Push to talk over Cellular (PoC) - Architecture

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Open Mobile Alliance

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1. Scope (Informative)

The scope of the Push to talk over Cellular (PoC) V2.0 architecture document is to define the architecture for the PoC Enabler V2.0. This architecture is backward compatible with the [OMA PoC V1.0 AD]. The architecture is based on the requirements listed for the system in the PoC requirements document [OMA PoC V1.0 RD] and [OMA PoC V2.0 RD].

The architecture of the SIP/IP Core and the underlying access network for PoC is out of scope of this document. When SIP/IP Core corresponds to the 3GPP IMS, the architecture and the 3GPP enablers for OMA PoC services are described in [3GPP TR 23.979].

System concepts and high-level procedures are described in [OMA PoC V2.0 SD].

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2. References

2.1 Normative References

[3GPP TS 23.002] 3GPP TS 23.002: "Network architecture".
URL: http://www.3gpp.org/

[3GPP TS 23.228] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS)", Stage 2.
URL: http://www.3gpp.org/

[3GPP TS 32.272] 3GPP TS 32.272: "Push-to-Talk over Cellular (PoC) Charging".
URL: http://www.3gpp.org/

[3GPP TS 33.203] 3GPP TS 33.203: "Access security for IP-based services".
URL: http://www.3gpp.org/

[3GPP2 S.R0100-0] 3GPP2 S.R0100-0 Push-to-Talk over Cellular (PoC) System Requirements, (v1.0).
URL: http://www.3gpp2.org/

[3GPP2 X.S0013.2] 3GPP2 X.S0013.2: "IP Multimedia Subsystem (IMS)", Stage 2.
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URL: http://www.3gpp2.org/

[OMA Charging AD] "Charging Architecture", Version 1.0, Open Mobile Alliance™, OMA-AD-Charging-V1_0,
URL: http://www.openmobilealliance.org/

[OMA Client Provisioning] "OMA Client Provisioning", Version 1.1, Open Mobile Alliance™, OMA-ERP-ClientProvisioning-V1_1,
URL: http://www.openmobilealliance.org/

[OMA DM] "OMA Device Management Protocol", Version 1.2, Open Mobile Alliance™,
OMA-TS-DM_Protocol-V1_2,
URL: http://www.openmobilealliance.org/

[OMA DM Bootstrap] "Device Management Bootstrap", Version 1.2, Open Mobile Alliance™, OMA-TS-DM_Bootstrap-V1_2,
URL: http://www.openmobilealliance.org/

[OMA IM AD] "Instant Messaging using SIMPLE Architecture", Version 1.0, Open Mobile Alliance™,
OMA-AD-SIMPLE_IM-V1_0,
URL: http://www.openmobilealliance.org/

[OMA PoC V1.0 AD] "Push to Talk over Cellular (PoC) - Architecture", Version 1.0, Open Mobile Alliance™,
OMA-AD-PoC-V1_0_2,
URL: http://www.openmobilealliance.org/

[OMA PoC V1.0 RD] "Push to Talk over Cellular Requirements", Version 1.0, Open Mobile Alliance™, OMA-RD-PoC-V1_0,
URL: http://www.openmobilealliance.org/

[OMA PoC V1.0 UP] "PoC User Plane", Version 1.0, Open Mobile Alliance™, OMA-TS-PoC_UserPlane-V1_0_2,
URL: http://www.openmobilealliance.org/

[OMA PoC V2.0 AD] "Push to Talk over Cellular (PoC) - Architecture", Version 2.0, Open Mobile Alliance™,
OMA-AD-PoC-V2_0,
URL: http://www.openmobilealliance.org/

[OMA PoC V2.0 CP] "OMA PoC Control Plane", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC_ControlPlane-V2_0,
URL: http://www.openmobilealliance.org/

[OMA PoC V2.0 Document-Mgmt] "OMA PoC Document Management", Version 2.0, Open Mobile Alliance™,
OMA-TS-PoC_Document_Management-V2_0,
URL: http://www.openmobilealliance.org/

[OMA PoC V2.0 RD] "Push to Talk over Cellular 2 Requirements", Version 2.0, Open Mobile Alliance™,
OMA-RD-PoC-V2_0,
URL: http://www.openmobilealliance.org/

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[OMA PoC V2.0 SD] "OMA PoC System Description", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC_System_Description-V2_0, URL: http://www.openmobilealliance.org/

[OMA PoC V2.0 UP] "OMA PoC User Plane", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC_UserPlane-V2_0, URL: http://www.openmobilealliance.org/

[OMA Presence V1.0 AD] "Presence SIMPLE Architecture Document", Version 1.0, Open Mobile Alliance™, OMA-AD-Presence_SIMPLE-V1_0, URL: http://www.openmobilealliance.org/

[OMA XDM V2.0 AD] "XML Document Management Architecture", Version 2.0, Open Mobile Alliance™, OMA-AD-XDM-V2_0, URL: http://www.openmobilealliance.org/

[RFC2119] IETF RFC 2119: "Key words for use in RFCs to Indicate Requirement Levels". S. Bradner. March 1997. URL: http://www.ietf.org/rfc/rfc2119.txt

[RFC2617] IETF RFC 2617: "HTTP Authentication: Basic and Digest Access Authentication", J. Franks et al, June 1999. URL: http://www.ietf.org/rfc/rfc2617.txt

[RFC3261] IETF RFC 3261: "SIP: Session Initiation Protocol", J. Rosenberg et al, June 2002. URL: http://www.ietf.org/rfc/rfc3261.txt

[RFC3265] IETF RFC 3265: "Session Initiation Protocol (SIP)-Specific Event Notification", A. B. Roach, June 2002. URL: http://www.ietf.org/rfc/rfc3265.txt

[RFC4412] IETF RFC 4412: "Communications Resource Priority for the Session Initiation Protocol (SIP)", H. Schulzrinne, J. Polk, February 2006. URL: http://www.ietf.org/rfc/rfc4412.txt

2.2 Informative References

[3GPP TR 23.979] 3GPP: TS 23.979: "3GPP enablers for Open Mobile Alliance (OMA) Push-to-talk over Cellular (PoC) services", Stage 2. URL: http://www.3gpp.org/

[3GPP TS 33.107] 3GPP: TS 33.107; "Lawful Interception architecture and functions". URL: http://www.3gpp.org/

[draft-MSRP] draft-ietf-simple-message-sessions-19 (February 2007): "The Message Session Relay Protocol", expires August 2007 URL: http://www.ietf.org/internet-drafts/draft-ietf-simple-message-sessions-19.txt

NOTE: The referenced IETF draft is a work in progress.

[OMA-DICT] "Dictionary for OMA Specifications", Open Mobile Alliance™, OMA-Dictionary-V2_4. URL: http://www.openmobilealliance.org/

[RFC3550] IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications", H. Schulzrinne, July 2003. URL: http://www.ietf.org/rfc/rfc3550.txt

[RFC4825] IETF RFC 4825: "The Extensible Markup Language (XML) Configuration Access Protocol (XCAP)", J. Rosenberg, May 2007. URL: http://www.ietf.org/rfc/rfc4825.txt

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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 [**Error! Reference source not found.**].

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

3.2 Definitions

For the purposes of the PoC specifications, the terms and definitions given in [OMA DICT], [OMA Presence V1.0 AD], [OMA XDM V1.0 AD] and the following terms and definitions apply.

1-1 PoC Session	A feature enabling a PoC User to establish a PoC Session with another PoC User.
1-many PoC Group Session	A PoC Session with many Participants and in which all Participants can communicate with each other.
1-many-1 PoC Group Session	A PoC Session established by a PoC User to a Pre-arranged PoC Group, in which one Participant is a Distinguished Participant and other Participants are Ordinary Participants.
Access Control	PoC User specified rules that define the interactions with other PoC Users, e.g. rules restricting other PoC Users that may try to establish PoC Session to the PoC User.
Ad-hoc PoC Group Session	A PoC Group Session established by a PoC User to PoC Users listed on the invitation. The list includes PoC Users or PoC Groups or both.
Advanced Revocation Alert	An alert to the PoC User that the Media transmit time will end within the time specified by the Alert Margin.
Alert Margin	The amount of time between the moment when the Advanced Revocation Alert is notifies the PoC User and the moment when the granted Media Burst for the PoC User is to be revoked.
Answer Mode	A PoC Client mode of operation for the terminating PoC Session invitation handling.
Answer Mode Indication	A PoC Service Setting indicating the current Answer Mode of the PoC Client.
Audio	General communication of sound with the exception of PoC Speech.
Chat PoC Group	A persistent PoC Group in which a PoC User individually joins to have a PoC Session with other joined PoC Users, i.e., the establishment of a PoC Session to a Chat PoC Group does not result in other PoC Users being invited. NOTE: A Chat PoC Group is a persistent PoC Group where the <invite-members> element is set to "false" as specified in the [OMA-PoC-Document-Mgmt] "PoC Group".
Chat PoC Group Session	A PoC Session established to a Chat PoC Group.
Contact List	A list available to the PoC User that contains the PoC Addresses and/or PoC Group Identities.
Continuous Media	Media with an inherent notion of time (e.g., PoC Speech, Audio, and Video).
Control Plane	The specification of the signalling between PoC Client and PoC Server, between PoC Box and PoC Server and between PoC Servers for the Push to talk over Cellular (PoC) service.
Controlling PoC Function	A function implemented in a PoC Server, providing centralized PoC Session handling, which includes Media distribution, Talk Burst Control, Media Burst Control, policy enforcement for participation in the PoC Group Sessions, and the Participant information.
Deferred Messaging	Messaging where messages are stored in a repository for later delivery.
Discrete Media	Media that itself does not contain an element of time (e.g. images, text).
Dispatch PoC Group	A Pre-arranged PoC Group in which one member is assigned the role of PoC Dispatcher and the other member(s) are assigned the role of PoC Fleet Members.

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Dispatch PoC Session	The PoC Session of a Dispatch PoC Group, or a subset of the Dispatch PoC Group, in which the 1-many-1 communication method is used.
Distinguished Participant	A Participant in a 1-many-1 Session that sends Media to all Ordinary Participants, and that receives Media from any Ordinary Participant. NOTE: The <is-key-participant> is set to "true" as specified in [OMA-PoC-Document-Mgmt] to indicate who is the Distinguished Participant.
External P2T Networks	Private or public circuit switched or packet switched network that provide push-to-talk services similar to PoC services.
Full Duplex Call Follow-on Proceed	A feature which allows PoC Session Participant to request the other PoC Session Participants to set up another independent full duplex voice call (either a circuit switched voice call or voice-over-IP call, subject to Service Provider Policy and configuration). The full duplex voice call set up is out of the scope of this specification.
Group	A predefined set of Users together with its policies and attributes. A Group is identified by a SIP URI.
Group Advertisement	A feature that provides the capability to inform other PoC Users of the existence of a PoC Group.
Home PoC Network	A network comprising of a Home PoC Server and SIP/IP Core operated by the PoC User's PoC service provider. The Home PoC Network is the same as the Home Network defined in 3GPP/3GPP2 IMS specifications.
Home PoC Server	The PoC Server of the PoC Service Provider that provides PoC service to the PoC User.
Incoming Instant Personal Alert Barring	A PoC Service Setting for the PoC Client that indicates the PoC User's desire for the PoC service to block all incoming Instant Personal Alerts.
Incoming PoC Session Barring	A PoC Service Setting for the PoC Client that indicates the PoC User's desire for the PoC service to block all incoming PoC Session requests.
Instant Personal Alert	A feature in which a PoC User sends a SIP based instant message to a PoC User requesting a 1-1 PoC Session.
Law Enforcement Agency	An organization authorized by a lawful authorization based on a national law to request interception measures and to receive the results of telecommunications interceptions.
Law Enforcement Monitoring Facility	A law enforcement facility designated as the transmission destination for the results of a Lawful Interception.
Lawful Interception	The legal authorization, process, and associated technical capabilities and activities of Law Enforcement Agencies related to the timely interception of signalling and content of wire, oral, or electronic communications.
Manual Answer Mode	A mode of operation in which the PoC Client requires the PoC User to manually accept the PoC Session invitation before the PoC Session is established.
Media	Forms of information that are exchanged between Participants. Media may come in different forms, which are referred to as Media Types.
Media Burst	Flow of Media from a PoC Client that has the permission to send Media to the receiving PoC Client(s).
Media Burst Control	Media Burst Control is a control mechanism that arbitrates requests from the PoC Clients, for the right to send Media and Multimedia.
Media Burst Control Protocol	Media Burst Control Protocol (MBCP) is a protocol for performing Media Burst Control, and is defined in [OMA PoC V2.0 AD].
Media Burst Control Schemes	Way of using Media Burst Control according to predefined rules and procedures.
Media Filtering	A procedure of the PoC Server performing the Participating PoC Function in order to determine the Media Burst retrieval priority in case of Simultaneous PoC Sessions.

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Media Type	Media Types share a characteristic of human perception. Media Types are either realtime or non-realtime, like: • PoC Speech • Audio (e.g. music) • Video • Discrete Media (e.g. still image, formatted and non-formatted text, file)
Media-floor Control	The mechanism to control separate Media streams.
Multimedia	Multimedia is the simultaneous existence of multiple Media Types like • audiovisual • video plus subtitles Multimedia from a single source that involves real-time Media Types are assumed to be synchronized.
NW PoC Box	A PoC functional entity in the PoC Network where PoC Session Data and PoC Session Control Data can be stored
Offline Charging Entity	Network entity that performs Offline Charging, as described in [OMA-DICT]
Online Charging Entity	Network entity that performs Online Charging, as described in [OMA-DICT]
Ordinary Participant	A Participant in a 1-many-1 PoC Group Session that is only able to send and receive Media to and from the Distinguished Participant.
P2T Address	A P2T Address identifying a P2T User. The P2T Address can be used by PoC Users to communicate with P2T Users. The P2T Address used in a PoC Network points to the PoC Interworking Agent of the P2T User in the PoC Interworking service.
P2T User	A P2T User is a user of the P2T service provided by an External P2T Network.
Participant	A Participant is a PoC User in a PoC Session.
Participating PoC Function	A function implemented in a PoC Server, which provides PoC Session handling, which includes policy enforcement for incoming PoC Sessions and relays Talk Burst Control and Media Burst Control messages between the PoC Client and the PoC Server performing the Controlling PoC Function. The Participating PoC Function may also relay RTP Media between the PoC Client and the PoC Server performing the Controlling PoC Function.
PoC Address	An address identifying a PoC User. The PoC Address can be used by one PoC User to request communication with other PoC Users. If SIP/IP Core is the 3GPP/3GPP2 IMS the PoC Address is a public user identity.
PoC Box	A PoC functional entity where PoC Session Data and PoC Session Control Data can be stored. It can be a NW PoC Box or a UE PoC Box.
PoC Client	A functional entity that resides on the User Equipment that supports the PoC service.
PoC Dispatcher	The Participant in a Dispatch PoC Session that sends Media to all PoC Fleet Members and that receives Media from any PoC Fleet Member. NOTE: The PoC Dispatcher is an enhancement to the PoC 1 Distinguished Participant.
PoC Fleet Member	A Participant in a Dispatch PoC Session that is only able to send Media to the PoC Dispatcher, and that likewise is only able to receive Media from the PoC Dispatcher. NOTE: PoC Fleet Member is the same as Ordinary Participant in PoC 1.
PoC Group	A Group supporting the PoC service. PoC User uses PoC Groups e.g. to establish PoC Group Sessions.
PoC Group Identity	A SIP URI identifying a Pre-arranged PoC Group or a Chat PoC Group. A PoC Group Identity is used by the PoC Client e.g. to establish PoC Group Sessions to the Pre-arranged PoC Groups and Chat PoC Groups.
PoC Group Session	A Pre-arranged PoC Group Session, Ad-hoc PoC Group Session or Chat PoC Group Session.

