Enabler Validation Plan for XML Document Management

Candidate Version 2.0 – 18 Aug 2009

Open Mobile Alliance
OMA-EVP-XDM-V2_0-20090818-C

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Contents

Figures

Tables

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1. Scope

This document details the Validation plan for the XDM V2.0 Enabler Release. The successful accomplishment of the validation activities will be required for the Enabler to be considered for Approved status.

The validation plan for the XDM V2.0 Enabler Release specifications is based on expected testing expectations in the Enabler Test Requirements (ETR). While the specific test activities to be performed are described in the Enabler Test Specification (ETS) the test environment is described in this plan. This test environment details infrastructure, operational and participation requirements identified for the needed testing activities.

The list of specifications, defining the scope of XDM V2.0, as stated in [ERELD_XDMv2] is according the following:

- XDM V2.0 Requirements [XDMv2_RD]
- XDM V2.0 Architecture [XDMv2_AD]
- XDM V2.0 Specification [XDMv2_Core]
- XDM V2.0 Management Object [XDMv2_MO]
- XDM V1.0 Shared Group [XDMv1_ Group]
- XDM V2.0 Shared List [XDMv2_ List]
- XDM V1.0 Shared Policy [XDMv1_ Policy]
- XDM V1.0 Shared Profile [XDMv1_ Profile]

In addition to the mentioned specifications comprising the XDM V2.0 enabler, a data dictionary (DTD) is defined in [ERELD_XDMv2], Section 5 (Supporting Files).

Interoperability of XDM Enabler is tested based on the latest available XDM INT ETS, and also on XDM V1.0 INT ETS documents.

Note that since the OMA XDM test tool is not available at this time, the document specifies the interoperability aspects only.

1.1   Assumptions

The XDM enabler will always be tested with other Enablers, e.g., with PoC, or SIMPLE IM.

It is also assumed that XDM V2.0 implementations are backwards compatible in the sense they implement XDM V1.0 mandatory requirements.

1.2   Exclusions

Since XDM test tool is not currently available, it should be noted that it is expected that OMA Trusted Zone will determine participating teams' readiness by evaluating pre-testing results. Pre-testing is performed during the first day of the TestFest event. Test cases to be performed during pre-testing, as well as logistical guidance for Trusted Zone are presented in Section 5.3.1.

2. References

2.1 Normative References

[ERELD_XDMv1]	"Enabler Release Document for XDM", Version 1.0, Open Mobile Alliance™, OMA-ERELD-XDM-V1_0, URL:http://www.openmobilealliance.org/
[OMA_XDMv1_ETS]	"Enabler Test Specification for XML Document Management Interoperability", Version 1.0, Open Mobile Alliance™, OMA-ETS-XDM_INT-V1_0, URL:http://www.openmobilealliance.org/
[ERELD_XDMv2]	"Enabler Release Document for XDM", Version 2.0, Open Mobile Alliance™, OMA-ERELD-XDM-V2_0, URL:http://www.openmobilealliance.org/
[XDMv2_RD]	"OMA XML Document Management Requirements", Version 2.0, Open Mobile Alliance™, OMA-RD-XDM-V2_0, URL:http://www.openmobilealliance.org/
[XDMv2_AD]	"XML Document Management Architecture", Version 2.0, Open Mobile Alliance™, OMA-AD-XDM-V2_0, URL:http://www.openmobilealliance.org/
[XDMv2_Core]	"XML Document Management (XDM) Specification", Version 2.0, Open Mobile Alliance™, OMA-TS-XDM_Core-V2_0, URL:http://www.openmobilealliance.org/
[XDMv2_MO]	"OMA Management Object for XML Document Management", Version 2.0, Open Mobile Alliance™, OMA-TS-XDM_MO-V2_0, URL:http://www.openmobilealliance.org/
[XDMv1_ Group]	"Shared Group XDM Specification", Version 1.0, Open Mobile Alliance™, OMA-TS-XDM_Shared_Group-V1_0, URL:http://www.openmobilealliance.org/
[XDMv2_ List]	"Shared List XDM Specification", Version 2.0, Open Mobile Alliance™, OMA-TS-XDM_Shared_List-V2_0, URL:http://www.openmobilealliance.org/
[XDMv1_ Policy]	"Shared Policy XDM Specification", Version 1.0, Open Mobile Alliance™, OMA-TS-XDM_Shared_Policy-V1_0, URL:http://www.openmobilealliance.org/
[XDMv1_ Profile]	"Shared Profile XDM Specification", Version 1.0, Open Mobile Alliance™, OMA-TS-XDM_Shared_Profile-V1_0, URL:http://www.openmobilealliance.org/
[OMA_XDMv2_INT_ ETS]	"Enabler Test Specification for XML Document Management Interoperability", Version 2.0, Open Mobile Alliance™, OMA-ETS-XDM_INT-V2_0, URL:http://www.openmobilealliance.org/
[OMA_XDMv2_CON _ETS]	"Enabler Test Specification for XML Document Management Conformance", Version 2.0, Open Mobile Alliance™, OMA-ETS-XDM_CON-V2_0, URL:http://www.openmobilealliance.org/
[XDMv2_ETR]	"Enabler Test Requirements for XML Document Management (XDM)", Open Mobile Alliance™, OMA-ETR-XDM-V2_0-20061219-D, URL:http://www.openmobilealliance.org/
[IOPEICSCLI]	"Enabler Implementation Conformance Statement Client Implementation of XDM", Version 2.0, Open Mobile Alliance OMA-EICS-XDM-Client-V2_0, URL:http://www.openmobilealliance.org/
[IOPEICSSRV]	"Enabler Implementation Conformance Statement Server Implementation of XDM", Version 2.0, Open Mobile Alliance OMA-EICS-XDM-Server-V2_0, URL:http://www.openmobilealliance.org/
[IOPPROC]	"OMA Interoperability Policy and Process", Version 1.8, Open Mobile Alliance™,

