Enabler Test Specification for DRM Conformance Right Issuer

Candidate Version 2.0 – 26 Sep 2006

Open Mobile Alliance

OMA-ETS-DRM_Conformance_Right_Issuer-V2_0-20060926-C

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1. Scope

This document describes in detail available RI conformance test cases for the OMA DRM V2.0 Enabler specification. These conformance test cases are aimed to verify the adherence to normative requirements described in the technical specifications.

The focus is on normative requirements that effect the security of the implementation. I.e. if not of these requirements are met, one or more illegal use cases will not fail. The result will be that someone may be able to access content although she is not legitimate to access it.

The OMA DRM V2.0 spec contains many mandatory (MUST, SHALL) or optional (SHOULD, MAY) conformance rules. The optional rules will not be covered by the conformance tests listed in this document.
The mandatory conformance rules are related to security or interoperability. Only the security related rules will be covered by the conformance tests listed in this document.

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2. References

2.1 References

[DRMCF-v2.0] "DRM Content Format". Open Mobile Alliance™. OMA-DRM-DCF-V2_0 (March 2006 approved release) URL:http://www.openmobilealliance.com/.

[DRMREL-v2.0] "DRM Rights Expression Language". Open Mobile Alliance™. OMA-DRM-REL-V2_0 (March 2006 approved release) URL:http://www.openmobilealliance.com/.

[DRM-v2.0] "DRM Rights Management". Open Mobile Alliance™. OMA-DRM-DRM-v2_0 (March 2006 approved release) URL:http://www.openmobilealliance.com/.

[ETP] "Enabler Test Plan for DRM 2.0" OMA-ETP-DRM-V2_0-20050818-A URL:http://www.openmobilealliance.com/

[OCSP] Myers, M., Ankney, R., Malpani, A., Galperin, S. and C. Adams, "Internet X.509 Public Key Infrastructure: Online Certificate Status Protocol - OCSP", RFC 2560, June 1999. http://www.ietf.org/rfc/rfc2560.txt

[OCSP-MP] OMA Online Certificate Status Protocol (profile of [OCSP]) V 1.0, 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

[ETS] Enabler Test Specification for DRM 2.0 OMA-ETS-DRM-V2_0-Interoperability URL:http://www.openmobilealliance.com/.

[Conf-Client] Enabler Test Specification for DRM 2.0 OMA-ETS-DRM-V2_0-Conformance –Client URL:http://www.openmobilealliance.com/

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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.

3.2 Definitions

See [DRM-v2.0], [DRMCF-v2.0] and [DRMREL-v2.0].

3.3 Abbreviations

See [DRM-v2.0], [DRMCF-v2.0] and [DRMREL-v2.0].

CRL	Certificate Revocation List
DCF	DRM Content Format
DRM	Digital Rights Management
REL	Rights Expression Language
TA	Trust Anchor

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4. Introduction

This document describes in detail conformance test cases for the OMA DRM V2.0 Enabler specification as specified in [DRM-v2.0], [DRMCF-v2.0] and [DRMREL-v2.0]. These conformance test cases are aimed to verify the adherence to normative requirements described in the technical specifications. Only test cases for the Right Issuer are listed in this document.

The OMA DRM V2.0 specification contains many mandatory (MUST, SHALL) or optional (SHOULD, MAY) requirements. The optional requirements will not be covered by the conformance tests listed in this document.

The Testcases related to IOP will be covered in [ETS]. The conformance tests for the DRM Agent will be covered in [Conf-Client].

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5. General setup for RI Conformance tests

This section gives a specification of the setup and system parameters that apply to all RI conformance tests.

5.1 Public Key Infrastructure for Rights Issuer conformance tests

In order to successfully conduct conformance tests, Test server and DRM Agent (DUT) have to agree upon some system parameters, generally referred to as Public Key Infrastructure (PKI). Normally this PKI is defined by the Trust Anchor.

All RI Conformance Tests shall be conducted with the PKI as specified in [ETP].

5.2 Discard History

In order to prevent any influence of previous communication each conformance test shall start with a virgin DRM agent and Rights Issuer. I.e. all cashed information like RI context and OCSP responses shall be deleted before starting the test.

5.3 Freshness

In some test cases, the current DRM time will be compared with another time value, e.g. expiration time. In a practical system, a certain margin will be allowed. This is in order to allow for some deviation of DRM time in the device from the actual time.
For these conformance tests this margin shall be set to 0 seconds.

5.4 Cryptographic algorithms

The cryptographic algorithms that will be used during all the conformance tests are the default algorithms as defined in [DRM-v2.0].

5.5 Version

Whenever applicable the value of the <version> element will be 2.0.

5.6 Key Identifier

Whenever applicable, the value of the key identifier will be the SHA-1 value of the public key.

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6. DRM Conformance Test Cases

6.1 ROAP Related Conformance Tests

6.1.1 Missing Signature in ROAP Request

Testcase ID	DRM-2.0-con-s-1
Test Object	RI
Test Case Description	Missing signature in ROAP Request
Specification Reference	[DRMDRM] 5.4.2.3.1 The RI MUST verify the signature on the ROAP-RegistrationRequest message. [DRMDRM] 5.4.3.1.1 The RI MUST verify the signature on the ROAP-RORequest message. [DRMDRM] 5.4.4.1 The RI MUST verify the signature on the ROAP-Join Domain Request message. [DRMDRM] 5.4.4.3 The RI MUST verify the signature on the ROAP-Leave Domain Request message. *SignatureError* indicates that the RI could not verify the Device's signature. This error is only valid in the following messages: ROAP-RegistrationResponse, ROAP-ROResponse, ROAP-JoinDomainResponse, and ROAP-LeaveDomainResponse.
SCR Reference	DRM-SERVER-007
Preconditions	PKI : Model A
Test Procedure	- The RI receives a ROAP Request that does not contain a signature.
Pass-Criteria	- The RI detects the absence of the signature returns a response with status = 'Malformed Request'.

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.2 Invalid Signature in ROAP Request

Testcase ID	DRM-2.0-con-s-2
Test Object	RI
Test Case Description	Invalid signature in ROAP Request
Specification Reference	[DRMDRM] 5.4.2.3.1 The RI MUST verify the signature on the ROAP-RegistrationRequest message. [DRMDRM] 5.4.3.1.1 The RI MUST verify the signature on the ROAP-RORequest message. [DRMDRM] 5.4.4.1 The RI MUST verify the signature on the ROAP-Join Domain Request message. [DRMDRM] 5.4.4.3 The RI MUST verify the signature on the ROAP-Leave Domain Request message. *SignatureError* indicates that the RI could not verify the Device's signature. This error is only valid in the following messages: ROAP-RegistrationResponse, ROAP-ROResponse, ROAP-JoinDomainResponse, and ROAP-LeaveDomainResponse.
SCR Reference	DRM-SERVER-007
Preconditions	PKI : Model A
Test Procedure	- The RI receives a ROAP Request that contains an invalid signature.
Pass-Criteria	- The RI detects the absence of the signature returns a response with status = ‘signature error’.