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PoC Interworking Agent	Abstract entity implemented in the PoC Interworking Function, acting as a PoC Client on behalf of a PoC Remote Access User or a P2T User.
PoC Interworking Function	Part of the PoC Interworking Service, it provides conversion between PoC Network based SIP signaling, Talk Burst Control and Media Burst Control Protocol, and Media packet transport, and External P2T Network based session signaling, floor control, and Media transport protocol.
PoC Interworking Service	A means to extend the PoC User experience beyond the OMA defined PoC service and PoC Network boundaries, accomplished by interworking with other networks and systems, while not PoC compliant, being able to provide a reasonably comparable capability, involving simplex Media based conferencing.
PoC Media Traffic Optimisation	A mechanism for reducing PoC Media traffic via the PoC-4 reference point.
PoC Remote Access	A method of providing a compliant PoC User access to a SIP/IP Core and PoC Network via an potentially non-SIP/IP based network
PoC Remote Access User	A user of the PoC service accessing the service potentially via a non IMS enabled SIP/IP based network, not necessarily using a PoC Client (e.g. a PoC User, with a valid subscription, accessing PoC services via a PSTN terminal).
PoC Server	A network element, which implements the 3GPP/3GPP2 IMS application level network functionality for the PoC service. A PoC Server can perform the role of the Controlling PoC Function or Participating PoC Function, or both at the same time.
PoC Service Setting	A set of parameters indicating the capability of the PoC Client and the willingness of the PoC User to support related PoC Client and PoC Server functionalities, e.g. Answer Mode Indication, Incoming PoC Session Barring, Incoming Instant Personal Alert Barring and Simultaneous PoC Sessions Support.
PoC Session	A PoC Session is a SIP Session established by the procedures of this specification. This specification supports the following types of PoC Sessions: 1-1 PoC Session, Ad-hoc PoC Group Session, Pre-arranged PoC Group Session, or Chat PoC Group Session.
PoC Session Control Data	Information about PoC Session Data e.g. time and date, PoC Session initiator.
PoC Session Data	Media Bursts and Media Burst Control information exchanged during a PoC Session e.g. Video frames, an image or Talk Burst.
PoC Speech	Communication of speech as defined by PoC version 1.0.
PoC User	A User of the PoC service. A PoC User can be the same person as a PoC Subscriber. A PoC User uses the PoC features through the User Equipment.
Pre-arranged PoC Group	A persistent PoC Group. The establishment of a PoC Session to a Pre-arranged PoC Group results in the members being invited. NOTE: A Pre-arranged PoC Group is a persistent PoC Group, where the <invite-members> element is set to "true" as specified in the [OMA-PoC-Document-Mgmt]"PoC Group".
Pre-arranged PoC Group Identity	PoC Group Identity of a Pre-arranged PoC Group.
Pre-arranged PoC Group Session	A PoC Session established by a PoC User to a Pre-arranged PoC Group.
Pre-established Session	The Pre-established Session is a SIP Session established between the PoC Client and the Home PoC Server containing at least one Media Stream bound to a Media-floor Control Entity. The PoC Client establishes the Pre-established Session prior to making requests for PoC Sessions to other PoC Users. To establish a PoC Session based on a SIP request from the PoC User, the PoC Server conferences other PoC Servers/Users to the Pre-established Session so as to create an end-to-end connection.
Primary PoC Session	A PoC Session that the PoC User selects in preference to other PoC Sessions. When the PoC User has Simultaneous PoC Sessions, the Primary PoC Session has a priority over Secondary PoC Sessions.
Push To Talk Service (P2T)	Non OMA PoC "walkie-talkie" service.
QoE Profile	Set of parameters that establish, from a high level point of view, the end PoC User experience in a given PoC Session. The QoE Profile is part of the PoC User's subscription and can also be specified for PoC Groups. Each QoE Profile is associated with certain rules for underlying resource usage and potential prioritization procedures.

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Remote PoC Network	Other PoC Network or inter working function to external P2T Network.
RTP Media	Considered as an association that allows exchange of RTP Media streams and RTCP messages among a set of PoC functional entities.
Secondary PoC Session	A PoC Session for which the PoC User receives Media when there is no Media present on the Primary PoC Session.
Service Provider Policy	Service Provider Policy refers to the overall policy conditions actually selected by a service provider(s) for commercial implementation of a PoC service. Service Provider Policy is established based on commercial considerations, which may concern, e.g. support/non-support of certain network or client capabilities or service features within a network. Service Provider Policy is applicable only to the network or subscribers over which the service provider has control.
Simultaneous PoC Session	Functionality, where Home PoC Server discards Media for keeping conversation uninterrupted, in case a PoC User is a Participant in more than one PoC Session simultaneously using the same PoC Client.
SIP Session	A SIP dialog. From [RFC3261], a SIP dialog is defined as follows: A dialog is a peer-to-peer SIP relationship between two UAs that persists for some time. A dialog is established by SIP messages, such as a 2xx response to an INVITE request. A dialog is identified by a call identifier, local tag, and a remote tag. A dialog was formerly known as a call leg in [RFC2543].
SIP URI	From RFC 3261: "A SIP or SIPS URI identifies a communications resource" and "follows the guidelines in RFC 2396 [5]". PoC uses SIP URIs to identify PoC Clients, PoC Servers, and PoC Sessions, resource lists that point to URI lists, etc.
Talk Burst	A flow of PoC Speech from a PoC Client having the permission to send PoC Speech as specified in [OMA PoC V1.0].
Talk Burst Control	A control mechanism that arbitrates requests from the PoC Clients for the right to send PoC Speech as specified in [OMA PoC V1.0].
Talk Burst Control Protocol	A protocol for performing Talk Burst Control defined in [OMA PoC V1.0 UP].
Talker Identification	A procedure by which the current talker's identity is determined and made known to listeners on the PoC Session.
UE PoC Box	A functional entity co-located with the PoC Client in the User Equipment where PoC Session Data and PoC Session Control Data can be stored.
User Equipment	A hardware device that supports a PoC Client e.g., a wireless phone.
User Plane	The User Plane includes the Media and Media control signaling (e.g., Talk Burst Control Protocol) between the PoC Client and PoC Server, between the PoC Box and the PoC Server as well as between PoC Servers.
Video	Communication of live-streamed pictures without any Audio component.

3.3 Abbreviations

For the purposes of the PoC specifications, the abbreviations given in [OMA DICT] and the following abbreviations apply:

CDR	Charging Data Record
DM	Device Management
GPRS	General Packet Radio Service
HTTP	Hypertext Transfer Protocol
IM	Instant Messaging
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISC	IMS Service Control Interface
ISIM	IP Multimedia Services Identity Module

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LI	Lawful Interception
MBCP	Media Burst Control Protocol
MMS	Multimedia Messaging Service
MSRP	Message Session Relay Protocol
	NOTE: The base Message Session Relay Protocol is defined in [draft-MSRP].
NW	Network
OMA	Open Mobile Alliance
P2T	Push To Talk
PDN	Packet Data Network
PoC	Push to talk over Cellular
QoE	Quality of Experience
RTCP	RTP Control Protocol
	NOTE: The base RTP Control Protocol is defined in [RFC3550].
RTP	Real-time Transport Protocol
	NOTE: The base Real-time Transport Protocol is defined in [RFC3550].
R-UIM	Removable User Identity Module
SIP	Session Initiation Protocol
	NOTE: The base Session Initiation Protocol is defined in [RFC3261].
TBCP	Talk Burst Control Protocol
UE	User Equipment
UIM	User Identity Module
UP	User Plane
URI	Uniform Resource Identifier
USIM	User Services Identity Module
XCAP	XML Configuration Access Protocol
	NOTE: The base XML Configuration Access Protocol is defined in [RFC4825]
XDM	XML Document Management
XDMC	XDM Client
XDMS	XDM Server
XML	Extensible Mark-up Language

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4. Introduction (Informative)

Push to talk over Cellular (PoC) is intended to provide rapid communications for business and consumer customers of mobile networks. PoC V2.0 will allow audio (e.g. speech, music), video (without audio component), still image, text (formatted and non-formatted) and file shared with a single recipient, (1-to-1) or between groups of recipients as in a group chat session, (1-to-many) such as in *Figure 1 "Example of a 1-many PoC Group session voice transmission"* below.

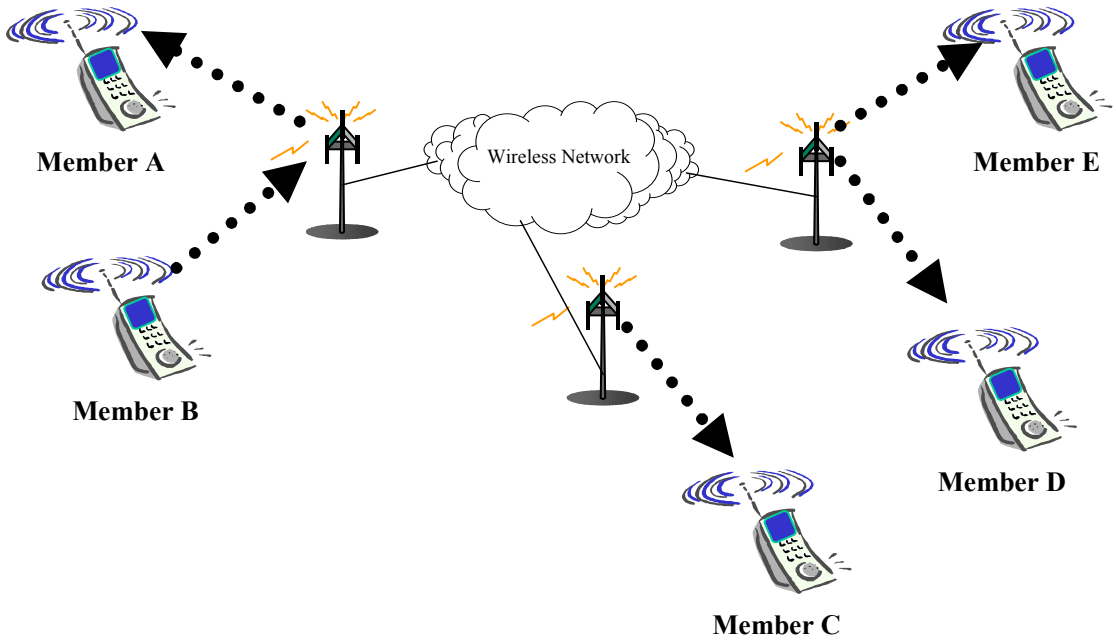


Figure 1: Example of a 1-many PoC Group Session (voice transmission)

Existing solutions that offer walkie-talkie like services typically consist of mobile terminals with dedicated talk buttons, supported by networks that support the exchange of signalling messages to establish and maintain a push to talk call, report the presence of users, etc. Such implementations use proprietary messaging protocol among the various entities, such as the mobile terminal and the network.

OMA-PoC seeks interoperability among the network entities to avoid market fragmentation, by realising the PoC service in a widely acceptable and standardised manner.

4.1 Planned Phases

The PoC Version 2.0 architecture extends [OMA PoC V1.0 AD] by adding functional entities and reference points, and by modifying some existing PoC version 1.0 functional entities. These additions and modifications address the requirements identified as Enabler Release PoC V2.0 in [OMA PoC V2.0 RD].

This subclause summarises the architecture modifications included in PoC Version 2.0.

PoC Versions 2.1 and later will build upon PoC Version 2.0 and will include additional features.

4.1.1 New Functional Entities

The new functional entities added in PoC Version 2.0 are:

- UE PoC Box
- NW PoC Box

The PoC Version 2.0 architecture also defines the following new external entities which provide additional PoC services:

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- PoC Interworking Function
- PoC Interworking Agent

4.1.2 Removed Functional Entities

The PoC Version 1.0 POC XDMS Functional Entity is removed in PoC Version 2.0. The Shared XDMSs, as defined in XDM 2.0 [OMA XDM V2.0 AD], includes the functionality provided by the PoC Version 1.0 POC XDMS. The related POC-5 Reference Point is also removed.

4.1.3 New Reference Points

The reference points added in PoC Version 2.0 are the following:

- POC-9, UE PoC Box – SIP/IP Core
- POC-10, UE PoC Box – PoC Server
- POC 11, NW PoC Box – SIP/IP Core
- POC 12, NW PoC Box – PoC Server
- POC 13, PoC Server - Shared List XDMSs
- LI-1, Functional Entities – Law Enforcement Monitoring Facility
- PB-1, Aggregation Proxy – NW PoC Box

4.1.4 Modified Functional Entities

The following functional entities modified to include support for new PoC Version 2.0 requirements are the PoC Client, the Controlling PoC Function, and the Participating PoC Function as summarized in the following subclauses:

4.1.4.1 PoC Client

The PoC Client is modified to add support related to the following requirements:

- Use of QoE Profiles
- PoC Session initiation including negotiation of Media other than PoC Speech
- Media Burst Control procedures and Media Burst Control Protocol negotiation
- Media Burst Control Protocols
- Media-floor Control procedures
- PoC Box capability
- Request with Media Content
- PoC Remote Access
- Full Duplex Call Follow-on Proceed
- Generate and send Media Bursts containing other Media than PoC Speech
- Receive and decode Media Bursts containing Media other than PoC Speech
- PoC Session modification for adding or removing Media in a PoC Session

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- PoC Dispatcher functionality
- Invited parties identity information functionality
- Advanced Revocation Alert
- Browser-based PoC Client invocation functionality
- Multiple PoC Group Sessions with Multiple PoC Groups
- Performance enhancements such as Media buffering capability negotiation, Limited Segment Media Buffer preload capability, Media Time Compression of buffered Media, and Local Granted Mode
- Media Burst Control Schemes
- Operator specified warning message
- Discrete Media

4.1.4.2 Controlling PoC Function

The Controlling PoC Function is updated to add support related to the requirements listed below:

- Assignation and application of a QoE Profile for each PoC Session
- Centralized Media distribution
- Centralized Media Burst Control functionality including Sender Identification
- Media Burst Control Protocol and Media Burst Control Protocol negotiation
- Media-floor Control procedures
- PoC Group Sessions with Multiple Groups
- Invited parties identity information functionality
- Discrete Media
- PoC Box handling
- Prioritization and preemption of PoC Sessions according to the QoE Profile associated to each PoC Session
- Request with Media Content
- Full Duplex Call Follow-on Proceed
- Dispatch PoC Sessions
- PoC Interworking with External P2T Networks
- PoC Remote Access
- Advanced Revocation Alert
- Performance enhancements such as Media buffering capability negotiation, Limited Segment Media Buffer preload capability, Media Time Compression of buffered Media, PoC Media Traffic Optimisation and Local Granted Mode.
- Media Burst Control Schemes
- Operator specified warning message

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4.1.4.3 Participating PoC Function

The Participating PoC Function is updated to add support related to the requirements listed below:

- Supports application of a QoE Profile for each PoC Session
- Supports Media Burst Control Protocol negotiation
- Stores the current PoC Service Settings
- Invited parties identity information functionality
- Prioritization and preemption of PoC Sessions according to the QoE Profile associated to each PoC Session
- Request with Media content
- PoC Interworking with External P2T Networks
- PoC Remote Access
- Media Burst Control Protocol
- Media Filtering of the Media streams in the case of Simultaneous PoC Sessions
- PoC Media Traffic Optimisation
- PoC Box handling
- Operator specified warning message

4.2 Security Considerations

The security mechanism provides the protection to the PoC service environment. The following aspects of security are considered: SIP signalling security, User Plane security, XDM security, and interworking function security.