OMA-ORG-IOP_Process-V1_8, URL:http://www.openmobilealliance.org/

[IOPTFG]	"OMA TestFest Participation Guidelines", Version 1.0, Open Mobile Alliance [TM], OMA-IOP-TestFest-Participation-Guidelines-V1_0, URL: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

[OMADICT]	"Dictionary for OMA Specifications", Open Mobile Alliance™, OMA-Dictionary, URL:http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except "Scope", are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

User	A person using UE.
User[N]	A subscriber assigned to UE, where N is an integer number (i.e. User1, User2)
UE[N]	A client terminal used for testing where N is an integer number (i.e. UE1, UE2, etc)
XDM Client	An HTTP client that understands how to follow the naming and validation constraints defined in [XCAP]
XDM Server	An HTTP server that understands how to follow the naming and validation constraints defined in [XCAP]

3.3 Abbreviations

OMA	Open Mobile Alliance
XDM	XML Document Management

4. Enabler Validation Description

As XDM V2.0 cannot be tested by itself, it will rely on other enabler's Test Fest participation.

It is intended that TestFests are the primary validation method for OMA XDM 2.0. Please refer to section 5 for further information.

5. TestFest Activities

5.1   Enabler Test Guidelines

A full description of XDM V2.0 can be found in [ERELD_XDMv2] and related specifications.

XML Document Management (XDM) defines a common mechanism that makes user-specific service-related information accessible to the service enablers (e.g., PoC, IM) that need them. Such information is expected to be stored in the network where it can be located, accessed and manipulated (e.g. created, changed, deleted). XDM specifies how such information will be defined in well-structured XML documents, as well as the common protocol for access and manipulation of such XML documents, by authorized principals.

Documents accessed and manipulated via XCAP are stored in logical repositories in the network, called XDMS. Each repository may be associated with a functional entity which uses its data to perform its functions.

XDM V2.0 is an extension of XDM V1.0 which enables the following functionality:

*   The XDMS defined in XDM V1.0 architecture is extended to four XDMSs (Shared List XDMS, Shared Group XDMS, Shared Policy XDMS and Shared Profile XDMS) that perform specialized functions.

*   Search for information in documents stored in an XDMS.

*   Network-to-network interface to enable search of information across XDMS of multiple domains and retrieval of document from remote network.

