) ROAP and the Child RO is successfully delivered to the DRM Agent. 3. The DRM Agent is allowed to use the delivered contents maintaining the state of the Parent RO i.e. the <count> element is decremented when either DCF A or DCF B is used. The DRM agent should not allow access to DCF C.

6.13 Domains

6.13.1 Domain join without existing RI Context

Test Case Id	DRM-2.1-int-55
Test Object	DRM Agent, RI server
Test Case Description	Trigger-initiated domain join without existing RI Context
Specification Reference	[DRMDRM] 5.1.8, 5.2.1, 5.4.4, 8
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-059 DRM-CLI-UD-067 DRM-SERVER-012, DRM-SERVER-018, DRM-SERVER-020, DRM-SERVER-022, DRM-SERVER-024
Tool	None
Test code	None

Preconditions	• Equipment:
	  o DRM Agent.
	  o RI Server.
	• State:
	  o The DRM Agent does not have a valid RI Context with the RI under test.
	  o There is a DCF stored on the terminal.
	  o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
	  o The DRM Agent's User Confirmation Whitelist contains no entry for this RI.
	• Can be tested at the same time as
	  o Registration (4-pass ROAP)
	  o Domain Joining
	  o RO Acquisition

Test Procedure	1. The DRM Agent receives a JoinDomain trigger from the RI. 2. User gives consent to registration/domain join. 3. The DRM Agent receives a ROAcqusition (for a Domain RO for the DCF on the terminal) trigger from the RI. 4. User tries to access the DCF.
Pass-Criteria	1. The DRM Agent prompts the user for registration as a response for the JoinDomain trigger. 2. RI and DRM Agent complete 4-pass Registration and 2-pass Join Domain Protocols. 3. RI and DRM Agent successfully complete a 2-pass ROAP for the Domain RO. 4. The DRM Agent grants access to the DCF according to the Domain RO.

6.13.2 Domain No Consume After

Test Case Id	DRM-2.1-int-56
Test Object	DRM Agent, RI server
Test Case Description	To test that the RI correctly specifies the Domain noConsumeAfter attribute in a JoinDomainResponse; and that the DRM Agent correctly enforces that Domain ROs are not consumable after the noConsumeAfter date.
Specification Reference	[DRMv2.1] Chapter 5.4.5.2.2.
SCR Reference	DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-059
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent has a valid RI Context with the RI. o There is at least one DCF stored on the Device for which it does not have any valid ROs. o A domain is established in the RI which has a noConsumeAfter property set to expire soon. o The DRM Agent is not a member of this domain. o An RO to be delivered is stateless and is bound to this domain.
Test Procedure	1. An RO Acquisition trigger (for the domain RO) is delivered to the device from the RI. 2. Before the “no consume after time” attempt to consume the DCF 3. After the “no consume after time” attempt to consume the DCF
Pass-Criteria	1. The DRM Agent and RI successfully complete the 2-pass Join Domain protocol and the 2-pass RO Acquisition protocol. 2. Before the “no consume after time” the Device should be able to consume the DCF 3. After the “no consume after time” the Device should NOT be able to consume the DCF

6.13.3 Domain upgrade

6.13.3.1 New Domain RO delivered before domain upgrade

Test Case Id	DRM-2.1-int-57
Test Object	DRM Agent, RI Server
Test Case Description	Automatically-initiated domain upgrade with valid RI Context and existing Domain Context for this RI A Domain RO is delivered before the DRM Agent has upgraded the domain.
Specification Reference	[DRMDRM] 5.1.8, 5.2.1, 5.4.4, 8.7.2.1
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-015, DRM-CLI-CMN-016, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-059, DRM-CLI-UD-067 DRM-SERVER-012, DRM-SERVER-018, DRM-SERVER-020, DRM-SERVER-022, DRM-SERVER-024
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent has a valid RI Context with the RI under test. o The DRM Agent has a Domain Context with the RI under test. o The RI has upgraded the domain by changing the Domain Key (first 17 digits of the previously stored domainId are the same) and incrementing the Domain Generation by one. o There is a DCF stored on the terminal containing a Domain RO with an upgraded domain key.
Test Procedure	1. User tries to access the DCF using a RO that matches the upgraded domain key. The domain key in the DRM Agent has not been upgraded yet.
Pass-Criteria	1. RI and DRM Agent complete 2-pass Join Domain Protocol which has been automatically initiated by the DRM Agent. The DRM Agent does not prompt for user consent. The DRM Agent grants access to the DCF. OR 1. The DRM Agent does not attempt to automatically upgrade the domain. The DRM Agent does not grant access to the DCF.

6.13.3.2 Domain join with existing Domain Context

Test Case Id	DRM-2.1-int-58
Test Object	DRM Agent, RI Server
Test Case Description	Trigger-initiated domain join with valid RI Context and existing Domain Context for this RI RI-initiated domain generation upgrade
Specification Reference	[DRMDRM] 5.2.1, 5.4.4, 8
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-015, DRM-CLI-CMN-016, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-059, DRM-CLI-UD-067 DRM-SERVER-012, DRM-SERVER-018, DRM-SERVER-020, DRM-SERVER-022, DRM-SERVER-024
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent has a valid RI Context with the RI under test. o The DRM Agent has a Domain Context with the RI under test. o There is a DCF stored on the terminal. o There is a Domain RO stored on the terminal. o The RI has upgraded the domain by changing the Domain Key (first 17 digits of the previously stored domainId are the same) and incrementing the Domain Generation by one. o User has not given permission for silent communication. • Can be tested at the same time as o 6.13.1 Domain join without existing RI Context or o 6.13.2 Domain join with valid RI Context. • Can be tested in continuation of o 6.13.3.1 New Domain RO delivered before domain upgrade
Test Procedure	1. The DRM Agent receives a JoinDomain trigger from the RI. 2. User tries to access the DCF.
Pass-Criteria	1. RI and DRM Agent complete 2-pass Join Domain Protocol. 2. The DRM Agent grants access to the DCF according to the Domain RO

6.13.4 Domain RO Acquisition with existing RI Context

Test Case ID	DRM-2.1-int-59
Test Object	DRM Agent, RI server
Test Case Description	Domain RO Acquisition with existing RI Context.
Specification Reference	[DRM-v2.0] Section 5.1.8, 8.6.2
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-057, DRM-CLI-UD-065
Tools	None
Test Code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o The DRM Agent has a Domain Context with the RI under test. o There is a domain DCF stored on the terminal. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. • Can be tested at the same time as o 6.13.1 Domain join without existing RI Context or o 6.13.2 Domain join with valid RI Context or o 6.13.3 Domain join with existing Domain Context.
Test Procedure	1. The DRM Agent receives a ROAcquisition trigger from the RI. 2. User tries to access the DCF.
Pass-Criteria	1. RI and DRM Agent successfully complete a 2-pass ROAP for the Domain RO. 2. DRM Agent grants access to the DCF according to the RO.

