Enabler Test Report

Digital Rights Management v2.0

OMA TestFest (September 2006)
Version 22-Sep-2006

Open Mobile Alliance
OMA-Enabler_Test_Report-DRM-20-2006-09-22

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Contents

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1. Scope

This report describes the results from the testing carried out at OMA TestFest-16 (September 2006) concerning DRM version 2.0.

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2. References

2.1 Normative References

[OMAIOPPROC] OMA Interoperability Policy and Process, http://www.openmobilealliance.org/

[DRMEICS] Enabler Implementation Conformance Statement, OMA DRM 2.0 Client Enabler Release, 15-Decembre-2005, http://www.openmobilealliance.org/

Enabler Implementation Conformance Statement, OMA DRM 2.0 Server Enabler Release, 15-Decembre-2005, http://www.openmobilealliance.org/

[ERELD] "Enabler Release Definition for DRM Version 2.0" Open Mobile Alliance™. OMA-ERELD-DRM-v2_0. URL:http://www.openmobilealliance.org/

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

[DRM-v2.0] "DRM Rights Management". Open Mobile Alliance™. OMA-DRM-DRM-v2_0. URL:http://www.openmobilealliance.com/.

[DRMCF-v2.0] "DRM Content Format". Open Mobile Alliance™. OMA-DRM-DCF-v2_0. URL:http://www.openmobilealliance.com/.

[DRMREL-v2.0] "DRM Rights Expression Language". Open Mobile Alliance™. OMA-DRM-REL-v2_0. URL:http://www.openmobilealliance.com/.

[EPTR] Enabler Product Test Report

[ETP] Enabler Test Plan

[ETS] OMA-ETS-DRM-Interoperability-V2_0-20060615-C.doc Enabler Test Specification [ETS]

2.2 Informative References

[OMADICT] Dictionary for OMA Specification, OMA-Dictionary
http://www.openmobilealliance.org/

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3. Terminology and Conventions

3.1 Conventions

This is an informative document, i.e. the document does not intend to contain normative statements.

3.2 Definitions

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

3.3 Abbreviations

CEK	Content Encryption Key
DCF	DRM Content Format
DRM	Digital Rights Management
HTTP	Hypertext Transfer Protocol
MIME	Multipurpose Internet Mail Extensions
OMA	Open Mobile Alliance
REL	Rights Expression Language
RI	Rights Issuer

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RO	Rights Object
ROAP	Rights Object Acquisition Protocol
SCR	Static Conformance Requirement
WAP	Wireless Application Protocol
WSP	Wireless Session Protocol

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4. Summary

This report gives details of the testing carried out during the OMA TestFest-16 (September 2006) for DRM v2.0.

The report is compiled on behalf of OMA by the OMA Trusted Zone.

The work and reporting has followed the OMA IOP processes and policies [OMAIOPPROC].

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5. Test Details

5.1 Documentation

This chapter lists the details of the enabler and any documentation, tools or test suites used to prove the enabler.

Date:	8th to 15th September 2006
Location:	Düsseldorf, Germany
Enabler:	DRM v2.0
Process:	OMA Interoperability Policy and Process [OMAIOPPROC]
Type of Testing	Interoperability Testing
Products tested:	Client-to-server
Test Plan:	DRM Enabler Test Plan [ETP]
Test Specification:	DRM Enabler Test Specification [ETS]
Test Tool:	None
Test Code:	None
Type of Test event:	TestFest
Participants:	CoreMedia, Irdeto Mobile Inc., Nokia Ltf, Philips Software, Sony Ericsson, Viaccess SA *plus three other participants*
Number of Client Products:	8
Participating Technology Providers for clients:	CoreMedia,, Irdeto Mobile Inc., Nokia Ltf, Philips Software, Sony Ericsson, Viaccess SA *plus two other clients*
Number of Server Products:	3
Participating Technology Providers for servers:	CoreMedia, Viaccess SA plus *one other server*
Number of test sessions completed:	20

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5.2 Test Case Statistics

5.2.1 Test Case Summary

This chapter gives an overview of the result for all test cases included in [ETS].