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.3 Invalid signature in certificate chain of ROAP requests

Testcase ID	DRM-2.0-con-s-3		
Test Object	RI		
Test Case Description	Invalid signature in certificate chain of ROAP request		
Specification Reference	[DRMDRM] 6.1 For each request signed by the Device that requires the RI to perform substantial or security-related processing, the RI MUST check the signature, expiry date (validity), and the revocation status of the Device certificate.		
SCR Reference	DRM-SERVER-007		
Preconditions	PKI : Model A State: - RI server does not have validation data for the certificate chain.		
Test Procedure	- RI server receives a ROAP request with a certificate chain with two certificates (one for the device and one for an intermediate CA). The Certificate for the intermediate CA has an invalid signature.		
Pass-Criteria	- RI sends a Response with Status = ”InvalidCertificateChain”.		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.4 cert. chain of ROAP requests – UTC time – NotBefore

Testcase ID	DRM-2.0-con-s-4
Test Object	RI
Test Case Description	Certificate chain of ROAP Request. Condition for Validity/NotBefore not met. Time is expressed in UTC.
Specification Reference	[DRMDRM] 6.1 For each request signed by the Device that requires the RI to perform substantial or security-related processing, the RI MUST check the signature, expiry date (validity), and the revocation status of the Device certificate.
SCR Reference	DRM-SERVER-015, DRM-SERVER-016, DRM-SERVER-018
Preconditions	PKI : Model A State: - RI server does not have validation data for the certificate chain.
Test Procedure	- RI server receives a ROAP request with a certificate chain with two certificates (one for the device and one for an intermediate CA). The Certificate for the intermediate CA has a Validity 'NotBefore' condition that is not met. Time is expressed in UTC.
Pass-Criteria	- RI sends a Response with Status = "InvalidCertificateChain".

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.5 cert. chain of ROAP requests – Gen. time – NotAfter

Testcase ID	DRM-2.0-con-s-5		
Test Object	RI		
Test Case Description	Certificate chain of ROAP Request. Condition for Validity/NotAfter not met. Time is expressed in Generalised time.		
Specification Reference	[DRMDRM] 6.1 For each request signed by the Device that requires the RI to perform substantial or security-related processing, the RI MUST check the signature, expiry date (validity), and the revocation status of the Device certificate.		
SCR Reference	DRM-SERVER-015, DRM-SERVER-016, DRM-SERVER-018		
Preconditions	PKI : Model A State: - RI server does not have validation data for the certificate chain.		
Test Procedure	- Necessary steps to prepare the following step. - RI server receives a ROAP request with a certificate chain with two certificates (one for the device and one for an intermediate CA). The Certificate for the intermediate CA has a Validity 'NotAfter' condition that is not met. Time is expressed in Generalised time.		
Pass-Criteria	- RI sends a Response with Status = "InvalidCertificateChain".		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.6 Revoked Device certificate in ROAP requests

Testcase ID	DRM-2.0-con-s-6		
Test Object	RI		
Test Case Description	Revoked Device Certificate in ROAP request		
Specification Reference	[DRMDRM] 6.1 For each request signed by the Device that requires the RI to perform substantial or security-related processing, the RI MUST check the signature, expiry date (validity), and the revocation status of the Device certificate.		
SCR Reference	DRM-SERVER-007, DRM-SERVER-015, DRM-SERVER-016, DRM-SERVER-018		
Preconditions	PKI : Model A State: - RI server does not have validation data for the certificate chain.		
Test Procedure	- RI server receives a ROAP request with a certificate chain with two certificates (one for the device and one for an intermediate CA). The Device Certificate has been revoked.		
Pass-Criteria	- RI sends a Response with Status = ”InvalidCertificateChain”.		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.7 Missing Session ID in registration request

Testcase ID	DRM-2.0-con-s-7		
Test Object	RI		
Test Case Description	Missing Session ID in registration request		
Specification Reference	[DRMDRM] 5.4.2.3.1 *Session ID* SHALL be identical to the *Session ID* parameter of the preceding ROAP-RIHello message, otherwise the RI SHALL terminate the Registration protocol.		
SCR Reference	DRM-SERVER-007, DRM-SERVER-015		
Preconditions	PKI : Model A		
Test Procedure	- The RI server receives a Registration request message without session ID.		
Pass-Criteria	- RI terminates the registration protocol and responds with status = 'MalformedRequest' - The RI terminates the Registration Protocol		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.8 Invalid Session ID in registration request

Testcase ID	DRM-2.0-con-s-8		
Test Object	RI		
Test Case Description	Invalid Session ID		
Specification Reference	[DRMDRM] 5.4.2.3.1 *Session ID* SHALL be identical to the *Session ID* parameter of the preceding ROAP-RIHello message, otherwise the RI SHALL terminate the Registration protocol.		
SCR Reference	DRM-SERVER-004, DRM-SERVER-007, DRM-SERVER-015		
Preconditions	PKI : Model A		
Test Procedure	- The RI Server receives a Registration request message with invalid session id.		
Pass-Criteria	- The RI server terminates the registration protocol and responds with status = 'Abort' - The RI terminates the Registration Protocol		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.9 Inaccurate DRM Time in Registration request

Testcase ID	DRM-2.0-con-s-9		
Test Object	RI		
Test Case Description	Inaccurate DRM Time in Registration Request		
Specification Reference	[DRMDRM] 6.3 An RI, which receives a ROAP-RegistrationRequest, and detects that the Device's time as specified in the request is inaccurate, MUST send an OCSP request to its responder, and include the nonce sent by the Device in the OCSP request. The nonce-based OCSP response returned from the OCSP responder MUST be included in the RegistrationResponse message sent back to the Device.		
SCR Reference	DRM-SERVER-015		
Preconditions	PKI : Model A - The Device DRM Time is different from the RI time		
Test Procedure	- RI Server receives a Registration request with inaccurate DRM Time.		
Pass-Criteria	- RI server sends a Registration Response with (fresh) nonce-based OCSP response(s).		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.10 Previous Reg. Response with Status ≠ Success