6.13.5 Domain RO in a DCF

Test Case ID	DRM-2.1-int-60
Test Object	DRM Agent
Test Case Description	To test delivering the Domain RO inside a DCF.
Specification Reference	[DRM-v2.0] Section 8.6.2
SCR Reference	DRM-CLI-CMN-015, DRM-CLI-CMN-035, DRM-CLI-CMN-037, DRM-CLI-CMN-042, DRM-CLI-CMN-051
Tools	None
Test Code	None
Preconditions	• Equipment: o DRM Agent o RI Server o Content Server • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o The DRM Agent has a Domain Context with the RI under test. o A RO inside the DCF is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The Content Server delivers a DCF to the DRM Agent. There is a Domain RO inside the DCF. 2. The user tries to use the received content.
Pass-Criteria	1. The DCF is successfully delivered to the DRM Agent. The Device correctly processes the received DCF and it is able to separate the content and the DomainRO. 2. The user is able to use the DCF according to the domain RO.

6.13.6 Sharing a DCF containing a RO between devices in the same domain

Test Case ID	DRM-2.1-int-61
Test Object	DRM Agent (two copies)
Test Case Description	To test if different devices related with the same domain are able to share DCFs.
Specification Reference	[DRM-v2.0] Section 8
SCR Reference	DRM-CLI-CMN-015, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CMN-045
Tools	None
Test Code	None
Preconditions	• Equipment: o Two DRM Agents o RI Server • State: o There exists a valid RI Context on both DRM Agents with the RI server under test. o Both DRM Agents have a Domain Context with the RI under test. o There is a domain DCF and RO stored on the first terminal. o The RO is stateless or there is no same entry in replay cache on the second terminal. • Can be tested at the same time as o Any of the other domain test cases.
Test Procedure	1. The user tries to use the DCF in the first terminal. 2. The DCF is superdistributed to the second terminal. 3. The user tries to use the DCF in the second terminal.
Pass-Criteria	1. The first DRM Agent grants access to the DCF according to the Domain RO. 2. The DCF is successfully superdistributed to the second DRM Agent. The DCF contains a copy of the Domain RO. 3. The second DRM Agent grants access to the DCF according to the Domain RO.

6.13.7 Domain leave with valid RI Context

Test Case Id	DRM-2.1-int-62
Test Object	DRM Agent, RI Server
Test Case Description	Device leaves a domain after receiving a LeaveDomain trigger.
Specification Reference	[DRMDRM] 5.2.1, 5.4.4, 8
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-033, DRM-CLI-CD-060, DRM-CLI-UD-068 DRM-SERVER-012, DRM-SERVER-014, DRM-SERVER-019, DRM-SERVER-020, DRM-SERVER-022, DRM-SERVER-024
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o DRM Agent has a valid RI Context with RI under test. o DRM Agent has a valid Domain Context for the domain it is about to leave. o At least one DCF is stored on the DRM Agent for which it has a Domain RO belonging to the domain it is about to leave. • Can be tested at the same time as o Domain Leaving
Test Procedure	1. The DRM Agent receives a signed LeaveDomain trigger from the RI. 2. User tries to access the DCF.
Pass-Criteria	1. RI and DRM Agent successfully complete a 2-pass Leave Domain Protocol. 2. DRM Agent does not grant access to the DCF.

6.14 DCF Metadata

6.14.1 3GPP User Data

Test Case Id	DRM-2.1-int-63
Test Object	DRM Agent, RI server
Test Case Description	To test that the content packaging server can insert User-Data such as title, author, etc into a DCF and that the DRM Agent can read that meta data.
Specification Reference	[DRMCF-v2.1] Chapter 6.3.2.3.1
SCR Reference	DRM-DCF-CLI-1, DRM-DCF-CLI-16, DRM-CLI-17
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent has a valid RI Context with the RI. o There is a DCF available that contains metadata in the UserData box (in the Discrete Headers box). This metadata shall as a minimum contain the following boxes: ▪ titl – title for the media (see [TS26.244] table 8.1) ▪ dscp – caption or description for the media (see [TS26.244] table 8.2) ▪ cprt – notice about organisation holding copyright for the media file (see [TS26.244] table 8.3) ▪ perf – performer or artist (see [TS26.244] table 8.4) ▪ auth – author of the media (see [TS26.244] table 8.5) ▪ gnre – genre (category and style) of the media (see [TS26.244] table 8.6) ▪ rtng – media rating (see [TS26.244] table 8.7) ▪ clsf – classification of the media (see [TS26.244] table 8.8) ▪ kywd – media keywords (see [TS26.244] table 8.9) ▪ loci – location information (see [TS26.244] table 8.10) ▪ albm – album title and track number for the media (see [TS26.244] table 8.11) ▪ yrrc – recording year for the media (see [TS26.244] table 8.12) ▪ crvu – contains a URI where coverart can be retrieved from ▪ lrcu – conatains a URI where lyrics can be retrieved from
Test Procedure	1. Using the appropriate Device functionality display all relevant meta data that is present within the DCF
Pass-Criteria	1. The device correctly displays the meta data stored in the DCF.

