



Simplified Converged Address Book Specification

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1. Scope

This document provides the Technical Specification of the S-CAB Enabler to fulfill the requirements outlined in the Simplified Converged Address Book Requirements document [S-CAB RD] for S-CAB V1.0 and in compliance to the architecture described in the Simplified Converged Address Book Architecture document [S-CAB AD]. The Technical Specification provides the definition of data elements of the S-CAB Enabler and the description of the procedures for the features supported by the S-CAB Enabler.

Additionally, this document describes a set of stage 3 detailed flows for the functionalities of the S-CAB Enabler. These flows serve to design the protocols and the functional entities themselves, e.g., the messages, parameters, exchange patterns, etc., of the S-CAB Enabler.

2. References

2.1 Normative References

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- [S-CAB RD] “Simplified Converged Address Book Requirements”, Version 1.0, Open Mobile Alliance™, OMA-RD-S_CAB-V1_0, URL:<http://www.openmobilealliance.org/>
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- [OMA XDM Core] “XML Document Management Specification”, Version 2.2, Open Mobile Alliance™, OMA-TS-XDM_Core-V2_2, URL:<http://www.openmobilealliance.org/>
- [OMA XDM List] “List XDM Specification”, Version 2.1, Open Mobile Alliance™, OMA-TS-XDM_List-V2_1, URL: <http://www.openmobilealliance.org/>
- [OMA XDM RD] “XML Document Management Requirements”, Version 2.2, Open Mobile Alliance™, OMA-RD-XDM-V2_1, URL:<http://www.openmobilealliance.org/>
- [OMA XDM UPP] “UPP Directory XDM Specification”; Open Mobile Alliance™, OMA-TS-XDM_UPP_Directory-V1_0, URL:<http://www.openmobilealliance.org/>
- [RFC2119] “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, March 1997, URL:<http://www.ietf.org/rfc/rfc2119.txt>
- [RFC2425] A MIME Content-Type for Directory Information. T. Howes, M. Smith, F. Dawson. September 1998. URL: <http://www.ietf.org/rfc/rfc2425.txt>
- [RFC2426] vCard MIME Directory Profile. F. Dawson, T. Howes. September 1998. URL: <http://www.ietf.org/rfc/rfc2426.txt>
- [RFC4660] IETF RFC 4660 “Functional Description of Event Notification Filtering”, H. Khartabil et al., September 2006 URL: <http://www.ietf.org/rfc/rfc4660.txt>
- [RFC4661] IETF RFC 4661 “An Extensible Markup Language (XML)-Based Format for Event Notification Filtering”, H. Khartabil et al., September 2006 URL: <http://www.ietf.org/rfc/rfc4661.txt>
- [SCRRULES] “SCR Rules and Procedures”, Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:<http://www.openmobilealliance.org/>

2.2 Informative References

- [OMA PDE] “OMA Presence SIMPLE Data Extensions V1.3”, Open Mobile Alliance™,
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- [OMA Pres TS] “OMA Presence SIMPLE Specification”, OMA-TS-Presence_SIMPLE-V2_0, Open Mobile Alliance™,
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
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[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [OMADICT] “Dictionary for OMA Specifications”, Version 2.7, 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

Access Permissions	See [OMA XDM RD].
Access Permissions Document	See [OMA XDM AD].
Active User Preferences Profile	See [OMA XDM RD].
Application Unique ID	See [OMA XDM Core].
Application Usage	See [OMA XDM Core].
Contact Card	A Contact Card is an XDM document containing contact information regarding persons, organizations, and/or groups of persons or organizations. One contact card is associated with one XDM document.
Confirmed Contact Card	Contact card the S-CAB User has approved and that the S-CAB User publishes, shares, etc., with other users. It also contains changes against the confirmed contact card that require user manual approval.
Contact Entry	See [S-CAB RD].
Contact Share	See [S-CAB RD].
Contact Status	See [S-CAB AD].
Contact Subscription	See [S-CAB RD].
Contact View	See [S-CAB RD].
Cross-Network Proxy	See [OMA XDM AD].
Document Reference	See [OMA XDM AD].
Document Selector	See [OMA XDM Core].
Enabler	See [OMADICT].
External Directories	See [S-CAB AD].
Forward XDCCP Request	See [OMA XDM Core].
Forwarding Notification List Document	See [OMA XDM List].
Global Document	See [OMA XDM Core].
Global Tree	See [OMA XDM Core].
History Information	See [OMA XDM AD].
Legacy Formats	See [S-CAB RD].
Limited Xquery over HTTP	See [OMA XDM AD].
Management Object	See [OMA DM TND].
Non S-CAB system	See [S-CAB AD].
Non S-CAB User	See [S-CAB AD].

Simplified Address Book	Set of Contact Cards in the user directory of the S-AB Application Usage. The Contact Cards in the S-AB Application Usage directory are either Confirmed Contact Cards or Tracking Contact Cards.
Simplified Personal Contact Card	Set of Contact Cards in the user directory of the S-PCC Application Usage. An S-CAB User can have one or more confirmed S-PCC. The Contact Cards in the S-PCC Application Usage directory are either Confirmed Contact Cards or Tracking Contact Cards.
Principal	See [OMADICT].
Request History Information Document	See [OMA XDM Core].
Request-URI	See [OMA XDM Core].
UPP Directory	See [OMA XDM RD].
UPP Directory Document	See [OMA XDM RD].
URI	See [OMA XDM Core].
User Directory Document Selector	See [OMA XDM Core].
Users Tree	See [OMA XDM Core].
Search Document	See [OMA XDM Core].
Search Proxy	See [OMA XDM AD].
Search Request	See [OMA XDM Core].
S-CAB Client	See [S-CAB AD].
S-CAB Format	S-CAB Contact Card data compliant with [S-CAB XDM TS]
S-CAB Server	See [S-CAB AD].
S-CAB User	See [S-CAB RD].
S-CAB User Preferences	See [S-CAB AD].
S-CAB User Preferences Document	See [S-CAB AD].
S-CAB Server	See [S-CAB AD].
S-CAB XDMS	See [S-CAB AD].
SIP MESSAGE	The SIP method MESSAGE as defined by [RFC3428]
SIP NOTIFY	See [OMA XDM Core].
SIP SUBSCRIBE	See [OMA XDM Core].
SIP URI	See [OMA XDM Core].
Subscription Proxy	See [OMA XDM AD].
Tracking Contact Card	Contact Card used to track contact information contained in (S-)PCC XDM documents, contact sources in 3 rd Party Systems, etc.
Tracking Contact Card Priority	An XML attribute of an XDM contact card that provides semantics for the merging of multiple tracking contact cards into a confirmed contact card.
Update Object	tbd
XDCP Document	See [OMA XDM Core].
XDCP Response	See [OMA XDM Core].
XDCP Request	See [OMA XDM Core].
XDM Agent	See [OMA XDM AD].
XDM Client	See XDMC in [OMA XDM AD].
XDM Document	See [OMA XDM RD]
XDM Preferences Document	See [OMA XDM Core].

XDM Resource	See [OMA XDM RD]
XDMS	See [OMA XDM AD].

3.3 Abbreviations

AUID	Application Unique ID
DM	Device Management
HTTP	Hyper Text Transfer Protocol
IP	Internet Protocol
OMA	Open Mobile Alliance
S- PCC	Simplified Personal Contact Card
S-AB	Simplified Address Book
S-CAB	Simplified Converged Address Book
SCR	Static Conformance Requirement
SIP	Session Initiation Protocol
UPP	User Preferences Profile
URI	Uniform Resource Identifier
XCAP	XML Configuration Access Protocol
XDCP	XDM Command Protocol
XDM	XML Document Management
XDMC	XML Document Management Client
XDMS	XML Document Management Server
XML	eXtensible Markup Language
XQuery	XML Query
XUI	XCAP User Identifier

The S-CAB Technical Specification provides the S-CAB User with the features described in sub clause 4.1 “*Version 1.0*”. The S-CAB Technical Specification utilizes XML Document Management [OMA XDM Core] to fulfill S-CAB requirements [S-CAB RD], and is based on the S-CAB architecture as described in [S-CAB AD].

4. Version 1.0

S-CAB Technical Specification version 1.0 supports the following features:

- 1) S-PCC and S-AB document management – The S-CAB Enabler allows S-CAB User devices and XDM-based application entities to:
 - a. Create, delete, retrieve, and replace, all or a subset of the informational elements of the S-PCC and S-AB documents;
 - b. Catch-up document changes relative to a previous valid document version;
 - c. Control access for all or a subset of the informational elements of an S-PCC and S-AB documents;
 - d. Retrieve request and modification history to the S-PCC and S-AB documents;
 - e. Restore S-PCC and S-AB Contact Cards to a previous version; and,
 - f. Write multiple document changes via XDCP request to the S-PCC and S-AB documents relative to the current XDM document version
- 2) Automatic update and composition of Confirmed Contact Card data based on changes to Tracking Contact Cards.
- 3) Manual approval of changes to Confirmed Contact Card data based on changes to Tracking Contact Cards.
- 4) S-PCC document subscription – The S-CAB Enabler allows S-CAB Users to request their S-CAB Server subscribe to all or a subset of another S-CAB User's S-PCC Contact Cards for purposes of document change tracking.
 - a. Subscription change updates are reflected into Tracking Contact Cards.
- 5) S-PCC and S-AB document event notifications: The S-CAB Enabler allows devices of an S-CAB User to receive notifications in the following cases:
 - a. Unauthorized access, change subscription, or search requests;
 - b. Document changes; and,
 - c. Document changes requiring user involvement.
- 6) S-PCC and S-AB document forwarding – The S-CAB Enabler provides the S-CAB User with the ability to send all or a subset of their S-PCC and S-AB document information to other users, both S-CAB and non-S-CAB.
- 7) S-PCC and S-AB document searching: The S-CAB Enabler provides search mechanism that allows S-CAB Users to search for information in S-PCC Contact Cards. The information returned in search operations is based on the Access Permissions of the target S-PCC Contact Cards. The S-CAB Enabler provides search function for only the S-CAB User's own S- S-AB Contact Cards.
- 8) Non S-CAB system document searching: The S-CAB Enabler provides search mechanism that allows S-CAB Users to search for user profile information in External Directories and 3rd Party Systems.
- 9) Import/Export – The S-CAB Enabler provides the ability to perform import and export operations between confirmed S-PCC and S-AB Contact Cards and information stored in non-S-CAB 3rd Party Systems. Import and export operations can be requested to occur one time or to be periodically scheduled.
 - a. Imported data changes are reflected in Tracking Contact Cards.
 - b. Interfaces to non S-CAB 3rd Party Systems are outside the scope of S-CAB.
- 10) Document change subscription to 3rd Party user contact information: The S-CAB Enabler can subscribe to changes in user contact information in 3rd Party Systems.
 - a. Interfaces to non S-CAB 3rd Party Systems are outside the scope of S-CAB.
- 11) Social Network Interworking: The S-CAB Enabler expands the social networking experience of S-CAB Users.
 - a. Enriching the existing contacts with information from external Social Networks.
 - b. Provide new contact suggestions.
 - c. Changes are reflected into Tracking Contact Cards.
 - d. Interfaces to Social Network Systems are outside the scope of S-CAB.