The following status is used in the tables below:

- **Total number of TCs**: Used in the summary to indicate how many test cases there are in total.
- **Number of passed:** Used in the summary to indicate how many of the total test cases successfully passed.
- **Number of failed:** Used in the summary to indicate how many of the total test cases failed.
- **Number of N/A:** Used in the summary to indicate how many of the total test cases have not been run due to one of the implementations not supporting the functionality required to run this test case.
- **Number of OT:** Used in the summary to indicate how many of the total test cases have not been run due to no time to run the test case.
- **Number of INC:** Used in the summary to indicate how many of the total test cases have not been run due to functionality not being tested due to an error in the implementation or other functionality that is required to run this test case.

Test Section:	Number of test sessions:	Total number of TCs:	Number of Passed:	Number of Failed:	Number of N/A:	Number of OT:	Number of INC:	Total:
Client to Server TCs	20	65	527	48	469	246	10	1300
Total	**20**	**65**	**527**	**48**	**469**	**246**	**10**	**1300**

Table 1. Test Summary Table

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5.2.2 Test Case List

This chapter lists the statistics for all test cases included in [ETS].

The following status is used in the tables below:

- **No. of runs(R):** Used to indicate how many times the test cases have been run in total.
- **No. of passed(P):** Used to indicate how many times the test case has been run with successful result.
- **No. of failed(F):** Used to indicate how many times the test case has been run with failed result
- **No. of OT(O):** Used to indicate how many times the test case has not been run due to no time available.
- **No. of INC(I):** Used to indicate how many times the test case has not been run due to errors being found in other functionality required for running this test case.
- **PR:** Used to indicate if any PRs (Problem Reports) have been issued during testing.
- **Note:** Used to indicate the cause of Inconclusive or Fail verdicts.

Tests for DRM Enabler TestFest Taken From OMA-ETS-DRM-V2_0-20060615-C

Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-1	To test “Forward Lock” DRM 1.0 functionality.	18	15	1	2	0		
DRM-2.0-int-2	To test DRM 1.0 “Combined Delivery” functionality.	17	15	1	1	0		
DRM-2.0-int-3	To test DRM 1.0 “Separate Delivery” functionality in case the DCF file indicates that the server intends to push the rights object separately.	17	11	1	4	1		
DRM-2.0-int-4	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.	20	17	1	1	1		
DRM-2.0-int-5	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.	20	16	1	3	0		
DRM-2.0-int-6	RO Acquisition without existing RI Context	20	17	0	3	0		

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Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-7	1-pass RO Acquisition with existing RI Context.	16	7	5	3	1		
DRM-2.0-int-8	1-pass RO Acquisition without existing RI Context.	16	7	5	3	1		
DRM-2.0-int-9	Server-initiated Device Time Synchronization	19	13	0	6	0		
DRM-2.0-int-10	To test a situation where an RO is included in the DCF.	18	10	2	6	0		
DRM-2.0-int-11	To test behaviour in the presence of a group RO for multiple DCFs, using the Group ID mechanism.	13	9	2	2	0		
DRM-2.0-int-12	To test behaviour in the presence of an individual RO for a content item which has a Group ID.	13	8	3	2	0		
DRM-2.0-int-13	To test behaviour in the presence of several rights objects for one piece of content.	20	14	0	6	0		
DRM-2.0-int-14	To test behaviour in the presence of several rights objects for one piece of content.	20	15	0	5	0		
DRM-2.0-int-15	To test DRM Agent's capability to process Multipart DCFs from the RI.	15	5	3	7	0	0030	
DRM-2.0-int-16	To test behaviour in the presence of multiple ROs for a multipart DCF.	15	7	1	7	0		
DRM-2.0-int-17	To test behaviour when different content items in a multipart DCF are associated with different groups	12	7	0	5	0		
DRM-2.0-int-18	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.	18	11	0	6	1		
DRM-2.0-int-19	To test the TransactionID mechanism in connection with Superdistribution.	12	6	0	6	0		
DRM-2.0-int-20	To test <display> and <print> permissions.	20	16	0	4	0		