4.2.1 SIP signalling security

The PoC Client SHALL be authenticated prior to accessing the PoC service. The PoC Server SHOULD rely on the security mechanisms provided by the underlying SIP/IP Core, for securing the service environments e.g. authentication of the service usage. It is assumed that the access level security is provided by the SIP/IP Core as defined in [RFC3261] to support the integrity and confidentiality protection of SIP signalling. The SIP/IP Core needs to ensure during registration that the registered PoC Address is allocated and authorised to be used by that PoC User in order to prevent spoofing attacks as identified in Appendix C. When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, and the User Equipment contains USIM/ISIM or UIM/R-UIM, the mutual authentication SHALL be applied as specified in [3GPP TS 33.203]/[3GPP2 S.R0086-0]. For further SIP signalling, the integrity protection mechanism SHALL be used as been specified in [3GPP TS 33.203]/[3GPP2 S.R0086-0].

NOTE: [RFC3261] mandates the support for HTTP digest authentication [RFC2617], if authentication is performed.

4.2.2 User Plane security

The PoC service User Plane communication between PoC Client and PoC Server, and between PoC Servers is protected with existing mechanisms being defined for radio access (3GPP GPRS or 3GPP2 PDN) and with secured connections between the network domains.

User Plane confidentiality is not specified in OMA PoC.

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4.2.3 XDM security

The XDM security is specified in [OMA XDM V2.0 AD] "*Security Considerations*".

4.2.4 PoC Interworking Function security

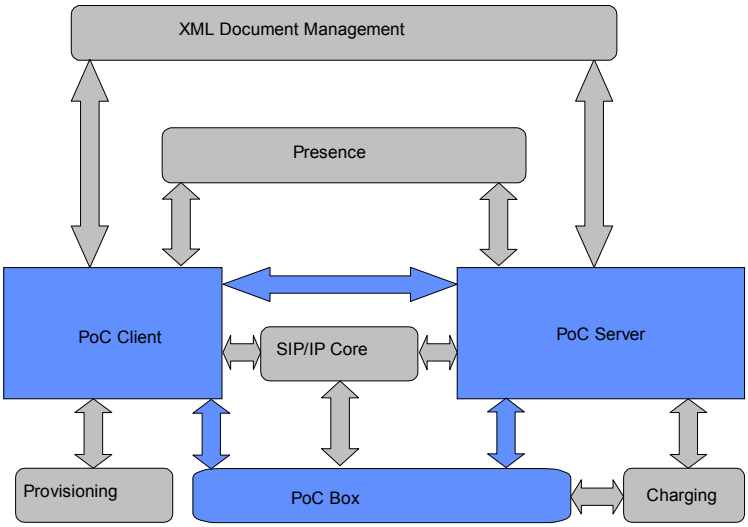
The PoC network SHALL apply the same security measures to the signalling received from non-PoC networks as it would to the signalling received from PoC networks. Subclause 4.2.1 *"SIP signalling security"*, 4.2.2 *"User Plane security"* and 4.2.3 *"XDM security"* apply.

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5. Architecture

The PoC architecture is an evolution of the architecture described in [OMA PoC V1.0 AD].

The PoC functional entities (PoC Client, PoC Box and PoC Server), that provide the PoC Service, use and interact with certain external entities providing services to the PoC Service as shown in the Figure 2 *"Interaction of PoC functional entities with external entities.*



NOTE 1: Interactions between external entities are not shown in the figure.

NOTE 2: Architecture for PoC specific charging is described in [OMA PoC V2.0 SD] *"Charging architecture"*.

Figure 2: Interaction of PoC functional entities with external entities.

The XML Document Management enabler is described in [OMA XDM V2.0 AD]. The XDM functional entities used by this version of the PoC Enabler are the Aggregation Proxy (as specified in subclause 6.2.3 *"Aggregation Proxy"*), Shared List XDMS (as specified in subclause 6.2.2.1 *"Shared List XML Document Management Server* (XDMS)*"*), Shared Group XDMS (as specified in subclause 6.2.2.2 *"Shared Group XML Document Management Server (XDMS)"*) and Shared Policy XDMS (as specified in subclause 6.2.2.3 *"Shared Policy XML Document Management Server (XDMS)"*). The PoC Server interacts with any of the Shared XDM Servers over the POC-2, XDM-2, and POC-13 reference points.

The Presence enabler is described in [OMA Presence V1.0 AD]. The Presence functional entities are the Presence Server (as specified in subclause 6.2.4 *"Presence Server"*), Presence Source (as specified in subclause 6.2.5 *"Presence Source"*), and Watcher (as specified in subclause 6.2.6 *"Watcher"*). The PoC Server can assume the role of a Presence Source or Watcher or both, and interacts with the Presence Server over the POC-2 and PRS-3 reference points. The PoC service interactions with Presence service functionality are further specified in [OMA PoC V2.0 SD] "*Presence*".

The SIP/IP Core includes a number of SIP proxies and SIP registrars. When SIP/IP Core is based on the 3GPP/3GPP2 IMS, the SIP/IP Core architecture is specified in [3GPP TS 23.228] or [3GPP2 X.P0013.2].

Discovery/Registry, Authentication/Authorization and Security are provided in cooperation with SIP/IP Core. Registry functionality is described in [OMA PoC V2.0 SD] *"Registration"*.

NOTE: Discovery is SIP/IP Core specific and out of scope of this specification.

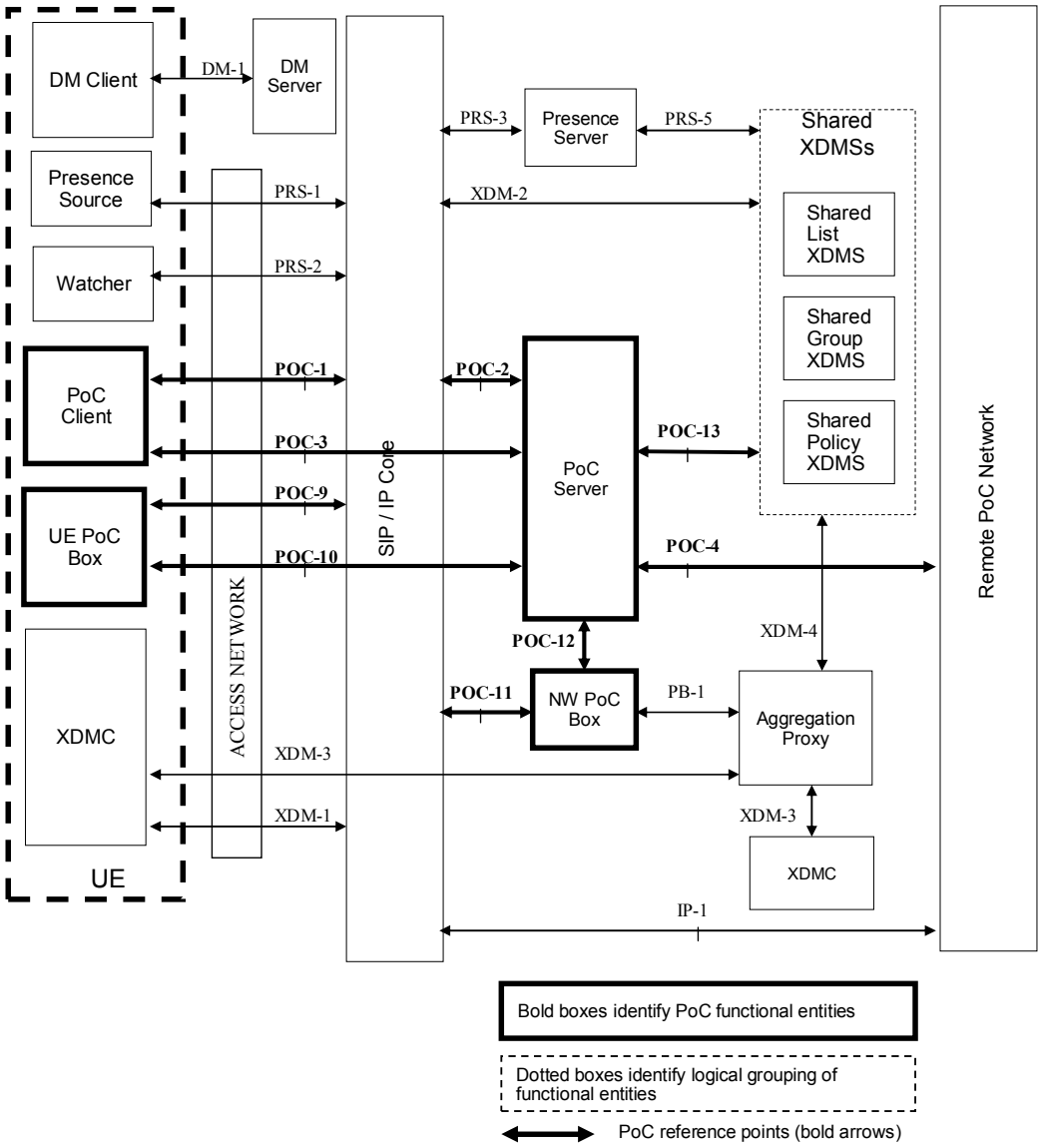
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The Authentication/Authorization is described in the subclause 4.2 *"Security Considerations"*. Security is described in the subclause 4.2 *"Security Considerations"*.

Charging functionality is described in [OMA PoC V2.0 SD] *"Charging"*.

Provisioning functionality is described in [OMA PoC V2.0 SD] *"PoC service provisioning"*.

Figure 3 *"PoC architecture"* describes the functional entities and reference points that are involved in the support of the PoC service.



NOTE 1: Shared XDMSs is a logical entity to map similar Shared XDM Servers together for simplification as specified in [OMA XDM V2.0 AD].

NOTE 2: There are other reference points described in clause 7 "Description of the reference points" in addition to those shown in the figure.

Figure 3: PoC architecture

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5.1 Dependencies

Certain protocol(s) is/are used for each reference point in PoC 2.0 architecture and protocols for some reference points are described in other enablers as shown in the Table 1: *Reference points and associated protocols*

ReferencePoint	Usage	Protocol
POC-1	PoC Client to SIP/IP Core Session signalling	SIP
POC-2	SIP/IP Core to PoC Server Session signalling	SIP
POC-3	Media, Talk Burst Control and Media Burst Control between PoC Server and PoC Client	RTP RTCP MSRP The Continuous Media transport utilizes RTP protocol. Talk Burst Control Protocol and Media Burst Control Protocol utilizes RTCP APP message protocol. The Discrete Media transport utilizes the MSRP protocol as defined in [OMA IM AD].
POC-4	Media, Talk Burst Control and Media Burst Control between networks	RTP RTCP MSRP The Continuous Media transport utilizes RTP protocol. Talk Burst Control Protocol and Media Burst Control Protocol utilizes RTCP APP message protocol. The Discrete Media transport utilizes the MSRP protocol as defined in [OMA IM AD].
POC-9	UE PoC Box to SIP/IP Core	SIP
POC-10	Media, Media Burst Control and Talk Burst Control between PoC Server and UE PoC Box	RTP RTCP MSRP The Continuous Media transport utilizes RTP protocol. Talk Burst Control Protocol and Media Burst Control Protocol utilizes RTCP APP message protocol. The Discrete Media transport utilizes the MSRP protocol as defined in [OMA IM AD].
POC-11	NW PoC Box to SIP/IP Core	SIP
POC-12	Media, Media Burst Control and Talk Burst Control between PoC Server and NW PoC Box	RTP RTCP MSRP The Continuous Media transport utilizes RTP protocol. Talk Burst Control Protocol and Media Burst Control Protocol utilizes RTCP APP message protocol. The Discrete Media transport utilizes the MSRP protocol as defined in [OMA IM AD].
POC-13	PoC Server to Shared XDMSs (i.e., Shared List XDMS, Shared Group XDMS and Shared Policy XDMS)	XCAP
XDM-1	XDMC to SIP/IP Core	See [OMA XDM V2.0 AD]
XDM-2	Shared Group XDMS to SIP/IP Core, Shared List XDMS to SIP/IP Core and Shared Policy XDMS to SIP/IP Core	See [OMA XDM V2.0 AD]
XDM-3	XDMC to Aggregation Proxy	See [OMA XDM V2.0 AD]

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ReferencePoint	Usage	Protocol
XDM-4	Aggregation Proxy to the Shared Group XDMS, Aggregation Proxy to Shared List XDMS and Aggregation Proxy to Shared Policy XDMS	See [OMA XDM V2.0 AD]
PRS-1	Presence Source to SIP/IP Core	See [OMA Presence V1.0 AD]
PRS-2	Watcher to SIP/IP Core	See [OMA Presence V1.0 AD]
PRS-3	SIP/IP Core to Presence Server	See [OMA Presence V1.0 AD]
PRS-5	Shared Group XDMS to Presence Server, Shared List XDMS to Presence Server and Shared Policy XDMS to Presence Server	See [OMA Presence V1.0 AD]
IP-1	Session signalling between networks	SIP
DM-1	DM Client to DM Server	See [OMA-DM]
PB-1	Aggregation Proxy to the NW PoC Box	XCAP

Table 1: Reference points and associated protocols

The access network used by the PoC architecture includes nodes required to gain IP connectivity.

PoC network SHALL utilize SIP/IP Core based on capabilities from IMS as specified in 3GPP ([3GPP TS 23.228]) and 3GPP2 ([3GPP2 X.S0013.2]).

5.2 Backward Compatibility

This subclause covers the general signaling principles to achieve backward compatibility. The feature specific backward compatibility, e.g. how PoC Box functionality works with PoC network elements, that are compliant with earlier versions of a PoC Enabler Release, is covered in the corresponding subclauses.

Backward compatibility means that one functional entity compliant with the earlier version of the PoC Enabler Release is able to use the functionalities with other functional entities compliant with the later version of the PoC Enabler Release and offer the functionality specified in the earlier version of the PoC Enabler Release.

The PoC Server SHALL support the backward compatibility with PoC Clients that are compliant with earlier versions of a PoC Enabler Release.

The PoC Client SHALL support the backward compatibility with PoC Servers that are compliant with earlier versions of a PoC Enabler Release.

The XDM Client accessing PoC documents SHALL support the backward compatibility with PoC XDMS from version 1.0 of the PoC Enabler Release.

The PoC Server SHALL support the backward compatibility with PoC Servers that are compliant with earlier versions of a PoC Enabler Release.

The PoC Server SHALL support the backward compatibility with Presence Servers that are compliant with earlier versions of a Presence Enabler Release in case presence is supported.

The backward compatibility towards XDM Enabler is described in [OMA XDM V2.0 AD].

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6. Description of functional entities

6.1 PoC functional entities

6.1.1 PoC Client

The PoC Client resides on the User Equipment and is used to access the PoC service.