5. Procedures at S-CAB Server

The S-CAB Server SHALL support the procedures described in the following sub clauses.

5.1 Contact Subscription Function

The Contact Subscription Function is responsible for the creation, release, and maintenance of SIP-based XDM document change subscriptions towards other S-CAB User's (S-PCC) Confirmed Contact Cards, and the update of the associated Tracking Contact Cards based on document change notifications of those subscriptions.

The Contact Subscription Function SHALL use the S-CAB Server XDM Agent function as described in section 5.5 to retrieve the list of contacts (if any) from the S-CAB User Preferences Application Usage as described in [S-CAB XDM TS] section "*S-CAB User Preferences Application Usage*" to which it must establish Contact Subscriptions. The Contact Subscription Function SHALL retrieve the list of contacts using either XDM operations or SIP subscription as described in [OMA XDM Core] section "*Procedures at the XDMC and the XDM Agent*" to the S-CAB User Preferences Document. In particular, the S-CAB Server:

- 1) SHALL use auid "org.openmobilealliance.s-cab-user-prefs";
- 2) SHALL obtain the value of the 'id' attribute of <entry> elements included in entries of the <subscription-list> element, from the S-CAB User Preferences Document as described in [S-CAB XDM TS] section "*S-CAB User Preferences Application Usage*"; and,
- 3) SHALL use the value of the 'id' attribute of <entry> elements to create S-PCC or PCC backend subscription requests directly to the S-PCC or PCC Application Usage or via Subscription Proxy as described in [OMA XDM Core] section "*SIP Subscription*".

Note: To support interworking with CAB 1.x systems, document change subscription requests sent by the S-CAB Server to CAB 1.x PCC Application Usages SHALL be CAB 1.x compatible.

If a <filter-set> element is associated with the 'id' attribute of <entry> element, then the Contact Subscription Function SHALL include the <filter-set> element in a MIME type "application/simple-filter+xml" in the SIP SUBSCRIBE request, as described in [OMA XDM Core] section "*Initial SIP Subscription*". If the MIME type "application/simple-filter+xml" is not supported by the contact's XDMS, the Contact Subscription Function SHALL apply the filter to all received SIP Notify before the information is stored in the Tracking Contact Card.

When the S-CAB Client changes a <filter-set> element in an <entry> of the <subscription-list> element, the Contact Subscription Function SHALL restart the associated backend SIP subscription and create and use a new Tracking Contact Card for the new subscription.

The Contact Subscription Function SHALL use the S-CAB Server XDM Agent function as described in section 5.5 and generate backend subscription requests towards the S-PCC or PCC Application Usages [CAB XDMS] of each of the contacts retrieved from <subscription-list> element. The Contact Subscription Function SHALL send the Subscription requests to either the S-PCC or PCC Application Usage or Subscription Proxy as described in [OMA XDM Core] section "*Initial SIP Subscription*".

In case the contact to which the Contact Subscription needs to be established does not have a Confirmed Contact Card in the S-AB User Directory of the S-CAB User, the Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to create, in the S-AB Application Usage User Directory, a new Confirmed Contact Card containing an <update-object> element with a <contact-subscription-status> element as described in [S-CAB-XDM TS] section "*S-AB Application Usage*".

In case the contact to which the Contact Subscription needs to be established has a Confirmed Contact Card in the S-AB User Directory of the S-CAB User, the Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to create an <update-object> element with a <contact-subscription-status> element in this Confirmed Contact Card as described in [S-CAB-XDM TS] section "*S-AB Application Usage*".

The Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to send the subscription request to the SIP Core as described in [OMA XDM Core] section "*SIP Subscription*".

The Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to retrieve the S-PCC or PCC Contact Card based on the XCAP URI in the received initial notification and SHALL store the retrieved information in a Tracking Contact Card.

The Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to update the <update-object> element with the User Directory Document Selector to the Tracking Contact Card and with the result of the subscription in the <contact-subscription-status> element as described in [S-CAB-XDM TS] section “*S-AB Application Usage*” and, if manual approval applies, with a Document Selector to an Indirect Update Object Document.

Upon receiving an incoming SIP-based document change notifications as described in [OMA XDM Core] section “*SIP NOTIFY Processing*”, the Contact Subscription Function SHALL update the associated Tracking Contact Card based on the document changes contained in the notification, in accordance with [S-CAB XDM TS] section “*S-AB Application Usage*” and SHALL use the S-CAB Server XDM Agent function to update the <update-object> element in the associated Confirmed Contact Card, if manual approval applies, with a Document Selector to an Indirect Update Object Document if such one not already exists.

In case of a non successful subscription, the Contact Subscription Function SHALL use the S-CAB Server XDM Agent function to update the <contact-subscription-status> element contained in the <update-object> element with a value as described in [S-CAB-XDM TS] section “*S-AB Application Usage*”.

5.2 Contact Share Function

The Contact Share function is implemented by reuse of the forwarding XDCP operations as defined in [OMA_XDM_Core] sections “XDM Operations using XDCP” and “Handling of XDCP Operations”. The S-CAB Server only handles Contact Share interworking with non S-CAB Users and the procedures are defined as part of the interworking function in section 5.3.

5.2.1 Procedures at the Originating Side

Contact Share of Confirmed Contact Cards in the S-PCC and S-AB Application Usages between S-CAB Users at the originating side is handled by the S-CAB Client and the S-CAB XDMS as described in [S-CAB-XDM] section “Forwarding” for respectively Application Usage without involvement of the S-CAB server. At the originating side, the S-CAB Server handles sending of Contact Share requests towards a non S-CAB User’s Address Book Application Usage and the procedure is defined as part of the Interworking Function in section 5.3.

5.2.2 Procedures at the Receiving Side

Contact Share of Confirmed Contact Cards in the S-PCC and S-AB Application Usages between S-CAB Users at the receiving side is handled by the S-CAB Client and the S-CAB XDMS as described in [S-CAB-XDM] section “Forwarding” for respectively Application Usage without involvement of the S-CAB server. At the receiving side, the S-CAB Server handles Contact Share from a CAB User’s Address book Application Usage and the procedure is defined as part of the Interworking Function in section 5.3.

5.2.3 Contact Suggestions

In order to deliver any contact suggestions to an S-CAB User, the S-CAB Server:

- 1) SHALL forward to the S-AB Application Usage the collection of Contact Cards consisting of the suggested S-CAB User(s) corresponding S-PCC(s), using the Remote Forwarding request as described in [OMA XDM Core] section “*Generation of the Forward XDCP Request to Remote Recipients*”, with the following clarification:
 - a) SHALL populate the <note> element included in the <forward-remote> element with a String “contact-suggestion”, which will indicate to the receiving side that this is a Contact suggestion;
 - b) SHALL include in the <sender-identity> element the XUI of the suggested S-CAB User;
 - c) SHALL include in the <document-uri> element a URI to a temporary document storage where the S-CAB Client can retrieve additional contact information about the suggested S-CAB User; and,
SHALL NOT include a <delivery-report> element.

5.3 Interworking Function

The Interworking Function SHALL support the following functionality:

- 1) One-time or periodic import of contact information in 3rd Party Systems into S-AB or S-PCC Tracking Contact Cards
- 2) Contact tracking of information in 3rd Party Systems into S-PCC Tracking Contact Cards
- 3) Export of S-AB and S-PCC Confirmed Contact Card data into 3rd Party Systems
- 4) Format adaptation between S-CAB Format and Legacy Formats
- 5) Contact information search in External Directories.
- 6) Contact Share with CAB Users supporting the CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “*AB Application Usage*”; and,
- 7) Contact Share with non S-CAB Users not supporting the CAB v1.0 Application Usages.

5.3.1 Import or Tracking of Contact Information in Non-CAB Systems

To support import of external contact information in 3rd Party system to an S-CAB User’s S-AB or S-PCC Application Usage, the S-CAB Server’s Interworking Function:

- 1) SHALL implement the Application Usages as described in [S-CAB XDM TS] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - a) when the Interworking Function receives an XDCCP request with an <import-to-doc> element without a <scheduled-interval> element, requesting a one time import of contact information from the 3rd Party system indicated in the <source-name> element, the Interworking Function:
 - i) SHALL check if the requestor has permission to update the associated Confirmed Contact Card by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” and if permission is granted continue with the following step;
 - ii) SHALL create an <update-object> element in the Confirmed Contact Card if such exists or create a new Confirmed Contact Card with an <update-object> element included as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”;
 - iii) SHALL send a response to the XDCCP request, if the import from the 3rd Party system can not be done immediately;
 - iv) SHALL perform a one time import of contact information from the 3rd Party system indicated in the <source-name> element;
 - v) SHALL create a Tracking Contact Card with the imported contact information after applying the filters in the <filter-set> element if this element is included in the XDCCP request;
 - vi) SHALL update the <update-object> element in the Confirmed Contact Card with a <tcc-ref> element as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”;
 - vii) SHALL, if the manual approval applies as described in [S-CAB XDM] sections “*S-CAB User Preferences*” and “*S-AB and S-PCC Interworking Function Application Usages*” for this import, update the <update-object> element in the Confirmed Contact Card with an <iuo-ref> element as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”; and,
 - viii) SHALL send a response to the XDCCP request if not already done.
 - b) when the Interworking Function receives an XDCCP request with an <import-to-doc> element, including a <scheduled-interval> element with a value greater than 0, requesting a periodic import of contact information from the 3rd Party system indicated in the <source-name> element, the Interworking Function:

- i) SHALL check if the requestor has permission to updated the associated Confirmed Contact Card by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” and if permission is granted continue with the following step;
 - ii) SHALL create an <update-object> element in the Confirmed Contact Card if such exists or create a new Confirmed Contact Card with an <update-object> element included as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”;
 - iii) SHALL send a response to the XDCP request, if the first import from the 3rd Party system can not be done immediately;
 - iv) SHALL perform a one time import of contact information from the 3rd Party system indicated in the <source-name> element;
 - v) SHALL create a Tracking Contact Card with the imported contact information after applying the filters in the <filter-set> element if this element is included in the XDCP request;
 - vi) SHALL update the <update-object> element in the Confirmed Contact Card with a <tcc-ref> element as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”;
 - vii) SHALL, if manual approval applies as described in [S-CAB XDM] sections “*S-CAB User Preferences*” and *S-AB and S-PCC Interworking Function Application Usages*” for this import, update the <update-object> element in the Confirmed Contact Card with an <iuo-ref> element as described in [S-CAB XDM] sections “*S-AB Application Usage*” and “*S-PCC Application Usage*”;
 - viii) SHALL send a response to the XDCP request if not already done;
 - ix) SHALL subscribe for changes in the associated Confirmed Contact Card and SHALL, when the Interworking Function detects that the <update-object> element associated with this periodic import is deleted, stop the import of contact information in the 3rd Party System and not continue with the next step;
 - x) SHALL wait until the next periodic import is scheduled to take place and perform a new import of contact information from the 3rd Party system;
 - xi) SHALL update the Tracking Card with any modified contact information from this import; and,
 - xii) SHALL,if manual approval applies as described in [S-CAB XDM] sections “*S-CAB User Preferences*” and *S-AB and S-PCC Interworking Function Application Usages*”, update the <update-object> element in the Confirmed Contact Card with an <iuo-ref> element if such one does not already exist.
- c) when the Interworking Function receives an XDCP request targeting S-PCC Application Usage with an <import-to-doc> element, including a <scheduled-interval> element with a value=’0”, requesting tracking of contact information changes in the 3rd Party system indicated in the <source-name> element, the Interworking Function:
- i) SHALL check if the requestor has permission to update the associated S-PCC Confirmed Contact Card by checking the Access Permissions Document associated with the S-PCC Confirmed Contact Card as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” and if permission is granted continue with the following step;
 - ii) SHALL create an <update-object> element in the Confirmed Contact Card if such exists or create a new Confirmed Contact Card with an <update-object> element included as described in [S-CAB XDM] section “*S-PCC Application Usage*”;
 - iii) SHALL send a response to the XDCP request;
 - iv) SHALL start the tracking by subscribing for changes in the contact information in the 3rd Party system indicated in the <source-name> element;
 - v) SHALL create a Tracking Contact Card including all initial received contact information after applying the filters in the <filter-set> element if this element is included in the XDCP request;
 - vi) SHALL update the <update-object> element in the Confirmed Contact Card with a <tcc-ref> element as described in [S-CAB XDM] section “*S-PCC Application Usage*”;

