Enabler Test Specification for Data Synchronization v1.1.2

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Open Mobile Alliance
OMA-ETS-DataSynchronization-V1_1_2-20040504-A

Contents

1. Scope

This document describes in detail available test cases for Data Synchronization v1.1.2.

The test cases are split in two categories, conformance and interoperability test cases.

The conformance test cases are aimed to verify the adherence to normative requirements described in the technical specifications.

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

If either conformance or interoperability tests do not exists at the creation of the test specification this part should be marked not available.

2. References

2.1. Normative References

[DSDEV] "SyncML Device Information", Open Mobile Alliance™, OMA_SyncML_DataSyncDevInfo_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[DSDEVDTD] "SyncML Device Information Document Type Definition", Open Mobile Alliance™, OMA_SyncML_DevInfoDTD_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[DSPRO] "SyncML Synchronization Protocol", Open Mobile Alliance™, OMA_SyncML_DataSyncProtocol_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[DSREPU] "SyncML Representation Protocol, Data Synchronization Usage", Open Mobile Alliance™, OMA_SyncML_DataSyncRep_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[COMMONMETA] "SyncML Meta Information", Open Mobile Alliance™, OMA_SyncML_MetaInfo_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[SYNCHTTP] "SyncML HTTP Binding Specification", Open Mobile Alliance™, OMA-SyncML-HTTPBinding-V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[SYNCOBEX] "SyncML OBEX Binding Specification", Open Mobile Alliance™, OMA-SyncML-OBEXBinding-V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[SYNCWSP] "SyncML WSP Binding Specification", Open Mobile Alliance™, OMA-SyncML-WSPBinding-V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels". S. Bradner. March 1997. http://www.ietf.org/rfc/rfc2119.txt

2.2. Informative References

[DSCHANGES] "Changes for SyncML Data Synchronization", Open Mobile Alliance™, OMA_SyncML_DataSyncChanges_V1_1_2, URL:http://www.openmobilealliance.org/tech/docs

[OMADICT] "Dictionary for OMA specifications". Open Mobile Alliance™. OMA-Dictionary-v1_0. 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.

The following numbering scheme is used:

xxx-y.z-con-number where:

xxx	Name of enabler, e.g. MMS or Browsing
y.z	Version of enabler release, e.g. 1.2 or 1.2.1
con	Indicating this test is a conformance test case
number	Leap number for the test case

Or

xxx-y.z-int-number where:

xxx	Name of enabler, e.g. MMS or Browsing
y.z	Version of enabler release, e.g. 1.2 or 1.2.1
int	Indicating this test is a interoperability test case
number	Leap number for the test case

3.2. Definitions

SCTS	SyncML Conformance Test Suite.
Test Object	The implementation under test is refered to as the Test Object. In this document, the Client.
Test Case	A Test Case is an individual test used to verify the conformance of the Test Object to a particular mandatory feature of the protocol. A 4-digit number identifies Test Cases where the first two digits denote the Test Group ID.
Test Group	A Test Group is a collection of Test Cases, which are executed, in a single SyncML session in SCTS conformance test tool.

3.3. Abbreviations

SCTS	SyncML Conformance Test Suite
DS	Data Synchronization

4. Introduction

The purpose of this document is to provide test cases for Data Synchronization Enabler Release v1.1.2.

Some features in the Data Synchronization enabler may optionally be implemented in mobile devices. The tests associated with these optional features are marked as [Optional] in the test specification.

5. Guidelines for Data Synchronization v1.1.2 Test Coverage

This section provides guidelines for executing the Interoperability test cases.

During Interoperability testing, you MUST demonstrate (where possible) all Data Media Types and transports claimed in the Enabler Implementation Conformance Statement (EICS) for your device. This is based upon the assumption that if both Client and Server claim to support the same media type then testing MUST include that media type. Where there is a mismatch of media types, no testing can be conducted. When devising the test schedule, the Trusted Zone will try to match Client/Server EICSs to facilitate test coverage.

To this effect, within a designated test session you MUST submit test results according to the following test criteria:

Data Media Type	Transport	Interoperability Test Cases to Execute
DataType1	HTTP	FULL - All IOP Test Cases (int-001 - int-012/13)
Each additional DataType	HTTP	Regression - Test Cases int-001 – int-004 Only
DataType1	OBEX	Regression - Test Cases int-001,7,8,11,12

Note(1): WSP support is classed as HTTP since this is the transport from the WAP Gateway.

Note(2): It is assumed that Data Media Types are independent of the transport mechanism. The second transport testing consists of a subset of Interoperability test cases intended to prove interoperability.

For example, if a Client and Server both claim to support Data Media types vCard(2.1), vCal(1.0)/vEvent and vCal(1.0)/vToDo and transport bindings HTTP and OBEX, then the following test results are expected:

HTTP	vCard(2.1) FULL	- Test Cases int-001 - int-012/13
HTTP	vCal(1.0)/vEvent Regression	- Test Cases int-001 - int-004
HTTP	vCal(1.0)/vToDo Regression	- Test Cases int-001 - int-004
OBEX	vCard(2.1) Regression	- Test Cases int-001,7,8,11,12

Please note that these are the minimum test results that MUST be submitted to the Trusted Zone. If time permits it is recommended that you execute all of the interoperability test cases for all of the claimed data media types and transports.

1. The intention of these guidelines is to prioritize test coverage.
2. You MUST execute all the test cases for one of the Media Types
3. You MUST demonstrate interoperability with all the supported data media types and transports.

You SHOULD complete as many full test sessions as possible for all supported data types and transports within the allocated time period for testing.

6. Data Synchronization Client Conformance Test Cases

For Enabler Data Synchronization there exist 28 Client Conformance tests. 22 of those are mandatory.

The Client Conformance test cases are listed according to the Test Groups. Each Test Group describes its test cases and the relevant information regarding the message exchanged. The tests executed to test a client implementation are described in this section.