6.14.2 User Editable Meta Data

Test Case Id	DRM-2.1-int-64
Test Object	DRM Agent, RI server
Test Case Description	To test that a content packaging server can add a User-Data box within the Mutable DRM Information box of a DCF and that the DRM Agent can read that meta data, update it and display it in-place of the meta data in the DCF discrete media headers.
Specification Reference	[DRMCF-v2.1] Chapter 6.3.2.3.1
SCR Reference	DRM-DCF-CLI-35
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent. o RI Server. • State: o The DRM Agent has a valid RI Context with the RI. o The Device shall have stored a DCF that contains Metadata in the UserData box (in the Discrete Headers box). The DCF shall also contain the same metadata in the UserData box in the MutableDRMInformation box. This metadata shall as a minimum contain the following boxes: ▪ titl – title for the media (see [TS26.244] table 8.1) ▪ dscp – caption or description for the media (see [TS26.244] table 8.2) ▪ rtng – media rating (see [TS26.244] table 8.7)
Test Procedure	1. Using the appropriate Device functionality display the DCF meta data 2. Using the appropriate Device functionality modify the metadata. 3. Using the appropriate Device functionality display the DCF meta data
Pass-Criteria	1. The device displays the meta data from the MutableDRMInformation box. 2. The Device shall allow the User to edit the meta data. 3. The device displays the user edited meta data

6.15 WBXML Encoding of triggers

6.15.1 RO Acquisition Trigger

Test Case Id	DRM-2.1-int-65
Test Object	DRM Agent, RI server
Test Case Description	To test the WBXML encoding of the RO Acquisition Trigger and delivery via WAP Push
Specification Reference	[DRMv2.1] Chapter 14.4 and Chapter 16
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-050, DRM-CLI-CMN-057, DRM-CLI-UD-071 DRM-SERVER-034, DRM-SERVER-038
Tool	None
Test code	None
Preconditions	• Equipment: o Mobile terminal that supports WAP Push with a DRM Agent o RI Server. o Push Proxy Gateway to delivery the WBXML Trigger via WAP Push • State: o The DRM Agent has a valid RI Context with the RI. o There is at least one DCF stored on the Terminal for which it does not have any valid ROs o An RO to be delivered is stateless or there is no same entry in the DRM Agent replay cach • Alternative execution o Non-mobile devices (e.g. PCs) that do not support support WAP Push may test decoding of the WBXML trigger via direct download.
Test Procedure	1. A WMBXML encoded RO Acquisition Trigger is delivered to the device by the RI (using WAP Push). 2. User tries to use the DCF
Pass-Criteria	1. DRM Agent and RI complete the 2-pass RO Acquisition protocol. 2. The Device is able to consume the DCF

6.15.2 Leave Domain Trigger

Test Case Id	DRM-2.1-int-66
Test Object	DRM Agent, RI server
Test Case Description	To test the WBXML encoding of the Leave Domain Trigger
Specification Reference	[DRMv2.1] Chapter 14.4 and Chapter 16
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-050, DRM-CLI-CMN-060, DRM-CLI-UD-071 DRM-SERVER-011, DRM-SERVER-019, DRM-SERVER-034, DRM-SERVER-038
Tool	None
Test code	None
Preconditions	• Equipment: o Mobile terminal that supports WAP Push with a DRM Agent o RI Server. o Push Proxy Gateway to delivery the WBXML Trigger via WAP Push • State: o DRM Agent has a valid RI Context with RI under test. o DRM Agent has a valid Domain Context for the domain it is about to leave. o At least one DCF is stored on the DRM Agent for which it has a valid Domain RO belonging to the RO it is about to leave. • Alternative execution o Non-mobile devices (e.g. PCs) that do not support support WAP Push may test decoding of the WBXML trigger via direct download.
Test Procedure	1. Attempt to consume the DCF 2. A WMBXML encoded Leave Domain Trigger is delivered to the device by the RI (using WAP Push). 3. Attempt to consume the DCF
Pass-Criteria	1. Before leaving the Domain the Device shall be able to consume the DCF. 2. The Leave Domain Trigger is processed without any user interaction 3. After leaving the Domain the Device shall not be able to consume the DCF.

6.16 Unconnected devices

6.16.1 Device registration and domain establishment

Test Case ID	DRM-2.1-int-67
Test Object	DRM Agents: Connected Device and Unconnected Device, RI server
Test Case Description	Device registration and domain establishment for Unconnected Device.
Specification Reference	[DRM-v2.0] Section 14 and 11.6
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-053, DRM-CLI-CD-055, DRM-CLI-CD-056, DRM-CLI-CD-062, DRM-CLI-UD-064, DRM-CLI-UD-065, DRM-CLI-UD-066, DRM-CLI-UD-067
Tools	None
Test Code	None
Preconditions	• Equipment: o DRM Agent (Connected Device) o DRM Agent (Unconnected Device) o RI Server • State: o The Connected Device has a valid RI Context and is registered to a Domain. o The Unconnected Device does not have a valid RI Context and is not registered to any Domain. o The Unconnected Device has a local connection to the Connected Device over OBEX.
Test Procedure	1. The user (Connected Device) initiates a browsing session to the RI and indicates that he wants to add an Unconnected Device to the same domain he is registered. 2. The Connected Device receives a joinDomain ROAP trigger with “proxy” attribute set to “True”. 3. The Connected Device passes this ROAP trigger to the Unconnected using the OBEX connection. 4. The Unconnected Device receives the ROAP trigger and runs 4-pass Registration Protocol using the OBEX connection established with the Connected Device. 5. Upon successfully establishing an RI Context, the Unconnected Device sends JoinDomainRequest in the OBEX response to the Connected Device.
Pass-Criteria	1. n/a 2. The Connected Device successfully indicates the RI that it wants to add a new Unconnected Device to the domain. 3. n/a 4. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while 4-pass Registration Protocol is being run. The Unconnected Device is successfully registered. 5. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while 2-pass JoinDomain Protocol is being run. The Unconnected Device successfully joins the domain.

