



Enabler Test Requirements for DS

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1. Scope

The Enabler Test Requirements (ETR) document for the Enabler under consideration is created and maintained by the Technical Working Group (TWG) responsible for the technical specifications for the corresponding Enabler.

The ETR document is intended to cover at least those requirements collected in the Requirements Document (RD) and the Architecture Document (AD) in addition to any other items the TWG has identified as important enough to warrant attention from interoperability perspective and identify any technical functionalities that should be covered by testing.

2. References

2.1 Normative References

- [DEVINF] “OMA DS Device Information”, Open Mobile Alliance™, OMA-TS-DS-DevInfo-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DS_MO] “OMA DS Management Object”, Open Mobile Alliance™, OMA-TS-DS_MO-V1_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DS_PROVISION] “OMA DS Provisioning”, Open Mobile Alliance™, OMA-TS-DS_Provisioning-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSCONCEPTS] “Data Synchronization Concepts and Definitions”, Open Mobile Alliance™, OMA-TS-DS_Concepts-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSHTTPBINDING] “OMA DS HTTP Binding Specification”, Version 2.0, Open Mobile Alliance™, OMA-TS-DS_HTTPBinding-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSNOTI] “OMA DS Notification”, Version 2.0, Open Mobile Alliance™, OMA-TS-DS_Notification-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSOBEXBINDING] “OMA DS OBEX Binding Specification”, Version 2.0, Open Mobile Alliance™, OMA-TS-DS_OBEXBinding_V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSPRO] “Data Synchronization Protocol”, Version 2.0, Open Mobile Alliance™, OMA-TS-DS_Protocol-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSSYNTAX] “Data Synchronization Syntax”, Open Mobile Alliance™, OMA-TS-DS_Syntax-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DSWSPBINDING] “OMA DS OBEX Binding Specification”, Version 2.0, Open Mobile Alliance™, OMA-TS-DS_WSPBinding-V2_0,
[URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [ERELED] “Enabler Release Document for DS”, Open Mobile Alliance™, OMA-ERELED-DS-V2_0,
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [IOPPROC] “OMA Interoperability Policy and Process”, Version 1.3, Open Mobile Alliance™, OMA-ORG-IOP_Process-V1_3,
[URL:http://www.openmobilealliance.org/](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](http://www.ietf.org/rfc/rfc2119.txt)

2.2 Informative References

- [OMADICT] “Dictionary for OMA Specifications”, Version x.y, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7,
[URL:http://www.openmobilealliance.org/](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” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

TestFest Multi-lateral interoperability testing event.

For more definitions, please refer to the [DSCONCEPTS] document.

3.3 Abbreviations

AD	Architecture Document
DS	Data Synchronization
DTD	Document Type Definition
GUID	Global Unique Identifier
HTTP	HyperText Transfer Protocol
IMEI	International Mobile Equipment Identifier
LUID	Local Unique Identifier
MD5	Message Digest algorithm version 5
MIME	Multi-purpose Internet Mail Extensions
MO	Management Object
OBEX	Object Exchange protocol
OMA	Open Mobile Alliance
OMA	Open Mobile Alliance
PKG	Package
RD	Requirements Document
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
WAP	Wireless Application Protocol
WBXML	Wireless Binary XML Content Format
WSP	Wireless Session Protocol
XML	Extensible Markup Language

4. Introduction

The purpose of this Enabler Test Requirements document is to help guide the testing effort for the Enabler DS V2.0, documenting those areas where testing is most important to ensure interoperability of implementations.

The Enabler under consideration comprises the following specifications:

- OMA-TS-DS_Concepts-V2_0: Defines the concepts and definitions for DS 2.0 enabler
- OMA-TS-DS_DevInf-V2_0: Defines the device information to be exchanged between DS Client and DS Server for DS 2.0 enabler
- OMA-SUP-XSD_DS_DevInf_Schema-V2_0: Defines the device information schema for exchanges between DS Client and DS Server for DS 2.0 enabler
- OMA-TS-DS_Notification-V2_0 : Defines the notification mechanism for DS 2.0 enabler
- OMA-TS-DS_Protocol-V2_0: Defines the DS fundamentals, sync flows, DS usages for DS 2.0 enabler
- OMA-TS-DS_Syntax-V2_0: Defines the syntax of the SyncML commands for DS 2.0 enabler
- OMA-SUP-XSD_DS_Syntax_Schema-V2_0: Defines the schema for the syntax of the SyncML commands for DS 2.0 enabler
- OMA-TS-DS_MO-V1_0: Defines the DS Management Object for provisioning in DS 2.0 enabler (and also DS 1.2 enabler)
- OMA-SUP-MO_DS-V1_0: Defines the DDF for the DS Management Object for provisioning in DS 2.0 enabler (and also DS 1.2 enabler)
- OMA-TS-DS_Provisioning-V2_0: Defines the DS Application Characteristic files for provisioning in DS 2.0 enabler
- OMA-TS-DS_HTTPBinding-V2_0: Defines the HTTP binding specification for DS 2.0 enabler
- OMA-TS-DS_OBEXBinding-V2_0: Defines the OBEX binding specification for DS 2.0 enabler
- OMA-TS-DS_WSPBinding-V2_0: Defines the WSP binding specification for DS 2.0 enabler