6.1. Data Synchronization Client Conformance Test Group #1

6.1.1. Support of the Basic authentication scheme

Test Case Id	DataSynchronization-v1.1.2-client-con-0101
Test Object	Client device
Test Case Description	To check if the Test Object supports the Basic authentication scheme. SCTS will challenge the client for credentials in this scheme.
Specification Reference	[DSPRO], Section 8
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – Chal [DSREPU] – Appendix A – Common Use Elements Table – Cred
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	None.
Pass-Criteria	Client MUST send valid credentials encoded using the Basic authentication scheme.

6.2. Data Synchronization Client Conformance Test Group #2

6.2.1. Support of the MD5 Digest authentication scheme

Test Case Id	DataSynchronization-v1.1.2-client-con-0201
Test Object	Client device
Test Case Description	To check if the client supports the MD5 scheme. SCTS will challenge the client for credentials in this scheme.
Specification Reference	[DSPRO], Section 8
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – Chal [DSREPU] – Appendix A – Common Use Elements Table – Cred
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	None.

Pass-Criteria	Client MUST send valid credentials encoded using the Basic authentication scheme.

6.3. Data Synchronization Client Conformance Test Group #3

6.3.1. Respond with Results for a Get on device information

Test Case Id	DataSynchronization-v1.1.2-client-con-0301
Test Object	Client device
Test Case Description	To check if the Test Object responds with Results for a Get on device information.
Specification Reference	[DSPRO], Section 9.2
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Get [DSREPU] – Appendix A – Protocol Commands Table – Result
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	None.
Pass-Criteria	The Test Object MUST return Results for SCTS' Get on device information.

6.3.2. Sending Alerts for all databases

Test Case Id	DataSynchronization-v1.1.2-client-con-0302
Test Object	Client device
Test Case Description	To check if the Test Object sends Alerts for all its databases.
Specification Reference	[DSPRO], Section 9.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Alert
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	None.
Pass-Criteria	The Test Objects Alerts MUST result in a status code of 200/508. SCTS MUST receive status codes of 200 for all its Alerts.

6.3.3. Sending of valid Sync Tags

Test Case Id	DataSynchronization-v1.1.2-client-con-0303
Test Object	Client device
Test Case Description	To check if the Test Object sends valid Sync Tags.

Specification Reference	[DSPRO], Section 10.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Sync
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	Test Object's Database must be empty.
Pass-Criteria	Test Object MUST send a Sync element without any child container/command elements.

6.4. Data Synchronization Client Conformance Test Group #4

6.4.1. Matching of Sync Anchors

Test Case Id	DataSynchronization-v1.1.2-client-con-0401
Test Object	Client device
Test Case Description	To check if the Test Object's and SCTS' Sync Anchors match by sending/receiving Alerts for normal two way sync.
Specification Reference	[DSPRO], Section 7.2.1
SCR Reference	[COMMONMETA] Appendix A – Conformace table – Anchor [COMMONMETA] Appendix A – Conformace table – Next [COMMONMETA] Appendix A – Conformace table – Last
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST send Alert codes of 200 with valid Sync Anchors and SCTS MUST receive a status code of 200 on it's Alert.

6.4.2. Correct handling of Add

Test Case Id	DataSynchronization-v1.1.2-client-con-0402
Test Object	Client device
Test Case Description	To check if the Test Object handles Adds correctly.
Specification Reference	[DSREPU], Section 9.4 [DSPRO], Section 10.3 [DSREPU], Section 6.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Map

Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 201 status code for all SCTS' Adds.

6.5. Data Synchronization Client Conformance Test Group #5

6.5.1. Sending of valid Add

Test Case Id	DataSynchronization-v1.1.2-client-con-0501
Test Object	Client device
Test Case Description	To check if the Test Object sends valid Adds.
Specification Reference	[DSREPU], Section 9.4 [DSREPU], Section 6.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. 4 data item(s) must be added to each database.
Pass-Criteria	The Test Object's Adds MUST result in a 201 status code and it MUST return a 200 status code for all SCTS' Maps.

6.5.2. Handling of Replace (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0502
Test Object	Client device
Test Case Description	To check if the Test Object handles a Replace on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.

Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Replace.

6.5.3. Sending of valid Replace (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0503
Test Object	Client device
Test Case Description	To check if the Test Object sends a valid Replace on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by SCTS must be replaced, the data item(s) will be specified.
Pass-Criteria	The Test Object's Replace MUST result in a 200 status code.

6.5.4. Handling of Delete (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0504
Test Object	Client device
Test Case Description	To check if the Test Object handles a Delete on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Delete.

6.5.5. Sending of valid Delete (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0505
Test Object	Client device
Test Case Description	To check if the Test Object sends a valid Delete on a data item added by

	SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by SCTS must be deleted, the data item(s) will be specified.
Pass-Criteria	The Test Object's Delete MUST result in a 200 status code.

6.6. Data Synchronization Client Conformance Test Group #6

6.6.1. Handling of Replace (client item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0601
Test Object	Client device
Test Case Description	To check if the Test Object handles a Replace on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Replace.

6.6.2. Sending of valid Replace (client item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0602
Test Object	Client device
Test Case Description	To check if the Test Object sends a valid Replace on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status

Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by the Test Object must be replaced, the data item(s) will be specified.
Pass-Criteria	The Test Object's Replace MUST result in a 200 status code.

6.6.3. Handling of Delete (client item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0603
Test Object	Client device
Test Case Description	To check if the Test Object handles a Delete on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Delete.

6.6.4. Sending of valid Delete (client item)

Test Case Id	DataSynchronization-v1.1.2-client-con-0604
Test Object	Client device
Test Case Description	To check if the Test Object sends a valid Delete on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by the Test Object must be deleted, the data item(s) will be specified.
Pass-Criteria	The Test Object's Delete MUST result in a 200 status code.

