Enabler Release Definition for Push

Approved Version 2.2 – 09 Aug 2011

Open Mobile Alliance

OMA-ERELD-Push-V2_2-20110809-A

Contents

1. SCOPE 4
2. REFERENCES 5
2.1 NORMATIVE REFERENCES 5
2.2 INFORMATIVE REFERENCES 6
3. TERMINOLOGY AND CONVENTIONS 7
3.1 CONVENTIONS 7
3.2 DEFINITIONS 7
3.3 ABBREVIATIONS 8
4. RELEASE VERSION 2.2 OVERVIEW 9
4.1 VERSION 2.2 FUNCTIONALITY 10
5. DOCUMENT LISTING FOR PUSH V2.2 11
6. OMNA CONSIDERATIONS 12
7. CONFORMANCE REQUIREMENTS NOTATION DETAILS 14
7.1 MINIMUM FUNCTIONALITY DESCRIPTION FOR PUSH 14
8. ERDEF FOR PUSH - CLIENT REQUIREMENTS 15
9. ERDEF FOR PUSH - SERVER REQUIREMENTS 16
APPENDIX A. CHANGE HISTORY (INFORMATIVE) 17
A.1 APPROVED VERSION HISTORY 17

Figures

Figure 1: The Push Framework 9

Tables

Table 1 ERDEF for Push Client-side Requirements 15
Table 2 ERDEF for Push Server-side Requirements 16

1. Scope

The scope of this document is limited to the Enabler Release Definition of Push according to OMA Release process and the Enabler Release specification baseline listed in section 5.

The Push enabler release defines the application level protocols, syntax and behaviours of client and server for the fulfilment of push services. Push service is defined as communication of content toward a client without an explicit request.

2. References

2.1 Normative References

[ERELDDM] "Enabler Release Definition for Device Management version 1.2". Open Mobile Alliance™. OMA-ERELD-DM-V1_2-20060208-C., URL:http://www.openmobilealliance.org/

[PPGService] "Push Proxy Gateway Service Specification". Open Mobile Alliance™. OMA-TS-PPGService-V2_2. URL:http://www.openmobilealliance.org/

[PushCAI] "Push Client - Application Interface Specification". Open Mobile Alliance™. OMA-TS-PushCAI-V1_0. URL:http://www.openmobilealliance.org/

[PushCO] "Cache Operation". WAP Forum™. WAP-175-CacheOp. URL:http://www.openmobilealliance.org/

[PushCO-SIN] "Cache Operaton-Specification Information Note". WAP Forum™. WAP-175_102-CacheOp URL:http://www.openmobilealliance.org/

[PushETR] "Push 2.2 Enabler Test Requirements". Open Mobile Alliance™. OMA-ETR-Push-V2_2 URL:http://www.openmobilealliance.org/

[PushMO] "Push Management Object". Open Mobile Alliance™. OMA-TS-Push_MO-V1_0. URL: http://www.openmobilealliance.org/

[PushMsg] "Push Message Specification". Open Mobile Alliance™. OMA-TS-Push_Message-V2_2. URL:http://www.openmobilealliance.org/

[PushOTA] "Push OTA Protocol Specification". Open Mobile Alliance™. OMA-TS-PushOTA-V2_2. URL:http://www.openmobilealliance.org/

[PushPAP] "Push Access Protocol Specification". Open Mobile Alliance™. OMA-TS-PAP-V2_2 URL:http://www.openmobilealliance.org/

[PushSI] "Service Indication". WAP Forum™. WAP-167-ServiceInd URL:http://www.openmobilealliance.org/

[PushSI-SIN] "Service Indication-Specification Information Note". WAP Forum™. WAP-167_103-ServiceInd URL:http://www.openmobilealliance.org/

[PushSL] "Service Load". WAP Forum™. WAP-168-ServiceLoad URL:http://www.openmobilealliance.org/

[PushSL-SIN] "Service Load-Specification Information Note". WAP Forum™. WAP-168_103-ServiceLoad URL:http://www.openmobilealliance.org/

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

[SCRRULES] “SCR Rules and Procedures”, Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:http://www.openmobilealliance.org/

[SIPPush] “Session Initiation Protocol (SIP) Push”, Open Mobile Alliance™. OMA-ERP-SIP_Push-V1_0. URL:http://www.openmobilealliance.org/

2.2 Informative References

[EMN] "Email Notification" Version 1.0. OMA-Push-EMN-V1_0, Open Mobile Alliance™. URL: http://www.openmobilealliance.org/