Generally, the testing activity should aim at validating the normal working behaviour of the client/server interactions, as well as testing the error conditions whenever it is possible to set up the appropriate scenarios. The following sections provide a more detailed description of the testing requirements for DS V2.0.

This document also intends to provide some guidance on the prioritization of the specifications and features to be tested within the DS V2.0 Enabler.

5. Test Requirements

The Data Synchronization V2.0 Enabler supports the following functionality.

- Sync type parameters negotiation
- Sync anchors
- Busy Signalling
- Conflict resolution
- Hierarchical sync
- Large object handling
- Filtering
- Sync commands
- Session maintenance
- End the session
- Normal sync
- Client initiated recovery sync
- Server initiated recovery sync
- Security

5.1 Enabler Test Requirements

The test requirements collected in this section are related to the Enabler DS V2.0.

In this section, it should be defined what specific functionalities of this Enabler shall or should be tested to ensure adequate operational of the implementations, including any security requirements and constraints on usage if specified (e.g. user can forward a media object but can not visualize it). That means that devices (clients/serves) shall do what they have to do and they shall not do what they are not allowed to do. Both types of test requirements (positive and negative testing) should be included here if so required.

Besides this information, OMA Architecture specifies a “Framework Architecture”, consisting of a set of common functions that need to be invoked in most use cases involving the different Service Enablers. The functionality requirements defined in the OMA Framework Architecture, i.e. authentication, authorization, charging, billing, common directory, etc. should also be listed in this table. Use cases are the main input to identify test requirements.

The following test requirements should cover both Conformance test requirements (i.e. functionality to be tested to verify whether it is implemented either in the client side or in the server side) and Interoperability test requirements (i.e. client/server interactions one with another)

The following sections (Mandatory and Optional test requirements) could also be separated for client and server test requirements.

The tables for the mandatory and optional test requirements include the following columns:

FEATURE KEY: A set of characters uniquely identifying the enabler test requirement to be tested. It is suggested that the Feature Key is no longer than 4 to 5 characters.

The purpose of the Feature Key is that when used, it distinctly refers to only one feature to be tested.

FEATURE DESCRIPTION: A description of a technical specification feature to be tested.

FEATURE TEST REQUIREMENTS: A description of what shall be tested for the feature,

5.1.1 Mandatory Test Requirements

Mandatory test requirements are covering mandatory features/functions of an Enabler which shall always be implemented in the client/server

NOTE: This table needs to be filled out at a level where ambiguity is not present but details are not overwhelming.

Ambiguity means that the details do not have several meanings nor have more than one possible implementation path following.

5.1.1.1 Fundamental Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	FUND-01	Sync type parameters negotiation	Requirements to test that server and client can send sync type parameters to the other side, and the recipient sends back the desired sync type parameters.
	FUND-02	Sync anchor comparison	Requirements to test that server and client can send sync anchors to the other side, and the recipient compares the received sync anchors with the stored sync anchors. Requirements to test that server and client can handle the situation that sync anchors mismatch.
	FUND-03	Conflict resolution	Requirements to test that server can perform conflict resolution based on the data items sent by the client.
Error Flow	N/A		

Table 1: Applicability Table for Fundamental Mandatory Test Requirements

5.1.1.2 Sync Flow Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	SYNC-01	Session maintenance	Requirements to test that server and client can send session maintenance commands to the other side to maintain the session to continue the sync.
	SYNC-02	End the session	Requirements to test that server and client can send session end commands to the other side to end the session.
	SYNC-03	Normal sync flow	Requirements to test that server and client can perform normal sync between each other.
	SYNC-04	Client initiated recovery sync	Requirements to test that server and client can perform client initiated recovery sync between each other.
	SYNC-05	Server initiated recovery sync	Requirements to test that server and client can perform server initiated recovery sync between each other.
Error Flow	SYNC-06	Abnormal flows	Requirements to test that server and client can handle the abnormal flows during the synchronization.

