Enabler Release Definition for Push to talk over Cellular

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Open Mobile Alliance

OMA-ERELD-PoC-V2_0-20110802-A

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1. Scope

The scope of this document is limited to the Enabler Release Definition of Push to talk over Cellular according to OMA Release process and the Enabler Release specification baseline listed in section 7.

2. References

2.1 Normative References

[OMA_SCR_Rules] "SCR Rules and Procedures", Version 1.0, Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures-V1_0, URL: http://www.openmobilealliance.org/

[POC1_ERELD] "Enabler Release Definition for Push-to-Talk over Cellular", Version 1.0.2, Open Mobile Alliance™, OMA-ERELD-PoC-V1_0_2, URL: http://www.openmobilealliance.org/

[POC1_GA] "Group Advertisement", Version 1.0.1, Open Mobile Alliance™, OMA-SUP-XSD_poc_group_advertisement-V1_0_1, URL: http://www.openmobilealliance.org/

[POC1_LST] "List Service", Version 1.0.2, Open Mobile Alliance™, OMA-SUP-XSD_poc_listService-V1_0_2, URL: http://www.openmobilealliance.org/

[POC1_RD] "Push to Talk over Cellular Requirements", Version 1.0, Open Mobile Alliance™, OMA-RD-PoC-V1_0, URL: http://www.openmobilealliance.org/

[POC1_UP] "PoC User Plane", Version 1.0.1, Open Mobile Alliance™, OMA-TS-PoC_User Plane-V1_0_1, URL: http://www.openmobilealliance.org/

[POC1_USG] "PoC Usage", Version 1.0.2, Open Mobile Alliance™, OMA-SUP-XSD_poc_pocusage-V1_0_2, URL: http://www.openmobilealliance.org/

[POC2_AC] "PoC Application Characteristics", Version 2.0 , Open Mobile Alliance™, OMA-SUP-AC_ap0006_POC-V2_0, URL: http://www.openmobilealliance.org/

[POC2_AD] "Push to talk over Cellular (PoC) – Architecture", Version 2.0, Open Mobile Alliance™, OMA-AD-PoC-V2_0, URL: http://www.openmobilealliance.org/

[POC2_CP] "OMA PoC Control Plane", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC-ControlPlane-V2_0, URL: http://www.openmobilealliance.org/

[POC2_Document_Mgmt] "PoC Document Management", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC_Document_Management-V2_0, URL: http://www.openmobilealliance.org/

[POC2_DPR] "Detailed Discrete Media Transfer Progress Report", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_detProgressRep-V2_0, URL: http://www.openmobilealliance.org/

[POC2_FDCFO] "Full Duplex Call Follow On Proceed postd Element", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_FDCFO-V2_0, URL: http://www.openmobilealliance.org/

[POC2_FR] "Discrete Media Transfer Final Report", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_finalReport-V2_0, URL: http://www.openmobilealliance.org/

[POC2_GAD] "Group Advertisement Dispatch Attribute", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_dispatchInd-V2_0, URL: http://www.openmobilealliance.org/

[POC2_ID] "Invocation Descriptor", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_sessionInvocationDescriptor-V2_0, URL: http://www.openmobilealliance.org/

[POC2_IM] "OMA PoC Endorsement of OMA IM TS", Version 2.0, Open Mobile Alliance™,

OMA-TS-PoC-Endorsement_OMA_IM_TS-V2_0,
URL: http://www.openmobilealliance.org/

[POC2_INV] "PoC Invocation Descriptor", Version 2.0, Open Mobile Alliance™,
OMA-TS-PoC_Invocation-Descriptor-V2_0,
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[POC2_IWF] "PoC Interworking Service", Version 2.0, Open Mobile Alliance™,
OMA-TS-PoC-Interworking-Service-V2_0,
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[POC2_MO_DDF] "OMA PoC Management Object", Version 2.0, Open Mobile Alliance™, OMA-SUP-MO_oma_poc-V2_0,
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[POC2_OPR] "Optimized Discrete Media Transfer Progress Report", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_optProgressRep-V2_0,
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[POC2_PII] "Participant Information Indications", Version 2.0, Open Mobile Alliance™,
OMA-SUP-XSD_poc_participantInfoInd-V2_0,
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[POC2_RD] "Push to talk over Cellular 2 Requirements", Version 2.0, Open Mobile Alliance™,
OMA-RD-PoC-V2_0,
URL: http://www.openmobilealliance.org/