The PoC Client SHALL be able to:

- Allow PoC Session initiation, (e.g. codec negotiation), participation (e.g., talk or listen), and release.
- Perform registration with the SIP/IP Core.
- Authentication of the PoC User to the SIP/IP Core.
- Generate and send Talk Bursts containing PoC Speech.
- Receive and decode Talk Bursts containing PoC Speech.
- Support Talk Burst Control procedures and Talk Burst Control Protocol negotiation.
- Support Talk Burst Control Protocols.
- Incorporate PoC configuration data provided by the DM Client.
- Support the PoC Service Settings.
- Support User Plane adaptation procedures if initiated by the PoC Server.
- Support receiving of Instant Personal Alert.

The PoC Client SHOULD be able to use QoE Profiles.

The PoC Client MAY:

- Allow PoC Session initiation including negotiation of Media other than PoC Speech.
- Support sending of Instant Personal Alert
- Provide Group Advertisement
- Support Media Burst Control procedures and Media Burst Control Protocol negotiation.
- Support Media Burst Control Protocols.
- Support Talk Burst request and Media Burst request queuing that MAY be based on priority or timestamp or both.
- Send quality feedback reports after end of Media Burst or after end of Talk Burst.
- Support for Pre-established Sessions.
- Support Simultaneous PoC Sessions.
- Support prioritization and pre-emption of PoC Sessions, according to the applicable QoE Profile.
- Support Session on-hold procedures.
- Request privacy for PoC User Identity.

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- Support of Media-floor Control procedures.
- Support PoC Box capability.
- Support Request with Media Content.
- Support PoC Remote Access
- Support Full Duplex Call Follow-on Proceed
- Generate and send Media Bursts containing other Media than PoC Speech.
- Receive and decode Media Bursts containing Media other than PoC Speech.

NOTE: Sent Media Bursts can be generated from content received in realtime or from stored content and the content from received Media Bursts can be rendered to the PoC User in realtime or stored for rendering later.

- Support PoC Session modification for adding or removing Media in a PoC Session.
- Support the PoC Dispatcher functionality.
- Support invited parties identity information functionality.
- Support the Advanced Revocation Alert
- Support the browser-based PoC Client invocation functionality
- Support obtaining Participant information.
- Support multiple PoC Group Sessions with Multiple PoC Groups.
- Support performance enhancements such as Media buffering capability negotiation, Limited Segment Media Buffer preload capability, Media Time Compression of buffered Media and Local Granted Mode.
- Support Media Burst Control Schemes.
- Support operator specified warning message.
- Support Discrete Media.
- Support performance enhancement.

6.1.2 XML Document Management Client

The XML Document Management Client (XDMC) is an XCAP client which manages XML documents stored in the network (e.g. URI lists used as e.g. Contact Lists in the Shared List XDMS, etc). Management features include operations such as create, modify, retrieve, and delete.

The XDMC MAY be implemented in a UE or fixed terminal.

The XDMC SHALL:

- Manage XML documents.

The XDMC MAY:

- Subscribe to changes made to XML documents stored in the network, such that it will receive notifications when those documents change; and,
- Support configuration of various documents e.g. criteria for PoC Box invocation, etc.

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6.1.3 PoC Server

The PoC Server implements the application level network functionality for the PoC service.

The PoC Server performs a Controlling PoC Function or Participating PoC Function or both. The Controlling PoC Function and Participating PoC Function are different roles of the PoC Server. The figures in this subclause show the flow of signalling traffic and Media and Media-related signalling traffic between Controlling PoC Function and Participating PoC Function in various configurations. Unless otherwise noted, the traffic flows shown in each figure apply to both signalling traffic and Media and Media-related signalling traffic in that configuration.

Figure 4 *"Relationship between Controlling PoC Function, Participating PoC Functions and the PoC Clients"* shows the distribution of the functionality during a 1-1 PoC Session in a single network. A PoC Server MAY perform both a Controlling PoC Function and a Participating PoC Function at the same time.

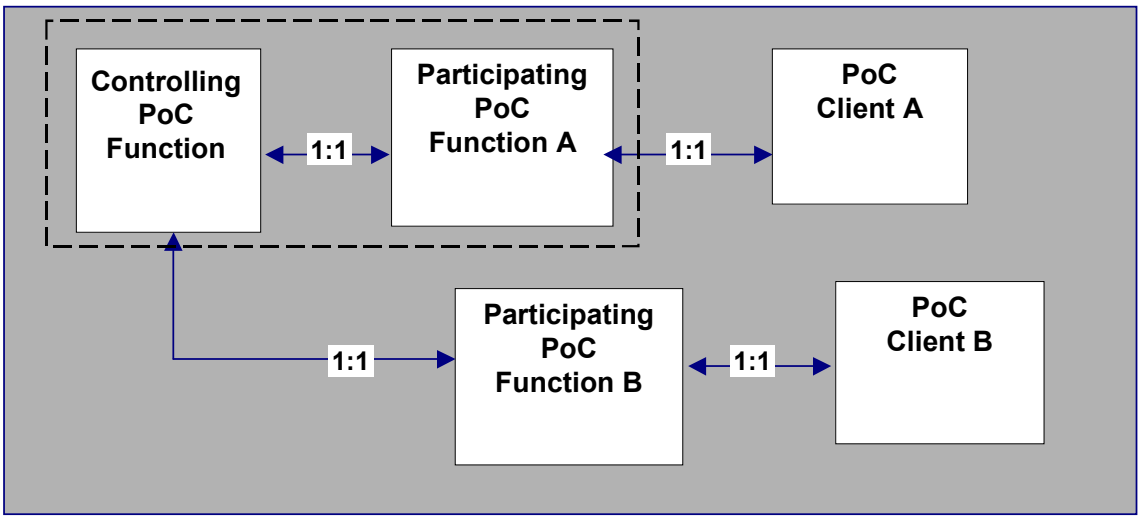


Figure 4: Relationship between Controlling PoC Function, Participating PoC Functions and the PoC Clients

The determination of the PoC Server role (Controlling PoC Function and Participating PoC Function) takes place during the PoC Session setup and lasts for the duration of the whole PoC Session.

In case of 1-1 PoC Session and Ad-hoc PoC Group Session the PoC Server of the inviting PoC User SHALL be capable of performing the Controlling PoC Function; in addition, the PoC Server MAY instead select another PoC Server to perform the Controlling PoC Function in accordance with Service Provider Policies.

In case of the Chat PoC Group and Pre-arranged PoC Group Session the PoC Server hosting the PoC Group SHALL be capable of performing the Controlling PoC Function; in addition, the PoC Server MAY instead select another PoC Server to perform the Controlling PoC Function in accordance with Service Provider Policies:

- PoC Servers with a lower traffic load can be selected as the PoC Server performing the Controlling PoC Function.
- A PoC Server that serves the greatest number of PoC Users of a PoC Group can be selected as the PoC Server performing the Controlling PoC Function.

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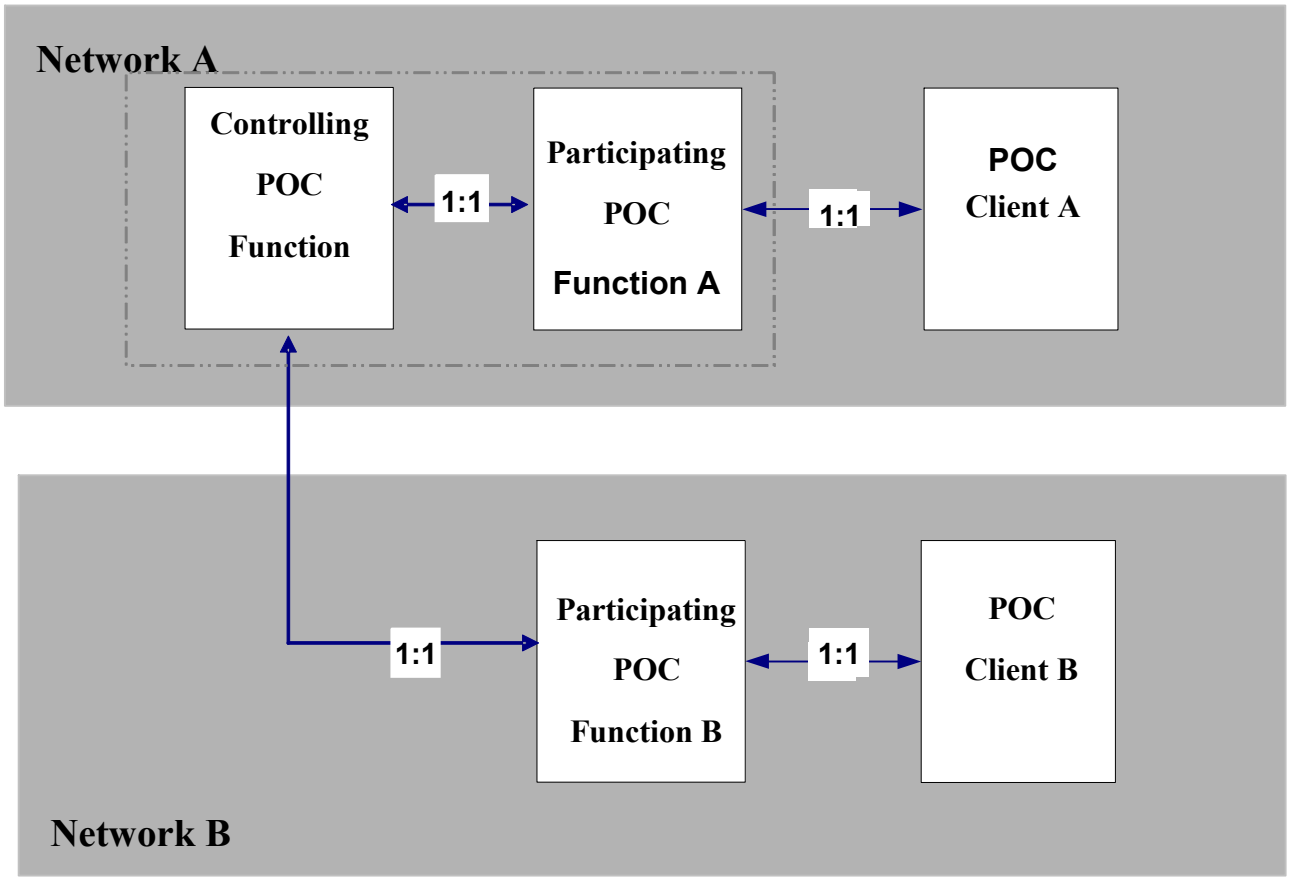


Figure 5: Relationship between the Controlling PoC Function, Participating PoC Function and PoC Clients for 1-1 PoC Session

In a PoC Session there SHALL be only one PoC Server performing the Controlling PoC Function. There MAY be one or more PoC Servers performing the Participating PoC Function in the PoC Session. Figure 5 *"Relationship between the Controlling PoC Function, Participating PoC Function and PoC Clients for 1-1PoC Session"* shows the distribution of the functionality during a 1-1 PoC Session in a multiple network environment.

The PoC Server performing the Controlling PoC Function has *N* number of SIP Sessions and Media, Talk Burst Control and Media Burst Control communication paths in one PoC Session, where *N* is number of Participants in the PoC Session. The PoC Server performing the Controlling PoC Function will have no direct communication to the PoC Client for PoC Session signalling, but will interact with the PoC Client via the PoC Server performing the Participating Function for the PoC Client.

The PoC Server performing the Controlling PoC Function will normally also route Media and Media-related signalling such as Talk Burst Control messages to the PoC Client via the PoC Server performing the Participating PoC Functioning for the PoC Client. However, local policy in the PoC Server performing the Participating PoC Function MAY allow the PoC Server performing the Controlling PoC Function to have a direct communication path for Media and Media-related signalling to each PoC Client. Figure 6 *"Direct Media flow between Controlling PoC Function and PoC Client"* shows the signalling and Media paths in this configuration for a Controlling PoC Function, Participating PoC Function and PoC Client served in the same network.

A PoC Server performing the Participating PoC Function has always a direct communication path with a PoC Client and a direct communication path with the PoC Server performing the Controlling PoC Function for PoC Session signalling.

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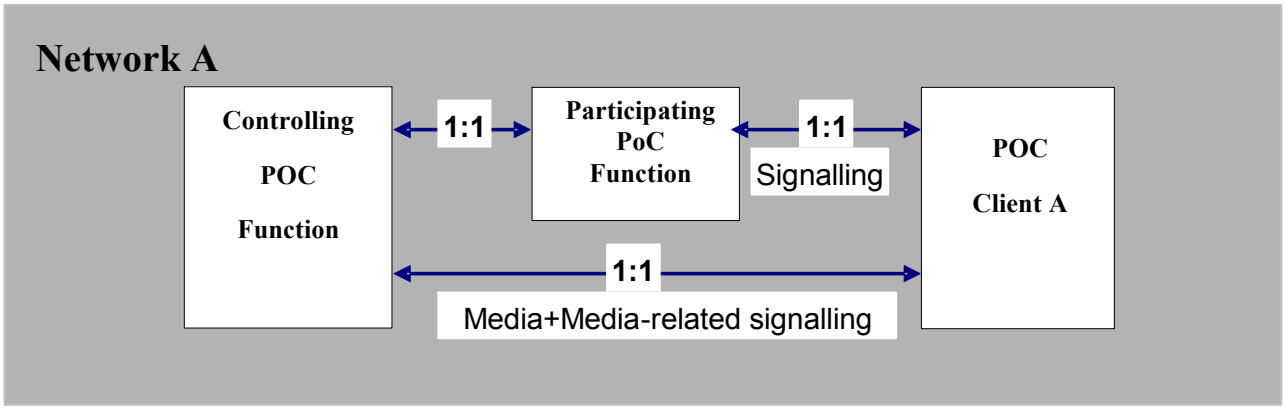


Figure 6: Direct Media flow between Controlling PoC Function and PoC Client

Figure 7 "Relationship between the Controlling PoC Function, Participating PoC Function and PoC Clients for PoC Group Session" depicts the relation between the Controlling PoC Function, Participating PoC Function and the PoC Client in multiple network environment for a PoC Group Session.

