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Enabler Release Definition for Data Sync

Approved Version 1.1.2 – 21 Jul 2004

Open Mobile Alliance
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1. Scope

The scope of this document is limited to the Enabler Release Definition of OMA Data Synchronization (DS) according to OMA Release process and the Enabler Release specification baseline listed in section 5. The Open Mobile Alliance DS v1.1.2 specifications are based on the SyncML Initiative's v1.1.1 Data Synchronization specifications and make use of the OMA SyncML Common v1.1.2 specifications as specified in the OMA SyncML Common specifications Enabler Release Definition [**ELREDSC**].

The SyncML Initiative, Ltd. was a not-for-profit corporation formed by a group of companies who co-operated to produce an open specification for data synchronization and device management. Prior to SyncML, data synchronization and device management had been based on a set of different, proprietary protocols, each functioning only with a very limited number of devices, systems and data types. These non-interoperable technologies have complicated the tasks of users, manufacturers, service providers, and developers. Further, a proliferation of different, proprietary data synchronization and device management protocols has placed barriers to the extended use of mobile devices, has restricted data access and delivery and limited the mobility of the users.

SyncML is a specification that contains the following main components:

- An XML-based representation protocol

- A synchronization protocol and a device management protocol

- Transport bindings for the protocol

The data representation specifies an XML DTD that allows the representation of all the information required to perform synchronization or device management, including data, metadata and commands. The synchronization and device management protocols specify how SyncML messages conforming to the DTD are exchanged in order to allow a SyncML client and server to exchange additions, deletes, updates and other status information.

There are also DTDs that define the representation of information about the device such as memory capacity, and the representation of various types of Meta information such as security credentials.

Although the SyncML specification defines transport bindings that specify how to use a particular transport to exchange messages and responses, the SyncML representation, synchronization and device management protocols are transport-independent. Each SyncML package is completely self-contained, and could in principle be carried by any transport. The initial bindings specified are HTTP, WSP and OBEX, but there is no reason why SyncML could not be implemented using email or message queues, to list only two alternatives. Because SyncML messages are self-contained, multiple transports may be used without either the server or client devices having to be aware of the network topology. Thus, a short-range OBEX connection could be used for local connectivity, with the messages being passed on via HTTP to an Internet-hosted synchronization server.

To reduce the data size, a binary coding of SyncML based on the WAP Forum's WBXML is defined. Messages may also be passed in clear text if required. In this and other ways SyncML addresses the bandwidth and resource limitations imposed by mobile devices.

SyncML is both data type and data store independent. SyncML can carry any data type that can be represented as a MIME object. To promote interoperability between different implementations of SyncML, the specification includes the representation formats used for common PIM data.

The OMA SyncML Data Synchronization v1.1.2 Enabler Release continues the effort to promote a single, common data synchronization protocol.

2. References

2.1 Normative References

[IOPPROC]	"OMA Interoperability Policy and Process", Version 1.1, Open Mobile Alliance™, OMA-IOP-Process-V1_1, URL:http://www.openmobilealliance.org/
[DSREPU]	"SyncML Representation Protocol, Data Synchronization Usage", Open Mobile Alliance™, OMA-SyncML-DataSyncRep-V1_1_2, URL:http:www.openmobilealliance.org/tech/docs.
[ELREDSC]	"Enabler Release Definition for SyncML Common Specifications", Open Mobile Alliance™, OMA-ERELD-SyncML-Common-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, URL:http://www.ietf.org/rfc/rfc2119.txt
[SYNCPRO]	"SyncML Synchronization Protocol", Open Mobile Alliance™, OMA-SyncML-DataSyncProtocol-V1_1_2, URL:http:www.openmobilealliance.org/tech/docs
[SYNCDEV]	"SyncML Device Information", Open Mobile Alliance™, OMA-SyncML-DevInfo-V1_1_2, URL:http:www.openmobilealliance.org/tech/docs
[SYNCDEVDTD]	"SyncML Device Information Document Type Definition", Open Mobile Alliance™, OMA-SyncML-DevInfo-DTD-V1_1_2, URL:http:www.openmobilealliance.org/tech/docs

2.2 Informative References

None

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 formal notation convention used in sections 8 and 9 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [IOPPROC].

3.2 Definitions

Enabler Release	Collection of specifications that combined together form an enabler for a service area, e.g. a download enabler, a browsing enabler, a messaging enabler, a location enabler, etc. The specifications that are forming an enabler should combined fulfil a number of related market requirements.
Data Synchronization	The act of establishing an equivalence between two data collections where each data element in one item maps to a data item in the other
Minimum Functionality Description	Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.

3.3 Abbreviations

DS	Data Synchronization
DTD	Document Type Definition
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition
OMA	Open Mobile Alliance
SCR	Static Conformance Requirements
SyncML	Synchronization Mark-up Language
XML	Extensible Mark-up Language

4. Introduction

This document outlines the Enabler Release Definition for DS and the respective conformance requirements for client and server implementations claiming compliance to the Open Mobile Alliance DS v1.1.2 specifications.