Testcase ID	DRM-2.0-con-s-10		
Test Object	RI		
Test Case Description	Registration Response has status ≠ success		
Specification Reference	[DRMDRM] 5.3.6 Upon transmission or receipt of a message for which Status is not "Success", the default behavior, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. RI systems and Devices are required to delete any session-identifiers, nonces, keys, and/or secrets associated with a failed run of the ROAP protocol.		
SCR Reference	DRM-SERVER-004		
Preconditions	PKI : Model A State: - RI server sends a Registration Response with status ≠ success		
Test Procedure	- DRM agent sends again a registration request without first starting a new 4-pass ROAP protocol by sending DeviceHello.		
Pass-Criteria	- RI server refuses the registration request because it has terminated the 4-pass ROAP protocol.		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.11 Inaccurate DRM Time in ROAP request

Testcase ID	DRM-2.0-con-s-11		
Test Object	RI		
Test Case Description	Inaccurate DRM Time in RO Request		
Specification Reference	[DRMDRM] 6.3 An RI, which receives a ROAP-RORequest or a ROAP-JoinDomainRequest, and detects that the Device's DRM Time as specified in the request is inaccurate, SHALL respond with the status code DeviceTimeError.		
SCR Reference	DRM-SERVER-016, DRM-SERVER-018		
Preconditions	PKI : Model A - The Device DRM Time is different from the RI time - There is a valid RI Context between the RI and the Device		
Test Procedure	- The RI receives a ROAP Request that contains an invalid DRM Time.		
Pass-Criteria	- The RI detects the invalid DRM Time and responds with status code DeviceTime Error.		
Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.12 Nonce generation on RI without system shutdown

Testcase ID	DRM-2.0-con-s-12		
Test Object	RI		
Test Case Description	Nonce Generation without system shutdown		
Specification Reference	[DRMDRM] 5.3.10 For each ROAP message that requires a nonce element to be sent, a fresh nonce SHALL be generated randomly each time.		
SCR Reference	DRM-SERVER-003		
Preconditions	PKI : Model A		
Test Procedure	- The RI Server sends a ROAP Request with RI Nonce. This is repeated 5 times.		
Pass-Criteria	- The nonces generated by the RI Server are all different.		
Test Case Deployment			
a	Device Hello processing	**c**	Join Domain Request processing
	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.13 Nonce generation on RI with system shutdown

Testcase ID	DRM-2.0-con-s-13		
Test Object	RI		
Test Case Description	Nonce Generation with system shutdown		
Specification Reference	[DRMDRM] 5.3.10 For each ROAP message that requires a nonce element to be sent, a fresh nonce SHALL be generated randomly each time.		
SCR Reference	DRM-SERVER-003		
Preconditions	PKI : Model A		
Test Procedure	- The RI Server is shut down and powered up. - *Necessary steps to prepare the following step.* - The RI Server sends a ROAP Request with RI Nonce. - The last two steps are repeated 5 times.		
Pass-Criteria	- The nonces generated by the RI Server are all different.		
Test Case Deployment			
a	Device Hello processing	**c**	Join Domain Request processing
	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.14 Session ID generation

Testcase ID	DRM-2.0-con-s-14
Test Object	RI
Test Case Description	Session ID Generation
Specification Reference	[DRMDRM] 5.4.2.2.1 *Session ID* is a protocol session identifier set by the RI. This allows for several, concurrent, RI-Device sessions.
SCR Reference	DRM-SERVER-003
Preconditions	PKI : Model A
Test Procedure	The RI Server receives a Device Hello messages and responds with a RI Hello message with a Session ID. - This is repeated 5 times.
Pass-Criteria	- The Session ID's generated by the RI server are all different.

Test Case Deployment			
a	Device Hello processing		

6.1.15 ROAP Trigger Integrity

Testcase ID	DRM-2.0-con-s-15
Test Object	RI
Test Case Description	ROAP Trigger Integrity
Specification Reference	[DRMDRM] 5.2.1
SCR Reference	DRM-SERVER-011
Preconditions	PKI : Model A
Test Procedure	- The RI generates a ROAP Trigger
Pass-Criteria	- The ROAP Trigger is correctly formed, with mandatory elements - The MIME type for the ROAP Trigger is "application/vnd.oma.drm.roap-trigger+xml"

Test Case Deployment			
a	Registration Request Trigger	**c**	Join Domain Trigger
b	RO Acquisition Trigger	**d**	Leave Domain Trigger

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6.1.16 Leave Domain Trigger Integrity

Testcase ID	DRM-2.0-con-s-16		
Test Object	RI		
Test Case Description	Leave Domain Trigger Integrity		
Specification Reference	[DRMDRM] 5.2.1		
SCR Reference	DRM-SERVER-011		
Preconditions	PKI : Model A		
Test Procedure	- The RI generates a Leave Domain Trigger		
Pass-Criteria	- The Leave Domain Trigger is correctly formed, with mandatory elements (nonce, signature and enckey elements) - The MIME type for the Leave Domain Trigger is "application/vnd.oma.drm.roap-trigger+xml"		
Test Case Deployment			
	Registration Request Trigger		Join Domain Trigger
	RO Acquisition Trigger	**a**	Leave Domain Trigger

6.1.17 Missing Nonce in ROAP Request

Testcase ID	DRM-2.0-con-s-17		
Test Object	RI		
Test Case Description	Missing Nonce in ROAP Request		
Specification Reference	[DRMDRM] 5.3.4 The ***triggerNonce*** attribute MUST be present in a ROAP request if and only if a ROAP trigger containing a **<nonce>** element initiated the ROAP request. In this case, the value of the ***triggerNonce*** attribute MUST be the same as the value of the ROAP trigger's **<nonce>** element.		
SCR Reference	DRM-SERVER-004		
Preconditions	PKI : Model A		
Test Procedure	- The RI sends a ROAP Trigger which includes a nonce element - The RI receives the corresponding ROAP request without Nonce.		
Pass-Criteria	- The RI answers with a Response message including an error code. - The RI aborts the protocol		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing	**d**	Leave Domain Request processing

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b	RO Request processing		

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6.1.18 Invalid Nonce in ROAP Request

Testcase ID	DRM-2.0-con-s-18
Test Object	RI
Test Case Description	Invalid Nonce in ROAP Request
Specification Reference	[DRMDRM] 5.3.4 The ***triggerNonce*** attribute MUST be present in a ROAP request if and only if a ROAP trigger containing a **<nonce>** element initiated the ROAP request. In this case, the value of the ***triggerNonce*** attribute MUST be the same as the value of the ROAP trigger's **<nonce>** element.
SCR Reference	DRM-SERVER-004
Preconditions	PKI : Model A
Test Procedure	- The RI sends a ROAP Trigger which includes a nonce element - The RI receives the corresponding ROAP request with Invalid Nonce.
Pass-Criteria	- The RI answers with a Response message including the MalformedRequest error code. - The RI aborts the protocol