- vii) SHALL, if manual approval applies as described in [S-CAB XDM] sections “*S-CAB User Preferences*” and *S-AB and S-PCC Interworking Function Application Usages*” for this tracking ,update the <update-object> element in the Confirmed Contact Card with an <iuo-ref> element;
- viii) SHALL subscribe for changes in the associated Confirmed Contact Card and SHALL when the Interworking Function detects that the <update-object> element associated with this tracking is deleted, stop the tracking of contact information in the 3rd Party System and not continue with the next step;
- ix) SHALL update the Tracking Card with changed contact information from the subscription to changes in the 3rd Party system as soon it receives; and,
- x) SHALL, if manual approval applies as described in [S-CAB XDM] sections “*S-CAB User Preferences*” and *S-AB and S-PCC Interworking Function Application Usages*” for this tracking, update the <update-object> element in the Confirmed Contact Card with an <iuo-ref> element if such one does not already exist.

Note: Procedures and formats of contact information that the Interworking Function is using for import of contact information from 3rd Party Systems are out of scope of this specification.

5.3.2 Export of Contact Information to Non-CAB Systems

To support export of S-AB and S-PCC contact information to 3rd Party Systems the S-CAB Server’s Interworking Function:

- 1) SHALL implement the Application Usages as described in [S-CAB XDM TS] section “S-AB and S-PCC Interworking Function Application Usages” with the following clarifications:
 - a) When the Interworking Function receives an XDCP request with an <export-from-doc> element without a <scheduled-interval> element, requesting a one time export of contact information to the 3rd Party system indicated in the <source-name> element, the Interworking Function:
 - i) SHALL check if the requestor has permission to export contact information from the Confirmed Contact Card indicated in the <ccc-ref> element of the XDCP request by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “S-AB and S-PCC Interworking Function Application Usages” and if permission is granted continue with the following step;
 - ii) SHALL retrieve the Confirmed Contact Card and apply the filter included in the <filter-set> element to the document if this element is included in the XDCP request;
 - iii) SHALL send a response to the XDCP request, if the export to the 3rd Party system can not be done immediately;
 - iv) SHALL create an <update-object> element in the Confirmed Contact Card as described in [S-CAB XDM] sections “S-AB Application Usage” and “S-PCC Application Usage” , if the export to the 3rd Party system can not be done immediately;
 - v) SHALL perform the export to the 3rd Party system indicated in the <source-name> element included in the XDCP request;
 - vi) SHALL delete the <update-object> element in the Confirmed Contact Card as described in [S-CAB XDM] sections “S-AB Application Usage” and “S-PCC Application Usage” if such one has been created for this export; and,
 - vii) SHALL send a response to the XDCP request if not already done.
 - b) When the Interworking Function receives an XDCP request with an <export-from-doc> element with a <scheduled-interval> element with a value greater than “0”, requesting periodic export of contact information to the 3rd Party system indicated in the <source-name> element, the Interworking Function:
 - i) SHALL check if the requestor has permission to export contact information from the Confirmed Contact Card indicated in the <ccc-ref> element of the XDCP request by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “S-AB and S-PCC Interworking Function Application Usages” and if permission is granted continue with the following step;
 - ii) SHALL retrieve the Confirmed Contact Card and apply the filter included in the <filter-set> element to the document if this element is included in the XDCP request;

- iii) SHALL send a response to the XDCP request, if the first export to the 3rd Party system can not be done immediately;
 - iv) SHALL create an <update-object> element in the Confirmed Contact Card as described in [S-CAB XDM] sections “S-AB Application Usage” and “S-PCC Application Usage”;
 - v) SHALL perform the export to the 3rd Party system indicated in the <source-name> element included in the XDCP request;
 - vi) SHALL send a response to the XDCP request if not already done;
 - vii) SHALL subscribe for changes in the associated Confirmed Contact Card;
 - viii) SHALL, when the Interworking Function detects that the <update-object> element Confirmed Contact Card associated with this periodic export is deleted, stop the export of contact information to the 3rd Party System and not continue with the next step; and,
 - ix) SHALL wait until the next periodic export is scheduled to take place and perform a new export of contact information from the 3rd Party system.
- c) When the Interworking Function receives an XDCP request with an <export-from-doc> element with a <scheduled-interval> element with a value = “0”, requesting export, when contact information has been modified, to the 3rd Party system indicated in the <source-name> element, the Interworking Function:
- i) SHALL check if the requestor has permission to export contact information from the Confirmed Contact Card indicated in the <ccc-ref> element of the XDCP request by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “S-AB and S-PCC Interworking Function Application Usages” and if permission is granted continue with the following step;
 - ii) SHALL retrieve the Confirmed Contact Card and apply the filter included in the <filter-set> element to the document if this element is included in the XDCP request;
 - iii) SHALL send a response to the XDCP request, if the first export to the 3rd Party system can not be done immediately;
 - iv) SHALL create an <update-object> element in the Confirmed Contact Card as described in [S-CAB XDM] sections “S-AB Application Usage” and “S-PCC Application Usage”;
 - v) SHALL perform the export to the 3rd Party system indicated in the <source-name> element included in the XDCP request;
 - vi) SHALL send a response to the XDCP request if not already done;
 - vii) SHALL subscribe for changes in the exported Confirmed Contact Card;
 - viii) SHALL, when the Interworking Function detects that the <update-object> element associated with this periodic export is deleted, stop the export of contact information to the 3rd Party System and not continue with the next step;
 - ix) SHALL, when the Interworking Function detects that the contact information in the exported Confirmed Contact Card is modified, perform the export to the 3rd Party system.

Note: Procedures and formats of contact information that the Interworking Function are using for export of contact information to 3rd Party Systems are out of scope of this specification.

5.3.3 Contact Search in External Directories

The Interworking Function SHALL support the contact search in External Directories, as described in [S-CAB XDM TS] section “S-CAB External Directories Search Application Usage” by supporting the XDM Search Function as described in [OMA XDM Core] section “Searching for Data in XML Documents”. The contact search requests and responses SHALL be based on the Search Document schema as described in [OMA XDM Core] section “Search Document”.

Upon receiving the search request, the Interworking Function SHALL use the <datasource> element included in the <request> element as defined on [S-CAB XDM TS] section “S-CAB External Directories Search Application Usage” to construct an external search request targeting the external directory indicated by the value of the <datasource> element.

The Interworking Function SHALL translate the search requests received via the XDMS function of the S-CAB Server to external search requests based on the format supported by the External Directories, in the case when External Directories do not support the standard S-PCC XML format as described in [S-CAB XDM TS] section “S-PCC”. When the External Directories support the standard S-PCC XML format for search requests, translation MAY not be required.

Note: The interactions with External Directories and mapping the requests/responses to/from External Directories are out of scope of this specification.

The Interworking Function SHALL send the search requests responses from the External Directory to the Search Proxy via the XDMS function of the S-CAB server. If multiple External Directories are searched, the Interworking Function SHALL aggregate the results prior to sending the response back to the Search Proxy.

5.3.4 Contact Share Interworking at the Originating Side

The Interworking Function SHALL support the External Directories Search Application Usage, as specified in [S-CAB XDM TS] by providing XDMS Search Function. The contact search requests and responses SHALL be based the Search Document schema as described in [OMA XDM Core] sub clause 5.4.1 “Search Document”.

Upon receive

If the S-CAB Server supports the sending of S-AB Documents to CAB users supporting the CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “AB Application Usage”, the S-CAB Server’s Interworking Function:

- 1) SHALL implement both the Forwarding function of an CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “AB Application Usage” and the Forwarding function of an S-AB Application Usage as defined in [S-CAB-XDM-TS] section “S-AB Application Usage” with the following clarifications:
 - a) when it receives via the S-CAB Server’s XDMS function a Remote Forwarding Request targeting the S-AB Application Usage, it SHALL check if the addressed user is user in a CAB domain and if that is the case continue with next step;
 - b) SHALL generate and send a Remote Forwarding XDCP request targeting the CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “AB Application Usage” using the procedure defined in [OMA_XDM_Core] section “Generation of a Forward XDCP Request to Remote Recipients” and with the <document-uri> element value set to a URI to a temporary storage in the S-CAB Server of the format “[XCAPROOTURI]/org.openmobilealliance.cab-address-book/users/[XUI]/[temporary document name]”;
 - c) when it receive a retrieve request for the temporary document, it SHALL retrieve the forwarded S-CAB Contact Card from the S-CAB XDMS S-AB Application Usage using the URI received previously in the <document-uri> element of the original Remote Forwarding XDCP request and map it to the format of the CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “AB Application Usage” before including it in the retrieve response sent to the non S-CAB system; and,
 - d) when it receives a Forward Delivery Report XDCP request from the non S-CAB User’s AB Application Usage, it SHALL map it to a Forward Delivery Report XDCP request from S-CAB User’s AB Application Usage and sent this request to the S-CAB XDMS.