6.7. Data Synchronization Client Conformance Test Group #7

6.7.1. Sync verification

Test Case Id	DataSynchronization-v1.1.2-client-con-0701
Test Object	Client device
Test Case Description	To check if the databases are in Sync by forcing a slow sync(SCTS does not send any modifications).
Specification Reference	[DSPRO], Section 10.5
SCR Reference	[DSPRO] Appendix A – Conformance Requirements for SyncML Client Table – Support of 'slow two-way sync' sync type
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST send all it's data to SCTS and SCTS checks if the databases are in sync.

6.8. Data Synchronization Client Conformance Test Group #8

6.8.1. Handling of Add with multiple items

Test Case Id	DataSynchronization-v1.1.2-client-con-0801
Test Object	Client device
Test Case Description	To check if the Test Object can handle an Add with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 201 for the Add with multiple items.

6.8.2. Handling of Replace with multiple items

Test Case Id	DataSynchronization-v1.1.2-client-con-0802
Test Object	Client device

Test Case Description	To check if the Test Object can handle a Replace with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 200 for the Replace with multiple items.

6.8.3. Handling of Delete with multiple items

Test Case Id	DataSynchronization-v1.1.2-client-con-0803
Test Object	Client device
Test Case Description	To check if the Test Object can handle a Delete with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 200 for the Delete with multiple items.

6.8.4. Respond for Delete – Multiple Status

Test Case Id	DataSynchronization-v1.1.2-client-con-0804
Test Object	Client device
Test Case Description	To check if the Test Object responds with individual 'Status' for each item in a Delete (One item is non-existant).
Specification Reference	SyncML Representation Protocol V1.01, Section 5.4.1
SCR Reference	[DSREPU], Section 5.4.1
Test Tool	[DSREPU] – Appendix A – Protocol Commands Table – Delete

	[DSREPU] – Appendix A – Protocol Commands Table – Status
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return two seperate status, one with a code of 200 and the other with a code of 211/404.

6.9. Data Synchronization Client Conformance Test Group #9

6.9.1. Handling of multiple messages

Test Case Id	DataSynchronization-v1.1.2-client-con-0901
Test Object	Client device
Test Case Description	To check if the Test Object can handle multiple messages.
Specification Reference	[DSPRO], Section 7.9
SCR Reference	[DSREPU] – Appendix A – Common use elements Table – Final
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	None
Pass-Criteria	The session MUST complete successfully.

6.10. Data Synchronization Client Conformance Test Group #10 [Optional]

6.10.1. Handling of NumberOfChanges

Test Case Id	DataSynchronization-v1.1.2-client-con-1001
Test Object	Client device
Test Case Description	To check if the Test Object handles NumberOfChanges properly.
Specification Reference	[DSDEV], Section 5.27 SyncML Sync Representation V1.1, Section 5.1.16
SCR Reference	[DSREPU] – Appendix A – Common use elements Table – NumberOfChanges [DSDEV] – Appendix A – Conformance table - SupportNumberOfChanges
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	If the Test Object does not support NumberOfChanges, this test group can be skipped.
Pass-Criteria	The Test Object MUST be able to correctly handle the NumberOfChanges in the Sync command.

6.11. Data Synchronization Client Conformance Test Group #11 [Optional]

6.11.1. Receiving of Large Object

Test Case Id	DataSynchronization-v1.1.2-client-con-1101
Test Object	Client device
Test Case Description	To check if the Test Object properly declares the MaxObjSize and can properly receive Large Objects.
Specification Reference	[DSDEV], Section 5.26 [DSPRO], Section 7.10 [COMMONMETA], Section 5.9
SCR Reference	[DSDEV] – Appendix A – Conformance table – SupportLargeObjs [DSPRO] – Appendix A – Conformance Requirements for SyncML Client Table – Support of 'Large Objects' [COMMONMETA] Appendix A – Conformance table – MaxObjSize
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. The Test Object MUST indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST send MaxObjSize in a Sync or Alert command. It MUST accept valid objects that do not fit into a single message. It MUST return the correct status for both the initial and final chunks of a Large Object.

6.12. Data Synchronization Client Conformance Test Group #12 [Optional]

6.12.1. Sending of Large Object

Test Case Id	DataSynchronization-v1.1.2-client-con-1201
Test Object	Client device
Test Case Description	To check if the Test Object properly declares the MaxObjSize and can properly send Large Objects.
Specification Reference	[DSDEV], Section 5.26 [DSPRO], Section 7.10 [COMMONMETA], Section 5.9

SCR Reference	[DSDEV] – Appendix A – Conformance table – SupportLargeObjs [DSPRO] – Appendix A – Conformance Requirements for SyncML Client Table – Support of 'Large Objects' [COMMONMETA] Appendix A – Conformance table – MaxObjSize
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object MUST indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST send MaxObjSize in a Sync or Alert command. It MUST be able to send atleast one Large Object.

6.13. Data Synchronization Client Conformance Test Group #13 [Optional]

6.13.1. Handling of Large Objects with incorrect size

Test Case Id	DataSynchronization-v1.1.2-client-con-1301
Test Object	Client device
Test Case Description	To check if the Test Object correctly handles Large Objects with incorrect size.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSPRO] – Appendix A – Conformance Requirements for SyncML Client Table – Support of 'Large Objects' [DSREPU] – Appendix A – Protocol Commands Table – Status
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. The Test Object MUST indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST return the correct status for an invalid size after the entire object has been received.

6.13.2. Handling of Large Objects that are not completely sent

Test Case Id	DataSynchronization-v1.1.2-client-con-1302
Test Object	Client device
Test Case Description	To check if the Test Object correctly handles large objects that are not completely sent.
Specification Reference	[DSPRO], Section 7.10

SCR Reference	[DSPRO] – Appendix A – Conformance Requirements for SyncML Client Table – Support of 'Large Objects' [DSREPU] – Appendix A – Protocol Commands Table – Alert
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object's databases must be in sync with SCTS. The Test Object MUST indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST report the interruption of a Large Object using an Alert 223.