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.19 Missing Domain ID in ROAP Request

Testcase ID	DRM-2.0-con-s-19		
Test Object	RI		
Test Case Description	Domain ID in ROAP trigger		
Specification Reference	[DRMDRM] 5.2.1 The **<domainID>** element MAY be included in certain ROAP triggers. If included, the Device MUST incorporate the **<domainID>** in the ROAP PDU that is sent in response to the trigger.		
SCR Reference	DRM-SERVER-016, DRM-SERVER-018, DRM-SERVER-019		
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device		
Test Procedure	- The RI sends a ROAP Trigger which includes a Domain ID element. - The RI receives a ROAP Request without Domain ID.		
Pass-Criteria	- The RI aborts the protocol		
Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.20 Invalid Domain ID in ROAP Request

Testcase ID	DRM-2.0-con-s-20		
Test Object	RI		
Test Case Description	Invalid Domain ID in ROAP trigger		
Specification Reference	[DRMDRM] 5.2.1 The **<domainID>** element MAY be included in certain ROAP triggers. If included, the Device MUST incorporate the **<domainID>** in the ROAP PDU that is sent in response to the trigger.		
SCR Reference	DRM-SERVER-004, DRM-SERVER-016, DRM-SERVER-018, DRM-SERVER-019		
Preconditions	PKI : Model A		
Test Procedure	- The RI sends a ROAP Trigger which includes a Domain ID element. - The RI receives a ROAP Request with an invalid Domain ID.		
Pass-Criteria	- The RI answers with a Response message including the InvalidDomain error code - The RI aborts the protocol		
Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.21 Missing Version in Device Hello

Testcase ID	DRM-2.0-con-s-21
Test Object	RI
Test Case Description	Missing version in Device Hello
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.2.1 *Version* is a <major.minor> representation of the highest ROAP version number supported by the Device. Devices MUST support all versions prior to the one they suggest. For this version of the protocol, *Version* SHALL be set to "**1.0**". Minor version upgrades must always be backwards compatible.
SCR Reference	DRM-SERVER-015
Preconditions	PKI : Model A
Test Procedure	- The RI receives a DeviceHello without *version* element
Pass-Criteria	- The RI answers with a RIHello including the MalformedRequest error code. - The RI closes the connection with the Device.

Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.22 Invalid Version in Device Hello

Testcase ID	DRM-2.0-con-s-22
Test Object	RI
Test Case Description	Invalid version in Device Hello
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.2.1 *Version* is a <major.minor> representation of the highest ROAP version number supported by the Device. Devices MUST support all versions prior to the one they suggest. For this version of the protocol, *Version* SHALL be set to "**1.0**". Minor version upgrades must always be backwards compatible.
SCR Reference	DRM-SERVER-004, DRM-SERVER-015
Preconditions	PKI : Model A
Test Procedure	- The RI receives a DeviceHello with an invalid *version* element
Pass-Criteria	- The RI answers with a RIHello including an UnsuportedVersion error code. - The RI closes the connection with the Device.

Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.23 Missing Request Time in ROAP Request

Testcase ID	DRM-2.0-con-s-23
Test Object	RI
Test Case Description	Missing Request Time in ROAP Request
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.2.3.1 Request Time is the current DRM Time as measured by the Device. Connected Devices and Unconnected Devices that support DRM Time MUST insert their current DRM Time. Unconnected Devices that do not support DRM Time MUST use the value "Undefined".
SCR Reference	DRM-SERVER-007
Preconditions	PKI : Model A
Test Procedure	- The RI receives a ROAP Request without the Request Time parameter
Pass-Criteria	- The RI sends a ROAP Response with status="MalformedRequest" - The RI closes the connection with the Device.

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.24 ROAP Request from Unconnected Devices without DRM Time

Testcase ID	DRM-2.0-con-s-24		
Test Object	RI		
Test Case Description	To test that the RI correctly interprets a *Request Time* set to Undefined		
Specification Reference	[DRMDRM] 5.4.2.3.1 Request Time is the current DRM Time as measured by the Device. Connected Devices and Unconnected Devices that support DRM Time MUST insert their current DRM Time. Unconnected Devices that do not support DRM Time MUST use the value "Undefined".		
SCR Reference	DRM-SERVER-007		
Preconditions	PKI : Model A		
Test Procedure	- The RI receives a valid ROAP Request with the Request Time parameter set to "Undefined".		
Pass-Criteria	- The RI sends a ROAP Response with status="Success"		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

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6.1.25 Missing Device ID in ROAP Request

Testcase ID	DRM-2.0-con-s-25
Test Object	RI
Test Case Description	Missing Device ID in ROAP Request
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.3.1.1 *Device ID* identifies the requesting Device as specified in section 5.4.2.4.1 [DRMDRM] 5.4.2.1.1 *Device ID* identifies the Device to the RI. The only identifier currently defined is the hash of the Device's public key info, as it appears in the certificate (i.e. the hash of the complete DER-encoded subjectPublicKeyInfo component in the Device's certificate). The default hash algorithm is SHA-1. Other identifiers are allowed but interoperability when using them is not guaranteed.
SCR Reference	DRM-SERVER-015
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device
Test Procedure	- The RI receives a ROAP Request without Device ID parameter
Pass-Criteria	- The RI sends a ROAP Response with status="MalformedRequest" - The RI closes the connection with the Device.

Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.26 Invalid Device ID in ROAP Request

Testcase ID	DRM-2.0-con-s-26
Test Object	RI
Test Case Description	Invalid Device ID in ROAP Request
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.3.1.1 *Device ID* identifies the requesting Device as specified in section 5.4.2.4.1. [DRMDRM] 5.4.2.1.1 *Device ID* identifies the Device to the RI. The only identifier currently defined is the hash of the Device's public key info, as it appears in the certificate (i.e. the hash of the complete DER-encoded subjectPublicKeyInfo component in the Device's certificate). The default hash algorithm is SHA-1. Other identifiers are allowed but interoperability when using them is not guaranteed.
SCR Reference	DRM-SERVER-016, DRM-SERVER-018, DRM-SERVER-019
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device
Test Procedure	- The RI receives a ROAP Request with an invalid Device ID parameter
Pass-Criteria	- The RI sends a ROAP Response with status="MalformedRequest" - The RI closes the connection with the Device.

Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.27 Missing riID in ROAP Request

Testcase ID	DRM-2.0-con-s-27
Test Object	RI
Test Case Description	Missing riID in ROAP Request
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.3.1.1 *RI ID* identifies the authorizing RI as specified in section 5.4.2.4.1 [DRMDRM] 5.4.2.2.1 *RI ID* identifies the RI to the Device. The only identifier currently defined is the hash of the Rights Issuer's public key info, as it appears in the certificate (i.e. the hash of the complete DER-encoded subjectPublicKeyInfo component in the Rights Issuer's certificate). The default hash algorithm is SHA-1. Other identifiers are allowed but interoperability when using them is not guaranteed. This information is part of the RI Context.
SCR Reference	DRM-SERVER-016, DRM-SERVER-018, DRM-SERVER-019, DRM-SERVER-030
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device
Test Procedure	- The RI receives a ROAP Request without riID parameter
Pass-Criteria	- The RI sends a ROAP Response with status="MalformedRequest" - The RI closes the connection with the Device.

Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.28 Invalid riID in ROAP Request

Testcase ID	DRM-2.0-con-s-28
Test Object	RI
Test Case Description	Invalid riID in ROAP Request
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *MalformedRequest* indicates that the RI failed to parse the Device's request [DRMDRM] 5.4.3.1.1 *RI ID* identifies the authorizing RI as specified in section 5.4.2.4.1 [DRMDRM] 5.4.2.2.1 *RI ID* identifies the RI to the Device. The only identifier currently defined is the hash of the Rights Issuer's public key info, as it appears in the certificate (i.e. the hash of the complete DER-encoded subjectPublicKeyInfo component in the Rights Issuer's certificate). The default hash algorithm is SHA-1. Other identifiers are allowed but interoperability when using them is not guaranteed. This information is part of the RI Context.
SCR Reference	DRM-SERVER-016, DRM-SERVER-018, DRM-SERVER-019, DRM-SERVER-030
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device
Test Procedure	- The RI receives a ROAP Request with an invalid riID parameter
Pass-Criteria	- The RI sends a ROAP Response with status="MalformedRequest" - The RI closes the connection with the Device.

Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.29 DeviceHello with *Certificate Caching* extension (the RI has stored the Device public key)

Testcase ID	DRM-2.0-con-s-29
Test Object	RI
Test Case Description	To test the Registration protocol which results in an RI Hello message containing *Peer Key Identifier* extension.
Specification Reference	[DRM-v2.0] Section 5.4.2.2
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-003, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-015, DRM-SERVER-025, DRM-SERVER-026, DRM-SERVER-027, DRM-SERVER-028, DRM-SERVER-029, DRM-SERVER-030, DRM-SERVER-033, DRM-SERVER-034
Preconditions	PKI : Model A State: - The RI has capabilities to store device certificates - The RI already has the Device's certificate or otherwise is able to verify a signature made by the Device. - The RI has stored the Device public key - The Device indicated support of only mandatory algorithms (i.e. left out the <supportedAlgorithms> element), or the RI only supports the mandatory algorithms.
Test Procedure	The RI receives a DeviceHello including *Certificate Caching* extension
Pass-Criteria	The RI responds with a RI Hello including *Peer Key Identifier* extension

Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.30 DeviceHello with *Certificate Caching* extension (the RI hasn't stored the Device public key)

Testcase ID	DRM-2.0-con-s-30		
Test Object	RI		
Test Case Description	To test the Registration protocol which results in an RI Hello message containing *Certificate Caching* extension.		
Specification Reference	[DRM-v2.0] Section 5.4.2.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-003, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-015, DRM-SERVER-025, DRM-SERVER-026, DRM-SERVER-027, DRM-SERVER-028, DRM-SERVER-029, DRM-SERVER-030, DRM-SERVER-033, DRM-SERVER-034		
Preconditions	PKI : Model A State: - The RI has capabilities to store device certificates - The RI already has the Device's certificate or otherwise is able to verify a signature made by the Device. - The Device indicated support of only mandatory algorithms (i.e. left out the <supportedAlgorithms> element), or the RI only supports the mandatory algorithms.		
Test Procedure	The RI receives a DeviceHello including *Certificate Caching* extension		
Pass-Criteria	The RI responds with a RI Hello including *Certificate Caching* extension		
Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.31 DeviceHello including Supported Algorithms parameter

Testcase ID	DRM-2.0-con-s-31		
Test Object	RI		
Test Case Description	To test the Registration protocol which results in an RI Hello message containing *Selected Algorithms* element		
Specification Reference	[DRM-v2.0] Section 5.4.2.2		
SCR Reference	DRM-SERVER-015		
Preconditions	PKI : Model A State: - The Device support more algorithms		
Test Procedure	The RI receives a DeviceHello including *Supported Algorithms* element		
Pass-Criteria	The RI responds with a RI Hello including *Selected Algorithms* element		
Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.32 ROAP Request without *Peer Key identifier* extension

Testcase ID	DRM-2.0-con-s-32		
Test Object	RI		
Test Case Description	To test the ROAP Request which results in a Response message containing a *Certificate Chain* element.		
Specification Reference	[DRM-v2.0] Section 5.4.2.2		
SCR Reference	DRM-SERVER-007		
Preconditions	PKI : Model A		
Test Procedure	The RI receives a ROAP Request message *Peer Key Identifier* extension not included		
Pass-Criteria	The RI responds with a Response including *Certificate Chain* element.		
Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing		Leave Domain Request processing
b	RO Request processing		

6.1.33 ROAP Request without No OCSP Response extension

Testcase ID	DRM-2.0-con-s-33		
Test Object	RI		
Test Case Description	To test the ROAP Request which results in a ROAP Response message containing an *OCSP Response* element.		
Specification Reference	[DRM-v2.0] Section 5.4.2.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004, DRM-SERVER-005,DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-009, DRM-SERVER-010, DRM-SERVER-015, DRM-SERVER-030, DRM-SERVER-033, DRM-SERVER-034		
Preconditions	PKI : Model A State: - The Device has a valid RI context with the RI		
Test Procedure	The RI receives a ROAP Request message that doesn't include *No OCSP Response* extension (*Peer Key Identifier* extension included)		
Pass-Criteria	The RI responds with a Response including *OCSP Response* element.		
Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.34 RO Request resulting to a RO Response including a Protected RO