A conceptual picture of a XDM system, according to [XDMv2_AD], is depicted in the following picture:
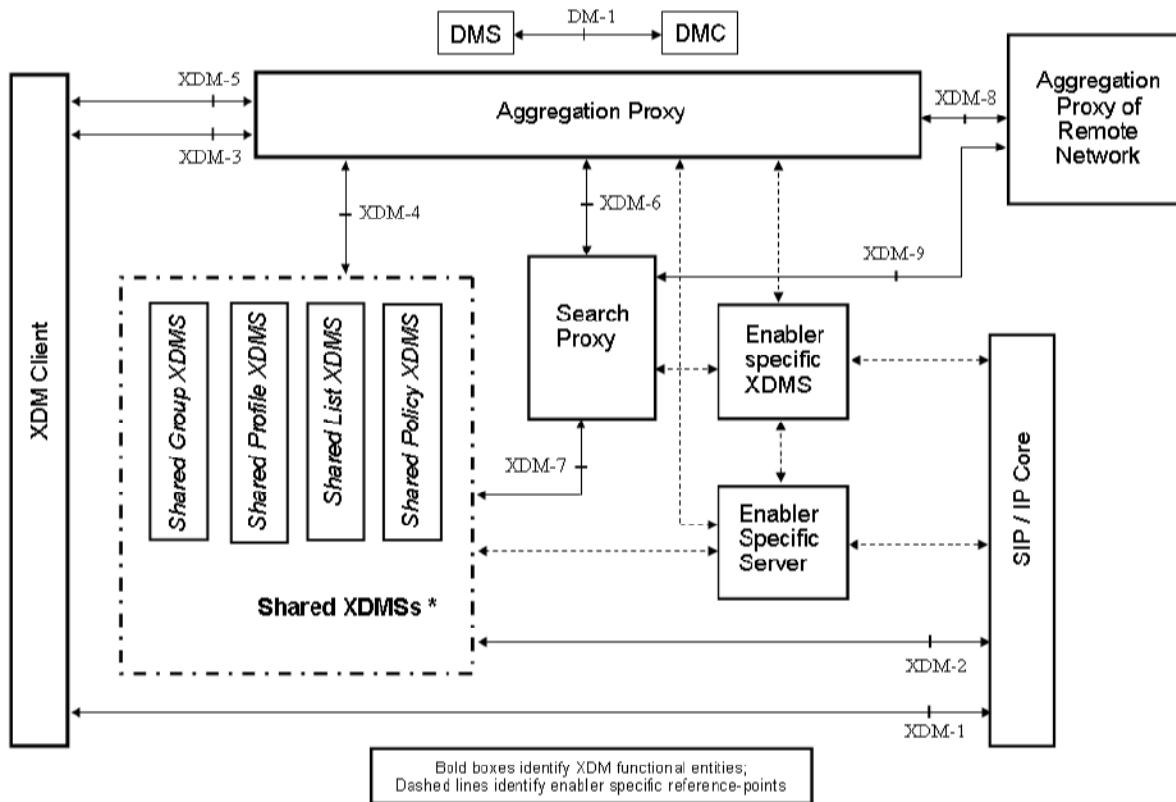
Figure 1: XDM V2.0 Architecture

5.1.1   Minimal Test Configuration

The minimal (hardware and software) configuration for testing XDM V2.0 is:

- **Client implementation** – The number of devices needed is at least two (a client can also be running on a PC). The XDM Client under test shall be able to authenticate with the XDM Server. It shall also be able to handle XDM documents stored in the XDMS. Subscription should also be supported.

- **Server implementation** – The number of servers needed is at least one. It is expected that the servers attending the TestFest implement the four XDMSs and connect with the clients and other servers via the standardized interfaces.

- **SIP/IP Core** – a SIP/IP Core, as a network of servers, such as proxies and/or registrars, is expected to perform a variety of services in support of the XDM Service, such as routing, authentication, compression, etc.

5.1.2   Minimal Participation Guidelines

This number will be somehow conditioned by other enabler (using XDM) participation guidelines. However, the desirable numbers are:

Minimum Client Participants: 3

Minimum Server Participants: 3

In addition to these minimum participation requirements it is suggested that the ratio of Server to Client implementations be limited to a maximum of 2:1. For example if four server implementations are available no more than eight client implementations should be permitted to participate. However, this is an ideal scenario; depending on the maturity of the enabler and participation level, this conditions can be adjusted.