6.14. Data Synchronization Client Conformance Test Group #14 [Optional]

6.14.1. Large Object delivery (Lack of commit)

Test Case Id	DataSynchronization-v1.1.2-client-con-1401
Test Object	Client device
Test Case Description	To check if the Test Object did not commit the Large Object with incorrect size and the incomplete Large Object sent in the last session.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSPRO] – Appendix A – Conformance Requirements for SyncML Client Table – Support of 'Large Objects'
Test Tool	SCTS DS 1.1.2 as a server
Preconditions	The Test Object MUST indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST not have commited the Large Objects from the last session. It MUST send only one Add containing the normal object that interupted the large object.

7. Data Synchronization Server Conformance Test Cases

For Enabler Data Synchronization there exist 35 conformance tests. 33 of those are mandatory.

The Server Conformance test cases are listed according to the Test Groups. Each Test Group describes its test cases and the relevant information regarding the message exchanged. The tests executed to test a client implementation are described in this section.

7.1. Data Synchronization Server Conformance Test Group #1

7.1.1. Server Layer Authentication

Test Case Id	DataSynchronization-v1.1.2-server-con-0101
Test Object	Server device
Test Case Description	To check if the Test Object implements 'Server Layer Authentication'. SCTS sends SyncHdr with wrong credentials.
Specification Reference	[DSPRO], Section 8.1 [DSPRO], Section 8.3 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] - Appendix A - Common Use Elements Table – Chal [DSREPU] – Appendix A – Message Container Elements – SyncHdr
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The Test Object MUST return a 401 status code on the SyncHdr

7.2. Data Synchronization Server Conformance Test Group #2

7.2.1. Server Layer Authentication - SyncHdr with nocredentials

Test Case Id	DataSynchronization-v1.1.2-server-con-0201
Test Object	Server device
Test Case Description	To check if the Test Object implements 'Server Layer Authentication'. SCTS sends SyncHdr with no credentials.
Specification Reference	[DSPRO], Section 8.1 [DSPRO], Section 8.3 [DSREPU], Section 5.4.1
SCR Reference	

	[DSREPU] - Appendix A - Common Use Elements Table – Chal [DSREPU] – Appendix A – Message Container Elements – SyncHdr
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The Test Object MUST return a 407 status code on the first SyncHdr

7.2.2. Accept of the credentials

Test Case Id	DataSynchronization-v1.1.2-server-con-0202
Test Object	Server device
Test Case Description	To check if the Test Object accepts the credentials sent and proceeds with the Sync Session.
Specification Reference	[DSPRO], Section 8.1
SCR Reference	[DSREPU] - Appendix A - Common Use Elements Table – Cred
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The Test Object MUST return either a 200 or 212 status code on the first/second SyncHdr.

7.2.3. Respond with Results for a Get on device information

Test Case Id	DataSynchronization-v1.1.2-server-con-0203
Test Object	Server device
Test Case Description	To check if the Test Object responds with Results for a Get on device information.
Specification Reference	[DSPRO], Section 9.2
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements Table – Get [DSREPU] – Appendix A – Protocol Command Elements Table - Result
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The Test Object MUST return Results for SCTS' Get on device information.

7.2.4. Responds with Alerts for all the databases

Test Case Id	DataSynchronization-v1.1.2-server-con-0204
Test Object	Server device

Test Case Description	To check if the Test Object responds with Alerts for all the databases alerted by SCTS.
Specification Reference	[DSPRO], Section 7.2.1 [DSPRO], Section 9.1
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements - Alert
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The Test Object MUST return a 200 status and an Alert for all SCTS' Alerts.

7.2.5. Sending of valid Sync Tags

Test Case Id	DataSynchronization-v1.1.2-server-con-0205
Test Object	Server device
Test Case Description	To check if the Test Object sends valid Sync Tags.
Specification Reference	[DSPRO], Section 10.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements - Sync
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	Test Object's Database must be empty.
Pass-Criteria	Test Object MUST send a Sync element without any child container/command elements.

7.3. Data Synchronization Server Conformance Test Group #3

7.3.1. Sync Anchors match by sending/receiving Alerts

Test Case Id	DataSynchronization-v1.1.2-server-con-0301
Test Object	Server device
Test Case Description	To check if the Test Object's and SCTS' Sync Anchors match by sending/receiving Alerts for normal two way sync.
Specification Reference	[DSPRO], Section 7.2.1
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements Table – Alert [COMMONMETA] – Appendix A – SyncML Meta Information Element Type Table – Anchor [COMMONMETA] – Appendix A – SyncML Meta Information Element

	Type Table – Last [COMMONMETA] – Appendix A – SyncML Meta Information Element Type Table - Next
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS..
Pass-Criteria	The Test Object MUST send Alert codes of 200 with valid Sync Anchors and SCTS MUST receive a status code of 200 on it's Alert.

7.3.2. Correct handling of Add

Test Case Id	DataSynchronization-v1.1.2-server-con-0302
Test Object	Server device
Test Case Description	To check if the Test Object handles Adds correctly.
Specification Reference	[DSREPU], Section 9.4 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Add
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 201 status code for all SCTS' Adds.

7.4. Data Synchronization Server Conformance Test Group #4

7.4.1. Sending of valid Add

Test Case Id	DataSynchronization-v1.1.2-server-con-0401
Test Object	Server device
Test Case Description	To check if the Test Object sends valid Adds.
Specification Reference	[DSREPU], Section 9.4 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Add
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. 4 data item(s) must be added to each database.
Pass-Criteria	The Test Object's Adds MUST result in a 201 status code and it MUST return a 200 status code for all SCTS' Maps.