It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Data Synchronization Enabler Release, version 1.1.2. Fully conformant DS client and DS server implementations can only be achieved through combining the conformance requirements outlined within this enabler release definition with those outlined within the SyncML Common Specifications [**ELREDSC**] enabler release definition.

The DS release provides for the definition and promotes a set of universal specifications for data synchronization.

The goal of a common synchronization protocol is symmetric. It would connect any to any, over any network. That is, it would:

- Synchronize networked data with any mobile device
- Synchronize a mobile device with any networked data

The data synchronization protocol would synchronize networked data with many different devices, including handheld computers, mobile phones, automotive computers, and desktop PCs. A user could access and manipulate the same set of data from different devices. For example, a user could read e-mail from either a handheld or a mobile phone, and still maintain a consistent, updated record of which messages had been read.

Similarly, with any-to-any synchronization, mobile devices could support more types of data, including e-mail, calendar, contact management information, enterprise data stored in databases, and documents on the web. With such functionality a user who received an order via e-mail could access the company inventory system on the same device to determine a delivery date.
To accomplish this goal, the protocol needs the following characteristics:

- Operate effectively over wireless and wire line networks
- Support a variety of transport protocols
- Support arbitrary networked data
- Enable data access from a variety of applications
- Address the resource limitations of the mobile device
- Build upon existing Internet and Web technologies
- The protocol's minimal function needs to deliver the most commonly required synchronization capability across the entire range of devices.

The OMA Data Synchronization release provides for the definition of a set of universal specifications for data synchronization. They are based on the SyncML v1.1.1 Data Synchronization specifications. Any changes are restricted to minor clarifications that do not change the meaning of the specifications from their original v1.1.1 SyncML form.

5. Enabler Release Specification Baseline

This section is normative.

The following section comprises the OMA DS v1.1.2 enabler release.

Description	Document Reference
SyncML Representation Protocol, Data Synchronization Usage, Version 1.1.2. URL:http:www.openmobilealliance.org/tech/docs	[**DSREPU**]
SyncML Synchronization Protocol, Version 1.1.2. URL:http:www.openmobilealliance.org/tech/docs	[**SYNCPRO**]
SyncML Device Information, Version 1.1.2. URL:http:www.openmobilealliance.org/tech/docs	[**SYNCDEV**]
SyncML Device Information, Document Type Definition, Version 1.1.2. URL:http:www.openmobilealliance.org/tech/docs	[**ELREDSC**]

6. Minimum Functionality Description for DS

This section is informative.

6.1 Minimum Functionality of DS Client Implementations

This section is informative.

- The list of minimum functionality for a DS client is very numerous. Please refer to the Enabler Release specification baseline listed in section 5

6.2 Minimum Functionality of DS Server Implementations

This section is informative.

The list of minimum functionality for a DS server is very numerous. Please refer to the Enabler Release specification baseline listed in section 5

7. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

Item: Entry in this column MUST be a valid ScrItem according to [IOPPROC].

Feature/Application: Entry in this column SHOULD be a short descriptive label to the **Item** in question.

Status: Entry in this column MUST accurately reflect the architectural status of the **Item** in question.

- M means the **Item** is mandatory for the class

- O means the **Item** is optional for the class

- NA means the **Item** is not applicable for the class

Requirement: Expression in the column MUST be a valid TerminalExpression according to [IOPPROC] and it MUST accurately reflect the architectural requirement of the **Item** in question.

8. ERDEF for DS - Client Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DS-C-001	DS Client	M*	See static conformance requirements contained within specifications detailed by the Enabler Release specification baseline listed in section 5

Table 1 ERDEF for DS Client-side Requirements

*It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Data Synchronization Enabler Release, version 1.1.2. Fully conformant DS client implementations can only be achieved through combining the conformance requirements outlined above with those outlined within the SyncML Common Specifications enabler release definition [**ELREDSC**].

9. ERDEF for DS - Server Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DS-S-001	DS Server	M*	See static conformance requirements contained within specifications detailed by the Enabler Release specification baseline listed in section 5

Table 2 ERDEF for DS Server-side Requirements

*It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Data Synchronization Enabler Release, version 1.1.2. Fully conformant DS server implementations can only be achieved through combining the conformance requirements outlined above with those outlined within the SyncML Common Specifications enabler release definition [**ELREDSC**].

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Reference	Date	Description
OMA-ERELD-SyncML-DS-1.1.2-20030612-A	12 June 2003	Approved by TP. TP ref# OMA-TP-2003-0264R1
OMA-ERELD-SyncML-DS-1.1.2-20040721-A	21July 2004	Corrections to DevInfo [SYNCDEV] and DevInfo DTD [ELREDSC] Notice sent to TP TP ref# OMA-TP-2004-0309