5.1.3   Optimal TestFest Achievement Guidelines

The ETS Test Cases listed below represent a subset of all the Test Cases for the Enabler that it is thought can be executed in a test session at an OMA TestFest. This list is intended to facilitate maximum test coverage of the functionality of the enabler within a test session. It is not intended to be the only tests executed at a TestFest, and teams are encouraged to execute more tests if they are able to do in the time allowed.

The list includes:

| Test Case ID	Test Case Title
XDM-2.0-int-0100	Authentication of XDMC in the UE
XDM-2.0-int-0200	XCAP Directory Retrieval
XDM-1.0-int-0200	Shared XDMS Document Creation, Retrieval, Modification and Validation. (See [OMA_XDMv1_ETS])
XDM-1.0-int-0201	Shared XDMS Element and Attribute Creation, Retrieval and Validation. (See [OMA_XDMv1_ETS])
XDM-2.0-int-0900	Subscription to changes in URI List documents (Includes Optional Features for XDMC)
XDM-2.0-int-1000	Search request (Includes Optional Features for XDMC)

5.2   Enabler Test Requirements

Testing requirements for XDM are specified in [XDMv2_ETR], which is divided in mandatory and optional test cases.

Since XDM basic functions are specified in XDM V1.0, it's essential that the testing session covers backwards compatibility of client and server.

5.2.1   Test Infrastructure Requirements

To prove interoperability of implementations it is essential to conduct the testing in an end-to-end environment. The environment has to be configured to allow clients under test easy access to the servers under test. The requirements on the testing environment are as follows:

- **Local Area Network (LAN)** – providing connection between a PC Client implementation and server implementations as well as providing an interface between the server implementation and other infrastructure components (e.g. SIP/IP Core).

- **SIP/IP Core** – providing connection between Client implementations and Server implementations for the sake of signalling and between remote servers.

- **Public Internet** – enabling connection to remote servers.

- **PLMN** – mobile network with an aired interface over GSM, UMTS or CDMA.

- **SIM cards** – for all GSM/UMTS mobile phone based Client implementations.
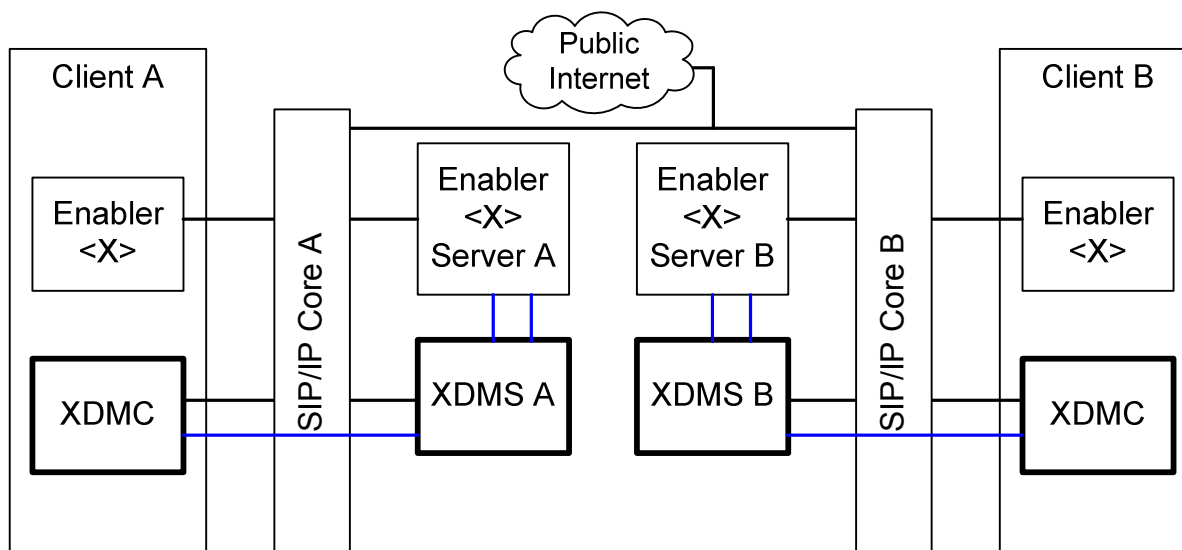
Blue lines represent connections running the XCAP protocol between these entities. These can be connected via na intranet, internet, local IP backbone, direct connections between entities, etc.