7.4.2. Handling of Replace (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0402
Test Object	Server device
Test Case Description	To check if the Test Object handles a Replace on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Replace.

7.4.3. Sending of valid Replace (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0403
Test Object	Server device
Test Case Description	To check if the Test Object sends a valid Replace on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by SCTS must be replaced, the data item(s) will be specified.
Pass-Criteria	The Test Object's Replace MUST result in a 200 status code.

7.4.4. Handling of Delete (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0404
Test Object	Server device
Test Case Description	To check if the Test Object handles a Delete on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Delete
Test Tool	SCTS DS 1.1.2 as a client

Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Delete.

7.4.5. Sending a valid Delete (SCTS item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0405
Test Object	Server device
Test Case Description	To check if the Test Object sends a valid Delete on a data item added by SCTS.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Delete
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by SCTS must be deleted, the data item(s) will be specified.
Pass-Criteria	The Test Object's Delete MUST result in a 200 status code..

7.5. Data Synchronization Server Conformance Test Group #5

7.5.1. Handling of Replace (server item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0501
Test Object	Server device
Test Case Description	To check if the Test Object handles a Replace on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Replace.

7.5.2. Sending of valid Replace (server item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0502
Test Object	Server device
Test Case Description	To check if the Test Object sends a valid Replace on a data item added by it.

Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by the Test Object must be replaced, the data item(s) will be specified.
Pass-Criteria	The Test Object's Replace MUST result in a 200 status code.

7.5.3. Handling of Delete (server item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0503
Test Object	Server device
Test Case Description	To check if the Test Object handles a Delete on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Delete
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 200 status code for SCTS' Delete.

7.5.4. Sending of valid Delete (server item)

Test Case Id	DataSynchronization-v1.1.2-server-con-0504
Test Object	Server device
Test Case Description	To check if the Test Object sends a valid Delete on a data item added by it.
Specification Reference	[DSREPU], Section 9.4
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Delete
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. 1 data item(s) previously added by the Test Object must be deleted, the data item(s) will be specified.
Pass-Criteria	The Test Object's Delete MUST result in a 200 status code.

7.5.5. Replace on non-existant data item

Test Case Id	DataSynchronization-v1.1.2-server-con-0505

Test Object	Server device
Test Case Description	To check if the Test Object handles a Replace on a non-existant data item as an Add.
Specification Reference	[DSREPU], Section 5.5.11
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return a 201 status code for SCTS' Replace.

7.6. Data Synchronization Server Conformance Test Group #6

7.6.1. Sync verification

Test Case Id	DataSynchronization-v1.1.2-server-con-0601
Test Object	Server device
Test Case Description	To check if the databases are in Sync by forcing a slow sync (SCTS does not send any modifications).
Specification Reference	[DSPRO], Section 10.5
SCR Reference	[DSPRO] – Appendix A – Table 2 – Support of ‘slow two-way sync’ sync type
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST send all it's data to SCTS and SCTS checks if the databases are in sync.

7.7. Data Synchronization Server Conformance Test Group #7

7.7.1. Response for Delete with a nonexistent target

Test Case Id	DataSynchronization-v1.1.2-server-con-0701
Test Object	Server device
Test Case Description	To check if the Test Object responds with an appropriate status code for a Delete with a nonexistent target/source.
Specification Reference	[DSREPU], Section 5.5.1

	[DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements – Delete
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	SCTS MUST receive a status code of 211/404 for the Delete.

7.8. Data Synchronization Server Conformance Test Group #8

7.8.1. Sync without separate intialization

Test Case Id	DataSynchronization-v1.1.2-server-con-0801
Test Object	Server device
Test Case Description	To check if the Test Object handles sync without seperate intialization.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements Table – Alert [DSREPU] – Appendix A – Protocol Commnad Elements Table – Sync
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	None.
Pass-Criteria	The synchronization session MUST be successful.

7.9. Data Synchronization Server Conformance Test Group #9

7.9.1. Add with multiple items

Test Case Id	DataSynchronization-v1.1.2-server-con-0901
Test Object	Server device
Test Case Description	To check if the Test Object can handle an Add with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements Table – Add
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 201 for the Add with multiple items.

7.9.2. Replace with multiple items

Test Case Id	DataSynchronization-v1.1.2-server-con-0902
Test Object	Server device
Test Case Description	To check if the Test Object can handle a Replace with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements Table – Replace
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 200 for the Replace with multiple items.

7.9.3. Delete with multiple items

Test Case Id	DataSynchronization-v1.1.2-server-con-0903
Test Object	Server device
Test Case Description	To check if the Test Object can handle a Delete with multiple items.
Specification Reference	[DSREPU], Section 7 [DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements Table – Delete
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return status code(s) of 200 for the Delete with multiple items.

7.9.4. Replace with multiple status

Test Case Id	DataSynchronization-v1.1.2-server-con-0904
Test Object	Server device
Test Case Description	To check if the Test Object responds with individual 'Status' for each item in a Replace (One item is non-existant).
Specification Reference	[DSREPU], Section 5.4.1

SCR Reference	[DSREPU] – Appendix A – Protocol Commnad Elements Table – Delete [DSREPU] – Appendix A – Protocol Commnad Elements Table – Status
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return two seperate status, one with a code of 200 and the other with a code of 201.

7.9.5. Delete with multiple status

Test Case Id	DataSynchronization-v1.1.2-server-con-0905
Test Object	Server device
Test Case Description	To check if the Test Object responds with individual 'Status' for each item in a Delete (One item is non-existant).
Specification Reference	[DSREPU], Section 5.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements Table – Alert [DSREPU] – Appendix A – Protocol Command Elements Table – Sync
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS.
Pass-Criteria	The Test Object MUST return two seperate status, one with a code of 200 and the other with a code of 211/404.