[POC2_RUL] "PoC Rules", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_poc2_0Rules-V2_0,
URL: http://www.openmobilealliance.org/

[POC2_SD] "OMA PoC System Description", Version 2.0, Open Mobile Alliance™,
OMA-TS-PoC_System_Description-V2_0,
URL: http://www.openmobilealliance.org/

[POC2_SET] "PoCv2.0 Service Settings", Open Mobile Alliance™,
OMA-SUP-XSD_poc_poc2_0Settings-V2_0,
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[POC2_SGRP] "Shared Group Extensions", Version 2.0, Open Mobile Alliance™,
OMA-SUP-XSD_poc_poc2_0SharedGroupExt-V2_0,
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[POC2_UP] "PoC User Plane", Version 2.0, Open Mobile Alliance™, OMA-TS-PoC_UserPlane-V2_0,
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[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997,
URL: http://www.ietf.org/rfc/rfc2119.txt

[RFC3261] "SIP: Session Initiation Protocol", June 2002,
URL: http://www.ietf.org/rfc/rfc3261.txt

NOTE: There are additional normative references given in the above listed documents.

2.2 Informative References

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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 [RFC2119].

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

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

3.2 Definitions

1-1 PoC Session	A feature enabling a PoC User to establish a PoC Session with another PoC User.
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.
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.
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.
Automatic Answer Mode	Answer Mode where the PoC Client accepts a PoC Session establishment request without manual intervention from the PoC User. The Media is immediately played when received.
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.
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.
Discrete Media	Media that itself does not contain an element of time (e.g. images, text).
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 PoC Group 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.
Group	A Group is a predefined set of PoC Users that is identified by a SIP URI. A PoC Client uses the Group to establish PoC Sessions and to define PoC Session access policy.
Group Advertisement	A feature that provides the capability to inform other PoC Users of the existence of a PoC Group.

Group List	A list of members in a Pre-arranged PoC Group or restricted Chat PoC Group. Each member is identified by a SIP URI or a TEL URI.
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.
Invited PoC User	The PoC User who has been invited to a PoC Session.
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 [POC2_UP].
Media Parameters	Media Parameters are SIP/SDP based information exchanged between the PoC Server and the PoC Client, between the PoC Server and the PoC Box and between PoC Servers that specify the characteristics of the Media for a PoC Session being established or that already exists.
Media Stream	An instance of the transmission of a Media Type, which is used as the basic unit to distinguish each Media flow. Multiple Media Streams can be combined to transmit multimedia.
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 Entity	A Media Control resource shared by Participants in a PoC Session. The Media-floor Control Entity is controlled by a state machine to ensure that only one Participant can access the Media resource at the same time. One Media-floor Control Entity can handle one or more Media Streams according to negotiation.
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.
On-demand Session	A PoC Session set-up mechanism in which all Media Parameters are negotiated at PoC Session establishment.
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.
Participant	A Participant is a PoC User in a PoC Session.
Participant Information	Information about the PoC Session and its Participants.

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 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 predefined set of PoC Users together with its attributes. A PoC Group is identified by a SIP URI (PoC Group Identity for Pre-arranged PoC Groups and Chat PoC Groups). 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.
PoC Network	Network comprising of a SIP/IP Core and PoC Server(s), which provide PoC capabilities to the associated PoC capable User Equipments which are compliant with OMA PoC Service Enabler specifications.
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 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 Provider	A PoC Service Provider provides PoC Service – on its own or in conjunction with other Value Added Services – to his PoC Subscribers.
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 Subscriber	Is one whose service subscription includes the PoC service. A PoC Subscriber can be the same person as a PoC User. NOTE: In [POC1_RD] the term “PoC Subscriber” is sometimes used to mean the same as term “PoC User” in [POC2_AD], [POC2_CP] and [POC2_UP].
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 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.
RTP Media	The Media carried in an RTP payload.
Sender Identification	The procedure by which the identity of the current Media sender is determined and made known to receivers on the PoC Session.
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.
Simultaneous PoC Sessions Support	A PoC Service Setting for the PoC Client that indicates that the PoC Client is able and PoC User is willing to use Simultaneous PoC Sessions.
SIP Session	A a SIP dialog. From [RFC 3261], 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 RFC 2543.
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 [P0C1_UP].
Talk Burst Control Protocol	A protocol for performing Talk Burst Control defined in [P0C1_UP].
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	Any entity that uses the described features through the User Equipment.
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