Figure 2: XDM Testing Infrastructure

5.2.2   Enabler Execution Flow

5.2.2.1   Authentication and sample XCAP operation

Figure 3 describes how a XCAP operation is performed in 3GPP IMS or 3GPP2 MMD. The Application Usage, i.e. the manipulation of a URI List is used in this specific example, but the same types of messages applies for other Application Usages (although the HTTP body content would, of course, be different). In this example is the XDMC residing in a UE in the same domain as the Shared List XDMS.
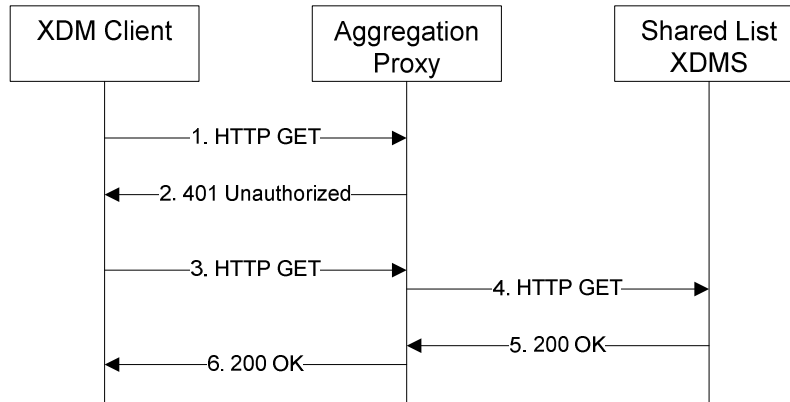
Figure 3 – Authentication and XCAP operation message flow

1) A user wants to obtain a XML document. For this purpose the XDMC sends an HTTP GET request to the Aggregation Proxy.

2) Upon receiving an unauthorized HTTP GET the Aggregation Proxy chooses to authenticate the XDMC.

3) The XDMC sends a HTTP GET request including the Authorization header.

4) Based on the AUID the Aggregation Proxy forwards the request to appropriate XDMS.

NOTE: If the "X-3GPP-Intended-Identity" is not included in the message (3), the Aggregation Proxy will include the "X-3GPP-Asserted-Identity" header.

5) After the XDMS has performed the necessary authorisation checks on the request originator, the XDMS sends an HTTP "200 OK" response including the requested document in the body.

6) The Aggregation Proxy encodes (optionally) the content and routes the response back to the XDMC.