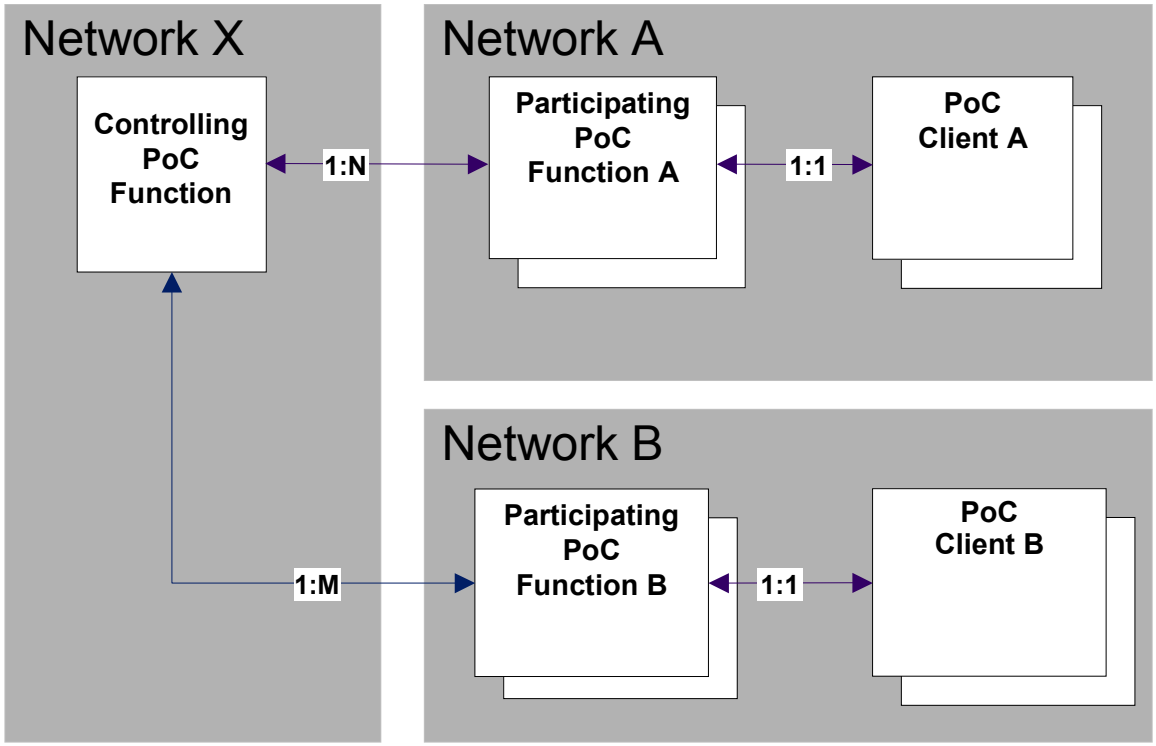


**Figure 7: Relationship between the Controlling PoC Function,
Participating PoC Function and PoC Clients for PoC Group Session**

NOTE: In Figure 7 "N" indicates the number of Participants in network A, and "M" indicates the number of Participants in network B

In case a PoC network interworks with an External P2T Network, any of the networks (network A, network B or network X) in the Figure 7 *"Relationship between the Controlling PoC Function, Participating PoC Function and PoC Clients for PoC Group Session"* MAY be replaced by an External P2T Network. An External P2T Network MAY act as originating or terminating Participating PoC Function or as a Controlling PoC Function. Figure 8 *"Relationship between the Controlling PoC Function, Participating PoC Function and an External P2T Network"* describes the case where network B is replaced by an External P2T Network.

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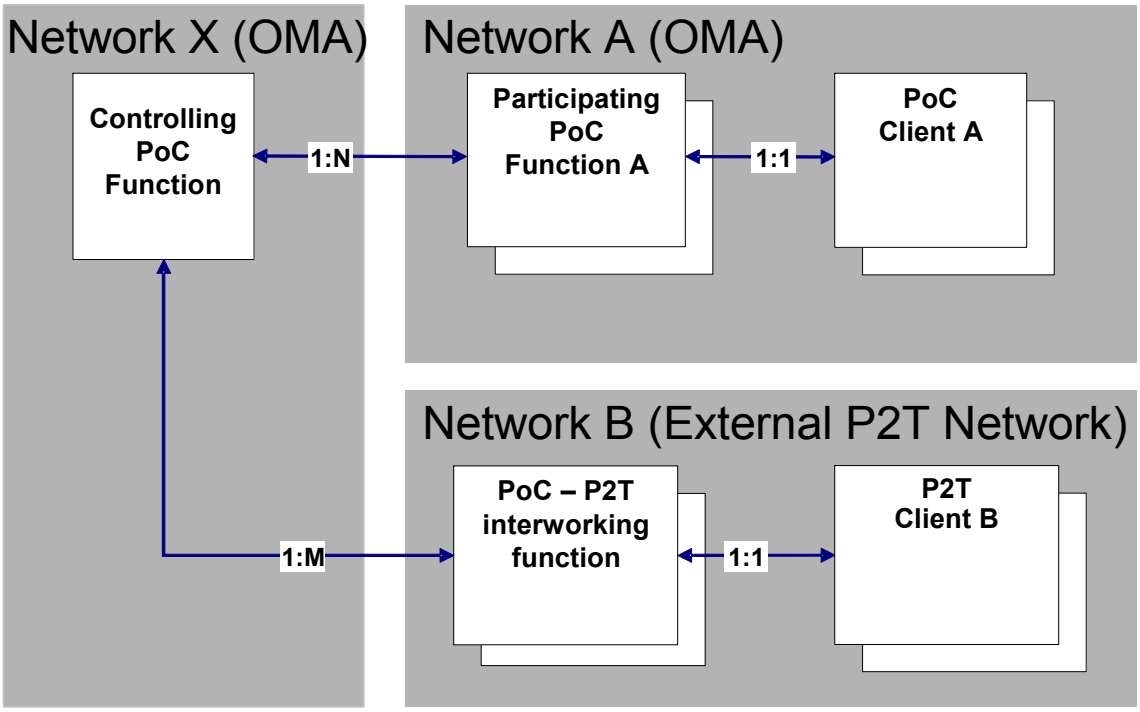


Figure 8: Relationship between the Controlling PoC Function, Participating PoC Function and an External P2T Network

6.1.3.1 Controlling PoC Function

The PoC Server SHALL perform the following functions when PoC Server performs the Controlling PoC Function:

- Provides centralized PoC Session handling.
- Supports assignation and application of a QoE Profile for each PoC Session.
- Provides the centralized Media distribution.
- Provides the centralized Talk Burst Control functionality including Talker Identification.
- Provides the centralized Media Burst Control functionality including Sender Identification.
- Supports Talk Burst Control Protocol and Talk Burst Control Protocol negotiation.
- Supports Media Burst Control Protocol and Media Burst Control Protocol negotiation.
- Provides SIP Session handling, such as SIP Session origination, release, etc.
- Provides policy enforcement for participation in PoC Group Sessions.
- Provides the Participant information.
- Provides for privacy of the PoC Addresses of Participants.
- Collects and provides centralized Media quality feedback information.
- Provides centralized charging reports.
- Supports of Media-floor Control procedures.

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- Supports PoC Group Sessions with Multiple Groups.
- Supports invited parties identity information functionality.
- Supports Discrete Media.

The PoC Server MAY perform the following function when PoC Server performs the Controlling PoC Function:

- Supports Talk Burst request and Media Burst request queuing that may be based on priority or timestamp or both.
- Provides transcoding between different codecs.
- Supports PoC Box handling.
- Prioritization and pre-emption of PoC Sessions according to the QoE Profile associated to each PoC Session.
- Supports request with Media Content.
- Supports Full Duplex Call Follow-on Proceed.
- Supports Dispatch PoC Sessions.
- Supports PoC Interworking with External P2T Networks.
- Supports PoC Remote Access.
- Supports Advanced Revocation Alert.
- Supports PoC Media Traffic Optimisation.
- Supports Media Burst Control Schemes.
- Supports the initiation of the User Plane adaptation.
- Support operator specified warning message.
- Supports performance enhancements such as Media buffering capability negotiation, Limited Segment Media Buffer preload capability, Media Time Compression of buffered Media, Local Granted Mode, and PoC Media Traffic Optimisation.

6.1.3.2 Participating PoC Function

The PoC Server SHALL perform the following functions when PoC Server performs the Participating PoC Function:

- Provides PoC Session handling;
- Supports application of a QoE Profile for each PoC Session;
- Provides SIP Session handling, such as SIP Session origination, release, etc, on behalf of the represented PoC Client;
- Provides policy enforcement for incoming PoC Session (e.g. Access Control, Incoming PoC Session Barring, availability status, etc);
- Provides the Participant charging reports;
- Supports Talk Burst Control Protocol negotiation;
- Supports Media Burst Control Protocol negotiation;
- Stores the current PoC Service Settings;

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- Provides for privacy of the PoC Address of the inviting PoC User on the PoC Session setup in the terminating PoC network; and,
- Support invited parties identity information functionality.

The PoC Server MAY perform the following functions when PoC Server performs the Participating PoC Function:

- Prioritization and pre-emption of PoC Sessions according to the QoE Profile associated to each PoC Session;
- Supports request with Media content;
- Supports PoC Interworking with External P2T Networks;
- Supports PoC Remote Access;
- Supports the initiation of the User Plane adaptation;
- Supports PoC Box handling; and,
- Supports Operator specified warning message.

When the Participating PoC Function is on the Media path, the PoC Server SHALL:

- relay Media packets between the PoC Client and the PoC Server performing the Controlling PoC Function;
- provide the Talk Burst Control message transfer function between PoC Client and PoC Server performing the Controlling PoC Function;
- support Talk Burst Control Protocol and Media Burst Control Protocol;
- provide the Media Burst Control message transfer function between PoC Client and PoC Server performing the Controlling PoC Function; and,
- collect and provide Media quality feedback information.

When the Participating PoC Function is on the Media path, the PoC Server MAY:

- provide Media Filtering of the Media streams in the case of Simultaneous PoC Sessions;
- provide transcoding between different codecs;
- Prioritization of the Media according to the QoE Profile associated to each PoC Session; and,
- provide PoC Media Traffic Optimisation functionality.

In a PoC Session there is one Participating PoC Function per PoC Client.

The Participating PoC Function MAY support Simultaneous PoC Sessions for the PoC Client. The Participating PoC Function MAY have 0 to M number of PoC Sessions for the PoC Client, where M is the maximum number Simultaneous PoC Sessions permitted to a single PoC Client. The maximum number of possible Simultaneous PoC Sessions MAY be limited by the operator or the PoC Client configuration.

Figure 9 *"Participating PoC Function with Simultaneous PoC Session support (informative)"* illustrates the Participating PoC Function sub-structure, which is informative for clarification.

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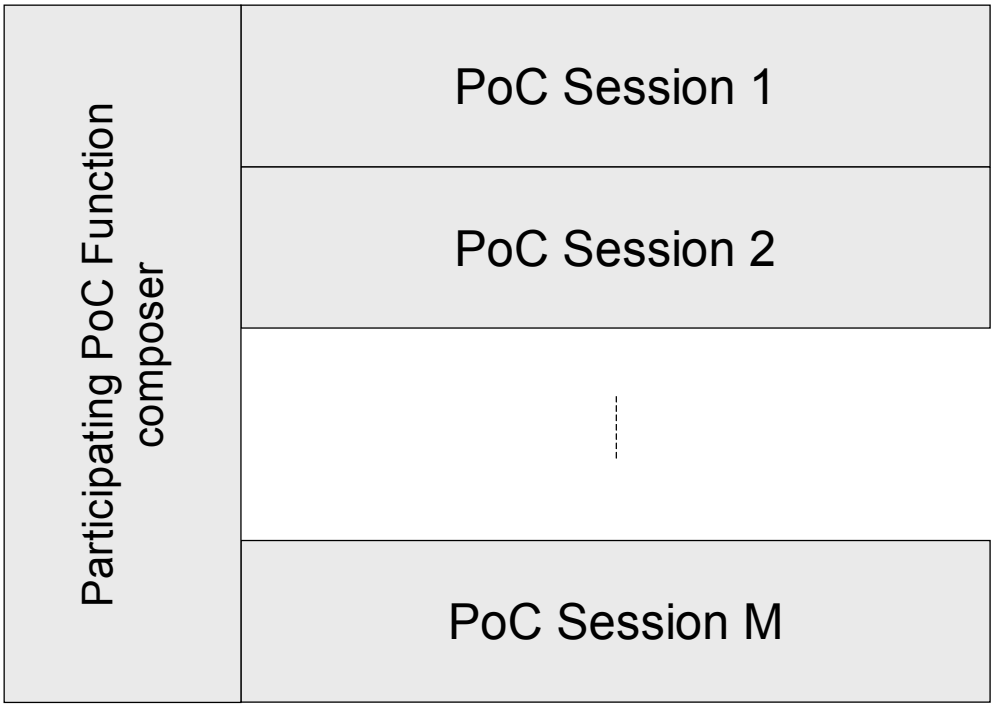


Figure 9: Participating PoC Function with Simultaneous PoC Session support (informative)

The composer MAY provide the following functions for the Participating PoC Function:

- policy enforcement for PoC Sessions (e.g. Access Control, availability status, …);
- dynamic PoC Session status information for PoC Sessions the PoC User is currently involved in (e.g. listening, speaking, Talk Burst requesting); and,
- support for Simultaneous PoC Sessions (e.g. storage of multiple-session settings, priority status of all active PoC Sessions, Media flow control based on priorities (optionally).

6.1.3.3 Presence functionality

The PoC Server performing the Participating PoC Function MAY act as Presence Source and Watcher towards the Presence Server on behalf of the PoC Client. The presence handling is performed via the reference points POC-2 and PRS-3. Communication between PoC Server and Presence Server is accomplished using SIP and the SIP specific event notification mechanism as specified in [RFC3261] and [RFC3265]. The details are specified in [OMA Presence V1.0 AD].

The PoC Server MAY perform the following functions when it assumes the role of a Presence Source:

- Mapping of dynamic PoC status information into Presence attributes describing the availability of the PoC User to communicate via the PoC service
- Publish PoC-related presence information to the Presence service (on behalf of PoC Client) based on this mapping function

The PoC Server MAY perform the following functions when it assumes the role of a Watcher:

- Get or request presence information from Presence service in order to provide the mediation of presence attributes into meaning for PoC Session setup's policy enforcement (e.g. PoC Client "not reachable" status, respecting PoC Clients manually updated PoC presence settings (e.g. appear offline))

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PoC Server MAY support policy enforcement for PoC Session handling based on PoC-related or general presence information (e.g. status "not reachable").

6.1.3.4 XML Document Management functionality

The PoC Server supports the following XDM functions:

- Retrieval of PoC User access policy documents from the Shared Policy XDMS.
- Retrieval of group definitions from the Shared Group XDMS.
- Retrieval of URI lists (e.g. used as Contact Lists) from the Shared List XDMS
- Subscription to the modification of XML documents stored in the Shared Policy XDMS, Shared Group XDMS or Shared List XDMS.

6.1.4 PoC XML Document Management Server

The PoC XDMS is a PoC 1.0 Enabler XCAP Server that manages XML documents in the PoC 1.0 Enabler Release as specified in [OMA PoC V1.0 AD].

NOTE: XML document management is described in the Shared Group XDM Specifications and Shared Policy XDM Specifications.

6.1.5 UE PoC Box

The UE PoC Box is an optional function co-located with the PoC Client in the UE.

The UE PoC Box SHALL be able to:

- Support PoC Session signaling;
- Support Talk Burst Control Protocol;
- Support Talk Burst Control procedures;
- Support storage of PoC Session Data;
- Support storage of PoC Session Control Data; and,
- Provide a PoC Box indication when accepting an invitation to a PoC Session.

The UE PoC Box MAY:

- Support Media Burst Control Protocol;
- Support Media Burst Control procedures;
- Support retrieval of PoC Session Data;
- Support retrieval of PoC Session Control Data; and,
- Support management of stored PoC Session Control Data and stored PoC Session Data..

NOTE: UE PoC Box specific charging is outside of scope of the PoC Box function.

6.1.6 NW PoC Box

The NW PoC Box is an optional entity located in the PoC User's Home PoC Network.

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The NW PoC Box SHALL be able to:

- Support PoC Session signaling;
- Support Talk Burst Control Protocol;
- Support Talk Burst Control procedure;
- Support storage of PoC Session Data;
- Support retrieval of PoC Session Data;
- Support storage of PoC Session Control Data;
- Support retrieval of PoC Session Control Data;
- Support management (e.g., deletion) of stored PoC Session Control Data and stored PoC Session Data;
- Support notifications of NW PoC Box stored messages; and
- Provide a PoC Box indication when accepting an invitation to a PoC Session.