6.16.2 RO Acquisition with existing RI Context.

Test Case Id	DRM-2.1-int-68
Test Object	DRM Agents: Connected Device and Unconnected Device, RI server
Test Case Description	RO Acquisition with existing RI Context.
Specification Reference	[DRM-v2.0] Section 14 and 11.6
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-025, DRM-CLI-CMN-037, DRM-CLI-CD-053, DRM-CLI-CD-055, DRM-CLI-CD-056, DRM-CLI-CD-062, DRM-CLI-UD-064, DRM-CLI-UD-065, DRM-CLI-UD-066
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent (Unconnected Device) o DRM Agent (Connected Device) o RI Server • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o There is a domain DCF on the Unconnected Device. o The Unconnected Device has a local connection to a Connected Device over OBEX. o A RO to be delivered is stateless or there is no same entry in replay cache on the Unconnected Device. • Can be tested at the same time as: o 6.16.1 Device registration and domain establishment
Test Procedure	1. User (Unconnected Device) requests a RO for an existing domain DCF. 2. User (Unconnected Device) tries to access the DCF.
Pass-Criteria	1. Unconnected device sends a RORequest message to the Connected Device over OBEX. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while 2-pass RO Acquisition Protocol is being run. 2. The Unconnected Device grants access to the DCF according to the RO.

6.16.3 Leaving Domain

Test Case ID	DRM-2.1-int-69
Test Object	DRM Agents: Connected Device and Unconnected Device, RI server
Test Case Description	Unconnected Device leaving domain.
Specification Reference	[DRM-v2.0] Section 14 and 11.6
SCR Reference	DRM-CLI-CMN-015, DRM-CLI-CMN-025, DRM-CLI-CMN-033, DRM-CLI-CMN-037, DRM-CLI-CD-053, DRM-CLI-CD-055, DRM-CLI-CD-056, DRM-CLI-CD-062, DRM-CLI-UD-064, DRM-CLI-UD-065, DRM-CLI-UD-066, DRM-CLI-UD-068
Tools	None
Test Code	None
Preconditions	• Equipment: o DRM Agent (Connected Device) o DRM Agent (Unconnected Device) o RI Server • State: o The Connected Device has a valid RI Context and is registered to a Domain. o The Unconnected Device has a valid RI Context and is registered to a Domain. o The Unconnected Device has a local connection to the Connected Device over OBEX. o There is a domain DCF on the Unconnected Device.
Test Procedure	1. The user (Connected Device) initiates a browsing session to the RI and indicates that he wants to remove the Unconnected Device from the domain. 2. The Connected Device receives a leaveDomain ROAP trigger with “proxy” attribute set to “True”. 3. The Connected Device passes this ROAP trigger to the Unconnected using the OBEX connection. 4. The Unconnected Device receives the ROAP trigger and begins to run the 2-pass LeaveDomain Protocol using the OBEX connection established with the Connected Device. 5. User tries to use the domain DCF.
Pass-Criteria	1. n/a 2. The Connected Device successfully indicates the RI that it wants to remove the Unconnected Device from the domain. 3. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while the 2-pass LeaveDomain Protocol is being run. 4. The Unconnected Device is successfully removed from the domain. 5. The DRM Agent (Unconnected Device) does not grant access to the DCF.

6.16.4 RO Acquisition without existing RI Context

Test Case Id	DRM-2.1-int-70
Test Object	DRM Agent, RI Server
Test Case Description	RO Acquisition without existing RI Context
Specification Reference	[DRM-v2.0] Section 14 and 11.6
SCR Reference	DRM-CLI-CMN-005, DRM-CLI-CMN-008, DRM-CLI-CMN-025, DRM-CLI-CMN-037, DRM-CLI-CD-053, DRM-CLI-CD-055, DRM-CLI-CD-056, DRM-CLI-CD-057, DRM-CLI-CD-062, DRM-CLI-UD-064, DRM-CLI-UD-065, DRM-CLI-UD-066
Tool	None
Test code	None
Preconditions	• Equipment: o DRM Agent o RI Server • State: o No valid RI Context with the RI server under test exists on the DRM Agent. o There is a Domain DCF stored on the terminal (Unconnected Device). o The DRM Agent (Unconnected Device) has a local connection to the Connected Device over OBEX. o A RO to be delivered is stateless or there is no same entry in replay cache on the Unconnected Device.
Test Procedure	1. The DRM Agent (Connected Device) receives a RO Acquisition trigger from the RI with “proxy” attribute set to “True”. The Connected Device passes this ROAP trigger to the Unconnected Device using the OBEX connection. 2. User (Unconnected Device) gives consent to RO acquisition. 3. User tries to access the Domain DCF.
Pass-Criteria	1. The DRM Agent (Unconnected Device) prompts the user permission of RO acquisition as a response for the RO Acquisition trigger. 2. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while the 4-pass Registration and 2-pass RO Acquisition Protocol are being run. 3. DRM Agent grants access to the DCF according to the RO.

6.16.5 DRM Agent without DRM Time

Test Case ID	DRM-2.1-int-71
Test Object	DRM Agent (Unconnected Device), RI Server
Test Case Description	To test Datetime constraints with an unconnected device that does not have a time source (i.e. a situation where the constraint is not understood and cannot be enforced).
Specification Reference	[DRMREL-v2.0] Section 5.5
SCR Reference	DRM-REL-GEN-C-015, DRM-REL-GEN-C-016, DRM-REL-GEN-C-019, DRM-REL-GEN-C-020, DRM-REL-GEN-C-021
Tools	None
Test Code	None
Preconditions	• Equipment: o DRM Agent (Connected Device). o DRM Agent (Unconnected Device). This DRM Agent does not support DRM Time. o One RI Server. • State: o There exists a valid RI Context on the DRM Agent with the RI server under test. o There is a domain DCF on the Unconnected Device. o The Unconnected Device has a local connection to a Connected Device over OBEX. o The RI has issued an RO containing a permission with an associated datetime constraint. There are no stateful constraints in the RO.
Test Procedure	1. User (Unconnected Device) requests a RO for the existing domain DCF. 2. User (Unconnected Device) tries to access the DCF.
Pass-Criteria	1. Unconnected device sends a RORequest message to the Connected Device over OBEX. The Connected Device successfully acts as a proxy between the RI and the Unconnected Device while 2-pass RO Acquisition Protocol is being run. 2. The DRM Agent (unconnected device) does NOT allow the user to use the DCF.