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Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-21	To test <play> permission.	20	16	0	4	0		
DRM-2.0-int-22	To test <execute> permission.	20	12	0	8	0		
DRM-2.0-int-23	To test <count> constraint for a DCF.	20	17	0	3	0		
DRM-2.0-int-24	To test <timed-count> constraint for a DCF.	15	8	0	7	0		
DRM-2.0-int-25	To test <datetime> constraint for a DCF.	20	16	0	4	0		
DRM-2.0-int-26	To test <interval> constraint for a DCF.	20	16	0	4	0		
DRM-2.0-int-27	To test <accumulated> constraint for a DCF.	15	9	0	6	0		
DRM-2.0-int-28	To test <individual> constraint for a DCF.	14	9	0	5	0		
DRM-2.0-int-29	To test <system> constraint for a DCF.	15	5	3	7	0		
DRM-2.0-int-30	To test the effect of having multiple constraints.	20	13	2	5	0		
DRM-2.0-int-31	To test the REL Permission Model in the case that the rights include a stateful top level constraint.	18	12	1	5	0		
DRM-2.0-int-32	Initiate ROAP from DCF Preview Header with existing RI Context & domain name NOT in Domain Name Whitelist.	15	9	0	6	0		
DRM-2.0-int-33	Initiate ROAP from DCF Preview Header with existing RI Context & domain name in the Domain Name Whitelist.	15	9	0	6	0		
DRM-2.0-int-34	To test inheritance model when stateful constraints are involved.	14	9	0	5	0		
DRM-2.0-int-35	To test a case where the Parent Rights Object	14	8	1	5	0		
DRM-2.0-int-36	To test inheritance model when a child RO is a group RO	13	8	0	5	0		
DRM-2.0-int-37	Trigger-initiated domain join without existing RI Context	14	11	0	3	0		

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Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-38	Trigger-initiated domain join with valid RI Context and no existing Domain Context for this RI.	14	11	0	3	0		
DRM-2.0-int-39	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.	14	9	2	3	0		
DRM-2.0-int-40	Trigger-initiated domain join with valid RI Context and existing Domain Context for this RI RI-initiated domain generation upgrade	14	10	1	3	0		
DRM-2.0-int-41	Domain RO Acquisition with existing RI Context.	14	11	0	3	0		
DRM-2.0-int-42	To test delivering the DomainRO inside a DCF.	14	10	1	3	0		
DRM-2.0-int-43	To test if different devices related with the same domain are able to share DCFs.	14	7	2	3	2		
DRM-2.0-int-44	Device leaves a domain after receiving a LeaveDomain trigger.	14	9	2	3	0		
DRM-2.0-int-45	Initiate ROAP from DCF Silent Header with existing RI Context and domain name NOT in Domain Name Whitelist.	16	10	0	5	1		
DRM-2.0-int-46	Initiate ROAP from DCF Silent Header with existing RI Context and domain name NOT in Domain Name Whitelist.	16	10	0	5	1		
DRM-2.0-int-47	To test a local backup of content and rights object.	9	3	0	5	1		
DRM-2.0-int-48	Device registration and domain establishment for Unconnected Device.	4	2	0	2	0		
DRM-2.0-int-49	RO Acquisition with existing RI Context.	4	1	0	3	0		
DRM-2.0-int-50	Unconnected Device leaving domain.	4	1	0	3	0		
DRM-2.0-int-51	RO Acquisition without existing RI Context	4	0	1	3	0		

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Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-52	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).	6	2	1	3	0		
DRM-2.0-int-53	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.	11	9	0	2	0		
DRM-2.0-int-54	Tests the capability of the ROAP protocol to choose and communiate the correct RI public key in the case that a Rights Issuer has two RI certificates. This may reflect a scenario where a Rights Issuer support two PKI ecosystems.	7	5	0	2	0		
DRM-2.0-int-55	Tests the capability of the ROAP protocol to select and agree a common set of certificates during the registration protocol in the case that both the RI and DRM Agent each have two certificates. This may reflect a scenario where both the DRM Agent and a Rights Issuer support two PKI ecosystems.	6	4	0	2	0		
DRM-2.0-int-56	To test packaging and rendering of a one-track null-encrypted PDCF file (e.g 3GP audio).	3	0	1	2	0	0023 0024 0025 0026 0027 0028	
DRM-2.0-int-57	To test packaging and rendering of a one-track encrypted PDCF (e.g audio file).	3	0	1	2	0		
DRM-2.0-int-58	To test packaging and rendering of a multi-track encrypted PDCF (e.g. video and audio 3GP file).	3	0	1	2	0		
DRM-2.0-int-59	To test PDCF superdistribution, using the Transaction Tracking mechanism.	3	0	1	2	0		