3GPP	3rd Generation Partnership Project
3GPP2	3rd Generation Partnership Project 2
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition

IETF	Internet Engineering Task Force
IMS	IP Multimedia Subsystem
MBCP	Media Burst Control Protocol
OMA	Open Mobile Alliance
PoC	Push to talk over Cellular
RFC	Request For Comments (IETF specifications)
RTCP	RTP Control Protocol
RTP	Real-time Transport Protocol
SDP	Session Description Protocol
SIP	Session Initiation Protocol
TBCP	Talk Burst Control Protocol
UDP	User Datagram Protocol
UE	User Equipment
UP	User Plane
URI	Uniform Resource Identifier
XML	Extensible Mark-up Language

4. Release Version Overview

This document outlines the Enabler Release Definition for Push to talk over Cellular (PoC) version 2.0 and the respective conformance requirements for PoC Clients and PoC Servers implementation claiming compliance as defined by Open Mobile Alliance across the specification baseline.

Push to talk over Cellular (PoC) service is a *two-way form* of communications that allows PoC Users to engage in immediate communication with one or more PoC Users. PoC service is similar to a "walkie-talkie" application in the way that by pressing a button a communication session with an individual PoC User or a broadcast to a group of Participants is initiated. Participants can receive Media from the sender either without any action on their part (Automatic Answer Mode), or can be notified and has to accept an invitation (Manual Answer Mode) before receiving from the sender.

In addition, the PoC service provides 2 models for PoC Session establishment: the Pre-established Session mode and the On-demand Session mode. The communication is half-duplex, meaning that one person can send Media at a time and all other Participants can receive Media. The permission for sending Media is controlled via a Media floor Control mechanism. The sending of Discrete Media can either be controlled by the Media-floor Control mechanism or not controlled.

The PoC service enabler supports the

- 1-1 PoC Session, which is the basic capability to set up communication between two PoC Users
- 1-to-many PoC Session, which is the capability to enable the setup a communication with a multiple number of other PoC Subscribers in an ad-hoc or pre-defined PoC Group manner
- Instant Personal Alert, which is the capability to inform about the inviting PoC User's wish to communicate and the request the Invited PoC User to "call-back".

The PoC service enabler utilizes basic inter-working with the Group Management service enabler and the Presence service enabler. Key features to these enablers are e.g. Group Lists creation and management functions, PoC Group sessions emulating conferencing on demand and integration of PoC User's presence & availability information in the session setup process. Complementing the basic PoC service, Group Advertisement is available to inform PoC Group members about the existence and the membership of the PoC Group.

PoC Version 2.0 defines new functionalities beyond of the Push to talk over Cellular (PoC) service extending the PoC Version 1.0 PoC service with:

- Other Media Types than PoC Speech. Examples of other Media Types are: Video, images, text and files.
- A PoC Box functionality allowing the PoC Service Infrastructure to store Media Bursts and related information (e.g., date & time, Sender Identity, Participant information) on behalf of a PoC User.
- Interworking functionality allowing other External P2T Networks to interwork with PoC Service Infrastructure.
- Quality of Experience (QoE) profiles allowing the PoC Service Infrastructure to differentiate the end PoC User experience provided to individual PoC Users on a subscription bases.
- Browser based PoC Client Invocation.
- PoC Sessions with multiple PoC Groups
- Requests with Media content
- Invited parties identity information
- Full Duplex Call Follow-on Proceed
- Dispatcher functions
- Advanced Revocation Alert
- Prioritization and pre-emption
- PoC Remote Access
- Performance enhancements objectives

- Operator specified warning message
- Lawful Interception
- Interoperability, i.e interworking with earlier versions of the PoC Enabler.
- Charging
- Rejection of Session Establishment due to hidden identity of an inviting PoC User

4.1 Version 1.0 Functionality

The PoC Version 1.0 requirements are specified in [POC1_ERELD].