7.10. Data Synchronization Server Conformance Test Group #10

7.10.1. Handling of multiple messages

Test Case Id	DataSynchronization-v1.1.2-server-con-1001
Test Object	Server device
Test Case Description	To check if the Test Object can handle multiple messages.
Specification Reference	[DSPRO], Section 7.9
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements Table – Alert [DSREPU] – Appendix A – Protocol Command Elements Table – Final [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxMsgSize
Test Tool	SCTS DS 1.1.2 as a client

Preconditions	None.
Pass-Criteria	The session MUST complete successfully.

7.11. Data Synchronization Server Conformance Test Group #11 [Optional]

7.11.1. Support of NumberOfChanges

Test Case Id	DataSynchronization-v1.1.2-server-con-1101
Test Object	Server device
Test Case Description	To check if the Test Object determines from the DevInfo whether or not NumberOfChanges is supported, and if it sends proper NumberOfChanges information to SCTS.
Specification Reference	[DSDEV], Section 5.27 [DSREPU], Section 5.1.16
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – NumberOfChanges [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportNumberOfChanges
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	If manual testing is being used, sending any modifications other than Adds is also acceptable.
Pass-Criteria	The Test Object SHOULD send NumberOfChanges in the Sync command ONLY. Not sending is also valid and implies that the Test Object does not support NumberOfChanges.

7.12. Data Synchronization Server Conformance Test Group #12 [Optional]

7.12.1. Sending of NumberOfChanges

Test Case Id	DataSynchronization-v1.1.2-server-con-1201
Test Object	Server device
Test Case Description	To check if the Test Object determines from the DevInfo whether or not NumberOfChanges is supported, and if it sends proper NumberOfChanges information to SCTS.
Specification Reference	[DSDEV], Section 5.27

	[DSREPU], Section 5.1.16
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – NumberOfChanges [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportNumberOfChanges
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	If manual testing is being used, sending any modifications other than Adds is also acceptable.
Pass-Criteria	The Test Object MUST NOT send NumberOfChanges.

7.13. Data Synchronization Server Conformance Test Group #13

7.13.1. Large Object delivery

Test Case Id	DataSynchronization-v1.1.2-server-con-1301
Test Object	Server device
Test Case Description	To check if the Test Object determines from the DevInfo whether or not Large Objects are supported, and if it properly declares the MaxObjSize and can properly receive Large Objects.
Specification Reference	[DSDEV], Section 5.26 [DSPRO], Section 7.10 [COMMONMETA], Section 5.9
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – MoreData [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxMsgSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxObjSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – Size
Test Tool	SCTS DS 1.1.2 as a client

Preconditions	The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST send MaxObjSize in a Sync or Alert command. It MUST accept valid objects that do not fit into a single message. It MUST return the correct status for both the initial and final chunks of a Large Object.

7.14. Data Synchronization Server Conformance Test Group #14

7.14.1. Large Object support

Test Case Id	DataSynchronization-v1.1.2-server-con-1401
Test Object	Server device
Test Case Description	To check if the Test Object determines from the DevInfo whether or not Large Objects are supported.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST NOT send Large Objects in its sync package, since SCTS will indicate no support for large objects.

7.15. Data Synchronization Server Conformance Test Group #15

7.15.1. Sending of Large Object

Test Case Id	DataSynchronization-v1.1.2-server-con-1501
Test Object	Server device
Test Case Description	To check if the Test Object determines from the DevInfo whether or not Large Objects are supported, and if it properly declares the MaxObjSize and can properly send Large Objects.
Specification Reference	[DSDEV], Section 5.26 [DSPRO], Section 7.10

	[COMMONMETA], Section 5.9
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – MoreData [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxMsgSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxObjSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – Size
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST send MaxObjSize in a Sync or Alert command. It MUST be able to send atleast one Large Object.

7.16. Data Synchronization Server Conformance Test Group #16

7.16.1. Large Object (Size mismatch)

Test Case Id	DataSynchronization-v1.1.2-server-con-1601
Test Object	Server device
Test Case Description	To check if the Test Object correctly handles Large Objects with incorrect size.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSREPU] – Appendix A – Common Use Elements Table – MoreData [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxMsgSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxObjSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements

	Type Table – Size
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST return the correct status for an invalid size after the entire object has been received.

7.16.2. Large Objects that are not completely sent

Test Case Id	DataSynchronization-v1.1.2-server-con-1602
Test Object	Server device
Test Case Description	To check if the Test Object correctly handles large objects that are not completely sent.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSREPU] – Appendix A – Protocol Command Elements Table – Alert [DSREPU] – Appendix A – Common Use Elements Table – MoreData [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxMsgSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – MaxObjSize [COMMONMETA] – Appendix A – SyncML Meta Information Elements Type Table – Size
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object's databases must be in sync with SCTS. The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST report the interruption of a Large Object using an Alert 223.

7.17. Data Synchronization Server Conformance Test Group #17

7.17.1. Large Object Delivery (Lack of Commit)

Test Case Id	DataSynchronization-v1.1.2-server-con-1701
Test Object	Server device
Test Case Description	To check if the Test Object did not commit the Large Object with incorrect size and the incomplete Large Object sent in the last session.
Specification Reference	[DSPRO], Section 7.10
SCR Reference	[DSDEV] – Appendix A – SynML Device Informaion Element Type Table – DevInf [DSDEV] – Appendix A – SynML Device Informaion Element Type Table – SupportLargeObjs [DSREPU] – Appendix A – Protocol Command Elements Table – Add
Test Tool	SCTS DS 1.1.2 as a client
Preconditions	The Test Object SHOULD indicate support for Large Objects in DevInfo. If the Test Object doesn't support large objects this test group can be skipped.
Pass-Criteria	The Test Object MUST not have commited the Large Objects from the last session. It MUST send only one Add containing the normal object that interupted the large object.