5.2.2.2   Subscribing to Changes in XML Documents

Figure 4 is an example that demonstrates how an XDMC residing in a UE subscribes to changes in a Group document. As the subscription is targeted to a single AUID and a single user, the Subscription Proxy is not used in this example.
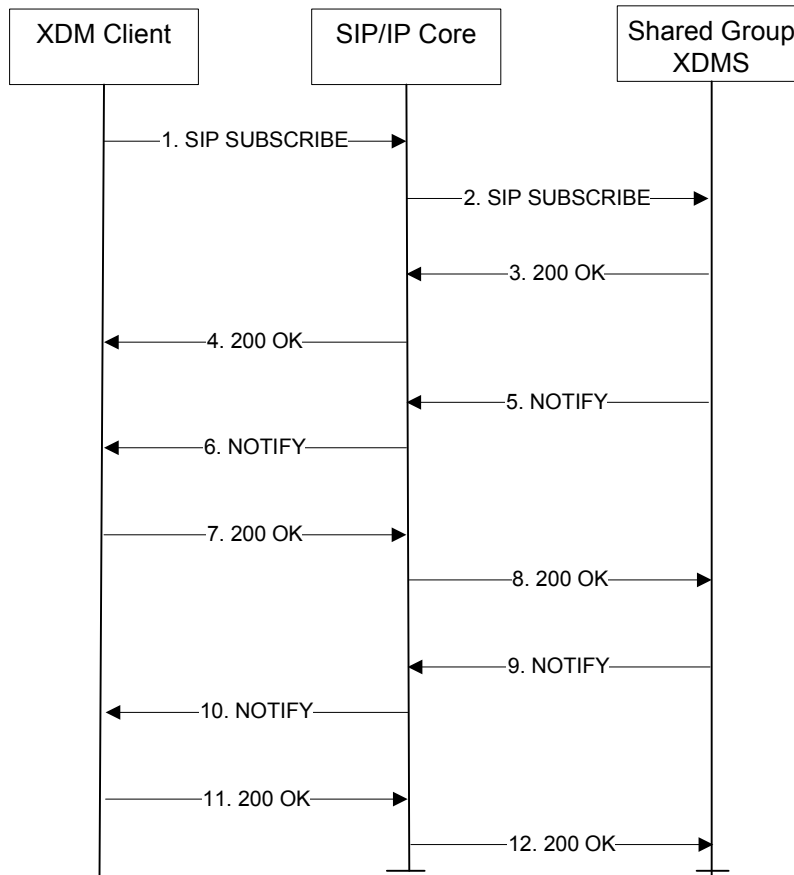
Figure 4 - Subscribing to Changes in XML Documents message flow

1) XDMC subscribes to his Group document, with the contact SIP URI, because he uses multiple devices and wants to keep them updated.

2) The SIP/IP Core network forwards the SIP SUBSCRIBE request to the Shared Group XDMS. When the SIP/IP Core network corresponds to 3GPP IMS or 3GPP2 MMD, the subscriber's preferred public SIP URI shall be inserted in P-Asserted-Identity header.

3) Upon receiving a SIP SUBSCRIBE request for the "xcap-diff" event package, the Shared Group XDMS shall perform the necessary authorization checks on the originator's identity. If the authorization is successes, it shall create a subscription dialog to "xcap-diff" event package to provide the changes of the data identified by the body of SUBSCRIBE request, and return 200 OK to the subscriber.

4) The SIP/IP Core network forwards the 200 OK response to the originator of the SIP SUBSCRIBE request.

5) The Shared Group XDMS generates and sends an initial SIP NOTIFY containing initial references to XDM documents.

6) The SIP/IP Core network forwards the SIP NOTIFY request to the appropriate XDMC. If the XDMC does not yet have local copies of XDM documents it may retrieve them.

7) The XDMC responds with a 200 OK.

8) The SIP/IP Core network forwards the 200 OK to the Shared Group XDMS.

9) After some updates in the XDM document, the Shared Group XDMS sends the diff part in SIP NOTIFY to the XDMC.

10) The SIP/IP Core network forwards the SIP NOTIFY request to the appropriate XDMC.

11) The XDMC responds with a "200 OK" and updates the old content.

12) The SIP/IP Core network forwards the 200 OK to the Shared Group XDMS

5.2.2.3 Search Operation

Figure 5 describes how a Search operation is performed. The example shows searching user profile data in Shared Profile XDMS; the same type of messages apply for searching in other Application Usages, where content of HTTP body would be different. In this example is the XDMC residing in a UE in the same domain as the Shared Profile XDMS.
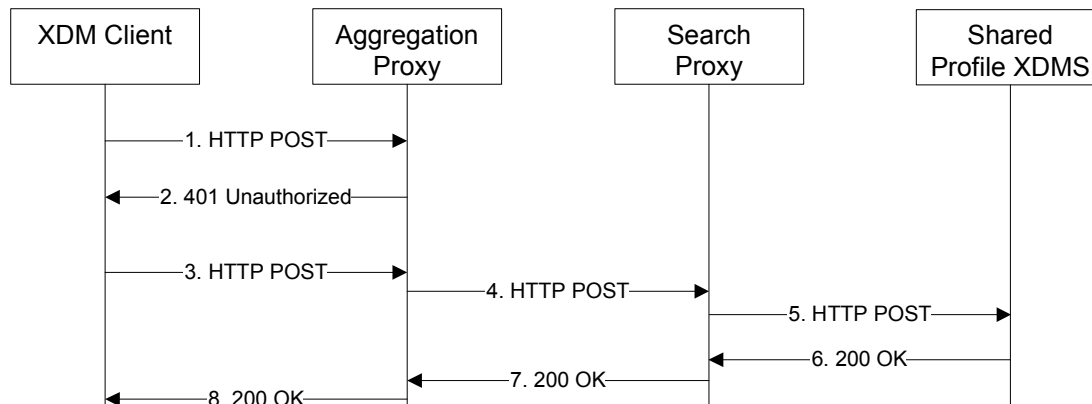
Figure 5 - Search operation message flow