The NW PoC Box MAY:

- Support Media Burst Control Protocol; and,
- Support Media Burst Control procedures.

Stored PoC Session Data MAY be retrieved using one of the Deferred Messaging Enablers (e.g., MMS, email, or IM Deferred Messaging). When a Deferred Messaging Enabler is used for retrieving stored PoC Session Data, retrieval of the associated PoC Session Control Data and management of the PoC Session Control Data and PoC Session Data is achieved using the mechanisms defined for the Deferred Messaging Enabler. These mechanisms are outside the scope of this specification.

Stored PoC Session Data MAY be retrieved in real time using the PoC Session establishment and PoC Session Data transfer mechanisms defined for the PoC Enabler. When PoC Session Data is retrieved in real time, management of the PoC Session Control Data and PoC Session Data is achieved using mechanisms (e.g XDM Enabler using XCAP protocol) defined by local policy.

6.2 External entities providing services to PoC system

6.2.1 SIP/IP Core

The SIP/IP Core includes a number of [RFC3261] compliant SIP proxies and SIP registrars. The SIP/IP Core performs the following functions that are needed to support the PoC Enabler:

- Routes the SIP signalling between the PoC Client and the PoC Server
- Provides discovery and address resolution services, including E.164 address resolution.
- Supports SIP compression
- Performs authentication and authorization of the PoC User at the PoC Client based on the PoC User's service profile
- Maintains the registration state
- Provides support for identity privacy on the Control Plane
- Provides charging information

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- Provides capabilities to Lawful Interception.
- Optionally supports the Communications Resource-Priority as specified in [RFC4412].

Part of the Lawful Interception functionality can be supported by the access network.

When SIP/IP Core is based on the 3GPP/3GPP2 IMS, the SIP/IP Core architecture is specified in [3GPP TS 23.228] or [3GPP2 X.P0013.2].

6.2.2 Shared XML Document Management Servers (XDMSs)

Documents accessed and manipulated via XCAP are stored in logical repositories in the network, called XML Document Management Servers (XDMS). Each XML document stored in an XDMS is described as an XCAP Application Usage, which enables applications to use the document via XCAP. The XDM Enabler describes Application Usages which can be reused by multiple Enablers (e.g. PoC and IM), and are stored in logical entities called Shared XDMSs. The PoC enabler uses three types of Shared XDMSs: Shared List XDMS, Shared Group XDMS and Shared Policy XDMS.

6.2.2.1 Shared List XML Document Management Server (XDMS)

The Shared List XDMS supports the Application Usages for the URI List and Group Usage List documents.

This entity is described in [OMA XDM V2.0 AD].

NOTE: In the PoCv1.0 Enabler, this functional entity is called Shared XDMS.

6.2.2.2 Shared Group XML Document Management Server (XDMS)

The Shared Group XDMS supports the Application Usage for the Group document.

This entity is described in [OMA XDM V2.0 AD].

NOTE: In the PoCv1.0 Enabler, the User Access Policy document is called PoC User Access Policy and is stored in the PoC XDMS.

6.2.2.3 Shared Policy XML Document Management Server (XDMS)

The Shared Policy XDMS supports the Application Usage for the User Access Policy document.

The Shared Policy XDMS is described in [OMA-XDM_V2.0_AD].

NOTE: In the PoCv1.0 Enabler, the User Access Policy document is called PoC User Access Policy and is stored in the PoC XDMS.

6.2.3 Aggregation Proxy

The Aggregation Proxy acts as the single contact point for the XDMC. The Aggregation Proxy performs authentication of the XDMC, and routes individual XCAP requests to the correct XDMS. The Aggregation Proxy MAY optionally support charging and compression of XML documents over the radio interface.

This entity is specified in [OMA XDM V2.0 AD].

6.2.4 Presence Server

The Presence Server is an entity that accepts, stores, and distributes presence information about PoC Clients. The presence information can be published by the Presence Source in the UE, or by the PoC Server on behalf of the PoC Client. The presence information can be fetched or subscribed to by the Watcher in the UE, or by the PoC Server on behalf of the PoC Client.

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NOTE: The address of the Presentity for PoC presence information needs to be the same as the PoC Address.

This entity is specified in [OMA Presence V1.0 AD].

6.2.5 Presence Source

The Presence Source is an entity that provides (publishes) presence information to a Presence Server.

This entity is specified in [OMA Presence V1.0 AD].

6.2.6 Watcher

The Watcher is an entity that requests presence information about a Presentity, or Watcher information about a Watcher, from the Presence Server.

This entity is specified in [OMA Presence V1.0 AD].

6.2.7 Charging Entity

The charging entity is an external entity, which MAY reside in the operator's domain. This entity takes various roles, which network operators or service providers or both need to perform the charging activities.

The Charging Entity provides the functionality of the Charging Enabler as specified in [OMA Charging AD].

6.2.8 Device Provisioning and Management Client

The device provisioning and management client is able to:

- receive the initial parameters needed for PoC service sent by service provider by using mechanisms specified in [OMA Client Provisioning] or [OMA DM Bootstrap].
- update the parameters needed for PoC service sent by service provider by using [OMA DM].

The exact syntax and definition of parameters needed for PoC service are specified in [OMA Client Provisioning] and in [OMA DM].

NOTE: In cases of networks where the provisioning systems specified in [OMA Client Provisioning] and [OMA DM] are not supported the provisioning system is out of scope of this specification.

6.2.9 Device Provisioning and Management Server

The device provisioning and management server can perform the following functions that are needed for the support of the PoC enabler:

- Initialization and update of all the configuration parameters necessary for the PoC Client.
- Support of software update for application upgradeable handsets.

The device provisioning and management server is the Device Management Server as specified in [OMA DM] and [OMA DM Bootstrap].

NOTE: In cases of networks where the provisioning systems specified in [OMA Client Provisioning] and [OMA DM] are not supported the provisioning system is out of scope of this specification.

6.2.10 PoC Interworking Function

The PoC Interworking Function, which is part of the optional PoC Interworking Service infrastructure, is an abstract function whose realization is outside the scope of OMA specifications; for example, the PoC Interworking Function can be realized

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with a single physical entity or a distributed one. The interfaces of the PoC Interworking Function towards the External P2T Networks are proprietary and outside the scope of OMA. The PoC Interworking Function is compliant to the PoC network open interface provided by the PoC Interworking Service, mostly POC-4 and IP-1 reference points.

The PoC Interworking Function:

- provides conversion between PoC network based SIP signaling and External P2T Network based session signaling,
- provides conversion between either Talk Burst Control Protocol or Media Burst Control Protocol or both, and External P2T Network based floor control
- provides conversion between RTP based Media packet transport, and Media transport protocol in the External P2T Network.
- provides transcoding for speech transferred between the PoC network and the External P2T Network
- provides conversion of Instant Personal Alert to or from similar service in the External P2T Network
- supports negotiation of
  - either Talk Burst Control Protocol or Media Burst Control Protocol or both in PoC Sessions.
  - codec and Media Parameter for PoC Sessions.
  - PoC Session modifications,
  - either Talk Burst Control Protocol or Media Burst Control Protocol options or both in PoC Sessions.
  - User Plane adaptation in PoC Sessions
- supports charging for PoC Sessions involving P2T Users
- supports P2T Address to or from PoC Address mapping
- supports expansion of PoC Group Identities involving P2T Users

Optionally the PoC Interworking Function:

- provides conversion of conference state event information to or from similar service in the External P2T Network
- provides conversion of PoC related presence information to or from similar service in the External P2T Network
- provides mapping of PoC functions to or from similar functions in the External P2T Network (e.g. polite calling)
- provides conversion of Group Advertisement to or from similar function in the External P2T Network

6.2.11 PoC Interworking Agent

The PoC Interworking Agent is an abstract function whose realization is outside the scope of OMA specifications. It can be part of the PoC Interworking Function, when the PoC Interworking Function is using the POC-1 and POC-3 reference points to connect to the PoC network.

On behalf of the PoC Remote Access User or a P2T User, the PoC Interworking Agent:

- performs PoC Session initiation, (e.g. codec negotiation), participation (e.g., talk or listen), and release
- performs registration with the SIP/IP Core
- authenticates of the PoC User to the SIP/IP Core
- generates and sends Talk Bursts containing PoC Speech

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- receives and decodes Talk Bursts containing PoC Speech
- generates and sends Media Bursts containing Media other than PoC Speech
- receives and decodes Media Bursts containing Media other than PoC Speech
- supports Talk Burst Control procedures and Talk Burst Control Protocol negotiation
- supports Media Burst Control procedures and Media Burst Control Protocol negotiation
- supports User Plane adaptation procedures if initiated by the PoC Server
- supports receiving of Instant Personal Alert

On behalf of the PoC Remote Access User or a P2T User, the PoC Interworking Agent optionally:

- supports sending of Instant Personal Alert
- supports sending and receiving Group Advertisement
- supports multiple of either Talk Burst Control Protocols or Media Burst Control Protocols, or both
- supports negotiation of either Talk Burst Control Protocol options or Media Burst Control Protocol options or both
- requests privacy for PoC User identity.

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7. Description of the reference points

The reference point descriptions in the following subclauses describe, what have to be supported by the reference points. These subclauses do not indicate if the presented functionalities are optional or mandatory for the corresponding network elements.

7.1 Reference point POC-1: PoC Client – SIP/IP Core

The POC-1 reference point supports the communication between the PoC Client and the SIP/IP Core. The protocol for the POC-1 reference point is SIP.

The PoC-1 reference point SHALL support PoC Clients compliant with the earlier versions of PoC Enabler Release.

This reference point SHALL support the following:

- PoC Session signalling between the PoC Client and the PoC Server
- Provides discovery and address resolution services
- Provides SIP compression
- Performs authentication and authorization of the PoC User at the PoC Client based on the PoC User's service profile
- Provides PoC Client registration
- Indication of capabilities for PoC
- Relaying PoC Service Settings to the PoC Server
- Provides the integrity protection and optionally the confidentiality protection of the PoC Session signalling

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the POC-1 reference point SHALL conform to the Gm reference point [3GPP TS 23.002, 3GPP2 X.S0013.2].

7.2 Reference point POC-2: SIP/IP Core – PoC Server

The POC-2 reference point supports the communication between the SIP/IP Core and the PoC Server. The protocol for the POC-2 reference point is SIP.

The PoC-2 reference point SHALL support PoC Servers compliant with the earlier versions of PoC Enabler Release.

The POC-2 reference point SHALL support the following:

- PoC Session signalling between the PoC Client and the PoC Server
- PoC Session signalling between the UE PoC Box and the PoC Server
- PoC Session signalling between the NW PoC Box and the PoC Server
- Provides address resolution services
- Provides charging information
- Publication of Presence information from the PoC Server to the Presence Server
- Subscription to Presence information by the PoC Server to the Presence Server
- Notification of Presence information by the Presence Server to the PoC Server

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- Indication of capabilities for PoC
- Relaying of PoC Service Settings from the PoC Client
- Relaying of PoC Service Settings from the UE PoC Box
- Subscription to the modification of XML documents.
- Notification of modifications made to XML documents.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the POC-2 reference point SHALL conform to the ISC reference point [3GPP TS 23.002, 3GPP2 X.S0013.2].

7.3 Reference point POC-3: PoC Client-PoC Server

The POC-3 reference point supports User Plane communication between the PoC Client and the PoC Server. The protocols for the POC-3 reference point are RTP/RTCP and MSRP. RTP protocol is used for Continuous Media transport, RTCP APP messages SHALL be supported for the transport of the Talk Burst Control and Media Burst Control procedures; MSRP is used for Discrete Media transport as defined in [OMA IM AD], reference point IM-7.

The PoC-3 reference point SHALL support PoC Servers and PoC Clients that are compliant with the earlier versions of PoC Enabler Release.

The POC-3 reference point SHALL support:

- Media transport
- Talk Burst Control procedures
- Media Burst Control procedures
- Quality feedback of received Media
- Discrete Media Burst delivery including Discrete Media transfer report procedures

The POC-3 reference point SHALL exist between a PoC Client and a PoC Server accessing the SIP/IP Core serving the PoC Client. The POC-3 reference point MAY exist between a PoC Client and a PoC Server accessing different SIP/IP Cores, e.g. to allow direct Media flow between the PoC Client and the PoC Server performing the Controlling PoC Function.

NOTE: Provision of a POC-3 reference point between a PoC Client and a PoC Server accessing different SIP/IP Cores, when the SIP/IP Cores are controlled by different operators, can be subject to an inter-operator agreement.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the POC-3 reference point SHALL use the services of the Mb reference point [3GPP TS 23.002] and ii reference point [3GPP2 X.S0013.2].

7.4 Reference point POC-4: PoC Server – PoC Server

The POC-4 reference point supports the User Plane communication between the PoC Servers. The protocols for the POC-4 reference point are RTP/RTCP and MSRP. RTP protocol is used for Continuous Media transport, RTCP APP messages SHALL be supported for the transport of the Talk Burst Control and Media Burst Control procedures; MSRP is used for Discrete Media transport as defined in [OMA IM AD], reference point IM-8.

The PoC-4 reference point SHALL support PoC Servers compliant with the earlier versions of PoC Enabler Release.

The POC-4 reference point SHALL support the following:

- Media transport
- Talk Burst Control procedures

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- Media Burst Control procedures
- Quality feedback of received Media
- Discrete Media Burst delivery including Discrete Media transfer report procedures

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the POC-4 reference point SHALL use the services of the Mb reference point [3GPP TS 23.002], [3GPP2 X.S0013.2].

7.5 Reference point POC-5: PoC Server – Shared XDMS

The POC-5 reference point specified in PoC 1.0 is not used in this version of the PoC Enabler. The equivalent functionality is included in the POC-13 reference point.

7.6 Reference point POC-6: SIP/IP Core – PoC XDMS

The POC-6 reference point specified in PoC 1.0 is not used in this version of the PoC Enabler. The equivalent functionality is provided by the XDM-2 reference point.

7.7 Reference point POC-7: Aggregation Proxy – PoC XDMS

The POC-7 reference point specified in PoC 1.0 is not used in this version of the PoC Enabler. The equivalent functionality is provided by the XDM-4 reference point.

7.8 Reference point POC-8: PoC Server – PoC XDMS

The POC-8 reference point specified in PoC 1.0 is not used in this version of the PoC Enabler. The equivalent functionality is provided by the POC-13 reference point.

7.9 Reference point XDM-1: XDM Client – SIP/IP Core

The functionality of the XDM-1 reference point is specified in [OMA XDM V2.0 AD].

7.10 Reference point XDM-2: Shared XDMSs – SIP/IP Core

The functionality of the XDM-2 reference point is specified in [OMA XDM V2.0 AD].

7.11 Reference point XDM-3: XDM Client – Aggregation Proxy

The functionality of the XDM-3 reference point is specified in [OMA XDM V2.0 AD].

7.12 Reference point XDM-4: Aggregation Proxy – Shared XDMSs

The functionality of the XDM-4 reference point is specified in [OMA XDM V2.0 AD].

7.13 Reference point PRS-1: Presence Source – SIP/IP Core

The functionality of the PRS-1 reference point is specified in [OMA Presence V1.0 AD].

7.14 Reference point PRS-2: Watcher - SIP/IP Core

The functionality of the PRS-2 reference point is specified in [OMA Presence V1.0 AD].

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7.15 Reference point PRS-3: SIP/IP Core – Presence Server

The functionality of the PRS-3 reference point is specified in [OMA Presence V1.0 AD].