Table 2: Applicability Table for Sync Flow Mandatory Test Requirements

5.1.1.3 Data Sync Operation Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	DSOP-01	Mandatory sync commands	Requirements to test that server and client can perform the mandatory sync commands: Add, Replace, Delete, Put, Get, Status, Alert, SyncAlert.
Error Flow	DSOP-02	Invalid sync commands	Requirements to test that server and client can handle the invalid sync commands.

Table 3: Applicability Table for Data Sync Operation Mandatory Test Requirements

5.1.1.4 Security Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	SEC-01	Security	Requirements to test that server and client can perform authentication, data integrity, data confidentiality between each other.
Error Flow	SEC-02	Security related error	Requirements to test that server and client can handle the security related errors during the authentication, integrity, and confidentiality.

Table 4: Applicability Table for Security Mandatory Test Requirements

5.1.2 Optional Test Requirements

Optional test requirements are covering optional features/functions of an Enabler.

If an optional requirement of the Enabler is implemented in the client/server, this requirement SHALL be tested.

NOTE: This table needs to be filled out at a level where ambiguity is not present but details are not overwhelming.

Ambiguity means that the details do not have several meanings nor have more than one possible implementation path following.

5.1.2.1 Fundamental Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	FUND-04	Busy Signalling	Requirements to test that server and client can handle the busy signalling commands between each other.
	FUND-05	Hierarchical sync	Requirements to test that server and client can perform the hierarchical sync between each other.
	FUND-06	Large object	Requirements to test that server and client can transfer large object between each other.
	FUND-07	Filtering	Requirements to test that server and client can perform data synchronization based on filtering criteria between each other.
	FUND-08	Provisioning	Requirements to test that server can provision client using DS MO or Application Character files.
	FUND-09	Transport bindings	Requirements to test that server and client can use HTTP, WSP and OBEX transport bindings between each other.
Error	FUND-10	Feature not supported	Requirements to test that server and client can handle the situation that the other side does not support the optional features.

	Feature Key	Feature Description	Feature Test Requirements
Flow	FUND-11	Error filter	Requirements to test that server and client can handle the situation that the filter grammar is error.

Table 5: Applicability Table for Fundamental Optional Test Requirements

5.1.2.2 Sync Flow Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	SYNC-07	Optional sync commands	Requirements to test that server and client can handle the optional sync commands (for example, Move, Copy) between each other.
	SYNC-08	Notification	Requirements to test that server can send notification to client to initiate a session.
Error Flow	N/A		

Table 6: Applicability Table for Sync Flow Optional Test Requirements

5.1.2.3 Data Sync Operation Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	DSOP-03	Optional sync commands	Requirements to test that server and client can handle the optional sync commands (for example, Move, Copy) between each other.
Error Flow	DSOP-04	Invalid sync commands	Requirements to test that server and client can handle the invalid optional sync commands.

Table 7: Applicability Table for Data Sync Operation Optional Test Requirements

5.1.2.4 Security Requirements

	Feature Key	Feature Description	Feature Test Requirements
Normal Flow	SEC-03	Security	Requirements to test that server and client can perform optional authentication methods between each other (MD5...).
	SEC-04	Security	Requirements to test that server and client can perform data encryption between each other.
Error Flow	SEC-05	Security related error	Requirements to test that server and client can handle data encryption errors.

Table 8: Applicability Table for Security Optional Test Requirements

5.2 Backwards Compatibility

DS V2.0 enabler is not compatible with DS V1.2.1 and the previous versions.

5.3 Enabler Dependencies

The DSMO in DS V2.0 is normatively dependent on the DM 1.2 specifications. However, this normative dependency should not be seen as requiring that version of the DM enabler as mandatory.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version <current version> History

Document Identifier	Date	Sections	Description
Draft Version OMA-ETR-DS-V2_0	27 Oct 2008	All	First draft based on the latest template OMA-DS-DS_2_0-2008-0125R01-INP_ETR_Draft
Candidate Version OMA-ETR-DS-V2_0	12 Feb 2009	n/a	Status changed to Candidate by TP TP ref # OMA-TP-2009-0074R01- INP_DS_V2_0_ERP_for_Candidate_Approval Editorial clean-up of sections 2 and 3 and appendix A before publication.