[EMNEnabler] "Enabler Release Definition Email Notification" Version 1.0. OMA-ERELD-EMN-V1_0, Open Mobile Alliance™. URL: http://www.openmobilealliance.org/

[OMADICT] “Dictionary for OMA Specifications”, Open Mobile Alliance™, OMA-ORG-Dictionary, URL:http://www.openmobilealliance.org/

[OMNA] "OMA Naming Authority". Open Mobile Alliance™. URL: http://www.openmobilealliance.org/ OMNA.aspx

[PushArch] "Push Architectural Overview". Open Mobile Alliance™. OMA-AD-Push-V2_2 URL:http://www.openmobilealliance.org/

[Push2.1] “Enabler Release Definition for Push Version 2.1”, Open Mobile Alliance™. OMA-ERELD-Push-V2_1. URL: http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope”, "Release Version Overview" and “Conformance Requirements Notation Details”, 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 [SCRRULES].

3.2 Definitions

Enabler Release	Collection of specifications that combined together form an enabler for a service area, e.g. a download enabler, a browsing enabler, a messaging enabler, a location enabler, etc. The specifications that are forming an enabler should combined fulfil a number of related market requirements.
Minimum Functionality Description	Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release
Push Access Protocol	A protocol used for conveying content that should be pushed to a client, and push related control information, between a Push Initiator and a Push Proxy/Gateway
Push Client –Application Interface	A device-internal interface provided by Push Clients, via which Push applications can register for Push services with application-specified options, and receive notifications of Push events.
Push Framework	The entire WAP push system. The push framework encompasses the protocols, service interfaces, and software entities that provide the means to push data to user agents in the WAP client.
Push Initiator	The entity that originates push content and submits it to the push framework for delivery to a user agent on a client.
Push OTA Protocol	A protocol used for conveying content between a Push Proxy/Gateway and a certain user agent on a client.
Push Proxy Gateway	A proxy gateway that provides push proxy services.

3.3 Abbreviations

CO	Cache Operation
DTD	Document Type Definition
EMN	Email Notification
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition
OMA	Open Mobile Alliance
OMNA	OMA Naming Authority
OTA	Over The Air
OTA-HTTP	Over the Air Protocol Variant (HTTP)
OTA-WSP	Over the Air Protocol Variant (Wireless Session Protocol)
OTA-SIP	Over the Air Protocol Variant (Session Initiation Protocol)
PAP	Push Access Protocol
PPG	Push Proxy Gateway
PI	Push Initiator
SI	Service Indication
SIP	Session Initiation Protocol
SL	Service Load

4. Release Version 2.2 Overview

This document outlines the Enabler Release Definition for Push and the respective conformance requirements for clients and servers implementing claiming compliance to it as defined by Open Mobile Alliance across the specification baseline.

A push operation is accomplished by allowing a *Push Initiator* (PI) to transmit *push content* and *delivery instructions* to a *Push Proxy Gateway* (PPG), which delivers the push content to the Push Client according to the delivery instructions. The Push Client subsequently delivers the push content to an OMA enabler user-agent or application in the device (hereafter referred to as the "client application"). The PPG and Push Client are the two architectural entities specified by the OMA Push enabler.

The PI is typically an application that runs on an ordinary web server. It communicates with the PPG using the *Push Access Protocol* (PAP). The PPG uses the *Push Over-The-Air* (OTA) *Protocol* to deliver the push content to the Push Client. Note the name Push-OTA is based upon the historical focus of OMA Push on mobile data services, but the protocol is also usable over wired connections.

Client applications may be OMA enabler user agents (e.g. browsers, multimedia messaging clients, instant messaging clients, etc) or other device-resident applications that are supported by the Push Client.

Figure 1 illustrates the push framework:

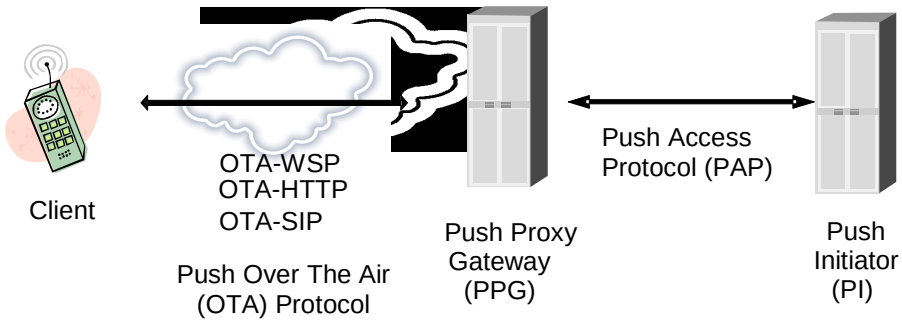

Figure 1: The Push Framework

PAP is based on standard Internet protocols; XML is used to express the delivery instructions, and the push content can be any MIME media type. These standards help make Push flexible and extensible.