If the S-CAB Server supports the sending of S-AB Document to non S-CAB users not supporting the CAB v1.0 Application Usage as defined in [CAB-XDM-TS] section “AB Application Usage”, the S-CAB Server’s Interworking Function:

- 2) SHALL implement the Forwarding function of an S-AB Application Usage as defined in [S-CAB-XDM-TS] section “S-AB Application Usage” with the following clarifications:
 - a) when it receives via the S-CAB Server’s XDMS function a Remote Forwarding Request targeting the S-AB Application Usage it SHALL check if the addressed user is a non CAB User and if that is the case continue with next step;
 - b) SHALL retrieve the S-AB Document referenced in the <document-uri> element of the Remote Forwarding Request;

- c) SHALL convert the information in the S-AB Document to the format as defined value by the <contact-share-format> element in S-CAB User Preferences Document described in [S-CAB XDM];
- d) SHALL send the information to the non S-CAB user using procedures that are subject to service provider policies and out of the scope for this specification and send a response to the Remote Forwarding Request to the S-CAB XDMS. Note: If the CPM Interworking Function is used as messaging delivery mechanism, the Interworking Function SHALL construct a message as described in [OMA CPM CONV FCT TS] and send a message towards the CPM Interworking Selection Function [OMA CPM IWF TS]; and,
- e) SHALL if a forward delivery report has been request generate a Forward Delivert Report XDCP request and send it to the S-CAB XDMS as described in [OMA XDM Core] section “*Generation of XDM Forward Delivery Report Request*”.

If the S-CAB Server supports the sending of S-PCC Documents to non CAB users, the S-CAB Server’s Interworking Function:

- 3) SHALL implement the Forwarding function of an S-CAB v1.0 PCC Application Usage as defined in [S-CAB-XDM-TS] section “*S-PCC Application Usage*” with the following clarifications:
 - a) when it receives via the S-CAB Server’s XDMS function a Remote Forwarding Request targeting the S-PCC Application Usage, it SHALL check if the addressed user is a non CAB User and if that is the case continue with next step;
 - b) SHALL retrieve the S-PCC Document referenced in the <document-uri> element of the Remote Forwarding Request;
 - c) SHALL convert the information in the S-PCC Document to the format as defined value by the <contact-share-format> element in S-CAB User Preferences Document described in [S-CAB XDM];
 - d) SHALL send the information to the non S-CAB user using procedures that are subject to service provider policies and out of the scope for this specification and send a response to the Remote Forwarding Request to the S-CAB XDMS. Note: If the CPM Interworking Function is used as messaging delivery mechanism, the Interworking Function SHALL construct a message as described in [OMA CPM CONV FCT TS] and send a message towards the CPM Interworking Selection Function [OMA CPM IWF TS]; and,
 - e) if a delivery report has been request generate a Forward Delivery Report XDCP request and SHALL send it to the S-CAB XDMS as described in [OMA XDM Core] section “*Generation of XDM Forward Delivery Report Request*”.

5.3.5 Contact Share Interworking with CAB 1.0 User AB Application Usage at the Receiving Side

The S-CAB server MAY support the reception a CAB v1.0 Address Book Document from a non S-CAB system.

If the S-CAB server supports Contact Share interworking at the receiving side, the S-CAB Server’s Interworking Function SHALL implement the Forwarding function of a CAB v1.0 Address book Application Usage as defined in [CAB-XDM-TS] section “*AB Application Usage*” with the following clarifications:

- 1) when it receives via the S-CAB Server’s XDMS function a Remote Forwarding XDCP request targeting the AB Application Usage, it SHALL map this request to a Remote Forwarding XDCP request targeting the S-CAB v1.0 Address Book Application Usage as defined in [S-CAB-XDM-TS] section “*S-AB Application Usage*” and send the request to the S-CAB XDMS with the following clarifications:
 - a) SHALL set the <document-uri> element value to a URI to a temporary storage in the S-CAB Server of the format “[XCAPROOTURI]/org.openmobilealliance.cab-address-book/users/[XUI]/[temporary document name]” where the [XUI] value is the XUI of the receiving S-CAB User.

When it receive a retrieve request for the temporary document from the S-CAB Client, or from the S-CAB XDMS:

- 1) it SHALL retrieve the document from the CAB domain using the URI received in the <document-uri> element of the original received Remote Forwarding XDCP request;
- 2) It SHALL map the document in the retrieve response from the format at of the CAB v1.0 Address Book Application Usage as defined in [CAB-XDM-TS] section “*AB Application Usage*” to the format of an S-AB Application Usage Document; and, 3) it SHALL send the mapped document in the retrieve response to the requestor. Composition Function

The S-CAB server SHALL support a Composition function to support e.g. the Contact Subscription function as described in section 5.1 and the Import and Tracking functions as described in section 5.3.1.

The Composition function SHALL contain two types of update procedures ‘Automatic Update’ and ‘Manual Update’ as described in sections 5.4.1 and 5.4.2.

The Contact Subscription function as described in section 5.1 SHALL select type of update procedure to be applied to a Confirmed Contact Card using S-CAB User Preferences as described in [S-CAB XDM] section “*S-CAB User Preferences*”.

The Import or Tracking function as described in section 5.3.1 SHALL select type of update procedure to be applied to a Confirmed Contact Card using S-CAB User Preferences as described in [S-CAB XDM] section “*S-CAB User Preferences*” and the <approval> element included in the import XDCP request as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”.

5.3.6 Automatic Update of Contact Card

The Composition Function SHALL use the S-CAB Server’s XDM Agent function to subscribe to document changes in the User Directory of an S-CAB User’s S-AB and S-PCC Application Usages to detect changes to the <update-object-list> element of an S-CAB user’s Confirmed Contact Cards and to detect changes to an S-CAB User’s Tracking Contact Cards

When the Composition Function detects:

- 1) an addition of a “tcc-ref” attribute to an <update-object> element included in the <update-object-list> element of a Confirmed Contact Card and the “approval” attribute include in the <update-object> element has the value “automatic”; or
- 2) a change to a Tracking Contact Card referenced by a “tcc-ref” attribute include in an <update-object> element included in the <update-object-list> element of a Confirmed Contact Card and the “approval” attribute included in the <update-object> element has the value “automatic”.

the Composition Function SHALL pair-wise merge Tracking Contact Cards into the associated Confirmed Contact Card. The Composition Function SHALL use the values of the “prio” attributes included in the <update-object> elements of the Confirmed Contact Card as Tracking Contact Card Priority To accomplish this, the Composition Function SHALL merge by starting with the lowest priority Tracking Contact Card and merge that with the second to the lowest priority Tracking Contact Card. The Composition Function proceeds to merge that resulting merge with the third lowest priority Tracking Contact Card, continuing recursively in this manner to the highest Tracking Contact Card, which is merged into the Confirmed Contact Card to become the new Confirmed Contact Card.

The Composition Function SHALL recursively merge Tracking Contact Cards in linear priority order, starting with the lowest priority Tracking Contact Card, as follows:

- 1) When there is no conflict in an element between two Tracking Contact Cards, the Composition Function SHALL merge the elements of the two Tracking Contact Cards:
 - a) For unordered sequences of the same parent element type, the Composition Function SHALL logically concatenate the unordered child elements of the lower priority Tracking Contact Card with the unordered child elements of the higher Tracking Contact Card into one unordered sequence, removing redundancies child elements in the concatenated sequence, if any should exist.
 - b) The Composition Function MAY subsume two child elements of the concatenated sequence into one element when they represent the same data.

For example: A <name> element exists in two Tracking Contact Cards such that one lacks a middle name while the other one has the middle name. In this case, the second element may be a desirable outcome.

- 2) When there is a conflict resulting from a merge, such as two elements of some type for which the [S-CAB XDMS] specifies there can be only one such element, the Composition Function SHALL discard elements belonging to the lower priority Tracking Contact Card and SHALL retain the element(s) belonging to the higher priority Tracking Contact Card.

Note: Identical elements of the same type differing only in some value appearing in a concatenated, unordered sequence may represent a conflict.

5.3.7 Manual Update of Contact Card

When the S-CAB Server gets a retrieve request for an Indirect Update Object Document as described in [OMA XDM Core] section “*GET Handling*”, the Composition Function:

- 1) SHALL check if the requestor has permission to update the Confirmed Contact Card associated with the Indirect Update Object Document by checking the Access Permissions Document associated with the Confirmed Contact Card as described in [S-CAB XDM] section “*Indirect update object*” and if permission is granted continue with the following step;
- 2) SHALL retrieve the Tracking Contact Card and the Confirmed Contact Card associated with the Indirect Update Object Document from the S-CAB User’s S-AB and S-PCC Application Usages as described in [OMA XDM Core] section “*GET Handling*”; and
- 3) SHALL merge the Tracking Contact Card against the Confirmed Contact Card and store a resulting set of document changes against the Confirmed Contact Card into the Indirect Update Object Document in accordance with [S-CAB XDMS] section “*Indirect Update Object*” before returning the Indirect Update Object Document to the requestor.

5.3.8 Merge of the Communication History

When the S-CAB Server gets notified that a new Tracking Communication History (TCH) Document was created, it SHALL perform the merge into the current Composed Communication History (CCH) Document. The resulting update will be performed into the S-CAB Communication History Application Usage in the S-CAB XDMS in accordance with document management procedures specified in [XDM TS Core].

5.4 XDM Agent Function

The XDM Agent function acts as a supporting entity to other S-CAB Server functions and supports interactions (i.e., document management operations, subscriptions/notifications, forwarding) with S-CAB Application Usages as described in [S-CAB XDMS] and the CAB AB Application Usage as described in [CAB-XDM].

If S-CAB Server’s CAB Capability Contact Status function populates the CAB capability (i.e. S-CAB / non-CAB) through Presence Enabler [OMA Pres] and the S-CAB Server publishes the CAB capability as Permanent Presence State, then the XDM Agent function SHALL interact with the Presence XDMS for this purpose as described in [OMA Pres TS] Section 5.1.3 “*Manipulation of Permanent Presence State using XCAP*”.

The XDM Agent function SHALL support the following procedures as described in [OMA XDM Core] section 6.1 “*Procedures at the XDMC and the XDM Agent*”:

- 1) Procedures of document management of S-CAB XML documents as described in [S-CAB XDMS] based on procedures as described in [OMA XDM Core] section “*Document Management*”;
- 2) Procedures of subscription to changes in S-CAB XML documents as described in [S-CAB XDMS] based on procedures as described in [OMA XDM Core] section “*Subscribing to changes in the XML documents*” with the exception of subsection “*XDMC*”;
- 3) Procedures of subscription to changes in UPP Directory Document as described in [OMA-XDM-UPP] based on procedures as described in [OMA XDM Core] section “*Subscribing to changes in the XML documents*” with the exception of subsection “*XDMC*”; and,

- 4) Procedures of XDM Forwarding for S-CAB XML documents as described in [S-CAB XDMS] based on procedures as described [OMA XDM Core] section “*XDM Resource Forwarding Operations*”.

The XDM Agent function SHALL support a procedure to generate Remote Forwarding XDCP requests as described in [OMA XDM Core] section “*Generation of a Forward XCP Request to Remote Recipients*”.

The XDM Agent function SHALL support a procedure to generate Forward Delivery Report XDCP requests as described in [OMA XDM Core] section “*Generation of XDM Forward Delivery Report Request*”.

The XDM Agent function SHALL support the Application Usages as described in [S-CAB XDMS].