8. Data Synchronization Interoperability Test Cases

For DS Enabler there exist 13 interoperability tests. 12 of those are mandatory.

8.1. Initial Two-way Sync

Test Case Id	DataSynchronization-v1.1.2-int-001
Test Object	Client and Server device
Test Case Description	This test shows basic compliance with the SyncML protocol and representation through the first-time use of a two-way synchronization. The intent is to show the exchange of Device Information as well as an empty two-way synchronization. The test should also show proper implementation of the Sync command when there is no data to send.
Specification Reference	[DSPRO] Section 7.7 [DSPRO] Section 9 [DSPRO] Section 10
SCR Reference	[DSPRO] – Appendix A – Both Client and Server Conformance Tables – "Support of 'two-way' sync type" [DSREPU] – Appendix A – Protocol Commands Table – Get [DSREPU] – Appendix A – Protocol Commands Table – Result [DSREPU] – Appendix A – Protocol Commands Table – Alert
Preconditions	1. Clear the client and server databases – this will ensure that no data other than Device Information is exchanged. 2. Using viewers, verify that the client and the server contain no records. 3. Create any appropriate synchronization accounts on the client and server.
Test Procedure	1. Perform a slow two-way synchronization. 2. Using viewers, verify the two-way sync actually took place. This can be done by viewing captured SyncML data or by viewing log files.
Pass-Criteria	1. The client and the server should contain no records. 2. The client and server should have exchanged device information. 3. The synchronization should have produced no errors.

8.2. Two-way Sync with Client and Server Add command

Test Case Id	DataSynchronization-v1.1.2-int-002
Test Object	Client and Server device

Test Case Description	This test shows the implementation of the Sync command with data and the Add commands. Simpler devices may send the Replace command instead of the Add command.
Specification Reference	[DSREPU] Section 6.5.1 [DSPRO], Section 10.3 [DSREPU], Section 6.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add
Preconditions	1. This test requires successful completion of Test Case #1. 2. This test also requires agreement between the client and server on which objects are to be synchronized (e.g. vCard 2.1).
Test Procedure	1. Create a new object on both the client and the server, filling in as many fields as possible. 2. Perform a two-way sync. 3. Using viewers, verify both objects exist on the client and the server.
Pass-Criteria	1. Both client and server will contain both objects. 2. Server should contain all the fields set in the object created on the client.

8.3. Two-way Sync with Client and Server Replace command

Test Case Id	DataSynchronization-v1.1.2-int-003
Test Object	Client and Server device
Test Case Description	This test shows implementation of the Replace command, as well as implementation of the ID mapping capability.
Specification Reference	[DSREPU], Section 6.5.11
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Replace
Preconditions	This test requires successful completion of Test Case #2.
Test Procedure	1. On the client, modify as many fields as possible in the object created on the server. 2. On the server, modify as many fields as possible in the object created on the client. 3. Perform a two-way sync. 4. Using viewers, verify both objects have been updated correctly on client and server.
Pass-Criteria	Both objects should have all the modified fields updated on the client and the server.

8.4. Two-way Sync with Client and Server Delete command

Test Case Id	DataSynchronization-v1.1.2-int-004
Test Object	Client and Server device
Test Case Description	This test shows implementation of the Delete command, as well as implementation of the ID mapping capability.
Specification Reference	[DSREPU], Section 6.5.5
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Delete
Preconditions	This test requires successful completion of Test Case #2 or #3.
Test Procedure	1. On the client, delete the object created on the server. 2. On the server, delete the object created on the client. 3. Perform a two-way sync. 4. Using viewers, verify both objects have been deleted from the client and the server.
Pass-Criteria	Both objects should be deleted from the client and the server.

8.5. Two-way Sync with Client sending new data

Test Case Id	DataSynchronization-v1.1.2-int-005
Test Object	Client and Server device
Test Case Description	This test shows two-way sync with server sending no sync data, and the client sending new data. This will require the sending and handling of an empty Sync command in addition to the handling of new data. It is possible that problems may arise from an empty Sync command being sent as well as a non-empty Sync. It is also possible that problems may arise from the handling of MapItems.
Specification Reference	[DSPRO], Section 10.1 [DSREPU] Section 6.5.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Sync [DSREPU] – Appendix A – Protocol Commands Table – Add
Preconditions	This test requires a previously successful two-way sync.
Test Procedure	1. Create a new object on the client. 2. Fill in as many fields as possible. 3. Perform a two-way sync. 4. Using viewers, verify that object exists correctly on the client and the server.

Pass-Criteria	Object may not appear on the server. Sync may fail due to no data from server (due to empty Sync command).

8.6. Two-way Sync with Server sending new data

Test Case Id	DataSynchronization-v1.1.2-int-006
Test Object	Client and Server device
Test Case Description	This test shows two-way sync with client sending no sync data, and the server sending new data. This will require the sending and handling of an empty Sync command in addition to the handling of new data. It is possible that problems may arise from an empty Sync command being sent as well as a non-empty Sync.
Specification Reference	[DSPRO], Section 10.2 [DSREPU] Section 6.5.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Sync [DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Map
Preconditions	This test requires a previously successful two-way sync.
Test Procedure	1. Create a new object on the server, filling in as many fields as possible. 2. Perform a two-way sync. 3. Using viewers, verify that object exists correctly on the client and the server.
Pass-Criteria	The new Object should exist on both client and server.