4.2 Version 2.0 Functionality

This section is informative.

The PoC enabler defined the following minimum mandatory functionality:

1. PoC Client and PoC Interworking Agent:
    - Registration and de-registration
    - PoC Session initiation, modification, joining and leaving, termination
    - On-demand Session establishment
    - PoC Session handling for 1-to-1 communication, Pre-arranged PoC Group , Chat PoC Group and Adhoc PoC Group communication
    - Instant Personal Alert (receiving)
    - Incoming PoC Session Barring
    - Manual Answer Mode or Automatic Answer Mode for incoming PoC Session invitations
    - Activation and deactivation of setting for service attributes (e.g. Incoming PoC Session Barring, Answer Mode Indication) towards PoC Server
    - Media transport (including support of UDP, port number handling, RTP, RTCP)
    - Media control by supporting RTCP Sender Report/Receiver Report (SR/RR) compound packets
    - PoC Session control
    - Talk Burst Control Protocol (TBCP)
    - Media Burst Control enhancements functionalities (*)
    - Timer Handling
    - Operator specified warning message functionality (*)

2. PoC Server and PoC Interworking Function:
    - Determination of PoC Server role for performing the Participating or Controlling PoC Function or both.
    - Common basic functions for Participating or Controlling PoC Function:
        - Support of PoC Session initiation, modification, joining and leaving, termination
        - PoC Session handling for 1-to-1 communication, Pre-arranged PoC Group, Chat PoC Group and Ad-hoc PoC Group communication

- Support for Media Types other than PoC Speech (e.g. voice, video, images, text, files) (*)
- PoC Sessions with Multiple PoC Groups
- Talk Burst Control Protocol (TBCP)
- Media Burst Control enhancements functionalities (*)
- Media control by supporting RTCP Sender Report/Receiver Report (SR/RR) compound packets
- On-demand Session establishment
- Invited Parties Identity Information (*)
- Capability to control QoS by differentiation in QoE profiles (*)
- Charging Functionalities (*)
- Interoperability with PoC V1.0 Servers and PoC V1.0 Clients

- Additional specific functions for PoC Server performing the Participating PoC Function
  - Manual Answer Mode handling or Automatic Answer Mode handling for PoC Session establishment
  - Setting, storing and enforcing different service attribute settings for the PoC Client
- Additional specific functions for PoC Server performing the Controlling PoC Function
  - Media transport (including support of UDP, port number handling, RTP, RTCP)
  - PoC Session control
  - Session modification for Media Parameter according to local policy and based on lowest negotiated media parameters (*)
  - Sender Identification
  - Timer Handling

PoC enabler defines the following optional functionality:

1. PoC Client and PoC Interworking Agent:
   - Group Advertisement
   - Pre-established Sessions (*)
   - Simultaneous PoC Sessions (*)
   - Media Types other than PoC Speech (e.g. voice, video, images, text, files) (*)
   - PoC Sessions with Multiple PoC Groups (*)
   - PoC Session establishment requests with Media contents (*)
   - Scheduling of RTCP packages
   - Sender Identification
   - Media Burst queuing (e.g. positioning, status) and priority
   - Media Adaptation (voice frame packetisation, voice codec adaptation)
   - Media Burst Control enhancements functionalities (*)
   - Timer Handling
   - Invited Parties Identity Information (*)
   - PoC Box functionality (*)

- Full-duplex call follow-on proceed
- PoC Dispatcher functionality (*)
- Advanced Revocation Alert (*)
- Capability to control QoS by differentiation in QoE profiles (*)
- QoE profiles prioritization and pre-emption (*)
- Inter-working Service for PoC Remote Access Users
- Browser-based PoC Client invocation (*)
- Included Media Content