7.16 Reference point PRS-5: Shared XDMS – Presence Server

The functionality of the PRS-5 reference point is specified in [OMA Presence V1.0 AD].

7.17 Reference point IP-1: SIP/IP Core – SIP/IP Core

The IP-1 reference point supports the communication between the SIP/IP Cores. The protocol for the IP-1 reference point is SIP.

The IP-1 reference point SHALL support the following:

- communication and forwarding of SIP signalling messaging between SIP/IP Cores
- transfer of inter-provider charging information.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the IP-1 reference point SHALL conform to the Mw reference point [3GPP TS 23.002] and [3GPP2 X.S0013.2].

7.18 Reference point C-5: PoC Server - Charging entity

For the PoC V2.0 Enabler Release and later PoC Enabler Releases, the C-5 reference point has been replaced by reference points CH-1 and CH-2 defined in [OMA Charging AD]. These interfaces are further described in following subclause 7.18.1 *"Reference point CH-1: PoC Server – Offline Charging Entity"* and 7.18.2 *"Reference point CH-2: PoC Server – Online Charging Entity"*.

7.18.1 Reference point CH-1: PoC Server – Offline Charging Entity

The CH-1 reference point supports the communication between the PoC Server and the Offline Charging Entity to perform the PoC-related offline charging activity.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the CH-1 reference point SHALL include either the functionality provided over the Rf reference point as described in [3GPP TS 32.272] / [3GPP2 X.S0013-007] or the functionality of a direct CDR generation in the PoC Server as described in [3GPP TS 32.272] / [3GPP2 X.S0013-007].

7.18.2 Reference point CH-2: PoC Server – Online Charging Entity

The CH-2 reference point supports the communication between the PoC Server and the Online Charging Entity to perform the PoC-related online charging activity.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the CH-2 reference point SHALL include the functionality provided over the Ro reference point as described in [3GPP TS 32.272] / [3GPP2 X.S0013-007].

7.19 Reference point DM-1: DM Client – DM Server

The DM-1 reference point supports the communication between the DM client and the DM server. The protocol for the DM-1 reference point is described in [OMA-DM]. The DM-1 reference point SHALL support

- Transfer of the PoC Client configuration data from the DM server.

OMA provides a general framework, which shall be used for this interface as described in [OMA- DM].

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7.20 Reference point LI-1: Functional Entities – Law Enforcement Monitoring Facility

The LI-1 reference point supports the communication between functional entities and Law Enforcement Monitoring Facilities. The LI-1 reference point uses protocols defined by applicable LI specifications that transport the LI information to Law Enforcement Monitoring Facilities. The definition of these LI protocols is outside the scope of this specification. When the SIP/IP Core corresponds with 3GPP IMS, the LI-1 reference point SHALL conform to the HI1, HI2 and HI3 reference point in [3GPP TS 33.107]. The administration of LI information is also outside the scope of this specification.

7.21 Reference point PB-1: Aggregation Proxy – NW PoC Box

The PB-1 reference point is an optional reference point that supports communication between the Aggregation Proxy and the NW PoC Box for exchange of XML documents for the operation of the NW PoC Box using XDM Enabler (e.g., retrieve PoC Session Control Data, delete PoC Session Control Data and PoC Session Data). The protocol for the PB-1 reference point is XCAP.

The documents exchanged using this reference point are a matter of local policy and not specified.

7.22 Reference point POC-9: UE PoC Box – SIP/IP Core

The POC-9 reference point supports the communication between the UE PoC Box and the SIP/IP Core. The protocol for the POC-9 reference point is SIP.

This reference point SHALL support the following:

- PoC Session signalling between the UE PoC Box and the PoC Server
- Provides discovery and address resolution services
- Provides SIP compression
- Performs authentication and authorization of the PoC User at the UE PoC Box based on the PoC User's service profile
- Provides UE PoC Box registration
- Indication of capabilities for UE PoC Box
- Relaying UE PoC Box PoC Service Settings to the PoC Server

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the POC-9 reference point SHALL conform to the Gm reference point [3GPP TS 23.002, 3GPP2 X.S0013.2].

7.23 Reference point POC-10: UE PoC Box-PoC Server

The POC-10 reference point is between the UE PoC Box and the PoC Server. The protocols for the POC-10 reference point are RTP/RTCP and MSRP. RTP protocol is used for Continuous Media transport, RTCP APP messages SHALL be supported for the transport of the Talk Burst Control and Media Burst Control procedures; MSRP is used for Discrete Media transport as defined in [OMA IM AD], reference point IM-7.

The POC-10 reference point SHALL support:

- Media transport
- Talk Burst Control procedures
- Media Burst Control procedures

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- Quality feedback of received Media
- Discrete Media Burst delivery including Discrete Media transfer report t procedures

The POC-10 reference point is between a UE PoC Box and a PoC Server accessing the SIP/IP Core serving the PoC Client or accessing different SIP/IP Cores, e.g. to allow direct Media flow between the UE PoC Box and the PoC Server performing the Controlling PoC Function.

NOTE: Provision of a POC-10 reference point between a UE PoC Box and a PoC Server accessing different SIP/IP Cores, when the SIP/IP Cores are controlled by different operators, can be subject to an inter-operator agreement.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the POC-10 reference point SHALL use the services of the Mb reference point [3GPP TS 23.002] and ii reference point [3GPP2 X.S0013.2].

7.24 Reference point POC-11: NW PoC Box – SIP/IP Core

The POC-11 reference point supports the communication between the NW PoC Box and the SIP/IP Core. The protocol for the POC-11 reference point is SIP.

The POC-11 reference point SHALL support the following:

- PoC Session signalling between the NW PoC Box and the PoC Server
- Provides discovery and address resolution services
- Performs authentication and authorization of the PoC User at the NW PoC Box based on the PoC User's service profile

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the POC-11 reference point SHALL conform to the Gm reference point [3GPP TS 23.002, 3GPP2 X.S0013.2].

7.25 Reference point POC-12: NW PoC Box – PoC Server

The POC-12 reference point is between the NW PoC Box and the PoC Server. The protocols for the POC-12 reference point are RTP/RTCP and MSRP. RTP protocol is used for Continuous Media transport, RTCP APP messages SHALL be supported for the transport of the Talk Burst Control and Media Burst Control procedures; MSRP is used for Discrete Media transport as defined in [OMA IM AD], reference point IM-8.

The POC-12 reference point SHALL support:

- Media transport
- Talk Burst Control procedures
- Media Burst Control procedures
- Quality feedback of received Media.
- Discrete Media Burst delivery including Discrete Media transfer report procedures

The POC-12 reference point is between a NW PoC Box and a PoC Server accessing the SIP/IP Core serving the NW PoC Box or accessing different SIP/IP Cores, e.g. to allow direct Media flow between the NW PoC Box and the PoC Server performing the Controlling PoC Function.

NOTE: Provision of a POC-12 reference point between a NW PoC Box and a PoC Server accessing different SIP/IP Cores, when the SIP/IP Cores are controlled by different operators, can be subject to an inter-operator agreement.

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When SIP/IP Core corresponds with 3GPP/3GPP2 IMS, then the POC-12 reference point SHALL use the services of the Mb reference point [3GPP TS 23.002] and ii reference point [3GPP2 X.S0013.2].

7.26 Reference point POC-13: PoC Server - Shared XDMSs

The POC-13 reference point supports communication between the PoC Server and the Shared XDMSs (i.e., the Shared List XDMS, the Shared Group XDMS and the Shared Policy XDMS). The protocol for the POC-13 reference point is XCAP.

The PoC-13 reference point SHALL support Shared XDM Servers compliant with the earlier versions of XDM Enabler Release.

The POC-13 reference point SHALL provide one or more of the following functions:

- Retrieval of URI Lists from the Shared List XDMS.
- Retrieval of Group documents from the Shared Group XDMS.
- Retrieval of user access policy documents from the Shared Policy XDMS.

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8. System concepts

The System concepts are described in [OMA PoC V2.0 SD] *"System concepts"*.

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9. High level procedures (Informative)

The High level procedures are described in [OMA PoC V2.0 SD] *"High level procedures (Informative)*".

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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 2.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-AD-PoC-V2_0-D	26 Oct 2005		Baseline document. Candidate Version 1.0 – 04 Nov 2005 was used for Draft Version 2.0 baseline document (OMA-POC-2005-0737-Latest-version-of-POC-AD-to-check).
	28 Nov 2005	3, 8, 9	Incorporated agreed documents: OMA-POC-2005-0654-AD-poc-service-setting OMA-POC-2005-0662-PoC1-AD-manual-answer-flows OMA-POC-2005-0749R01-POC2-AD-expelling-participants Reformatting of figures were done by editor
	07 Dec 2005	4, 5	Incorporated agreed document: OMA-POC-2005-POCv2-2005-0004R01
	21 Dec 2005	1, 3, 4, 5, 6, 8, 9	Incorporated agreed documents after Athens meeting OMA-POC-POCv2-2005-0001-AD-small-corrections (Propagation document of OMA-POC-2005-0756-PoC1-AD-conference-uri) OMA-POC-POCv2-2005-0008R01-AD-Arcitecture-picture-konverted-to-ppt-format OMA-POC-POCv2-2005-0009R03-AD-Media-floor-Control OMA-POC-POCv2-2005-0020R01-Modifications-to-Sec-1-2-4-and-5 OMA-POC-POCv2-2005-0032R01-AD-interworking OMA-POC-POCv2-2005-0034-Session-Barring_def_abb OMA-POC-POCv2-2005-0046R01-AD_text-for-Incoming-Condition-Session-Barring OMA-POC-POCv2-2005-0050-moderated-poc-groups Propagated documents from PoC V1.0 OMA-POC-POCv1-2005-0013R01-AD-Consistency-Revision-for-Queued-Talk-Burst-Request-Process
	27 Jan 2006	2, 3, 5, 6, 7, 8, 9, Appendix D	Incorporated agreed documents after Tokyo meeting (total 14) OMA-POC-POCv2-2005-0072R03-AD-drafting-session-result-PoC-Box-function OMA-POC-POCv2-2006-0007R02-AD-8.28-Media-Burst-Control-clarifications OMA-POC-POCv2-2006-0008R01-AD-8.4-Sender-Identification OMA-POC-POCv2-2006-0009R01-AD-8.27-Media-floor-Control-clarifications OMA-POC-POCv2-2006-0011-AD-8.18-Access-Control OMA-POC-POCv2-2006-0015R02-AD-Invocation-of-PoC-Client-from-Browsing OMA-POC-POCv2-2006-0016R01-AD-6.1-Media-floor-Control-Entity-negotiation OMA-POC-PoCv2-2006-0018R01-AD-SS-Priority-Handling OMA-POC-POCv2-2006-0023-Moderated-PoC-Groups-to-a-Right-Place OMA-POC-POCv2-2006-0026R01-AD-8-Charging-Correlation OMA-POC-POCv2-2006-0033R01-AD-8.x-Answer-mode-override OMA-POC-PoCv2-2006-0040R02-PoC2-AD-Moderated-PoC-Groups OMA-POC-2006-0046-PoCv2-AD-Appendix-PoC-Interworking OMA-POC-POCv2-2006-0063R01-AD-8-Crisis-Handling-SystemConcepts
	30 Jan 2006	8	The previous version (OMA-AD-PoC-V2_0-20060127-D) had wrong editing of OMA-POC-PoCv2-2006-0040R02-PoC2-AD-Moderated-PoC-Groups and it is corrected.

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Document Identifier	Date	Sections	Description
	14 Feb 2006	3, 5, 6, 7, 8, 9, Appendix D	Incorporated agreed documents after Paris meeting (total 25) OMA-POC-POCv2-2006-0010R04-AD-9.2.2.x-PoC-Sessions-with-Multiple-PoC-Groups OMA-POC-POCv2-2006-0012R05-AD-Full-duplex-call-follow-on OMA-POC-POCv2-2006-0017R04-AD-9-Media-floor-Control-negotiation-parameters OMA-POC-POCv2-2006-0020R01-AD-ESS-Service-Settings OMA-POC-POCv2-2006-0025R02-AD-8.x-PoC-Sessions-with-Multiple-PoC-Groups OMA-POC-POCv2-2006-0030R03-AD-Multiple-Types-Media-Burst-Control OMA-POC-POCv2-2006-0035R03-AD-PoC-Box-Funct-describe OMA-POC-POCv2-2006-0036R04-AD-9.x-PoC-Box-Flow OMA-POC-POCv2-2006-0037R03-AD-PoC-IRS-Funct-describe OMA-POC-POCv2-2006-0039R04-AD-9.x-MM-PoC-Session-establish OMA-POC-PoCv2-2006-0056R02-Manual Answer with PES OMA-POC-POCv2-2006-0057R03-AD Advanced Revocation Alert OMA-POC-POCv2-2006-0061R02-AD-Dynamic-PoC-Groups OMA-POC-2006-0067R01-PoC2-AD-video audio media OMA-POC-POCv2-2006-0073R02-AD-terminology-corrections OMA-POC-POCv2-2006-0077R02-AD-Request-with-media-content-was-2006-0065 OMA-POC-POCv2-2006-0079-AD-Charging-of-PoC-Sessions OMA-POC-POCv2-2006-0081R01-AD-PoC-Priority-Levels OMA-POC-POCv2-2006-0082R01-MBC-Confirm-indication OMA-POC-POCv2-2006-0083R03-CF-Determination OMA-POC-PoCv2-2006-0085R01-AD-Moderated-PoC-Groups-Corrections OMA-POC-PoCv2-2006-0086R02-AD-Dynamic-PoC-Group-Changes OMA-POC-POCv2-2006-0098-AD-3.2-QoE-definitions OMA-POC-POCv2-2006-0102R03-AD-Invited-Parties-Identity-Information OMA-POC-POCv2-2006-0104R01-AD-UE-PoC-Box Incorporated agreed document from R&A (total 1) OMA-POC-POCv2-2005-0063-AD_PoC-Service-Setting (R&A from 2005-12-22 to 2006-01-04)
	20 Feb 2006	2,3,6,7,8	Incorporated agreed documents after Paris meeting (total 3) OMA-POC-POCv2-2006-0045R03-AD_Condition-Session-Barring OMA-POC-POCv2-2006-0064R03-AD-MBC-Schemes-from-0026 OMA-POC-POCv2-2006-0110R01-AD-ESS-Sect-8-based-on-19R01 Incorporated agreed document from 14 Feb 2006 Tele-conference (total 2) OMA-POC-POCv2-2006-0111R01-AD-7.x-PoC-Service-Setting OMA-POC-POCv2-2006-0115R02-LATE-AD-8.x-PoC-Dispatcher
	24 Feb 2006	8	Incorporated agreed documents after Paris meeting (total 1) OMA-PoC-PoCv2-2006-0110R02-AD-ESS-Sect-8-based-on-19R01: Only the difference between 0110R01 and 0110R02 was incorporated since 0110R01 was already incorporated in the previous version (20 Feb 2006).
	13 Mar 2006	1,2,3,6,7,8,9	Sections 8 and 9, and Appendix B and D are moved to new document, OMA TS PoC System Description Incorporated agreed documents after Seoul meeting (total 5) OMA-POC-POCv2-2006-0068R03-AD-6.1-Remote-Access OMA-POC-POCv2-2006-0134R01-AD-Moving-function-from-PoC-Client-to-XDMC OMA-POC-POCv2-2006-0135-AD-Moving-PoC-Box-to-6.1 OMA-POC-POCv2-2006-0161-AD-update-for-sipping-conference-package-12 OMA-POC-POCv2-2006-0164R01-AD- 6.2-PoC-Interwoking-Function