8.7. Two-way Sync with Large number of Objects

Test Case Id	DataSynchronization-v1.1.2-int-007
Test Object	Client and Server device
Test Case Description	To facilitate testing, Test Cases int-007 and int-008 may be executed in the reverse order. To save unnecessary keyboardwork, it is perceived easier to arrange a test database in the client rather than in the server. To improve test execution, it is faster to sync the client's database to the server first (test 8) and then clean the client's database, initiate a slow sync and sync the items back from the server (test int-007).
Specification Reference	[DSREPU], Section 9.4 [DSPRO], Section 10.3 [DSREPU], Section 6.4.1

SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Map
Preconditions	This test requires a previously successful two-way sync. (Note this could be a slow-sync or normal-sync).
Test Procedure	1. Create enough Objects on the server to force at least two messages to the client, but not so much as to have the client run out of space. 2. Perform a two-way sync. (Can be a slow-sync) 3. Using viewers, verify that the objects exist correctly on the client and the server. 4. Again, using viewers, show that multiple messages were sent.
Pass-Criteria	1. Objects should exist on both the client and the server. 2. Multiple messages should have been sent by the server. 3. Multiple messages should have been handled by the client.

8.8. Two-way Sync with Large number of Objects Returned

Test Case Id	DataSynchronization-v1.1.2-int-008
Test Object	Client and Server device
Test Case Description	This test shows client implementation of sending multiple messages. This test shows the client's ability to create multiple messages to the server. It also shows the server ability to respond properly to multiple messages from the client.
Specification Reference	[DSREPU], Section 9.4 [DSREPU], Section 6.4.1
SCR Reference	[DSREPU] – Appendix A – Protocol Commands Table – Add [DSREPU] – Appendix A – Protocol Commands Table – Replace [DSREPU] – Appendix A – Protocol Commands Table – Status
Preconditions	This test requires successful completion of Test Case #7.
Test Procedure	1. Modify all objects sent by the server in Test Case #7 (to force at least two messages to the server). 2. Perform a two-way sync. 3. Using viewers, verify that the objects exist correctly on the client and the server – this will require viewing each object and verifying the data is correct.
Pass-Criteria	All Objects should exist on both the client and the server, and their data should match.

8.9. Two-way Sync with Server not responding

Test Case Id	DataSynchronization-v1.1.2-int-009
Test Object	Client and Server device
Test Case Description	This test shows client ability to deal with network or server error.
Specification Reference	
SCR Reference	[DSPRO] –Appendix –Table 2 –Support of 'two-way sync'sync type
Preconditions	The server must be disabled, or set to not respond.
Test Procedure	1. Perform a two-way sync.
Pass-Criteria	1. The client log should report that the server is not responding. 2. The user may be prompted that server is not available.

8.10. Two-way Sync with incomplete communication

Test Case Id	DataSynchronization-v1.1.2-int-010
Test Object	Client and Server device
Test Case Description	This test shows client and server ability to deal with incomplete communication during a session.
Specification Reference	[DSPRO] – Appendix – Table 2 – Support of 'two-way sync' sync type
SCR Reference	
Preconditions	This test requires a previously successful two-way sync.
Test Procedure	1. Create a new object on both the client and the server, filling in as many fields as possible. 2. Perform a two-way sync. 3. Break communication during sync. Depending on the device, it could be as simple as unplugging the client from the network to as complex as putting the device into a Faraday cage. 4. Wait for sync to finish. 5. Perform two-way sync.
Pass-Criteria	1. Both client and server logs should report that the session was interrupted before completion. 2. The second sync should be successful. (Both objects synced properly.)

8.11. Two-way Slow Sync with data

Test Case Id	DataSynchronization-v1.1.2-int-011

Test Object	Client and Server device
Test Case Description	This test shows implementation of slow sync.
Specification Reference	
SCR Reference	[DSPRO] – Appendix – Table 2 – Support of 'slow two-way sync' sync type
Preconditions	This test requires a previously successful two-way sync.
Test Procedure	1. Configure the server and/or the client to ask for Slow-Sync. 2. Perform a two-way sync. 3. Verify that slow sync took place.
Pass-Criteria	1. Slow-Sync should be indicated in the log of the client and server. 2. User may be prompted that the session will be a slow sync. 3. Duplicates may occur, but be prevented if possible.

8.12. Two-way Slow Sync to restore client data

Test Case Id	DataSynchronization-v1.1.2-int-012
Test Object	Client and Server device
Test Case Description	This test shows implementation of slow sync to recover data onto a client.
Specification Reference	
SCR Reference	[DSPRO] – Appendix – Table 2 – Support of 'slow two-way sync' sync type
Preconditions	This test requires a previously successful two-way sync.
Test Procedure	1. Clear the data from the client. 2. Configure the server and/or the client to ask for Slow-Sync. 3. Perform a two-way sync. 4. Verify that slow sync took place.
Pass-Criteria	1. Slow-Sync should be indicated in the log of the client and server. 2. User may be prompted that the session will be a slow sync. 3. All the client data should be restored.

8.13. Two-way Sync with Large Object Handling [Optional]

Test Case Id	DataSynchronization-v1.1.2-int-013
Test Object	Client and Server device

Test Case Description	This test shows implementation of the Large Data Handling functionality. This will require the sending and handling of large data by both Client and Server including the receiving, checking for the correctness in MaxObjSize and committing the object to the datastore.
Specification Reference	
SCR Reference	[DSPRO] – Appendix – Table 2 – Support of 'two-way sync' sync type [DSPRO] – Appendix – Table 2 – Support of 'Large Objects'
Preconditions	This test requires a previously successful two-way sync. (Note this could be a slow-sync or normal-sync).
Test Procedure	1. Create a large object on the server, filling in as many fields as possible. 2. Perform a two-way sync. 3. Using viewers, verify that object exists correctly on the client and the server. 4. Modify the large object on the client. 5. Perform a two-way sync. 6. Using viewers, verify that modified object exists correctly on the client and the server.
Pass-Criteria	1. The large Object should exist on both client and server. 2. Large Object should have been sent and received by the client. 3. Large Object should have been sent and received by the server.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-ETS-DataSynchronization-V1_1_2-20031015-A	15 Oct 2003	First Approved version