2. PoC Server and PoC Interworking Function:
    - Common basic functions:
        - Media control by supporting quality feed back
        - User Plane adaptation
        - Incoming Instant Personal Alert Barring
        - Group Advertisement
        - Media Transcoding
        - PoC Session establishment requests with Media contents (*)
        - Included Media Content
    - Additional specific functions for PoC Server performing the Participating PoC Function
        - Pre-established Session (*)
        - Simultaneous PoC Sessions (*)
        - Media relay function
        - Media transport (including support of UDP, port number handling, RTP, RTCP)
        - Timer Handling
    - Additional specific functions for PoC Server performing the Controlling PoC Function
        - Media Burst operation for queuing (e.g. state, position) and priority (*)
        - Session modification for media capabilities according to local policy and based on lowest negotiated media parameters (*)
    - Additional specific functions for the PoC Server
        - Full-duplex call follow-on proceed
        - PoC Dispatcher functionality(*)
        - QoE profiles prioritization and pre-emption (*)
        - Operator specified warning message functionality (*)
        - Browser-based PoC Client invocation (*)
    - Additional specific functions for the PoC service infrastructure
        - Lawful Interception (*)
        - Advanced Revocation Alert (*)

- PoC Box functionality (*)
- PoC Interworking service to support symmetric communication with PoC Remote Access PoC Users
- PoC Interworking with External P2T Networks.

(*) These functions do not apply to the basic functionality to be supported by the PoC Interworking Function and PoC Interworking Agent

3. NW PoC Box
    - PoC Session initiation, modification, joining and leaving, termination
    - Talk Burst Control Protocol (TBCP)
    - Talk Burst Control procedure
    - Storage of PoC Session Data
    - Support storage of PoC Session Control Data
    - Provide a PoC Box indication when accepting an invitation to a PoC Session
    - Media transport (including support of UDP, port number handling, RTP, RTCP)
    - Interoperability with PoC V1.0 Clients
    - Media Burst Control Protocol (MBCP)
    - Media Burst Control procedures
    - Retrieval of PoC Session Data (out of scope of this release of the Enabler)
    - Retrieval of PoC Session Control Data (out of scope of this release of the Enabler)
    - Media types other than PoC Speech (e.g. Audio, Video, images, text, files)
    - Management of stored PoC Session Control Data and stored PoC Session Data (out of scope of this release of the Enabler)

4. UE PoC Box
    - PoC Session initiation, modification, joining and leaving, termination
    - Support Talk Burst Control Protocol (TBCP)
    - Support Talk Burst Control procedures;
    - Support storage of PoC Session Data;
    - Support storage of PoC Session Control Data; and
    - Media transport (including support of UDP, port number handling, RTP, RTCP)
    - Media Burst Control Protocol (MBCP)
    - Media Burst Control procedures
    - Retrieval of PoC Session Data (out of scope of this release of the Enabler)
    - Retrieval of PoC Session Control Data (out of scope of this release of the Enabler)
    - Management of stored PoC Session Control Data and stored PoC Session Data (out of scope of this release of the Enabler)

- Media types other than PoC Speech (e.g. Audio, Video, images, text, files)
- Provide a PoC Box indication when accepting an invitation to a PoC Session

The PoC enabler defines the following external dependencies:

- Mandatory
  - XDM Document Management Enabler
  - Device management
  - Charging
  - SIP/IP core: IP Multimedia Subsystem (IMS) – comment: Chapter 5-Architecture (under Table 1) states that "... SHALL utilize SIP/IP core from IMS as specified in 3GPP and 3GPP2.
  - SIP/IP core: Multimedia Domain (MMD) – comment: Chapter 5-Architecture (under Table 1) states that "... SHALL utilize SIP/IP core from IMS as specified in 3GPP and 3GPP2.
- Optional
  - Presence Service Enabler

5. Document Listing for PoC V2.0

This section is normative.

The PoC Enabler comprises the following specifications:

Doc Ref	Permanent Document Reference	Description
Requirement Document		
[POC2_RD]	OMA-RD-PoC-V2_0-20110802-A	Requirement Document for PoC V2.0 Enabler. Defines the requirements for the Push to talk over Cellular service capturing the overall service description, primarily from the service subscriber's and PoC User's points of view. It is applicable to network operators, service providers and terminal and infrastructure manufacturers.
Architecture Document		
[POC2_AD]	OMA-AD-PoC-V2_0-20110802-A	Architecture Document for PoC V2.0 Enabler. Defines the overall architecture of PoC V2.0.
Technical Specifications		
[POC2_CP]	OMA-TS-PoC_ControlPlane-V2_0-20110802-A	Defines the PoC Control Plane signaling procedures of the PoC Client and PoC Server for Push to talk over Cellular (PoC) service including example detailed signaling flows for the reference points POC-1, POC-2 and IP-1.
[POC2_Document_ Mgmt]	OMA-TS-PoC_Document_Management-V2_0-20110802-A	Defines the PoC Enabler specific usage of XML documents defined by the XDM Enabler and specifies the PoC Enabler deviations and extensions to these documents.
[POC2_IM]	OMA-TS-PoC_Endorsement_OMA_IM_TS-V2_0-20110802-A	Endorses the OMA IM SIMPLE service for the PoC V2.0 discrete media transport.
[POC2_INV]	OMA-TS-POC_Invocation_Descriptor-V2_0-20110802-A	Defines the browser-based PoC Client invocation.
[POC2_IWF]	OMA-TS-PoC_Interworking_Service-V2_0-20110802-A	Defines the PoC Interworking Service through endorsement for PoC V2.0 Specifications [POC2_CP], [POC2_UP] and [POC2_Document_Mgmt].
[POC2_SD]	OMA-TS-PoC_System_Description-V2_0-20110802-A	Defines the system description of PoC V2.0 including detailled descriptions of technologies and their uses.
[POC2_UP]	OMA-TS-PoC_UserPlane-V2_0-20110802-A	Defines the User Plane procedures for the Push to talk over Cellular (PoC) service over the POC-3 and the POC-4 reference points as defined in the reference [POC2_AD]. When necessary, inter-working between the Control Plane [POC2_CP] and User Plane is described. If necessary, requirements on the implementation of SIP / IP Core are included.

Doc Ref	Permanent Document Reference	Description
Supporting Files		
Note: The following list contains all supporting files needed for the PoC V2.0 release. It contains therefore supporting files from PoC V1.0.n and specific PoC V2.0. **Maintenance Note: Modifications to earlier releases have to be maintained also backwards to the earlier enabler release packages.**		
[POC1_GA]	OMA-SUP-XSD_poc_group_advertisement-V1_0_1-20061128-A	XML schema for Group Advertisement Working file in XML Schema directory: file: poc_group_advertisement-v1_0.xsd path: http://www.openmobilealliance.org/tech/profiles/
[POC1_LST]	OMA-SUP-XSD_poc_listService-V1_0_2-20090922-A	XML schema for PoC Groups Working file in XML Schema directory: file: poc_listService-v1_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC1_USG]	OMA-SUP-XSD_poc_pocusage-V1_0_3-20091203-A	XML schema for PoC-specific URI List usage Working file in XML Schema directory: file: poc_pocusage-v1_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_AC]	OMA-SUP-AC_ap0006_POC-V2_0-20110802-A	Description of the Application Characteristic for PoC V2.0. This aligns with the Provisioning Spec. Working file in Application Characteristics directory: file: ac_ap0006_poc-v2_0.txt path: http://www.openmobilealliance.org/tech/omna/ac
[POC2_DPR]	OMA-SUP-XSD_poc_detProgressRep-V2_0-20110802-A	XML schema for PoCv2.0 detailed Discrete Media Transfer Progress Report file: poc_detProgressRep-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_FDCFO]	OMA-SUP-XSD_poc_FDCFO-V2_0-20110802-A	XML schema for Full Duplex Call Follow On Proceed postd Element Working file in XML Schema directory: file: poc_FDCFO-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_FR]	OMA-SUP-XSD_poc_finalReport-V2_0-20110802-A	XML schema for PoCv2.0 Discrete Media Transfer Final Report file: poc_finalReport-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_GAD]	OMA-SUP-XSD_poc_dispatchInd-V2_0-20110802-A	XML schema for Group Advertisement Dispatch Attribute Working file in XML Schema directory: file: poc_dispatchInd-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles/
[POC2_ID]	OMA-SUP-XSD_poc_sessionInvocationDescriptor-V2_0-20110802-A	XML schema for PoCv2.0 Invocation descriptor Working file in XML Schema directory: file: poc_sessionInvocationDescriptor-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_MO_DDF]	OMA-SUP-MO_oma_poc-V2_0-20110802-A	Defines the PoC Management Object Device Description Framework for PoC 2.0 enabler file: oma_poc-v2_0.ddf path:http://www.openmobilealliance.org/tech/omna/omna-dm_mo