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Document Identifier	Date	Sections	Description
	14 April 2006	all	Incorporated agreed documents from 2006-03-15 to 2006-03-28 R&A (total 9) OMA-POC-POCv2-2006-0070R05-AD-sections-3-6-7-8.26-QoE OMA-POC-POCv2-2006-0130R03-AD-8.39-Request-with-media-content-clarifications OMA-POC-POCv2-2006-0148R01-AD-ESS-Support-Sec-6 OMA-POC-POCv2-2006-0155R01-Multiple-PoC-Address OMA-POC-POCv2-2006-0179R02-AD-FDCFO-operator-policy OMA-POC-POCv2-2006-0216R01-Addition-of-Abbreviations OMA-POC-POCv2-2006-0218-Group-and-PoC-Group-Usage OMA-POC-POCv2-2006-0228R01-PoC-Group-Identities OMA-POC-POCv2-2006-0248-Crisis-Event-Handling-Term-definitions Incorporated agreed documents after Vancouver meeting (total 29) OMA-POC-POCv2-2006-0094R05-AD-5-7-XDM-2-compliance OMA-POC-POCv2-2006-0159R03-AD-6.1.3.x-IRS OMA-POC-POCv2-2006-0177R04-AD-Discrete-Media OMA-POC-POCv2-2006-0204R01-AD-6.1.3.1-CF-Conferecing-PoC-Box OMA-POC-POCv2-2006-0207R03-AD-Session-Setup-Capability-Notification OMA-POC-POCv2-2006-0223R02-User-and-PoC-User-Usage OMA-POC-POCv2-2006-0234R01-AD-UE-PoC-BoX-Cleanup OMA-POC-POCv2-2006-0244R01-Sect-6-Functions-of-PoC-entities OMA-POC-POCv2-2006-0254R01-AD-PoC-Invocation-from-Browsing OMA-POC-POCv2-2006-0256R02-XML-Document-Management-Client-normative OMA-POC-POCv2-2006-0257R01-AD-Scope-and-Void OMA-POC-POCv2-2006-0258R01-AD-1-scope-small-adjustments OMA-POC-POCv2-2006-0259R02-AD-5.1-Dependencies-small-correction OMA-POC-POCv2-2006-0260-AD-6.1.1-PoC-Client-small-correction OMA-POC-POCv2-2006-0261R01-AD-6.1.3-PoC-Server-small-corrections OMA-POC-POCv2-2006-0262-AD-6.1.5-UE-PoC-Box-small-correction OMA-POC-POCv2-2006-0263R01-AD-6.2-External-entities---small-corrections OMA-POC-POCv2-2006-0264R01-AD-7-Reference-points---consistency-check OMA-POC-POCv2-2006-0267-AD-1-many-PoC-Session-definition OMA-POC-POCv2-2006-0275R01-AD-traffic-optimisation OMA-POC-POCv2-2006-0279R02-AD-chap-5-7-NW-PoC-Box OMA-POC-POCv2-2006-0295R01-AD-Controlling-PoC-Function OMA-POC-POCv2-2006-0297-AD-3.2-kill-an-EN OMA-PoC-PoCv2-2006-0302-AD-6.1.1-PoC-Interworking-Service OMA-PoC-PoCv2-2006-0304R01-AD-6.2.10-PoC-Interworking-Service OMA-PoC-PoCv2-2006-0306R01-AD-6.2.11-PoC-Interworking-Service OMA-POC-POCv2-2006-0325R01-AD-Charging-Update-Revision OMA-POC-POCv2-2006-0329R01-AD-5-Crisis-Event-Handling-Architecure OMA-POC-POCv2-2006-0345R01-AD-backward-compatibility
	25 April 2006	2, 3, 4	Incorporated agreed documents from 2006-04-20 to 2006-04-22 R&A (total 3) OMA-POC-POCv2-2006-0220R01-References-Corrections OMA-POC-POCv2-2006-0221R02-Security-Considerations-Section OMA-POC-POCv2-2006-0222R01-Terminology-Corrections

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	22 May 2006	all	Incorporated agreed documents after Kansas meeting (total 26) OMA-POC-POCv2-2006-0217R04-IMS-Referencing OMA-POC-POCv2-2006-0219R03-Planned-Phases-Section OMA-POC-POCv2-2006-0353R01-AD-6.1.3.1-small-editorials OMA-POC-POCv2-2006-0372-AD-split-2.0-and-2.1 OMA-POC-POCv2-2006-0377R01-AD-kill-some-ENs OMA-POC-POCv2-2006-0378-AD-kill-one-EN-more OMA-POC-POCv2-2006-0379R02-AD-xdm-backward-compatibility OMA-POC-POCv2-2006-0384R01-AD-unused-definitions OMA-POC-POCv2-2006-0387R01-AD-Configuration-of-Request-in-Media-parameters OMA-POC-POCv2-2006-0390R01-AD-Media-Burst-Control-enhancement-cleaning OMA-POC-POCv2-2006-0393R01-AD--Media-Burst-Control-Schemes OMA-POC-POCv2-2006-0400R01-AD--PoC-Box-criteria-Access-Policy OMA-POC-POCv2-2006-0402R02-AD--PoC-Box-indication OMA-POC-POCv2-2006-0404R01-AD-PoC-Box---Message-waiting- OMA-POC-POCv2-2006-0405R03-AD-NW-PoC-Box-ARCH OMA-POC-POCv2-2006-0406R02-AD-Editorial-cleaning-up-and-error-corrections OMA-POC-POCv2-2006-0407-AD-PoC-Box-Reference-point-POC-2 OMA-POC-POCv2-2006-0408-AD-PoC-Box-as-logical-function OMA-POC-POCv2-2006-0413-AD-6.1.6-NW-PoC-Box-ENs OMA-POC-POCv2-2006-0415R02-AD-6.1.2-XDMC and others OMA-POC-POCv2-2006-0447R02-AD-Lawful-Interception-Support OMA-POC-POCv2-2006-0452-AD-Discrete-media-POC-10-POC-12-POC-14 OMA-POC-POCv2-2006-0453R01-AD-Discrete-media-Delivery-Report OMA-POC-POCv2-2006-0475R01-AD-kill-one-EN OMA-POC-POCv2-2006-0476R03-AD-PoC-Box-Message-Retrieval OMA-POC-POCv2-2006-0478-AD-Charging-reference-cleanup-and-EN
	23 May 2006	5, 6, 7	Editing corrections from previously incorporated documents OMA-POC-POCv2-2006-0405R03-AD-NW-PoC-Box-ARCH OMA-POC-POCv2-2006-0452-AD-Discrete-media-POC-10-POC-12-POC-14 OMA-POC-POCv2-2006-0447R03-AD-Lawful-Interception-Support Agreed document on 23 May 2006 tele conference OMA-POC-POCv2-2006-0480-AD-solve-the-open-ENs Adding one Editor's Note under subclause 7.25 regarding PB-1 reference point issue
	24 May 2006	5	Editing correction of OMA-POC-POCv2-2006-0405R03-AD-NW-PoC-Box-ARCH (Adding PB-1 in figure 3)
	21 June 2006	all	Incorporated closed ADRR comments from OMA-ADRR-PoC-V2_0-20060620-D Incorporated agreed documents after Osaka meeting (total 3) OMA-POC-POCv2-2006-0485-AD-Lawful-intercept-clarification OMA-POC-POCv2-2006-0486-AD-5-Minor-error-correction OMA-POC-POCv2-2006-0512R02-AD-cover-the-comments-in-511
	28 June 2006	all	Incorporated agreed documents from 27 June 2006 tele conference (total 1) OMA-POC-POCv2-2006-0567R01-AD-Siemens-review-comment-fixes
	29 Sept 2006	6	Incorporated agreed documents after Tallin meeting (total 1) OMA-POC-POCv2-2006-0806-CR_AD_provisioning
	24 Oct 2006	2, 6	Incorporated agreed documents after Athens meeting (total 1) OMA-POC-POCv2-2006-0718R03-CR-AD-DM
	23 Nov 2006	2, 3, 6	Incorporated agreed documents after Shenzhen meeting (total 3) OMA-POC-POCv2-2006-1140R01-AD-IWF-Remote-Network OMA-POC-POCv2-2006-1181R01-CR_AD_6.2.1_add_loose_routing OMA-POC-POCv2-2006-1205R01-CR_AD_QoE_SIPCore_RPH_Support

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	21 Dec 2006	3, 5, 6, 7	Updated with agreed CRs: OMA-POC-POCv2-2006-1297-CR_AD_6.2.1_SIPIP Core OMA-POC-POCv2-2006-1411-CR_Full_Duplex_Call_Follow_on_Proceed_Definition_clerical OMA-POC-POCv2-2006-1430R01-CR_AD_5_architecture_figure_update
	19 Feb 2007	all	Updated with agreed CRs OMA-POC-POCv2-2007-0001-CR_AD_editorials OMA-POC-POCv2-2007-0007R01-CR_AD_corrections OMA-POC-POCv2-2007-0064R01-CR B32,33,34 AD 3.2 Definitions OMA-POC-POCv2-2007-0065R01-CR B43 AD 4.1 Planed Phases OMA-POC-POCv2-2007-0067-CR B72 AD 6.1.1 PoC Client OMA-POC-POCv2-2007-0068R01-CR B96 AD 6.1.3.4 XML Document Management functionality OMA-POC-POCv2-2007-0069R01-CR B101,102 AD 6.1.5 UE PoC Box OMA-POC-POCv2-2007-0153R01-CR_AD_Cleaning_my_T_comments OMA-POC-POCv2-2007-0161R02-INP_AD_Editorial_clean_up_in_AD OMA-POC-POCv2-2007-0177-CR_AD_CONRR_B92_B96 OMA-POC-POCv2-2007-0180R01-CR_AD_CONRR_B19_B21_B22 OMA-POC-POCv2-2007-0250R01-CR_AD_B15_B36 OMA-POC-POCv2-2007-0264-CR_AD_CONR_B153_Definitions OMA-POC-POCv2-2007-0265R01-CR_AD_CONR_B76_Architecture
	26 March 2007	all	Updated with agreed CRs OMA-POC-POCv2-2007-0241R02-CR_AD_CONRR_B10_B123_B126_B136_B139 OMA-POC-POCv2-2007-0244R03-CR_AD_B72_resolution OMA-POC-POCv2-2007-0245R02-CR_AD_B149_resolution OMA-POC-POCv2-2007-0246R01-CR_AD_B125_B135_B138_resolution OMA-POC-POCv2-2007-0277R01-CR_AD_CONRR_B110 OMA-POC-POCv2-2007-0314-CR_AD_CONRR_I10 OMA-POC-POCv2-2007-0390-CR_AD_B30_B31 OMA-POC-POCv2-2007-0394-CR_AD_CONRR_C151_Shared_XDMS
	23 April 2007	3, 5	Updated with agreed CRs OMA-POC-POCv2-2007-0445R01-CR_AD_B26_and_B56_resolution OMA-POC-POCv2-2007-0499-CR_AD_B35_interpretation_of_PoC_abbreviation
	3 May 2007	2, 5, 7	Updated with agreed CRs OMA-POC-POCv2-2007-0008R05-CR_AD_remove_PoC_XDMS OMA-POC-POCv2-2007-0458R01-CR_AD_CONRR_B59_Figure_2
	22 May 2007	all	Updated with agreed CRs OMA-POC-POCv2-2007-0716-CR_AD_PoC_XDM_Ref_Change OMA-POC-POCv2-2007-0753R01-CR_AD_Align_Shared_XDMSs OMA-POC-POCv2-2007-0772R01-CR_AD_B58_architecture_in_5 OMA-POC-POCv2-2007-0774R02-CR_AD_B129_reference_points_in_5_and_7.x OMA-POC-POCv2-2007-0777-CR_AD_B98_and_solving_C186_for_charging_architecture_in_5 OMA-POC-POCv2-2007-0787-CR_AD_Bxx1_Removing_life_time_from_PoC_Box_
	18 June 2007	all	Updated with agreed CRs OMA-POC-POCv2-2007-0566R03-CR_AD_B111_115 OMA-POC-POCv2-2007-0773R03-CR_AD_B64_backward_compatibility_in_5.2 OMA-POC-POCv2-2007-0873R03-CR_AD_B155_Reference_Points_Clean_Up OMA-POC-POCv2-2007-0888R02-CR_AD_ETR_SD_CP_UP_IM_IW_ID_DM_Alignment_of_Definitions
	2 July 2007	4, 6	Updated with agreed CRs OMA-POC-POCv2-2007-0941R08
	4 July 2007	4, 6	Typo correction of the previous version

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	8 Aug 2007	2, 3	Updated with agreed CRs OMA-POC-POCv2-2007-0999R02-CR_AD_ETR_SD_CP_UP_IM_IW_ID_DM_Definitions_Alignment_E22 OMA-POC-POCv2-2007-1045R01-CR_AD_expired_IETF_draft_update
Candidate version OMA-AD-PoC-V2_0	02 Oct 2007	All	Status changed to Candidate by TP TP ref # OMA-TP-2007-0343R01-INP_POC_V2_0_ERP_for_Candidate_Approval General editorial clean-up of styles for publication.

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Appendix B. Guidelines for preparing flow charts (Informative)

The Appendix B Guidelines for preparing flow charts is described in [OMA PoC V2.0 SD] "Guidelines for preparing flow charts (Informative)".

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Appendix C. OMA SEC Group security threats analyses (Informative)

OMA Security Group has analysed the potential PoC security threats. When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, these potential security threats are addressed. If other SIP/IP Cores are used then these potential security threats need to be addressed by the SIP/IP Core:

1. Registering misleading usernames

   Currently with the OMA PoC framework a user is required to have one private identity (which is kept internally by the SIP/IP Core service provider) and a number of public identities. Currently it is possible for users to register misleading public identities in order to fool or masquerade at the PoC User Plane as other users. For example, a users real name may be John Smith and may have a private SIP address as: SIP:John.Smith@operator.net, however, John Smith can then register public ID's such as SIP:Bob.Holmes@operator.net. Please note that all public ID's require operator provisioning before they can be used. An unknown public ID to the SIP/IP Core operator cannot be registered without prior provisioning.

2. SPAM

   There is a general SPAM problem with PoC. It is possible for advertising companies or other third parties to randomly invite users to their groups, although the user has to accept the invite before participating, this will still cause a nuisance. SPAM coupled with misleading user public identities can trick the user into participating into a group or one on one PoC Session. On the network side, SPAM will cause network clogging on the air interface, if for example a third party tries to invite users from a particular cell based on location information.

3. Eavesdropping in PoC Sessions

   Because it is possible for users to register arbitrary public user names, as suggested in point 1, it is possible for the attacker to trick the user into accepting an invite that may have been from a trusted user. For one to one communication this may be identified once the attacker starts his speech, however in Ad-hoc Group PoC Sessions it may be possible for the attacker to invite him-self on to a group session and passively eavesdrop. This could be picked up in the network at a later time as the network operator can identify the real user behind the public identity.

4. The possibility of attacks such as eavesdropping makes it possible for Pre-Pay customers that have not registered personal details with operators difficult to trace because identities are tied down to an IMSI (SIM card) and not the actual user information such as name and address.

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