5.5 XDMS Function

The S-CAB Server SHALL support an XDMS function as described in [OMA XDM Core] section “*Procedures at the XDM Server*” with the following clarifications:

- 1) If the S-CAB Server supports contact search in external directories as described in section 5.3.3, the XDMS Function SHALL support Search procedure of an Application Usage as described in [S-CAB XDM] section “*S-CAB External Directories Search Application Usage*”;
- 2) If the S-CAB Server supports manual updates of Confirmed Contact Cards as described in section 5.4.2, the XDMS Function SHALL support a “Get an XDM Document” procedure of an Application Usage as described in [S-CAB XDM] section “*Indirect Update Object*”;
- 3) If the S-CAB Server supports import or tracking of contact information from Non-CAB Systems as described in section 5.3.1, the XDMS Function SHALL support an import procedure of an Application Usage as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
- 4) If the S-CAB Server supports export of contact information to Non-CAB systems as described in section 5.3.3, the XDMS Function SHALL support an export procedure of an Application Usages as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”; and,
- 5) If the S-CAB Server supports Contact Share Interworking as described in section 5.2.1 and 5.2.2, the XDMS Function SHALL support remote forwarding and “Get an XDM Document” procedures of the S-AB Application Usage as described in [S-CAB XDM] section “*S-AB Application Usage*”, remote forwarding procedures of the S-PCC Application Usage [S-CAB XDM] section “*S-PCC Application Usage*” and remote forwarding and “Get an XDM Document” procedures of the AB-Application Usage as described in [CAB XDM] section “*AB Application Usage*”.

5.6 Presence Source Function

If S-CAB Server populates the S-CAB capability (i.e. S-CAB / non-S-CAB) through Presence Enabler [OMA Pres] in accordance with bilateral Service Provider agreements, and the S-CAB Server publishes the S-CAB capability as avia SIP Publish, then the S-CAB Server Presence Source function SHALL interact with the Presence Server of the S-CAB User for this purpose, as described in [OMA Pres TS] Section 5.1.2 “*Publication of Presence Information using SIP*”.

5.7 Presence Watcher Function

If S-CAB Server populates the S-CAB capability (i.e. S-CAB / non-S-CAB) through Presence Enabler [OMA Pres], then the S-CAB Server Presence Watcher function SHALL subscribe to the Presence information of the contacts of the S-CAB Users served by this S-CAB Server as described in [OMA Pres TS] Section 5.2 “*Watcher*” and in accordance with bilateral Service Provider agreements, in order to receive the S-CAB capability of those contacts as part of in the Presence information updates.

5.8 Contact Status S-CAB Capability Function

The S-CAB Capability Contact Status Function SHALL manage the Contact Status information contained in the <contact-status> element included in the <pcc> element in an S-AB Document of the type Confirmed Contact Card following the rules and procedures as described in [S-CAB XDM TS] section “*S-AB Application Usage*”.

5.8.1 Population of S-CAB Capability based on the Presence Enabler

If S-CAB Server populates the S-CAB capability (i.e. S-CAB / non-S-CAB) through Presence Enabler [OMA Pres] the S-CAB Server SHALL follow the following procedures.

The S-CAB tuple in the presence document is defined according to [OMA PDE], using the <service-description> registered by OMNA:

```
<tuple >      -><status>-><basic>->open/closed
               -><willingness>-><basic>->open/closed
               -><service-description>-><service-id>->org.openmobilealliance:S-CAB
               -><version>->1.0
               -><contact>-> tel:+1-123-456-7890
```

When a user becomes an S-CAB User then S-CAB Server SHALL set the <status><basic> and <willingness><basic> elements in the S-CAB tuple to “open” and the <contact> element to the S-CAB User’s XUI. This SHALL be done either as a SIP Publish by the S-CAB Server Presence Source function or by modification of the Permanent Presence State by the S-CAB Server XDM Agent function.

When a user unsubscribes from no longer being a S-CAB CAB User, then the S-CAB Server SHALL set the <status><basic> and <willingness><basic> elements in the S-CAB tuple to “closed”. This SHALL be done either as a SIP Publish by the S-CAB Server Presence Source function or by modification of the Permanent Presence State by the S-CAB Server XDM Agent function.

The S-CAB Server Presence Watcher function SHALL subscribe to the Presence information of the S-CAB Users’ contacts served by the S-CAB Server by either of the following procedures in accordance with bilateral Service Provider agreements:

- Individual Presence subscriptions to each of the contacts in the address book of each of the S-CAB Users, on behalf of these users.

NOTE: Multiple subscriptions to a specific contact may be performed if that contact is included in the address books of more than one S-CAB User.

- Single anonymous Presence subscription for each contact included in at least one address book of the S-CAB Users served by that S-CAB server.

When the S-CAB Server Presence Watcher function receives a presence notification then the S-CAB Server SHALL check the changes in the S-CAB tuple and update the <contact-type> element as described in [S-CAB XDM TS] section “*S-AB Application Usage*” as detailed below. Notifications associated to an anonymous subscription SHALL result in updates to the S-AB Application Usage of all S-CAB Users with that contact in their address books. Notifications associated to an individual Presence subscription SHALL result in updates to the S-AB Application Usage of the specific S-CAB User on which behalf that subscription was issued.

Upon reception of a Presence notification with the <status><basic> element in a contact’s S-CAB tuple with value “open” and in case that contact’s <contact-type> element as described in [S-CAB XDM TS] section “*S-AB Application Usage*” was not present (meaning a non-S-CAB user) then it SHALL be included, the sub-element <s-cab> SHALL be set, the sub-element <contact-type-source> SHALL be set to “presence” (reflecting that this information has been obtained through the Presence Enabler) and the address received in the <contact> element in the S-CAB tuple SHALL be marked as the S-CAB User’s XUI in the S-AB Application Usage by setting the corresponding “xui-type” attribute to “CAB”.

Upon reception of a Presence notification with no S-CAB tuple for a contact or with the <status><basic> element in a contact's S-CAB tuple with value "closed" and provided that contact's <s-cab> element was set and the <contact-type-source> was set to "presence" (meaning that this information was obtained through the Presence Enabler), then the S-CAB Server SHALL remove the <contact-type> element altogether (meaning that the user is no longer an S-CAB user). In case that the <contact-type-source> element is not set to "Presence" then the S-CAB Server SHALL NOT perform any action as the <contact-type> information may have been obtained from other sources and the absence of the S-CAB tuple may mean that the Presence Server has no information about the S-CAB capability of its users.

5.8.2 Mutual Contact Status Information

To support mutual contact status information, the S-CAB Server Contact Status function SHALL update the <mutual-contact-status> element included in the <contact-type> element included in Confirmed Contact Card in the S-AB Application Usage as described in [S-CAB XDM TS] section *S-AB Application Usage* with the following clarifications.

The S-CAB Server:

- 1) SHALL detect when a contact is S-CAB or CAB 1.0 User by the presence of an <s-cab> element or a <cab> element in the <contact-type> element of a Confirmed Contact Card, and if the <send-notification-contact-added> element of the S-CAB User Preferences Document has the value "true" as describe in [S-CAB XDM TS] continue with the next step;
- 2) SHALL check that the contact associated with the Confirmed Contact Card has access permissions to retrieve the S-CAB User's PCC Document and if that is the case continue with the next steps.

5.8.2.1 Mutual Contact Status handling within same domain

If the contact and the S-CAB User belong to the same local domain, the S-CAB Server SHALL perform the following:

- a) if the <receive-notification-when-contact-added> element is set to "true" in the contact's S-CAB User Preference Document and,
- b) if the contact has a Confirmed Contact Card associated with the S-CAB User, then

the S-CAB Server SHALL set the <mutual-contact-status> element in both S-CAB Users' Confirmed Contact Cards to the value "mutual".

Else, if the contact does not have a Confirmed Contact Card associated with the S-CAB User:

- i) the S-CAB Server SHALL create a Confirmed Contact Card in the contact's S-AB Application Usage, and
- ii) it SHALL set the contact's <mutual-contact-status> element to the value "added-by-contact" and the S-CAB User's <mutual-contact-status>element to the value "unknown".

If the contact's <receive-notification-when-contact-added> element is not set to "true", the S-CAB Server SHALL set the S-CAB User's <mutual-contact-status>element to the value "unknown" and SHALL NOT create <mutual-contact-status>element in the contact's Confirmed Contact Card.

5.8.2.2 Mutual Contact Status handling inter-domain

The contact can be a S-CAB User or a CAB 1.0 User in this case. The mutual contact status information between S-CAB Users and CAB-Users in different remote domains, is exchanged using SIP MESSAGE.

5.8.2.2.1 Originating side procedures

The Contact Status Function in the S-CAB Server SHALL construct and send a SIP MESSAGE to the SIP/IP Core, as described [S-CAB AD] using the following steps:

- c) it SHALL set the Request-URI of the SIP MESSAGE with the value of the recipient's XUI (i.e. the value of added-XUI);
- d) it SHALL set the To header field of the SIP MESSAGE with the Request-URI;

- e) it SHALL set the From header field of the SIP MESSAGE with the value of the originator's S_CAB User XUI (i.e. the value of owner-XUI) and the 'display-name' parameter of the From header to the Owner's display-name from his/her PCC that has the highest 'pref' value;
- f) it SHALL set the P-Asserted-Identity header field of the SIP MESSAGE with the value of the originator's XUI (i.e. the value of owner-XUI);
- g) it SHALL set the Contact header field with the value of the CAB feature tag, i.e. "3gpp-service.ims.icsi.oma.cab_1.0";
- h) it SHALL set the P-Preferred-Service header field with the value of the CAB feature tag, i.e. "3gpp-service.ims.icsi.oma.cab_1.0";
- i) It SHALL an empty body in the SIP MESSAGE, and;
- j) It SHALL send the SIP MESSAGE according to the procedures of the SIP/IP Core that is referenced in [OMA XDM Core].

The Contact Status Function SHALL create a <mutual-contact-status> element in the Confirmed Contact Card with the value set to "unknown" to indicate that a notification has been sent to the remote domain, or if the <mutual-contact-status> element exists and contains the value "added-by-contact" it SHALL change it to "mutual".

5.8.2.2.2 Terminating side procedures

When the S-CAB Server receives a SIP MESSAGE:

- 1) It SHALL check if the feature tag "3gpp-service.ims.icsi.oma.cab_1.0" is present in the Contact header field. If the feature tag is not present, or the value is not recognized, the CAB Server SHALL reject the request with SIP 403 "Forbidden" response;
- 2) It SHALL check if the values of "To" and "From" match the semantics of added-XUI and owner-XUI respectively, in which case it SHALL respond with 200 OK SIP response according to [RFC 3428] and continue with the next step. If any of these checks fail, then it SHALL reject the request with 488 Not Acceptable Here SIP response and it SHALL not continue with the next step;
- 3) It SHALL use the information in the "To" header to locate the receiving S-CAB User's S-AB, and the information in the "From" header to identify if a Confirmed Contact Card associated with the sending S-CAB or CAB User exists in the recipient's S-AB;
- 4) if the <receive-notification-when-contact-added> element is set to "true" in the receiving S-CAB User Preference Document, then
 - a) if the originating S-CAB or CAB User has an associated Confirmed Contact Card, the S-CAB Server SHALL update the <mutual-contact-status> element to contain the value "mutual".
 - b) If the originating S-CAB or CAB User does not have an associated Confirmed Contact Card, the S-CAB Server SHALL create a Confirmed Contact Card using information from the received SIP MESSAGE, or from the originating S-CAB or CAB User's PCC Document. S-CAB Server SHALL include a <mutual-contact-status> element in the created Confirmed Contact Card, with the value "added-by-contact" to indicate to the receiving S-CAB User that this Confirmed Contact Card was created by the Contact Status function upon a notification for contact-added.