6.17 Multiple PKIs

6.17.1 Device with two certificates

Test Case ID	DRM-2.1-int-72
Test Object	DRM Agent, and Rights Issuer
Test Case Description	Tests the capability of the ROAP protocol to choose and communiate the correct device public key in the case that a DRM Agent has two device certificates. This may reflect a scenario where a device is a member of two PKI ecosystems.
Specification Reference	[DRM-v2.0] Section 5.4.2
SCR Reference	DRM-CLI-CMN-008, DRM-CLI-CMN-019, DRM-CLI-CMN-037 DRM-SERVER-007, DRM-SERVER-015
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server o Two Certificate Authorities with independent roots and OCSP responders. • State: o The DRM Agent has two device certificate chains and two RI trust anchors. Each certificate chain is issued by a different certificate authority and they each have a unique subjectPublicKeyInfo. o The Rights Issuer has only one certificate chain; and only one device trust anchor. The device trust anchor must be able to validate one of the DRM Agents issued certificates. o There is no RI Context between the DRM Agent and the RI. o There is a DCF stored on the terminal. o The RI has issued a stateless RO for the DCF.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent. 2. User gives consent to registration. 3. RI sends RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass Registration Protocol. 3. DRM Agent sends an RORequest with the same Device ID that was “selected” in the registration protocol. The RI responds with the ROResponse; and 2-pass RO Acquisition is successfully completed. 4. The DRM Agent grants access to the DCF according to the RO.

6.17.2 RI with two certificates

Test Case ID	DRM-2.1-int-73
Test Object	DRM Agent, and Rights Issuer
Test Case Description	Tests the capability of the ROAP protocol in the case that a Rights Issuer has two RI certificates. This may reflect a scenario where a Rights Issuer support two PKI ecosystems.
Specification Reference	[DRM-v2.0] Section 5.4.2
SCR Reference	DRM-CLI-CMN-008, DRM-CLI-CMN-17, DRM-CLI-CMN-019, DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-015, DRM-SERVER-030
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server o Two Certificate Authorities with independent roots and OCSP responders. • State: o The Rights Issuer has two RI certificate chains; and two device trust anchors. Each certificate chain is issued by a different certificate authority but they have the same `subjectPublicKeyInfo`. o The DRM Agent has only one device certificate chain; and only one RI trust anchor. The RI trust anchor must be able to validate one of the RIs issued certificates. o There is no RI Context between the DRM Agent and the RI. o There is a DCF stored on the terminal. o The RI has issued a stateless RO for the DCF.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent. 2. User gives consent to registration. 3. RI sends RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass Registration Protocol. 3. DRM Agent and RI successfully complete 2-pass RO Acquisition. 4. The DRM Agent grants access to the DCF according to the RO.

6.17.3 Certificate chains from different trust models

Test Case ID	DRM-2.1-int-74
Test Object	DRM Agent, and Rights Issuer
Test Case Description	Tests the capability of the ROAP protocol to allow registration in the case that the RI and Device have certificates from different trust models, but do trust the "other" trust model. Essentially Device has a certificate chain from PKI_A and additionally trusts PKI_B, RI has chain from PKI_B and additionally trusts PKI_A. The RI and Device should be able to trust each other even though they have certificate chains from different trust authorities.
Specification Reference	[DRM-v2.0] Section 5.4.2
SCR Reference	DRM-CLI-CMN-17, DRM-CLI-CMN-019, DRM-CLI-CMN-037 DRM-SERVER-006, DRM-SERVER-007, DRM-SERVER-008, DRM-SERVER-030
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent. o RI Server o Two Certificate Authorities (CA1 and CA2) with independent roots and OCSP responders. • State: o The Rights Issuer has one RI certificate chains (from CA1). o The DRM Agent has one device certificate chain (from CA2). o The RI trusts device certificate chains from CA1 and CA2. o The DRM Agent trusts RI certificate chains from both CA1 and CA2. o There is no RI Context between the DRM Agent and the RI. o There is a DCF stored on the terminal. o The RI has issued a stateless RO for the DCF.
Test Procedure	1. RI sends RegistrationRequest trigger to the DRM Agent. 2. User gives consent to registration. 3. RI sends RO Acquisition trigger to the DRM Agent. 4. User tries to access the DCF.
Pass-Criteria	1. DRM Agent prompts user for consent regarding the registration procedure. 2. RI and DRM Agent complete 4-pass Registration Protocol. 3. DRM Agent and RI successfully complete 2-pass RO Acquisition. 4. The DRM Agent grants access to the DCF according to the RO.

6.18 Non-Streamable PDCF

6.18.1 One-track PDCF with NULL encryption

Test Case ID	DRM-2.1-int-75
Test Object	DRM Agent, RI Server
Test Case Description	To test packaging and rendering of a one-track null-encrypted PDCF file (e.g 3GP audio).
Specification Reference	[DRMCF-v2.0] Section 7.1.1, 7.1.3 and 7.1.4
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-2, DRM-DCF-CLI-23 (or DRM-DCF-CLI-24), DRM-DCF-CLI-25, DRM-DCF-CLI-26, DRM-DCF-CLI-27, DRM-DCF-CLI-34
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a media player which is able to render 3GP and/or 3GP2 PDCF files. o One RI Server able to package PDCF • State o The RI has packaged a one-track 3GP (or 3GP2) file into a non-streamable PDCF with NULL encryption mode. The EncryptionMethod field in the OMADRMCommonHeaders box is set to NULL. o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The user requests the RO for the PDCF 2. The user downloads the PDCF and tries to use it
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent 2. The DRM agent grants access to the PDCF according to the issued RO. The player should render the content.