Testcase ID	DRM-2.0-con-s-34		
Test Object	RI		
Test Case Description	To test the 2-pass ROAP ROAcquisition protocol which results in a RO Response containing a Protected RO.		
Specification Reference	[DRM-v2.0] Section 5.4.3.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-003, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-008, DRM-SERVER-016, DRM-SERVER-021, DRM-SERVER-023, DRM-SERVER-030 and DRM-SERVER-032		
Preconditions	PKI : Model A State: - The Device has a valid RI Context with the RI		
Test Procedure	- The RI receives a RO Request from the Device for a device RO		
Pass-Criteria	- The RI sends the correct RO Response including the Protected RO (<roap:protectedRO>) element that contains the RO <roap:ro>		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

6.1.35 1-pass RO Response Protocol

Testcase ID	DRM-2.0-con-s-35		
Test Object	RI		
Test Case Description	To test the 1- pass ROAP RO Acquisition protocol which results in a RO Response message containing a ProtectedRO		
Specification Reference	[DRM-v2.0] Section 5.4.3.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-008, DRM-SERVER-017, DRM-SERVER-021, DRM-SERVER-023, DRM-SERVER-030 and DRM-SERVER-032		
Preconditions	PKI : Model A State: - The Device has a valid RI Context with the RI - The Device has subscribed to a regular RO delivery		
Test Procedure	- The RI sends a 1-pass RO Response to the device		
Pass-Criteria	- The RO Response contains every mandatory field including the ProtectedRO (<roap:protectedRO>) which contains the RO <roap:ro>.		
Test Case Deployment			

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6.1.36 Join Domain Request including *Hash Chain Support* extension

Testcase ID	DRM-2.0-con-s-36		
Test Object	RI		
Test Case Description	To test the JoinDomain protocol which results in a Join Domain Response message containing *Hash Chain Support* extension		
Specification Reference	[DRM-v2.0] Section 5.4.4.2		
SCR Reference	DRM-SERVER-018		
Preconditions	PKI : Model A State: - The Device has a valid RI context with the RI - The Device and the RI use the technique of generating Domain Keys through hash chain.		
Test Procedure	The RI receives a Join Domain Request including *Hash Chain Support* extension		
Pass-Criteria	The RI responds with a RI Hello including *Hash Chain Support* extension		
Test Case Deployment			
	Device Hello processing	**a**	Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.37 Error Code: NotFound

Testcase ID	DRM-2.0-con-s-37		
Test Object	RI		
Test Case Description	To test the error code handling: Not Found		
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *NotFound* indicates that the requested object was not found. This error is only valid in the ROAP-ROResponse message.		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004		
Preconditions	PKI : Model A State: - There is a valid RI Context between the RI and the Device		
Test Procedure	- The RI receives a RO Request for a invalid <roID> in the <roInfo> element		
Pass-Criteria	- The RI answers with a Response message including the *NotFound* error code. - The RI closes the connection with the Device.		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.38 Error code: UnsupportedVersion

Testcase ID	DRM-2.0-con-s-38
Test Object	RI
Test Case Description	To test the error code handling: UnsupportedVersion
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *UnsupportedVersion* indicates that the Device used a ROAP protocol version not supported by the RI. This error is only valid in the ROAP-RIHello message.
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004
Preconditions	PKI : Model A
Test Procedure	- The RI receives a DeviceHello with a ROAP version the RI does not support.
Pass-Criteria	- The RI answers with a Response message including the *UnsupportedVersion* error code. - The RI closes the connection with the Device.

Test Case Deployment			
a	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.1.39 Error code: NotRegistered

Testcase ID	DRM-2.0-con-s-39
Test Object	RI
Test Case Description	To test the error code handling: NotRegistered
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *NotRegistered* indicates that the Device tried to contact an RI which does not have any registration information stored for the Device. This error is only valid in the following messages: ROAP-ROResponse, ROAP-JoinDomainResponse, and ROAP-LeaveDomainResponse. The Device SHOULD initiate the 4-pass Registration protocol, using the same ROAP URL as from the ROAP Request that resulted in the error response. See also section **Error! Reference source not found.**.
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004
Preconditions	PKI : Model A - The RI doesn't have any registration information for the Device - There is a valid RI Context between the RI and the Device
Test Procedure	- The RI receives a ROAP Request from an unregistered Device
Pass-Criteria	- The RI answers with a Response message including the *NotRegistered* error code.

Test Case Deployment			
	Device Hello processing	**b**	Join Domain Request processing
	Reg. Request processing	**c**	Leave Domain Request processing
a	RO Request processing		

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6.1.40 Error code: InvalidDCFHash

Testcase ID	DRM-2.0-con-s-40		
Test Object	RI		
Test Case Description	To test the error code handling: InvalidDCFHash		
Specification Reference	[DRMDRM] 5.3.5 All responses contain a ***status*** attribute that indicates whether the preceding request was successful or not. Upon transmission or receipt of a message for which Status is not "Success", the default behaviour, unless explicitly stated otherwise below, is that both the RI and the Device SHALL immediately close the connection and terminate the protocol. *InvalidDCFHash* is sent when the RI detects an incorrect DCF hash value in a ROAP-RORequest message. This error is only valid in the ROAP-ROResponse message.		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004		
Preconditions	PKI : Model A - There is a valid RI Context between the RI and the Device		
Test Procedure	- The RI receives a RO Request with an invalid DCF hash value		
Pass-Criteria	- The RI answers with a RO Response message including the *InvalidDCFHash* error code.		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.41 Missing Certificate Chain

Testcase ID	DRM-2.0-con-s-41
Test Object	RI
Test Case Description	Certificate chain of ROAP Request missing
Specification Reference	[DRMDRM] 5.4.2.3 RegistrationRequest *Certificate Chain:* This parameter MUST be present unless the preceding ROAP-RIHello message contained the *Peer Key Identifier* extension and its value identified the key in the Device's current certificate. When present, the value of a *Certificate Chain* parameter shall be a certificate chain including the Device's certificate. [DRMDRM] 5.4.3.1 RO Request *Certificate Chain:* This parameter is sent unless it is indicated in the RI Context that this RI has stored necessary Device certificate information. [DRMDRM] 5.4.3.1 Join domain Request *Certificate Chain:* This parameter is sent unless *Certificate Caching* is indicated in the RI Context with this RI. [DRMDRM] 5.4.4.1 Leave domain request *Certificate Chain:* This parameter is sent unless *Certificate Caching* is indicated in the RI Context with this RI. [DRMDRM] 5.3.6 *NoCertificateChain* indicates that the RI could not verify the signature on a Device request due to not having access to the Device's certificate chain. This error is only valid in the following messages: ROAP-RegistrationResponse, ROAP-ROResponse, ROAP-JoinDomainResponse, and ROAP-LeaveDomainResponse.
SCR Reference	DRM-SERVER-004, DRM-Server-007
Preconditions	PKI : Model A State: - The RI has not included either the Peer Key Identifier extension in the RI hello during registration, or the RI has indicated that it caches certificates by using the Certificate Caching extension in the RI hello. - RI server does not have validation data for the certificate chain. RI server does not have validation data for the certificate chain.
Test Procedure	- RI server receives a ROAP request where the Certificate Chain is missing
Pass-Criteria	- RI sends a ROAPResponse with Status = ” *NoCertificateChain*” and closes the connection