Doc Ref	Permanent Document Reference	Description
[POC2_OPR]	OMA-SUP-XSD_poc_optProgressRep-V2_0-20110802-A	XML schema for PoCv2.0 optimized Discrete Media Transfer Progress Report file: poc_optProgressRep-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_PII]	OMA-SUP-XSD_poc_participantInfoInd-V2_0-20110802-A	XML schema for Participant Information Indications Working file in XML Schema directory: file: poc_participantInfoInd-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_RUL]	OMA-SUP-XSD_poc_poc2_0Rules-V2_0-20110802-A	XML schema for PoC V2.0 extensions of PoC User access policy Working file in XML Schema directory: file: poc_poc2_0Rules-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_SET]	OMA-SUP-XSD_poc_poc2_0Settings-V2_0-20110802-A	XML schema for PoCv2.0 Service Settings Working file in XML Schema directory: file: poc_poc2_0Settings-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles
[POC2_SGRP]	OMA-SUP-XSD_poc_poc2_0SharedGroupExt-V2_0-20110802-A	XML schema for PoCv2.0 Shared Groups Working file in XML Schema directory: file: poc_poc2_0SharedGroupExt-v2_0.xsd path: http://www.openmobilealliance.org/tech/profiles

Table 1: Listing of Documents in PoC V2.0 Enabler

6. Conformance Requirements Notation Details

This section is informative.

The ERDEF tables are defined in the following chapters for:

- PoC Client,
- PoC Interworking Service Agent,
- PoC Server performing the Participating PoC Function,
- PoC Server performing the Controlling PoC Function,
- PoC Interworking Service Function,
- PoC Invocation Descriptor,
- UE PoC Box,
- NW PoC Box.

The tables in following chapters use the following notation:

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

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

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

Dependency grammar used in this section is specified in [OMA_SCR_Rules]:

```
TerminalExpression =        ScrReference
/ NOT TerminalExpression
/ TerminalExpression LogicalOperator TerminalExpression
/ " (" TerminalExpression ")"

ScrReference =              ScrItem
/ ScrGroup

ScrItem =  SpecScrName "–" GroupType "–" DeviceType "–" NumericId "-" Status
/ SpecScrName "–" DeviceType "–" NumericId "-" Status

ScrGroup =                  SpecScrName ":" FeatureType
/ SpecScrName "–" GroupType "–" DeviceType "–" FeatureType

SpecScrName = 1*Character;

GroupType = 1*Character;

DeviceType = "C" / "S"; C – client, S – server

NumericId = Number Number Number

Status = "M" / "O"; M - Mandatory, O - Optional

LogicalOperator = "AND" / "OR"; AND has higher precedence than OR and OR is inclusive

FeatureType = "MCF" / "OCF" / "MSF" / "OSF";

Character = %x41-5A;
```

7. ERDEF for PoC - Client Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-POCV1-C-001-M	PoC Client Control Plane	PoCCPSpec_V1: MCF
OMA-ERDEF-POCV1-C-002-M	PoC Client User Plane	PoC_UserPlaneV1: MCF
OMA-ERDEF-POCV1-C-003-O	PoC Client Control Plane	PoCCPSpec_V1: OCF See NOTE 1
OMA-ERDEF-POCV1-C-004-O	PoC Client User Plane	PoC_UserPlaneV1: OCF See NOTE 2
OMA-ERDEF-POCV2-C-005-M	PoC Client Control Plane	POC_CP_V2: MCF
OMA-ERDEF-POCV2-C-006-M	PoC Client User Plane	POC_UP_V2: MCF
OMA-ERDEF-POCV2-C-007-O	PoC Client Control Plane	POC_CP_V2: OCF See NOTE 1
OMA-ERDEF-POCV2-C-008-O	PoC Client User Plane	POC_UP_V2: OCF See NOTE 2
OMA-ERDEF-POCV2-C-009-O	PoC Interworking_Agent	POC IW TS V2: MCF
OMA-ERDEF-POCV2-C-010-O	PoC Interworking_Agent	POC IW TS V2: OCF See NOTE 3
OMA-ERDEF-POCV2-C-011-O	PoC Service Invocation Descriptor	POC ID-UE: MCF

NOTE 1: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix A) of [POC2_CP] shall be adhered to.