6.18.2 One-track encrypted PDCF

Test Case ID	DRM-2.1-int-76
Test Object	DRM Agent, RI Server
Test Case Description	To test packaging and rendering of a one-track encrypted PDCF (e.g audio file).
Specification Reference	[DRMCF-v2.0] Section 7.1, 7.1.3 and 7.1.4
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-23 (or DRM-DCF-CLI-24), DRM-DCF-CLI-25, DRM-DCF-CLI-34
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render 3GP and/or (3GP2) PDCF files. o One RI Server able to package PDCF files • State: o The RI has packaged a one-track 3GP (or 3GP2) file into a non-streamable PDCF with AES128CTR encryption mode. The EncryptionMethod field in the OMADRMCommonHeaders box is set to AES_128_CTR and the SelectiveEncryption field in the OMADRMAUFormatBox is set to 1. o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The user requests the RO for the PDCF 2. The user downloads the PDCF and tries to use it
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent 2. The DRM agent grants access to the PDCF according to the issued RO. The player should render the content.

6.18.3 Multi-track encrypted PDCF

Test Case ID	DRM-2.1-int-77
Test Object	DRM Agent, RI Server
Test Case Description	To test packaging and rendering of a multi-track encrypted PDCF (e.g. video and audio 3GP file).
Specification Reference	[DRMCF-v2.0] Section 7.1, 7.1.3 and 7.1.4
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-27, DRM-DCF-CLI-28, DRM-DCF-CLI-34
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render 3GP and/or 3GP2 PDCF files. o One RI Server able to package PDCF • State: o The RI has packaged a multi-track 3GP (or 3GP2) file into a non-streamable PDCF with AES128CTR encryption mode. The EncryptionMethod field in the OMADRMCommonHeaders box is set to AES_128_CTR and the `SelectiveEncryption` field in the OMADRMAUFormatBox is set to 1. o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered grants usage rights for all tracks in the PDCF. The RO is stateless or there is no same entry in the DRM Agent replay cache.
Test Procedure	1. The user requests the RO for the PDCF 2. The user downloads the PDCF and tries to use it
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent 2. The DRM agent grants access to the PDCF according to the issued RO. The player should render the content.

6.18.4 PDCF Superdistribution (Transaction Tracking)

Test Case ID	DRM-2.1-int-78
Test Object	DRM Agent, RI Server
Test Case Description	To test PDCF superdistribution, using the Transaction Tracking mechanism.
Specification Reference	[DRMCF-v2.0] Sections 5.2.1, 5.2.4.1 and 7.1
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-31, DRM-DCF-CLI-32
Tools	None
Test Code	None
Preconditions	• Equipment: o Two terminals (A and B) with a DRM Agent integrated with a player which is able to render 3GP (or 3GP2) PDCF files. o One RI Server able to package PDCF files • State: o Both DRM Agents have a valid RI Context with the RI. o There is a PDCF stored on terminal A. The PDCF contains a Transaction ID and a RightsIssuerURL that points to the RI and will return an RO Acquisition trigger or an xHTML page. o The RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. Terminal A receives the PDCF and tries to use the PDCF. 2. The user (terminal A) requests an RO for the PDCF. 3. If an xHTML page is presented the user selects a trigger to download. 4. Terminal A sends the DCF to client device B. 5. The user (Terminal B) tries to use the PDCF. 6. The user (terminal B) requests an RO for the PDCF. 7. If an xHTML page is presented the user selects a trigger to download. 8. The user (terminal B) tries to use (render) the PDCF.
Pass-Criteria	1. Terminal A does not render the PDCF and gives the user an option of obtaining the rights object. The device must also have consent to perform transaction tracking operations. This may be a global setting, an individual setting for this RI; or an explicit consent. 2. The DRM Agent connects to the PDCF RightsIssuerURL. This either returns an RO Acquisition trigger; or an xHTML page which allows the user to obtain a ROAP trigger. 3. DRM Agent A sends RO Request, containing the TransactionID it found in the PDCF. The RI sends an ROResponse message containing the new RO and a new TransactionID. DRM Agent A replaces the TransactionID in the PDCF. 4. The Terminal A is able to forward the PDCF to terminal B, which receives it. 5. Terminal B does not render the PDCF and gives the user an option of obtaining the rights object. The device must also have consent to perform transaction tracking operations. This may be a global setting, an individual setting for this RI; or an explicit consent. 6. The DRM Agent connects to the PDCF RightsIssuerURL. This either returns an RO Acquisition trigger; or an xHTML page which allows the user to obtain a

	ROAP trigger. 7. DRM Agent B sends RO Request, containing the new TransactionID (from step 3). The RI sends ROResponse message containing the new RO and a new TransactionID. DRM Agent B replaces the TransactionID in the PDCF. 8. On terminal B, the PDCF can be used in accordance with the received rights.

6.18.5 Multi-track PDCF with rights for only one track

Test Case ID	DRM-2.1-int-79
Test Object	DRM Agent
Test Case Description	To test rendering of a multi-track encrypted PDCF where rights are only available for one of the tracks.
Specification Reference	[DRMCF-v2.0] Sections 5.2.1 and 7.1
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-23 (or DRM-DCF-CLI-24), DRM-DCF-CLI-27
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render 3GP (or 3GP2) PDCF files. o One RI Server able to package PDCF • State: o The RI has packaged a **multi-track 3GP** file into a non-streamable PDCF. o The DRM Agent has a valid RI Context with the RI. o The RI has created a RO that grants permission to use only one of the tracks in the PDCF (eg. the audio track only). The RO is stateless or there is no same entry in the DRM Agent replay cache.
Test Procedure	1. The user requests the RO for the PDCF 2. The user downloads the PDCF and tries to play it.
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent 2. The DRM agent grants access to the PDCF according to the issued RO. Only one track of the PDCF should be rendered (e.g. audio) as per the issued RO.