As mentioned, the **PPG** is responsible for delivering the push content to the Push Client. In doing so it potentially may need to translate the Push Client address provided by the PI into the Push Client's network address, transform the push content to adapt it to the Push Client's capabilities, store the content if the Push Client is currently unavailable, etc. The PPG does more than deliver messages. For example, it may notify the PI about the final outcome of a push submission and optionally handle cancellation, replace, or Push Client capability requests from the PI.

The **OTA** protocol provides both "connectionless" and "connection-oriented" services. Connection-oriented service refers to a service context in which the Push Client has established a specific transport layer "connection" with the PPG, for reception of Push-based services. Connection-oriented service is supported via the WAP1 Wireless Session Protocol (WSP) as the OTA-WSP Push protocol, via the WAP2 HTTP-based OTA-HTTP Push protocol, and via the SIP-based OTA-SIP Push protocol. Connectionless service does not depend upon a pre-established/specific connection between the Push Client and PPG, and is supported via OTA-WSP and OTA-SIP.

The push specification suite also encompasses content types which can be pushed. These specifications define the syntax, semantics and transport optimized forms of the content types. The content types are **Service Indication** (SI), **Service Load** (SL), **Cache Operation** (CO) and **Email Notification** (EMN).

4.1 Version 2.2 Functionality

This enabler release continues on the work of the OMA in the area of Push and is an extension of the Push 2.1 Enabler release [Push2.1], defining push security mechanisms and OTA-SIP as a new Push-OTA protocol variant. An aspect of the defined push security mechanisms depend on device management object extension defined in [PushOTA] which depends on the OMA Device Management Enabler [ERELDDM].

In addition this enabler release definition defines a minimum level of conformance for segmentation and re-assembly for SMS based Push, as well as push initiator guidelines on the most efficient way to use this form of push delivery mechanism.

5. Document Listing for Push V2.2

This section is normative.

Doc Ref	Permanent Document Reference	Description
Requirement Document		
[Push_RD]	OMA-RD-PushSecurity-V1_0-20110809-A	Push Requirements
Architecture Document		
[PushArch]	OMA-AD-Push-V2_2-20110809-A	Push Architecture
Technical Specifications		
[PPGService]	OMA-TS-PPGService-V2_2-20110809-A	Push Proxy Gateway Service Specification
[PushCAI]	OMA-TS-PushCAI-V1_0-20110809-A	Push Client – Application Interface Specification
[PushPAP]	OMA-TS-PAP-V2_2-20110809-A	Push Application Protocol (PAP) Specification
[PushOTA]	OMA-TS-PushOTA-V2_2-20110809-A	Push Over the Air (OTA) Specification
[PushMsg]	OMA-TS-Push_Message-V2_2-20110809-A	Push Message Specification
[PushMO]	OMA-TS-Push-MO-V1_0-20110809-A	Push Management Object Specification
[PushSI]	WAP-167-ServiceInd-20010731-a	Push Service Indication Specification
	WAP-167_103-ServiceInd-20010926-a	Specification Information Note
[PushSL]	WAP-168-ServiceLoad-20010731-a	Push Service Load Specification
	WAP-168_103-ServiceLoad-20010816-a	Specification Information Note
[PushCO]	WAP-175-CacheOp-20010731-a	Push Cache Operation Specification
	WAP-175_102-CacheOp-20010816-a	Specification Information Note
Supporting Files		
[Push_pap]	OMA-SUP-DTD_pap-V2_2-20110809-A	Push Access Protocol DTD Working file in DTD directory: file: pap_2.1.dtd path: http://www.openmobilealliance.org/tech/dtd/
[Push_si]	OMA-SUP-DTD_si-V1_0-20110405-A	Service Indication DTD: Working file in DTD directory: file: si_1.0.dtd path: http://www.openmobilealliance.org/tech/dtd/
[Push_sl]	OMA-SUP-DTD_sl-V1_0-20110405-A	Service Load DTD Working file in DTD directory: file: sl_1.0.dtd path: http://www.openmobilealliance.org/tech/dtd/
[Push_co]	OMA-SUP-DTD_co-V1_0-20110405-A	Cache Operation DTD Working file in DTD directory: file: co_1.0.dtd path: http://www.openmobilealliance.org/tech/dtd/
[Push_MO_push_DDF]	OMA-SUP-MO_Push_DDF-V1_0-20110809-A	Push Device Management Object Description DTD Working file in DTD directory: file: dm_ddf-v1_2.dtd path: http://www.openmobilealliance.org/tech/dtd/

Email Notification [EMN] is managed under a separate enabler release, OMA Email Notification [EMNEnabler].