NOTE: As soon as the S-CAB User starts updating a Confirmed Contact Card for a contact that has the <mutual-contact-status> element with a value of "added-by-contact", the S-CAB Server SHALL change the element value to "mutual". The update can be the result of any one of S-CAB User management operations, Contact Subscriptions, import/external subscriptions.

6. Procedures at CAB Client

6.1 S-CAB XDM Document Management and Tracking

The S-CAB Client MAY support the following S-CAB Application Usages:

- 1) the S-PCC Application Usage as described in [S-CAB XDM] section “*S-PCC Application Usage*”;
- 2) the S-AB Application Usage as described in [S-CAB XDM] section “*S-AB Application Usage*”;
- 3) the S-CAB User Preferences Application Usage as described in [S-CAB XDM] section “*S-Cab User Preferences Application Usage*”;
- 4) the S-AB Interworking Function Application Usage as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
- 5) the S-PCC Interworking Function Application Usage as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
- 6) the S-CAB Indirect Update Object Application Usage as described in [S-CAB XDM] section “*Indirect Update Object*”; and,
- 7) the S-CAB External Directory Search Application Usage as described in [S-CAB XDM] section “*External Directory Search*”.

The S-CAB Client SHALL format document management requests as described in [OMA XDM Core], section 6.1 “*Procedures at the XDMC and the XDM Agent*” and as described in [S-CAB XDM] for respective Application Usage.

The S-CAB Client SHALL format document management requests for the S-CAB User Communication History Application Usage according to [OMA XDM Core], sub clause 6.1.1 “*Document Management*” with the following clarification:

- SHALL populate the AUID of the XCAP URI with “org.openmobilealliance.s-cab-comm-history”.

Note: While an S-CAB Client could subscribe directly to any other S-CAB User’s S-PCC XDM document Confirmed Contact Card, a major point of the S-CAB Enabler is that it composes information from various sources.

6.2 Import, Tracking, and Export of 3rd Party System Information

6.2.1 Import of 3rd Party System Contact Information

The S-CAB Client SHALL support import of contact information from a 3rd Party System as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” to an S-AB Document as described in [S-CAB XDM] section “*S-AB Application Usage*”.

The S-CAB Client:

- 1) SHALL when the S-CAB User requests contact information import from a 3rd Party System source to an S-AB Document, construct an XDCP Request according to the rules and procedures as described in [OMA XDM Core] section 6.1.1.3 “*XDM Operations using XDCP*” and as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - a) SHALL set the XDCP Request URI to `http://[XCAP Root URI]/org.openmobilealliance.xdcp/org.openmobilealliance.s-cab-ab.iwfw/users/XUI` (see section 6.1.1.1 “*XDM URI Construction*” [OMA XDM Core]);
 - b) SHALL include in the body of the XDCP Request an “XDCP Document” as specified in [OMA XDM Core] section “*XDCP Document*” containing an `<import-to-doc>` element populated with `<source-name>` element as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;

- c) MAY include in the XDCP Document <scheduled-interval>, <expiration-time>, <credentials>, <prio>, <approval>, <ccc-ref> and <filter-set>> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - i) The <scheduled-interval> element SHALL be included with a value greater than “0” if the S-CAB User has requested that a periodic import of contact information shall be done;
 - ii) The <scheduled-interval> element SHALL NOT be included if the S-CAB User has requested that a one time import of contact information shall be done;
 - iii) The <approval> element SHALL be included if the S-CAB User has requested that the element that selects type of update of S-AB Documents in the S-CAB User Preferences as described in [S-CAB XDM] section “*S-CAB User Preferences Application Usage*” shall not be used for this import; and,
 - iv) The <prio> element SHALL be included with a value less than “1.00” if the S-CAB User has requested “automatic” approval and if this import shall be given a Tracking Contact Card Priority to be used by the Composition Function as described in section 5.4 in relation to other sources at automatic update of the S-AB Document.
- 2) SHALL send the XDCP Request to the Aggregation Proxy according to the rules and procedures described in [OMA XDM Core].
- 3) MAY if it receives an XDCP Response with an <import-result> element including an <import-done> and an <iuo-ref> element apply the procedure for manual approval of updates to a Confirmed Contact Card;
- 4) MAY if it receives an XDCP Response with an <import-result> element including an <approval> element with the value “manual” apply the ‘subscribe to document changes’ procedure as described in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” to be able to detect when a <iuo-ref> element is included in the <update-object> element of the Confirmed Contact Card as described in [S-CAB XDM] section “*S-AB Application Usage*”;
- 5) SHALL delete the <update-object> element included in the Confirmed Contact Card as described in [OMA XDM Core] section “*Delete an Element*” if the S-CAB User requests an ongoing import to be cancelled.

The S-CAB Client SHALL support import of contact information from a 3rd Party System as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” to an S-PCC Document as described in [S-CAB XDM] section “*S-PCC Application Usage*”.

The S-CAB Client:

- 1) SHALL when the S-CAB User requests information import from a 3rd Party System source to an S-PCC Document construct an XDCP Request according to the rules and procedures described in [OMA XDM Core] section 6.1.1.3 “XDM Operations using XDCP” and as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - a) SHALL set the XDCP Request URI to http://[XCAP Root URI]/org.openmobilealliance.xdcp/org.openmobilealliance.cab-pcc.s-cab-iwif/users/XUI (see section 6.1.1.1 “XDM URI Construction” [OMA XDM Core]);
 - b) SHALL include in the body of the XDCP Request an “XDCP Document” as specified in [OMA XDM Core] section “*XDCP Document*” containing an <import-to-doc> element populated with <source-name> element as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
 - c) MAY include in the XDCP Document <scheduled-interval>, <expiration-time>, <credentials>, <prio>, <approval>, <ccc-ref> and <filter-set>> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - i) The <scheduled-interval> element SHALL be included with a value greater than “0” if the S-CAB user has requested that a periodic import of contact information shall be done;
 - ii) The <scheduled-interval> element SHALL NOT be included if the S-CAB User has requested a one time import of contact information shall be done;
 - iii) The <scheduled-interval> element SHALL be included with a value = “0” if the S-CAB User has requested that tracking of contact information shall be done;
 - iv) The <approval> element SHALL be included if the S-CAB User has requested that the element that selects type

of update of S-PCC Documents in the S-CAB User Preferences as described in [S-CAB XDM] section “*S-CAB User Preferences Application Usage*” shall not be used for this import; and,

- d) The <prio> element SHALL be included with a value less than “1.00” if the S-CAB User has requested “automatic” approval and if this import has shall be given a Tracking Contact Card Priority to used by the Composition Function as described in section 5.4 in relation to other sources at automatic update of the S-PCC Document
- 2) Send the XDCP Request to the Aggregation Proxy according to the rules and procedures described in [OMA XDM Core];
- 3) MAY if it receives an XDCP Response with an <import-result> element including an <import-done> and an <iuo-ref> element apply the procedure for manual approval of updates to a Confirmed Contact Card;
- 4) MAY if it receives an XDCP Response with an <import-result> element including an <approval> element with the value “manual” apply the ‘subscribe to document changes’ procedure as described in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” to be able to detect when an <iuo-ref> element is included in the <update-object> element of the Confirmed Contact Card as described in [S-CAB XDM] section “*S-PCC Application Usage*”;
- 5) SHALL delete the <update-object> element included in the Confirmed Contact Card as described in [OMA XDM Core] section “*Delete an Element*” if the S-CAB User requests an ongoing import to be cancelled

6.2.2 Export of S-CAB Contact Information to 3rd Party System

The S-CAB Client SHALL support export of contact information to a 3rd Party System as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” from an S-AB Document as described in [S-CAB XDM] section “*S-AB Application Usage*”.

The S-CAB Client:

- 1) SHALL when the S-CAB User requests export into a 3rd Party System source, construct an XDCP Request according to the rules and procedures described in [OMA XDM Core] section 6.1.1.3 “*XDM Operations using XDCP*” and as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - a) SHALL set the XDCP Request URI to http://[XCAP Root URI]/org.openmobilealliance.xdcp/org.openmobilealliance.s-cab-ab.iwf/users/XUI (see section 6.1.1.1 “*XDM URI Construction*” [OMA XDM Core];
 - b) SHALL include in the body of the XDCP Request an “XDCP Document” as specified in [OMA XDM Core] section “*XDCP Document*” containing an <export-from-doc> element populated with <source-name> and <ccc-ref> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
 - c) MAY include in the XDCP Document the <scheduled-interval>, <expiration-time>, <credentials> and <filter-set> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - i) The <scheduled-interval> element SHALL be included with a value greater than “0” if the S-CAB User has requested that a periodic export of contact information shall be done;
 - ii) The <scheduled-interval> element SHALL NOT be included if the S-CAB User has requested that a one time export of contact information shall be done; and,
 - iii) The <scheduled-interval> element SHALL be included with a value = “0” if the S-CAB User has requested that export of contact information shall be done as soon the Confirmed Contact Card is changed.
- 2) SHALL send the XDCP Request to the Aggregation Proxy according to the rules and procedures described in [OMA XDM Core];
- 3) MAY if it receives an XDCP Response with a <done> element apply the ‘subscribe to document changes’ procedure as described in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” to be able to monitor the export by checking for changes to the <update-object> element included the Confirmed Contact Card as described in [S-CAB XDM] section “*S-AB Application Usage*”; and,

- 4) SHALL delete the <update-object> element included in the Confirmed Contact Card as described in [OMA XDM Core] section “*Delete an Element*” if the S-CAB User requests an ongoing export to be cancelled.

The S-CAB Client SHALL support export of contact information to a 3rd Party System as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” from an S-PCC Document as described in [S-CAB XDM] section “*S-PCC Application Usage*”.

The S-CAB Client:

- 1) SHALL when the S-CAB User requests export into a 3rd Party System source construct an XDCP Request according to the rules and procedures as described in [OMA XDM Core] section 6.1.1.3 “*XDM Operations using XDCP*” and as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications:
 - a) SHALL set the XDCP Request URI to http://[XCAP Root URI]/org.openmobilealliance.xdcp/org.openmobilealliance.cab-pcc.s-cab-iwfw/users/XUI (see section 6.1.1.1 “*XDM URI Construction*” [OMA XDM Core]);
 - b) SHALL include in the body of the XDCP Request an “XDCP Document” as specified in [OMA XDM Core] section “*XDCP Document*” containing an <export-from-doc> element populated with <source-name> and <ccc-ref> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*”;
 - c) MAY include in the XDCP Document <scheduled-interval>, <expiration-time>, <credentials> and <filter-set> elements as described in [S-CAB XDM] section “*S-AB and S-PCC Interworking Function Application Usages*” with the following clarifications;
 - iv) The <scheduled-interval> element SHALL be included with a value greater than “0” if the S-CAB User has requested that a periodic export of contact information shall be done;
 - v) The <scheduled-interval> element SHALL NOT be included if the S-CAB User has requested a one time export of contact information shall be done; and,
 - vi) The <scheduled-interval> element SHALL be included with a value = “0” if the S-CAB User has requested that export of contact information shall be done as soon the Confirmed Contact Card is changed.
- 2) SHALL send the XDCP Request to the Aggregation Proxy according to the rules and procedures described in [OMA XDM Core];
- 3) MAY if it receives an XDCP Response with a <done> element apply the ‘subscribe to document changes’ procedure as described in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” to be able to monitor the export by checking for changes to the <update-object> element included in the Confirmed Contact Card as described in [S-CAB XDM] section “*S-PCC Application Usage*”; and,
- 4) SHALL delete the <update-object> element included in the Confirmed Contact Card as described in [OMA XDM Core] section “*Delete an Element*” if the S-CAB User requests an ongoing export to be cancelled.