1) XDMC sends an HTTP POST request to the Aggregation Proxy.

2) Upon receiving an unauthorized HTTP POST the Aggregation Proxy chooses to authenticate the XDMC.

3) The XDMC sends a HTTP POST request including the Authorization header to the Aggregation Proxy.

4) Based on AUID, the Aggregation Proxy forwards the Search Request to the Search Proxy.

NOTE 1: If the "X-3GPP-Intended-Identity" is not included in the message (3), the Aggregation Proxy will include the "X-3GPP-Asserted-Identity" header.

5) Based on the target parameter in the Request URI, the Search Proxy forwards the Search Request to the appropriate XDMS.

6) After the XDMS has performed the search operation, the XDMS sends an HTTP "200 OK" response including the requested results in the body.

7) The Search Proxy routes the response to the Aggregation Proxy.

8) The Aggregation Proxy encodes (optionally) the content and routes the response back to the XDMC.

5.2.3 Test Content Requirements

Not applicable.

5.2.4 Test Limitations

5.2.4.1 Physical

None.

5.2.4.2 Resources

XDM testing, as already mentioned is dependent on another enabler. So by itself XDM is not testable. This could be a limitation if no enabler using XDM doesn't register in the TestFests.

5.2.5 Test Restrictions

None.

5.2.6 Test Tools

A Test Tool may be provided for XDM V2.0.

5.2.6.1 Existing Tools to be Used

None.

5.2.6.2 Conformance Test Case Priorities

This table shows the relative priorities of the conformance test cases as described in the Conformance part of the ETS [OMA_XDMv2_CON_ETS].

Test Case Id	Priority
<test case id>	High / Medium / Low

5.2.6.3 Test Tool Requirements

Not applicable.

5.2.7 Resources Required

It is required that there is at least one dedicated human tester onsite at a Test Fest for each implementation tested.

Server teams may be asked to test multiple client implementations during a single test session but only if the server test team has a tester assigned to each client implementation.

Typically one tester per implementation is sufficient for mature implementations. Therefore early implementations are recommended to assign at least two engineers for each implementation under test. This allows when engineer to run tests while another is investigating the cause of any problems.

5.3 Tests to be Performed

The following sections describe the tests related to the formal TestFest validation activities.

5.3.1 Entry Criteria for TestFest

The following tests need to be performed and passed by implementations by members wishing to participate in the TestFest. This ensures minimal requisite capability of the implementations. The tests are defined in the ETS [OMA_XDMv2_INT_ETS] and any special comments are noted.

This is the pre-testing for the test fest. If implementations fail these tests, it means that implementations should not go to the test fest.

Test Case Id	Special Conditions

Test Case Id	Special Conditions
XDM-2.0-int-0100	
XDM-2.0-int-0200	
XDM-1.0-int-0200	

Table 1: Listing of Tests for Entry Criteria for TestFest

5.3.2 Testing to be Performed at TestFest

The following tests need to be performed to fully cover the range of capabilities of the enabler and defined protocols. These tests are to be covered in the TestFest. The tests are defined in the ETS [OMA_XDMv2_INT_ETS] and any special comments are noted.