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Test Case:	Test Case Description:	R	P	F	O	I	PR:	Note:
DRM-2.0-int-60	To test rendering of a multi-track encrypted PDCF where rights are only available for one of the tracks.	3	0	1	2	0		
DRM-2.0-int-61	To test packaging, streaming and rendering of a one-track PDCF with SelectiveEncryption disabled (all packets are encrypted).	2	0	0	2	0		
DRM-2.0-int-62	To test SDP intitated Rights Object acquisition; and the subsequence packaging, streaming and rendering of a one-track PDCF (SelectiveEncryption enabled).	2	0	0	2	0		
DRM-2.0-int-63	To test a multi-track PDCF streamable packaging and rendering, SelectiveEncryption enabled. Some packets are encrypted and others are unencrypted.	2	0	0	2	0		
DRM-2.0-int-64	To test the behaviour in the presence of a group RO for a PDCF, using the GroupID mechanism.	2	0	0	2	0		
DRM-2.0-int-65	To test a situation where a Domain RO is included in a PDCF.	2	0	0	2	0		

Table 2. Test Case Counts

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5.2.3 Problem Reports

During the activities for TestFest16, the following problem reports were generated relating to the test materials and test process:

PR Number	Affecting	Description	Test Case reference / Specification reference
0023	Specification	Meaning of plaintextLength in PDCF case is unclear	OMA-ETS-DRM-Interoperability-V2_0-20050630-A TC int-56; OMA-DRM-DCF-V2_0-20040715-C section 5.2.1.4
0024	Specification	Can PDCFs really have MDRI boxes	OMA-ETS-DRM-Interoperability-V2_0-20050630-A TC int-56; OMA-DRM-DCF-V2_0-20040715-C section 7.1 and 5.2.4
0025	Specification	What are the default values for the optional odaf box?	OMA-ETS-DRM-V2_0-20050315-A TC int 56; OMA-DRM-DCF-V2_0-20040715-C section 7.1.3.2
0026	Specification	How to represent single bit values	OMA-ETS-DRM-Interoperability-V2_0-20050630-A TC int 56; OMA-DRM-DCF-V2_0-20040715-C sections 7.1.3.2 and 7.1.4
0027	Test Suite Problem	Test int-56 requires selectiveEncryption to be 0	OMA-ETS-DRM-Interoperability-V2_0-20050630-A TC int-56; OMA-DRM-DCF-V2_0-20040715-C section 7.1.3.2
0028	Specification	No value of reserved bits in OMADRMAUFormatBox given.	OMA-ETS-DRM-Interoperability-V2_0-20050630-A TC int-56; OMA-DRM-DCF-V2_0-20040715-C section 7.1.3.2
0029	Specification	confusion about the Access Unit Format header vs. box	OMA-DRM-DCF-V2_0-20040715-C section 7.1.4
0030	Test Suite Problem	An issue came up during TestFest 16 where a client and a server had a disagreement on what 'single RO' for a multipart DCF means. The client team maintained 'single RO' refers to a single 'protectedRO' node, with multiple assets to give rights for each content object in the DCF. The server team argued that 'single RO' could also mean a single roResponse node, but it could contain multiple 'protectedRO' nodes.	OMA-ETS-DRM-Interoperability-V2_0-20050630-A

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Full details of all Problem Reports can be found at:

http://www.openmobilealliance.org/OMA-Problem-Reporting-System.html

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6. Confirmation

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OMA Trusted Zone

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Appendix A. Change History (Informative)

Type of Change	Date	Section	Description
Initial Version	22nd September 2006	All	First Version for TestFest-16

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