NOTE 2: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix A) of [POC2_UP] shall be adhered to.

NOTE 3: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR of [POC2_IWF] shall be adhered to.

Table 2: ERDEF for PoC Client-side Requirements

8. ERDEF for PoC - Server Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-POCV1-S-001-M	PoC Server: Control Plane: Participating PoC Function	PoCCPSpec-PIR: MSF AND PoCCPSpec-PTR: MSF
OMA-ERDEF-POCV1-S-002-M	PoC Server: Control Plane: Controlling PoC Function	PoCCPSpec-CIR: MSF AND PoCCPSpec-CTR: MSF
OMA-ERDEF-POCV1-S-003-M	PoC Server: User Plane: Participating PoC Function	PoC_UserPlaneV1-PPR-S-001:MSF
OMA-ERDEF-POCV1-S-004-M	PoC Server: User Plane: Controlling PoC Function	PoC_UserPlaneV1-CTR: MSF AND PoC_UserPlaneV1-CTB: MSF AND PoC_UserPlaneV1-CME: MSF AND PoC_UserPlaneV1-CMC: MSF AND PoC_UserPlaneV1-CID: MSF AND PoC_UserPlaneV1-CTI: MSF
OMA-ERDEF-POCV1-S-005-O	PoC Server: Control Plane: Participating PoC Function	PoCCPSpec: OSF See NOTE 1
OMA-ERDEF-POCV1-S-006-O	PoC Server: Control Plane: Controlling PoC Function	PoCCPSpec: OSF See NOTE 1
OMA-ERDEF-POCV1-S-007-O	PoC Server: User Plane: Participating PoC Function	PoC_UserPlaneV1: OSF See NOTE 2
OMA-ERDEF-POCV1-S-008-O	PoC Server: User Plane: Controlling PoC Function	PoC_UserPlaneV1: OSF See NOTE 2
OMA-ERDEF-POCV2-S-009-M	PoC Server Control Plane	POC_CP_V2: MCF
OMA-ERDEF-POCV2-S-010-M	PoC Server User Plane	POC_UP_V2: MCF
OMA-ERDEF-POCV2-S-011-O	PoC Server Control Plane	POC_CP_V2: OCF See NOTE 1
OMA-ERDEF-POCV2-S-012-O	PoC Server User Plane	POC_UP_V2: OCF See NOTE 2
OMA-ERDEF-POCV2-S-013-O	PoC Interworking_Function	PoC IW TS V2: MSF
OMA-ERDEF-POCV2-S-014-O	PoC Interworking_Function	PoC IW TS V2: OSF See NOTE 3

NOTE 1: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix F) of [POC2_CP] shall be adhered to.

NOTE 2: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix A) of [POC2_UP] shall be adhered to.

NOTE 3: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR of [POC2_IWF] shall be adhered to.

Table 3: ERDEF for PoC Server-side Requirements

9. ERDEF for PoC - PoC Box Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-POCV2-C-050-O	PoC Box: Control Plane: UE PoC Box	POC_CP_V2: POC_CP-PBO:OCF
OMA-ERDEF-POCV2-C-051-O	PoC Box: User Plane: UE PoC Box	POC_UP_V2: POC_UP-PBO:OCF
OMA-ERDEF-POCV2-S-050-O	PoC Box: Control Plane: NW PoC Box	POC_CP_V2: POC_CP-PBO:OSF
OMA-ERDEF-POCV2-S-051-O	PoC Box: User Plane: NW PoC Box	POC_UP_V2: POC_UP-PBO:OSF
NOTE 1: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix F) of [POC2_CP] shall be adhered to. NOTE 2: Any, All, or None of the optional requirements may be implemented. If any are implemented, then the dependencies implied in the SCR (appendix A) of [POC2_UP] shall be adhered to.		

Table 4: ERDEF for PoC Box Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-ERELD-POC-V2_0-20110802-A	02 Aug 2011	Status changed to Approved by TP: OMA-TP-2011-0274-INP_PoC_V2_0_ERP_for_final_Approval