Test Case Id	Special Conditions
XDM-2.0-int-0100	
XDM-2.0-int-0200	
XDM-1.0-int-0200	
XDM-1.0-int-0201	
XDM-1.0-int-0203	
XDM-1.0-int-0204	
XDM-2.0-int-0600	
XDM-2.0-int-0601	
XDM-2.0-int-0602	
XDM-2.0-int-0800	
XDM-2.0-int-0801	
XDM-2.0-int-0802	
XDM-2.0-int-0900	
XDM-2.0-int-0901	
XDM-2.0-int-0902	
XDM-2.0-int-0903	
XDM-2.0-int-1000	
XDM-2.0-int-1050	
XDM-2.0-int-1051	

Table 2: Listing of Tests to be Performed at TestFest

5.4 Enabler Test Reporting

5.4.1 Problem Reporting Requirements

Normal Reporting, no special reporting required.

5.4.2 Enabler Test Requirements

Normal Reporting, no special reporting required.

6. Alternative Validation Activities

6.1   Bi-lateral testing

If for some reason, the enabler doesn't have enough TestFest session, then bi-lateral testing shall be considered for validation. The main reason for this is the dependence of XDM on other enablers.

7. Approval Criteria

Normal approval criteria (as per Section "Enabler Release Approval Criteria" in [IOPPROC]). Usually three TestFests are to be held and there should be no pending PRs.

7.1   Enabler Validation Test Cases

The following table should list the set of tests that are used for enabler validation.

Test Case Id	ETR Requirement Id	ETR Status	Notes
XDM-2.0-int-0100	N/A		(Use of [OMA_XDMv1_ETS] test cases)
XDM-2.0-int-0200	DIR-001	M	
XDM-1.0-int-0200	N/A		
XDM-1.0-int-0201	N/A		
XDM-1.0-int-0203	N/A		
XDM-1.0-int-0204	N/A		
XDM-2.0-int-0600	XOP-009	M	
	XOP-011	M	
XDM-2.0-int-0601	XOP-010	M	
	XOP-011	M	
XDM-2.0-int-0602	XOP-012	M	
XDM-2.0-int-0800	XOP-017	M	
	XOP-019	M	
XDM-2.0-int-0801	XOP-018	M	
	XOP-019	M	
XDM-2.0-int-0802	XOP-020	M	
XDM-2.0-int-0900	SUB-001	M	
XDM-2.0-int-0901	SUB-002	M	
XDM-2.0-int-0902	SUB-003	M	
XDM-2.0-int-0903	SUB-004	M	
XDM-2.0-int-1000	SRC-001	O	
XDM-2.0-int-1050	SRC-002	O	
XDM-2.0-int-1051	SRC-002	O	

Table 3: Enabler Validation Test Cases

7.2   Non-Covered ETR Requirements

Any restrictions, limitations and/or infeasibility of testing of the ETR requirements should be stated in this section.

If new information about limitations and/or infeasibility of testing of any of the ETR requirements is discovered, this section should be updated accordingly.

ETR Requirement Id	ETR Status	Notes
SEC-001	M	This requirement needs to be covered in CON ETS.
SEC-002	M	This requirement needs to be covered in CON ETS.
SEC-003	M	This requirement needs to be covered in CON ETS.
SEC-004	M	This requirement needs to be covered in CON ETS.
SEC-005	M	This requirement needs to be covered in CON ETS.
XOP-013	M	Contribution needed to extend coverage.
XOP-014	M	Contribution needed to extend coverage.
XOP-015	M	Contribution needed to extend coverage.
XOP-016	M	Contribution needed to extend coverage.
HCOM-001	O	
XOP-021	O	
XOP-022	O	
XOP-023	O	
XOP-024	O	
BC-001	O	
BC-002	O	
BC-003	O	
BC-004	O	

Table 4: Non-Covered ETR Requirements

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 <current version> History

Document Identifier	Date	Sections	Description
Draft Versions OMA-EVP-XDM-V2_0	11 Oct 2007	First draft	
	14 Aug 2008	First draft agreed	
	09 Jul 2009		Editorial updates
Candidate Versions OMA-EVP-XDM-V2_0	18 Aug 2009	n/a	TP approval: OMA-TP-2009-0350-INP_XDM_2.0_EVP_for_Candidate_approval

Appendix B.   XDM Test Tool Requirements

B.1   Introduction

<More text>

B.2   OMA XDM Test Tool: Overview

<More text>

B.3   Requirements for Test Tool

<More text>