6.3 Contact Subscription Invitation

When the S-CAB User requests that a contact subscription invitation shall be sent to an S-CAB contact, the S-CAB Client SHALL construct and send a Forwarding request with the following clarifications:

- 1) SHALL, before creating and sending the Forwarding request, update the S-CAB User’s S-PCC Application Usage Access Permissions Document giving the contact access permissions to retrieve the PCC Document;
- 2) SHALL create an XDCP request as defined in [OMA XDM Core] section “*XDM Resource Forwarding Operations*” with the following clarifications:
 - a) SHALL set the HTTP Request URI to “http://[XCAP Root URI]/org.openmobilealliance.xdcp/org.openmobilealliance.cab-pcc/users/[S-CAB User XUI]/[User Directory Document Selector]” as described in [OMA XDM Core] section “*XDM Operations using XDCP*”; and,
 - b) SHALL populate the <note> element included in the XDCP request with the string “pcc-subscription-invitation” which will indicate to the receiving side that this is a Contact Subscription Invitation.

- 3) SHALL use the XDM Agent function as described in section 5.5 to send the XDCP request.

To support the reception of a contact subscription invitation, the S-CAB Client SHALL subscribe to document changes in the S-CAB User's Forwarding Notification List documents as described in [OMA XDM List] section "*Forwarding Notification List*" and in [OMA XDM Core] section "*Subscribing to Changes in the XDM Resources*" with the following clarification:

- 1) When the S-CAB Client detects a <request-notification-list> element with an "auid" attribute with a value 'org.openmobilealliance.pcc' and with a <note> element with the value "pcc-subscription-invitation" included in a <request> element, the S-CAB Client SHALL regard the forwarded S-PCC Document as a contact subscription invitation from the sender of a Forwarding XDCP Request;
- 2) SHALL retrieve the S-PCC Document referenced in the <document-uri> attribute included in the <request> element using the procedure as described in [OMA XDM Core] section "*Retrieve a Document*";
- 3) SHALL if the S-CAB User accepts the contact subscription invitation add the inviter's identity to the <subscription-list> element in the S-CAB User's S-CAB User Preferences Document as described in [S-CAB XDM] section"; and,
- 4) SHALL send a Forward Accept XDCP Request with the <do-not-store> element included as described in [OMA XDM Core] "*Handling of XDM Resource Forwarding Notifications*".

6.4 Contact Subscription Function

The S-CAB Client MAY support the contact subscription function.

If supported the S-CAB Client:

- 1) SHALL, if the S-CAB User requests that a contact subscription shall be done, add an <entry> element to the <subscription-list> element included in the S-CAB User's S-CAB User Preferences Document as described in [S-CAB XDM] section "*S-CAB User Preferences*" with the following clarifications:
 - a) the "id" attribute SHALL contain the XUI of the contact to subscribe to;
 - b) the "ccc-ref" attribute SHALL, if it is included, contain the User Directory Document Selector to the Confirmed Contact Card that the S-CAB User requests to be updated with contact information from the contact subscription. Note: If this attribute is not included, the S-CAB server will select if an existing Confirmed Contact Card will be used or if a new one will be created and used, based on contact identity information in the S-CAB User's S-AB Documents; and,
 - c) the "approval" attribute SHALL be included if the S-CAB user requests that the <contact-subscription-update> element as described in [S-CAB XDM] section "*S-CAB User Preferences*" shall not be used for this particular contact subscription.
- 2) SHALL, if the S-CAB User requests that a contact subscription shall be cancelled, delete the contact's corresponding <entry> element included in the <subscription-list> element included in the S-CAB User's S-CAB User Preferences Document as described in [S-CAB XDM] section "*S-CAB User Preferences*";
- 3) SHALL, if the S-CAB User requests manual approval of changes to a Confirmed Contact Card, subscribe to changes to Confirmed Contact Cards in the S-CAB User's S-AB Application Usage User Directory and check for S-AB Documents including <update-object> elements including a <contact-subscription-status> element and an "iuo-ref" attribute as described in [S-CAB XDM] section "*S-CAB AB Application Usage*" with the following clarifications:
 - a) SHALL, when the S-CAB Client detects an "iuo-ref" attribute included in an <update-object> element, retrieve the Indirect Update Object Document referenced in the "iuo-ref" attribute and present the proposed changes to the Confirmed Contact Card included in the XCAP Diff document in the body of the response as described in S-CAB XDM "*Indirect update Object*" to the S-CAB User for manual approval; and,
 - b) SHALL update the Confirmed Contact Card with the changes that were approved by the S-CAB User by generating a Differential Write XDCP request as described in [OMA XDM Core] section "*Differential Write*" with the XCAP Diff document received where all not approved document changes to the Confirmed Contact Cards are removed. Note: The first child element included in the <document> element of the received XCAP Diff document as described in S-CAB XDM "*Indirect update Object*" shall always be included in the Differential Write XDCP request as it is used to acknowledge that the manual update approval procedure has been performed.

6.5 Contact Share Function

The S-CAB Client SHALL support the contact share function.

The S-CAB Client:

- 1) SHALL, if the S-CAB User requests that a contact share shall be done, act as an XDMC and send a Forwarding XDCP request as described in [OMA XDM Core] sections “*XDM Operations using XDCP*” and “*XDM Resource Forwarding Operations*” with the following clarifications:
 - a) SHALL set the HTTP Request-URI SHALL to ‘http://[XCAP Root URI]/org.openmobilealliance.cab-pcc/users/[XUI]/[User Directory Document Selector]’ if the S-CAB User requests to contact share an S-PCC Document; and,
 - b) SHALL set the HTTP Request-URI SHALL to ‘http://[XCAP Root URI]/org.openmobilealliance.s-cab-address-book/users/[XUI]/User Directory Document [Selector]’ if the S-CAB User requests to contact share an S-AB Document.
- 2) SHALL subscribe to document changes in the S-CAB User’s Forwarding Notification List documents as described in [OMA XDM List] section “*Forwarding Notification List*” and in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” with the following clarifications:
 - a) when it detects <request-notification-list> elements with “*aid*” attributes with values ‘org.openmobilealliance.cab-pcc’ or ‘org.openmobilealliance.s-cab-address-book’, it SHALL follow the procedures as described in [OMA XDM Core] section “*Handling of XDM Resource Forwarding Notification with the following additions*”:
 - i) SHALL apply the procedure in section 6.7 if the <note> element included in a <request-notification-list> element contains the value “*contact-suggestion*”;
 - ii) SHALL apply the procedure in section 6.3 if the <note> element included in a <request-notification-list> element contains the value “*pcc-subscription-invitation*”; and,
 - iii) SHALL if the S-CAB User requests a forwarded S-PCC Document to be stored in the S-CAB User’s address book, set the “*udds*” attribute included in the <store> element in the Forward Accept XDCP request to include a Document Selector to an S-AB Document instead of a User Directory Document Selector as described in [OMA XDM Core].

6.6 Contact Search in External Directories

The S-CAB Client MAY support contact search in external directories.

If supported the S-CAB Client SHALL, when the S-CAB User requests a contact search an external directory, send a Search request as described in [OMA XDM Core] section “*Search for Data in XML Documents*” and in [S-CAB XDM] section “*External Directories Search*”.

6.7 Contact Suggestion

The S-CAB Client SHALL support the delivery of contact suggestions to an S-CAB User.

The S-CAB Client SHALL subscribe to document changes in the S-CAB User’s Forwarding Notification List documents as described in [OMA XDM List] section “*Forwarding Notification List*” and in [OMA XDM Core] section “*Subscribing to Changes in the XDM Resources*” with the following clarification:

- 1) When the S-CAB Client detects a <request-notification-list> element with an “*aid*” attribute with a value ‘org.openmobilealliance.s-cab-address-book’ and with a <note> element with the value “*contact-suggestion*”, the S-CAB Client SHALL regard the forwarded S-AB Document as a suggestion for a new Confirmed Contact Card to be inserted in the S-CAB User’s address book; and,
- 2) SHALL use procedures as described in [OMA XDM Core] section “*Handling of XDM Resource Forwarding Notification*” to inform the network about the S-CAB User’s disposition of the contact suggestion (e.g. if the forwarded S-AB Document shall be inserted as a Confirmed Contact Card or not in the S-CAB User’s address book).