Test Case Deployment			
	Device Hello processing	**c**	Join Domain Request processing
a	Reg. Request processing	**d**	Leave Domain Request processing
b	RO Request processing		

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6.1.42 Erroneous Transaction ID

Testcase ID	DRM-2.0-con-s-42		
Test Object	RI		
Test Case Description	The RI receives an RORequest for a group (or parent) RO and the request includes a transaction ID		
Specification Reference	[DRMDRM] 5.4.3.1 RO Request Transaction Identifier: Allows a Device to provide the RI with information for tracking of transactions, for example relating to loyalty programs (an example of this could be reward scheme information from the DCF scheme). [DRMDRM] 5.4.3.1 RO Response The RI MUST NOT include a TransactionIdentifier ROAP extension in the ROResponse when the ROResponse contains a RO bound to a GroupID as specified in section 9.7. Upon reception of a ROResponse containing a TransactionIdentifier ROAP extension and a RO bound to a GroupID a Device MUST ignore the TransactionIdentifier ROAP extension.		
SCR Reference	DRM-Server-035		
Preconditions	PKI : Model A State: The ROID specified in the previously delivered RO acquisition trigger is for a group or parent RO.		
Test Procedure	- The RI receives a ROAP Request with a group or parent RO and a transaction ID extension		
Pass-Criteria	- The RI sends a ROAP Response containing the requested RO but with no new transaction ID		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.43 Unique Identifier for the Right Issuer in ROAP Trigger

Testcase ID	DRM-2.0-con-s-43		
Test Object	RI		
Test Case Description	To test that the <riID> element is unique for a RI		
Specification Reference	[DRMDRM] 5.2.1 The <riID> element MUST uniquely identify the Rights Issuer.		
SCR Reference	DRM-SERVER-011		
Preconditions	PKI : Model A		
Test Procedure	- The RI sends ROAP Triggers to the DRM Agent. This is repeated 5 times.		
Pass-Criteria	- The <riID> are all the same		
Test Case Deployment			
a	Registration Trigger	**c**	Join Domain Trigger
b	RO Acquisition Trigger	**d**	Leave Domain Trigger

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6.1.44 More than one roID elements in a ROAcquisition trigger

Testcase ID	DRM-2.0-con-s-44		
Test Object	RI		
Test Case Description	To test that the RO Acquisition Trigger generation for more than one roID		
Specification Reference	[DRMDRM] 5.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-011, DRM-SERVER-012, DRM-SERVER-013,DRM-SERVER-030, DRM-SERVER-033, DRM-SERVER-034		
Preconditions	PKI : Model A State: - The user purchases several ROs - The Device has a valid RI Context with the RI		
Test Procedure	- The RI sends a RO Acquisition trigger to initiate the ROAP RO Acquisition protocol		
Pass-Criteria	- The RO Acquisition trigger contains more than one roID - The trigger initiates the ROAP Protocol		
Test Case Deployment			
	Registration Trigger		Join Domain Trigger
a	RO Acquisition Trigger		Leave Domain Trigger

6.1.45 domain ID in ROAP Triggers

Testcase ID	DRM-2.0-con-s-45		
Test Object	RI		
Test Case Description	To test the presence of domain ID in ROAP Triggers		
Specification Reference	[DRMDRM] 5.2		
SCR Reference	DRM-SERVER-011, DRM-SERVER-012		
Preconditions	PKI : Model A State: - The Device has a valid RI Context with the RI		
Test Procedure	- The Device joins/leaves a Domain		
Pass-Criteria	- The RI sends a ROAP Domain Trigger containing the domainID that the device wants to join/leave		
Test Case Deployment			
	Registration Trigger	**a**	Join Domain Trigger
	RO Acquisition Trigger	**b**	Leave Domain Trigger

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6.1.46 Use of MAC in leave domain ROAP Trigger

Testcase ID	DRM-2.0-con-s-46		
Test Object	RI		
Test Case Description	To test the use of MAC in leave domain trigger		
Specification Reference	[DRMDRM] 5.2		
SCR Reference	DRM-SERVER-001, DRM-SERVER-002, DRM-SERVER-003, DRM-SERVER-004, DRM-SERVER-005, DRM-SERVER-006, DRM-SERVER-008, DRM-SERVER-011, DRM-SERVER-012, DRM-SERVER-030, DRM-SERVER-033, DRM-SERVER-034		
Preconditions	PKI : Model A State: - The Device has a valid RI Context with the RI		
Test Procedure	- The Device leaves a Domain		
Pass-Criteria	- The RI sends a Leave Domain Trigger with a MAC Key wrapped with the Domain Key to authenticate the trigger		
Test Case Deployment			
	Registration Trigger		Join Domain Trigger
	RO Acquisition Trigger	**a**	Leave Domain Trigger

6.1.47 Obsolete Domain, the device has a valid Domain Context

Testcase ID	DRM-2.0-con-s-47		
Test Object	RI		
Test Case Description	To test RI behavior when the Domain becomes obsolete		
Specification Reference	[DRMDRM] 8.8		
SCR Reference	DRM-SERVER-020		
Preconditions	PKI : Model A State: - There is a valid Domain context between the RI and the Device - The Domain is upgraded and the Domain Generation value reaches 999		
Test Procedure	- The Device wants to acquire new rights for this Domain		
Pass-Criteria	- The RI answers with a response with an error status (InvalidDomain)		
Test Case Deployment			
	Device Hello processing		Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
a	RO Request processing		

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6.1.48 Obsolete Domain, the device doesn't have a valid Domain Context

Testcase ID	DRM-2.0-con-s-48		
Test Object	RI		
Test Case Description	To test RI behavior when the Domain becomes obsolete		
Specification Reference	[DRMDRM] 8.8		
SCR Reference	DRM-SERVER-020		
Preconditions	PKI : Model A State: - There's no Domain context between the RI and the Device - The Domain is upgraded and the Domain Generation value reaches 999		
Test Procedure	- The Device wants to join the Domain		
Pass-Criteria	- The RI answers with a Join Domain Response with an error status (*DomainAccessDenied*)		
Test Case Deployment			
	Device Hello processing	**a**	Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