6.18.6 Group RO for PDCF

Test Case ID	DRM-2.1-int-80
Test Object	DRM Agent, RI Server
Test Case Description	To test the behaviour in the presence of a group RO for a PDCF, using the GroupID mechanism.
Specification Reference	[DRMCF-v2.0] Sections 5.2.1, 5.2.3.1 and 7.1
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-30
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render 3GP (or 3GP2) PDCF files. o One RI Server able to package PDCF • State: o The DRM Agent has a valid RI Context with the RI. o The RI has a 3GP (or 3GP2) file packaged as a non-streamable PDCF. The PDCF contains a Group ID box in the ExtendedHeaders. o There are no existing rights on the device for the PDCF to be streamed. o A RO is to be delivered for this group. The RO is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The user requests the Group RO for the PDCF 2. The user downloads the PDCF and tries to play it.
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the Group RO is delivered to the DRM agent. 2. The user is allowed to play the PDCF and the player is able to render it in accordance with the issued Group RO. The PDCF contains an OMADRMGroupID box ExtendedHeader.

6.18.7 Domain RO in the PDCF

Test Case ID	DRM-2.1-int-81
Test Object	DRM Agent, RI Server
Test Case Description	To test a situation where a Domain RO is included in a PDCF.
Specification Reference	[DRMCF-v2.0] Sections 5.2.1, 5.2.4 and 7.1
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-31, DRM-DCF-CLI-33
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render 3GP (or 3GP2) PDCF files. o One RI Server able to package PDCF • State: o The RI has a 3GP (or 3GP2) file packaged as a non-streamable PDCF. The PDCF contains a Domain RO within the MutableDRMInformation box, after the “Movie Box”. o The DRM Agent has a valid RI Context with the RI. o The DRM Agent has a Domain Context with the RI under test.
Test Procedure	1. The user downloads the PDCF and tries to play it.
Pass-Criteria	1. The Device correctly processes the received PDCF and it is able to separate the content and the Domain RO. The user is allowed to play the content and the player is able to render it in accordance with the embedded Domain RO.

6.19 Streamable PDCF

6.19.1 One-track Streaming PDCF

Test Case ID	DRM-2.1-int-82
Test Object	DRM Agent, RI Server
Test Case Description	To test packaging, streaming and rendering of a one-track PDCF.
Specification Reference	[DRMCF-v2.0] Section 7.2.1, 7.2.2
SCR Reference	[DRMCF-v2.0] DRM-DCF-CLI-2, DRM-CLI-DCF-25, DRM-CLI-DCF-28
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render streamable 3GP and/or 3GP2 PDCF files. o One RI Server able to package streamable PDCF. o A streaming server to stream the PDCF file • State: o The RI has a one-track 3GP (or 3GP2) file to be streamed as a PDCF. o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The user requests the RO for the PDCF 2. The user initiates the streaming. The server sends the Session Descriptor (SDP) with and the Encryption Parameter set to AES128CTR. 3. The PDCF is streamed and rendered.
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent. 2. The device retrieves the SDP file (the Encryption Parameter is set to AES128CTR). Streaming is initiated. 3. The user is allowed to play the streamed track and the player is able to render it in accordance with the issued RO.

6.19.2 SDP initiated RO acquisition

Test Case ID	DRM-2.1-int-83
Test Object	DRM Agent, RI Server
Test Case Description	To test SDP intitated Rights Object acquisition; and the subsequence packaging, streaming and rendering of a one-track PDCF (*SelectiveEncryption* enabled).
Specification Reference	[DRMCF-v2.0] Section 7.2.2
SCR Reference	[DRMCF-v2.0] DRM-CLI-DCF-25, DRM-CLI-DCF-27
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render streamable 3GP and/or 3GP2 PDCF files. o One RI Server able to package streamable PDCF. o A streaming server to stream the PDCF file • State: o The RI has a one-track 3GP (or 3GP2) file to be streamed as a PDCF. o The DRM Agent has a valid RI Context with the RI. o There are no existing rights on the device for the PDCF to be streamed. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent.
Test Procedure	1. The user initiates the streaming. The server sends the Session Descriptor (SDP) with Selective Encryption set to 1 and the Encryption Parameter set to AES128CTR. 2. User requests a RO for the PDCF. 3. If an xHTML page is presented the user selects a trigger to download. 4. User resumes the streaming session. The PDCF is streamed and rendered.
Pass-Criteria	1. The device retrieves the SDP file. The DRM agent realises that there are no rights for the content (associated by the ContentID in the SDP file). The DRM Agent asks for user consent to acquire rights for the content. 2. The DRM Agent connects to the SDP RightsIssuerURL. This either returns an RO Acquisition trigger; or an xHTML page which allows the user to obtain a ROAP trigger. 3. The RI and DRM Agent successfully complete the 2-pass RO Acquisition Protocol and the RO is delivered successfully to the DRM Agent. 4. The streaming session is resumed, and the user is allowed to play the streamed track and the player is able to render it in accordance with the issued RO.

6.19.3 Multi-track PDCF

Test Case ID	DRM-2.1-int-84
Test Object	DRM Agent, RI Server
Test Case Description	To test a multi-track PDCF streamable packaging and rendering, *SelectiveEncryption enabled*. Some packets are encrypted and others are unencrypted.
Specification Reference	[DRMCF-v2.0] Section 7.2.1, 7.2.2
SCR Reference	[DRMCF-v2.0] DRM-CLI-DCF-23 (or DRM-CLI-DCF-24), DRM-CLI-DCF-25, DRM-CLI-DCF-28
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal with a DRM Agent integrated with a player which is able to render streamable 3GP and/or 3GP2 PDCF files. o One RI Server able to package streamable PDCF. o A streaming server to stream the PDCF file • State: o The RI has a **multi-track** 3GP (or 3GP2) file to be streamed as a PDCF. o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered grants usage rights for all tracks in the PDCF. The RO is stateless or there is no same entry in the DRM Agent replay cache.
Test Procedure	1. The user requests the RO for the PDCF 2. The user initiates the streaming. The server sends the Session Descriptor (SDP) with Selective Encryption set to 1 and the Encryption Parameter set to AES128CTR. 3. The PDCF is streamed and rendered. Some packets are encrypted, others are not.
Pass-Criteria	1. The DRM agent and the RI successfully complete a 2-pass ROAP and the RO is delivered to the DRM agent. 2. The device retrieves the SDP file (the Selective Encryption is set to 1 and the Encryption Parameter is set to AES128CTR). Streaming is initiated. 3. The user is allowed to play the streamed tracks and the player is able to render them in accordance with the issued RO.