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 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-TS-S_CAB-V1_0	09 May 2011	All	Initial draft
	15 Feb 2012	1, 2, 3, 4, 5.0 5.1, and 5.3	OMA-COM-S-CAB-2012-0011R01-CR_TS_section_1_3 OMA-COM-S-CAB-2012-0012R01-CR_TS_section_4 OMA-COM-S-CAB-2012-0013R01-CR_TS_section_5.1 OMA-COM-S-CAB-2012-0015R01-CR_TS_section_5.3
	21 Feb 2012	5.4, 5.5, and 6.2	OMA-COM-S-CAB-2012-0016R01-CR_TS_section_5.4 OMA-COM-S-CAB-2012-0017R01-CR_TS_section_5.5 OMA-COM-S-CAB-2012-0019R01-CR_TS_section_6.2
	16 Mar 2012	6.1, 5.7 – 5.9	OMA-COM-S-CAB-2012-0018R01-CR_TS_section_6.1 OMA-COM-S-CAB-2012-0030R02-CR_TS_CAB_Capability
	25 Apr 2012	3.2, 5.2.3 and 6.3	OMA-COM-S-CAB-2012-0039-CR_TS_section_3.2 OMA-COM-S-CAB-2012-0065-CR_TS_SUBS_002 OMA-COM-S-CAB-2012-0069R01-CR_TS_SN_002
	19 Jun 2012	5.2, 5.2.1, 5.2.2, 5.3, 5.3.4, and 5.3.5	OMA-COM-S-CAB-2012-0077R01-CR_TS_C16_17_18_19_20 OMA-COM-S-CAB-2012-0078R02-CR_C24
	26 Jun 2012	5.3.1, 5.3.2, 5.3.3, 5.4, 5.4.1, 5.4.2, 5.6, 6.1, 6.2, 6.2.1, 6.2.2, 6.3, 6.4, 6.5, 6.6 and 6.7	OMA-COM-S-CAB-2012-0097R01-CR_TS_C45_47_48_49_50_51_52 OMA-COM-S-CAB-2012-0098-CR_TS_C56 OMA-COM-S-CAB-2012-0099-CR_TS_C41_42 OMA-COM-S-CAB-2012-0100R01-CR_TS_C25_26_27_28_29_30_31_32_33 OMA-COM-S-CAB-2012-0101R01-CR_C34_35_36_37_38_39_40 OMA-COM-S-CAB-2012-0102-CR_TS_C43_44 OMA-COM-S-CAB-2012-0103-CR_TS_C69_70_71 OMA-COM-S-CAB-2012-0104R01-CR_TS_C72_C80 OMA-COM-S-CAB-2012-0106R01-CR_TS_C85 OMA-COM-S-CAB-2012-0107-CR_TS_C86 OMA-COM-S-CAB-2012-0108-CR_TS_C87 OMA-COM-S-CAB-2012-0109-CR_TS_C90 OMA-COM-S-CAB-2012-0110-CR_TS_C53_54_55 OMA-COM-S-CAB-2012-0112-CR_TS_C83_84
	6 Jul 2012	5.4.1, 5.4.2, 5.4.3 and 6.1	OMA-COM-S-CAB-2012-0123-CR_TS_C08_C46_C88_C89_COMM
	23 Jul 2012	2.1, 2.2, 4, 5.1, 5.2.3, 5.7, 5.8, 5.9, 5.9.1, 5.9.2, 5.9.2.1, 5.9.2.2, 5.9.2.2.1, 5.9.2.2.2 and 6.3	OMA-COM-S-CAB-2012-0130-CR_TS_C61_62_63_64_65_66_67.doc OMA-COM-S-CAB-2012-0131-CR_TS_C9_10_11_12_13_14_15 OMA-COM-S-CAB-2012-0134-CR_TS_C07 OMA-COM-S-CAB-2012-0135-CR_TS_C59_60 OMA-COM-S-CAB-2012-0136-CR_TS_C81_82 OMA-COM-S-CAB-2012-0137-CR_TS_C91 OMA-COM-S-CAB-2012-0144-CR_TS_C21_C22 OMA-COM-S-CAB-2012-0147-CR_TS_C01_03_04_05_06 OMA-COM-S-CAB-2012-0154R01-CR_TS_C067
	24 Jul 2012	5.2.1	Editorial cleanup: <ul style="list-style-type: none"> - implemented CONRR comment C093 (ref. OMA-COM-S-CAB-2012-0163-CR_Close_unaddressed_CONRR_July20_deadline) - added table numbers for SCRs and updated Table of Contents to replace Korean page numbering - removed table of Figures in Contents, and Appendix C since they were empty

Document Identifier	Date	Sections	Description
	20 Aug 2012	All	Editorial fix: 2012 template styles
Candidate Version: OMA-TS-S_CAB-V1_0	04 Sep 2012	All	Status changed to Candidate by TP: OMA-TP-2012-0326-INP_SCAB_V1_0_ERP_for_Candidate_Approval

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [SCRRULES].

The SCR items defined in the following tables includes SCR for:

- S-CAB Client
- S-CAB Server

Note: The SCR Items for an XDMS supporting the S-CAB Application Usages, S-AB Application Usage, S-PCC Application Usage and S-CAB User Preferences Application Usage, are described in [S-CAB XDM TS] Appendix C “Static Conformance Requirements”.

Note: All the Requirements prefixed with “XDM” are references to SCR table Items in the [OMA XDM Core] or [OMA XDM List].

Note: All the Requirements prefixed with “S-CAB” and that not are Items in the tables below are references to SCR table Items in [S-CAB XDM TS].

B.1 SCR for S-CAB Client

Note: The S-CAB Client is acting as an XDMC as described in [OMA XDM Core].

Note: Additional SCR Items for the S-CAB Application Usages that the S-CAB Client in its role as an XDMC needs to fulfil can be found in [S-CAB XDM TS] Appendix C “Static Conformance Requirements”.

Item	Function	Reference	Requirement
S-CAB-XOP-C-001-M	Support for S-CAB XDM Document Management and Tracking	Section 6.1	S-CAB_AB-XOP-C-001-M AND S-CAB_AB-SUB-C-001-M AND S-CAB_AB-DIFF-C-001-M AND S-CAB_AB-DEL-C-001-M AND S-CAB_AB-RES-C-001-M AND S-CAB_PCC-XOP-S-001-M AND S-CAB_PCC-SUB-C-001-M AND S-CAB_PCC-DIFF-C-001-M AND S-CAB_PCC-DEL-C-001-M AND S-CAB_PCC-RES-C-001-M AND S-CAB_UP-XOP-C-001-M AND S-CAB_UP-SUB-C-001-O AND S-CAB_CH-XOP-C-001-M AND S-CAB_CH-SUB-C-001-M
S-CAB-IMP-C-001-M	Support for import from Non-CAB Systems	Section 6.2.1	S-CAB_AB_IWF-IMP-C-001-M AND S-CAB_AB_IWF-XOP-C-003-M S-CAB_PCC_IWF-IMP-C-001-M AND S-CAB_PCC_IWF-XOP-C-003-M AND S-CAB_IUO-XOP-S-001-M AND S-CAB-XOP-C-001-M
S-CAB-EXP-C-001-M	Support for export to Non-CAB Systems	Section 6.2.2	S-CAB_AB_IWF-EXP-C-001-M AND S-CAB_AB_IWF-XOP-C-003-M AND S-CAB_PCC_IWF-EXP-C-001-M AND S-CAB_PCC_IWF-XOP-C-003-M
S-CAB-SUBI-C-001-M	Support for Contact Subscription Invitation	Section 6.3	S-CAB_PCC-FW-C-001-M AND XDM_FNL-AU-C-001-O AND XDM_FNL-SUB-C-001-O

Item	Function	Reference	Requirement
S-CAB-SUB-C-001-M	Support for Contact Subscription function	Section 6.4	S-CAB_UP-XOP-C-001-M AND S-CAB_AB-XOP-C-001-M AND S-CAB_AB-SUB-C-001-M AND S-CAB_IUO-XOP-C-001-M
S-CAB-SHR-C-001-M	Support for Contact Share function	Section 6.5	S-CAB_PCC-FW-C-001-M AND S-CAB_AB-FW-C-001-M AND XDM_FNL-AU-C-001-O AND XDM_FNL-SUB-C-001-O
S-CAB-ESRC-C-001-M	Support for Contact Search in External Directories	Section 6.6	S-CAB_EDS-SRC-C-001-M AND S-CAB_EDS-XOP-C-002-M AND S-CAB_EDS-XOP-C-003-M AND S-CAB_EDS-XOP-C-004-M AND S-CAB_EDS-XOP-C-008-M AND
S-CAB-SUG-C-001-M	Support for Contact Suggestion	Section 6.7	XDM_FNL-AU-C-001-O AND XDM_FNL-SUB-C-001-O AND S-CAB_AB-FW-C-001-M

Table 1 - S-CAB Client SCR table

B.2 SCR for S-CAB Server

Note: The S-CAB Server is acting as an XDM Agent and as an XDMS as described in [OMA XDM Core].

Note: Additional SCR Items for the Application Usages that the S-CAB Server in its role as an XDMS needs to fulfil can be found in [S-CAB XDM TS] Appendix C “Static Conformance Requirements”.

Item	Function	Reference	Requirement
S-CAB-SUB-C-001-M	Support for Contact Subscription function	Section 5.1	S-CAB_UP-XOP-A-001-M AND S-CAB_UP-SUB-A-001-M AND S-CAB_AB-XOP-A-001-M AND S-CAB_AB-SUB-A-001-M AND S-CAB_PCC-XOP-A-001-M AND S-CAB_PCC-SUB-A-001-M
S-CAB-SUG-C-001-M	Support for Contact Suggestion	Section 5.2.3	S-CAB_AB-FW-S-001-M
S-CAB-IMP-C-001-M	Support for import from Non-CAB Systems	Section 5.3.1	S-CAB_AB_IWF-IMP-S-001-M AND S-CAB_AB_IWF_XOP-S-003-M AND S-CAB_AB_IWF-RI-S-001-M AND S-CAB_AB_IWF-SEC-S-001-M AND S-CAB_PCC_IWF-IMP-S-001-M AND S-CAB_PCC_IWF_XOP-S-003-M AND S-CAB_PCC_IWF-RI-S-001-M AND S-CAB_PCC_IWF-SEC-S-001-M S-CAB_AB-XOP-A-001-M AND S-CAB_AB-SUB-A-001-M AND S-CAB_PCC-XOP-A-001-M AND S-CAB_PCC-SUB-A-001-M
S-CAB-EXP-C-001-M	Support for export to Non-CAB Systems	Section 5.3.2	S-CAB_AB_IWF-EXP-S-001-M AND S-CAB_AB_IWF_XOP-S-003-M AND S-CAB_AB_IWF-RI-S-001-M AND

Item	Function	Reference	Requirement
			S-CAB_AB_IWF -SEC-S-002-M AND S-CAB_PCC_IWF-EXP-S-001-M AND S-CAB_PCC_IWF_XOP-S-003-M AND S-CAB_PCC_IWF -RI-S-001-M AND S-CAB_PCC_IWF -SEC-S-002-M AND S-CAB_AB-XOP-A-001-M AND S-CAB_AB-SUB-A-001-M AND S-CAB_PCC-XOP-A-001-M AND S-CAB_PCC-SUB-A-001-M
S-CAB-ESRC-C-001-M	Support for Contact Search in External Directories	Section 5.3.3	S-CAB_EDS-SRC-S-001-M
S-CAB-SHRI-C-001-M	Support for Contact Share Interworking	Section 5.3.4, Section 5.3.5	S-CAB_AB-FW-S-001-M
S-CAB-COMPPCC-S-001-M	Support for Composition S-PCC Document	Section 5.4.1, Section 5.4.2	S-CAB_IUO-XOP-S-001-M AND S-CAB_PCC-XOP-A-001-M AND S-CAB_PCC-SUB-A-001-M AND S-CAB_UP-XOP-A-001-M AND S-CAB_UP-SUB-A-001-M AND
S-CAB-COMPAB-S-001-M	Support for Composition S-AB Document	Section 5.4.1, Section 5.4.2	S-CAB_IUO-XOP-S-001-M S-CAB_AB-XOP-A-001-M AND S-CAB_AB-SUB-A-001-M AND S-CAB_UP-XOP-A-001-M AND S-CAB_UP-SUB-A-001-M AND
S-CAB-COMPCH-S-001-M	Support for Composition Communication History Document	Section 5.4.3	S-CAB_CH-XOP-A-001-M AND S-CAB_CH-SUB-A-001-M
S-CAB-CAP-S-001-M	Support for S-CAB Capability function	Section 5.9	S-CAB_AB-XOP-A-001-M
S-CAB-CAP-S-002-O	Support for population of S-CAB Capability based on Presence	Section 5.9.1	S-CAB_AB-XOP-A-001-M

Table 2 - S-CAB Server SCR table