6.1.49 Domain Context expiry

Testcase ID	DRM-2.0-con-s-49
Test Object	RI
Test Case Description	To test RI behavior when the Domain Context Expiry Date is reached
Specification Reference	[DRMDRM] 8.5
SCR Reference	DRM-SERVER-020
Preconditions	PKI : Model A State: There's is Domain context between the RI and the Device, but the Domain Context is expired
Test Procedure	- The Device attempts to rejoin the Domain
Pass-Criteria	- The RI answers with a Join Domain Response extending the domain context (i.e. Domain Expiry Date is extended) OR - The RI answers with a Join Domain Response with the suitable ROAP status code (e.g InvalidDomain)
Test Case Deployment	

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	Device Hello processing	**a**	Join Domain Request processing
	Reg. Request processing		Leave Domain Request processing
	RO Request processing		

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6.2 Permission Model

6.2.1 Play Permission for a sound file

Testcase ID	DRM-2.0-con-s-50		
Test Object	RI		
Test Case Description	To test the generation of a play permission generation for a sound file		
Specification Reference	[DRMREL] 5.4.2		
SCR Reference	DRM-REL-GEN-S-004		
Preconditions	PKI : Model A		
Test Procedure	- The user purchases rights for an unlimited play for a sound object		
Pass-Criteria	- The RI delivers a RO with a play element and no <count> constraint		
Test Case Deployment			

6.2.2 Display permission for an image object

Testcase ID	DRM-2.0-con-s-51		
Test Object	RI		
Test Case Description	To test the generation of a display permission generation for an image file		
Specification Reference	[DRMREL] 5.4.3		
SCR Reference			
Preconditions	PKI : Model A		
Test Procedure	- The user purchases rights for an unlimited display for a image object		
Pass-Criteria	- The RI delivers a RO with a display element and no <count> constraint		
Test Case Deployment			

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6.2.3 Export permission

Testcase ID	DRM-2.0-con-s-52		
Test Object	RI		
Test Case Description	To test the generation of a export permission generation for a RO		
Specification Reference	[DRMREL] 5.4.6		
SCR Reference	DRM-REL-GEN-S-005		
Preconditions	PKI : Model A		
Test Procedure	- The user purchases rights for exporting the RO		
Pass-Criteria	- The RI delivers a RO with an export element, which contains a mandatory <constraint> element and <system> element specifying to which target system the DRM content and RO are allowed to be exported		
Test Case Deployment			

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6.3 Constraint Model

6.3.1 Datetime constraint

Testcase ID	DRM-2.0-con-s-53
Test Object	RI
Test Case Description	To test the generation of a datetime constraint for a content
Specification Reference	[DRMREL] 5.5.4
SCR Reference	DRM-REL-GEN-S-006, DRM-REL-GEN-S-007, DRM-REL-GEN-S-008
Preconditions	PKI : Model A
Test Procedure	- The user purchases rights for using a content from a start time to a end time
Pass-Criteria	- The RI delivers a RO with a datetime element with a start element and a end element which have this format: CCYY-MM-DDThh:mm:ssZ
Test Case Deployment	

6.3.2 Interval constraint

Testcase ID	DRM-2.0-con-s-54
Test Object	RI
Test Case Description	To test the generation of an interval constraint for a content
Specification Reference	[DRMREL] 5.5.5
SCR Reference	DRM-REL-GEN-S-009
Preconditions	PKI : Model A
Test Procedure	- The user purchases rights for using a content during an interval of time
Pass-Criteria	- The RI delivers a RO with an interval element which has the restricted duration format PnDTnHnMnS or any reduced precision and truncated representation version thereof as specified in [XMLSchema].
Test Case Deployment	

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6.3.3 Accumulated constraint

Testcase ID	DRM-2.0-con-s-55
Test Object	RI
Test Case Description	To test the generation of an accumulated constraint for a content
Specification Reference	[DRMREL] 5.5.5
SCR Reference	DRM-REL-GEN-S-009
Preconditions	PKI : Model A
Test Procedure	- The user purchases rights for using a content for a maximum metered usage time.
Pass-Criteria	- The RI delivers a RO with an accumulated element which hasthe restricted duration format PnDTnHnMnS or any reduced version thereof as specified in [XMLSchema].
Test Case Deployment	

6.4 PDCF Tests Cases

6.4.1 Non-streamable PDCF

Test Case ID	DRM-2.0-con-s-56
Test Object	RI Server
Test Case Description	To test correct PDCF packaging
Specification Reference	[DRMCF-v2.0] Section 7.1.1, 7.1.3 and 5.2.1
SCR Reference	[DRMCF-v2.0] TP-CLI-25, TP-CLI-26, TP-CLI-27
Tools	None
Test Code	None
Preconditions	• Equipment: o One RI Server able to package PDCF • State: o There is an unprotected 3GP file downloadable from the server
Test Procedure	1. The server packages the 3GP audio file

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Pass-Criteria	1. The PDCF file fulfilled these conditions: - OMA DRM key management scheme 'odkm' and a *SchemeVersion* set to 0x00000200 are indicated in the *SchemeTypeBox* - At least one OMADRMKMSBox is present in the first sub-box of the SchemeInformationBox - *OMADRMCommonHeaders* in the *OMADRMKMSBox*

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7. DRM Interoperability Test Cases

See [ETS] for Interoperability Test cases.

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Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
Approved OMA-ETS-DRM_Conformance_Right_Issuer-V2_0	26 Jul 2005	First Version

A.2 Draft/Candidate Version 2.0 History

Document Identifier	Date	Sections	Description
Draft Version OMA-ETS-DRM_Conformance_Right_Issuer-V2_0	31 Aug 2006	5.1, 5.3, 5.4, 6.1.1,.6.1.2, 6.1.3, 6.1.4, 6.1.10, 6.1.16 to 6.1.49, 6.2 and 6.3	IOP OMA-IOP-2006-0218-INP_DRM_2.0_RI_Conf_ETS_updates agreed in IOP
Candidate Version OMA-ETS-DRM_Conformance_Right_Issuer-V2_0	26 Sep 2006	n/a	Status changed to Candidate OMA-TP-2006-0307-INP_OMA_ETS_DRM_Conformance_Right_Issuer_V2_0_for_Candidate_Re_approval (TP R&A 13-26 Sep 2006).

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