6.20 HTTP and OTA Download

6.20.1 Multipart/related delivery of DCF and ROAP Trigger

Test Case ID	DRM-2.1-int-85
Test Object	DRM Agent, RI Server
Test Case Description	To test the usage of the multipart/related MIME format to deliver a DCF and a ROAP Trigger together in a single response.
Specification Reference	[DRMCF-v2.0] Section 14.2.3 and Annex G.2.1
SCR Reference	DRM-CLI-CMN-061
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal that has a DRM Agent integrated with a browser that supports multipart/related MIME types. o One RI Server and a Content Issuer that supports combined delivery of DCFs and ROAP Triggers in a multipart/related message. • State: o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. o A DCF is available on the Content Issuer for delivery to the device
Test Procedure	1. User initiates the download of a DCF. The content issuer uses a multipart/related response to deliver the DCF and an RO Acquisition trigger in a single response. 2. User attempts to play the DCF
Pass-Criteria	1. The DRM Agent saves the DCF. The DRM Agent the RI complete 2-pass RO Acquisition. 2. The DRM agent allows the user to use the DCF in accordance with the issued RO.

6.20.2 OTA Download Separate Delivery Method

Test Case ID	DRM-2.1-int-86
Test Object	DRM Agent, RI Server
Test Case Description	To test the usage of OMA Download OTA 1.0 co-delivery method to deliver a Download Descriptor and a ROAP Trigger in a single multipart. The download descriptor nextURL is used to deliver the content. Installation notification is confirmed
Specification Reference	[DRMCF-v2.0] Section 14.3.1.2 and Annex G.3.1
SCR Reference	DRM-CLI-CMN-064 DRM-SERVER-033
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal that supports OMA OTA Download 1.0 [DLOTA] and a DRM Agent. o One RI Server and a Content Issuer that supporta OMA OTA Download 1.0 • State: o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. o A DCF is available on the Content Issuer for delivery to the device o There is one download descriptor (DD1) with the following parameters: ▪ ObjectURI points to the DCF on the Content Issuer ▪ Install-notification URI is setup ▪ NextURL points to the next download descriptor DD2 o There is another download descriptor (DD2) with the following parameters: ▪ ObjectURI points to a ROAP Trigger within a multipart/related response ▪ Install-notification URI is setup ▪ NextURL points to an xHTML page
Test Procedure	1. User initiates the download of DD1 2. User gives consent to download the DCF. 3. A multipart/related response is returned from DD1.NextURL. The first part is DD2 and the second part is an ROAcquisition Trigger. 4. User attempts to play the DCF
Pass-Criteria	1. DD1 is delivered to the device. Device ask the user for consent to download the DCF. The correct MIME type of the protected content is displayed. 2. The Download agent downloads the DCF from the Content Issuer. After the download is completed the install-notification is sent and the next URL is contacted. 3. The device does NOT ask for user confirmation before processing the DD2. The ROAP Trigger is processed and the DRM Agent and the RI complete 2-pass RO Acquisition. After the RO Acquisition the device sends the install notification. 4. The DRM agent allows the user to use the DCF in accordance with the issued RO.

6.20.3 OTA Download Combined Delivery method

Test Case ID	DRM-2.1-int-87
Test Object	DRM Agent, RI Server
Test Case Description	To test the processing of a ROAP response PDU contained within in a multipart/related message-body. Additionally tests the usage of OMA Download OTA 1.0 co-delivery method to deliver a Download Descriptor and a ROAP Trigger in a single multipart.
Specification Reference	[DRMCF-v2.0] Sections 14.2.4, 14.3.1.3 and Annex G.3.2
SCR Reference	DRM-CLI-CMN-061, DRM-CLI-CMN-064 DRM-SERVER-033
Tools	None
Test Code	None
Preconditions	• Equipment: o One terminal that supports OMA OTA Download 1.0 [DLOTA] and a DRM Agent. o One RI Server and a Content Issuer that supporta OMA OTA Download 1.0 • State: o The DRM Agent has a valid RI Context with the RI. o A RO to be delivered is stateless or there is no same entry in replay cache on the DRM Agent. o A DCF is available on the Content Issuer for delivery to the device o There is a download descriptor (DD) with the following parameters: ▪ ObjectURI points to a ROAP Trigger within a multipart/related response ▪ Install-notification URI is setup ▪ NextURL points to an xHTML page • Alternative Execution: o In the case of devices or RIs that do not support OMA OTA Download then the ROAP Trigger can be delivered directly via HTTP download. The primary point of the test is to test the inclusion of a ROAP PDU in the multipart-response.
Test Procedure	1. User initiates the download of the DD. A multipart/related response is sent to the device where the first part is the DD and the second part is an RO Acquisition trigger. 2. RI sends a multipart/related response containing a DCF and an RO Response PDU. 3. User tries to use the DCF
Pass-Criteria	1. The user should NOT be asked for consent. The DRM agent sends an RO Request message to the RI. 2. The DRM agent receives the DCF, stores it, and processes the received rights object. 3. The DRM Agent allows the user to use the DCF in accordance with the issued RO.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version –or- No previous version within OMA

A.2 Draft/Candidate Version 2.1 History

Document Identifier	Date	Sections	Description
Draf t Versions OMA_ETS-DRM_INT-V2_1	08 May 2007	all	Initial draft: OMA-IOP-BRO-2007-0066R01-INP_DRM_2.1_Interoperability_ETS
	12 Jul 2007	2, 3	Editorial corrections of text styles and sorting of ref, def and abbr lists.
Candidate Versions OMA-ETS-DRM_INT-V2_1	07 Aug 2007	All	Status changed to Candidate by TP TP ref # OMA-TP-2007-0288-INP_ETS_DRM_INT_V2_1_for_Candidate_Approval