6. OMNA Considerations

Push 2.2 includes the following OMNA items:

1. URN-based Management Object Identifiers (*new in Push 2.2*)
    a. urn:oma:mo:oma-push:1.0
2. PUSH Application Ids
    a. WAP Push Session Initiation Application (SIA)
        i. x-wap-application:push.sia
    b. WML User Agent (browser)
        i. x-wap-application:wml.ua
3. Media (MIME) Types
    a. Service Indication
        i. text/vnd.wap.si
        ii. application/vnd.wap.sic
    b. Service Loading
        i. text/vnd.wap.sl
        ii. application/vnd.wap.slc
    c. Cache Operation (*experimental: not yet registered with IANA)*
        i. text/vnd.wap.co
        ii. application/vnd.wap.coc
    d. Session Initiation Application (*experimental: not yet registered with IANA)*
        i. application/vnd.wap.sia
    e. Push message encapsulation
        i. application/vnd.oma.push *(new in Push 2.2)*
4. DOCTYPE Declarations
    a. Service Indication
        i. -//WAPFORUM//DTD SI 1.0//EN
    b. Service Loading
        i. -//WAPFORUM//DTD SL 1.0//EN
    c. Cache Operation
        i. -//WAPFORUM//DTD CO 1.0//EN
    d. Push Access Protocol
        i. -//OMA//DTD PAP 2.1//EN

ii. -//OMA//DTD PAP 2.2//EN

5. Document Type Definitions
    a. Push Management Object
        i. http://www.openmobilealliance.org/Tech/DTD/push_ddf-v1_2.dtd (*new in Push 2.2*)
    b. Service Indication
        i. http://www.openmobilealliance.org/DTD/si_1.0.dtd
    c. Service Loading
        i. http://www.openmobilealliance.org/DTD/sl_1.0.dtd
    d. Cache Operation
        i. http://www.openmobilealliance.org/DTD/co_1.0.dtd
    e. Push Access Protocol
        i. http://www.openmobilealliance.org/Tech/DTD/pap_2.1.dtd
        ii. http://www.openmobilealliance.org/Tech/DTD/pap_2.2.dtd (*new in Push 2.2*)
6. IMS Communication Resource Identifier (ICSI)
    a. urn:urn-xxx:3gpp-service.ims.icsi.omapush (*this URN value is not yet registered with 3GPP, per http://www.3gpp.org/Uniform-Resource-Name-URN-list*)

7. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

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

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

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

- M means the **Item** is mandatory for the class
- O means the **Item** is optional for the class
- NA means the **Item** is not applicable for the class

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

7.1 Minimum Functionality Description for Push

This section is informative.

The minimum functionality required for push service is divided into client and server requirements.

On the server side it is a minimum that the following is supported:

- Push Access Protocol, mandatory elements
- Push proxy gateway service mandatory service
- Service Indication content type
- Over the Air – Wireless Session Protocol Connectionless Push Service.

Connection-Orientated push, if supported on the server, must be one or more of the ***OTA-WSP*** type, the ***OTA-HTTP*** type, or the ***OTA-SIP*** type as defined in [PushOTA].

On the client side it is a minimum that the following is supported:

- Service Indication content type
- Over the Air – Wireless Session Protocol Connectionless Push Service
- Support for 'Whitelists' as defined in section 8.3 [PushOTA]

Connection-Orientated push, if supported on the client, must be one or more of the ***OTA-WSP*** type, the ***OTA-HTTP*** type, or the ***OTA-SIP*** type as defined in [PushOTA].

The changes between the previous definition of Push [Push2.1] are amendments to:

- enhance the ***security*** of the push request and to address unwanted push messages at the Push Client. The push specifications have been enhanced to increase the number of verification steps that the client takes prior to processing or presenting a received push message. In addition there are additional parameters which have been added to the HTTP content type header in order that the push client can authenticate the source of the content received via push.
- extend the Push-OTA with OTA-SIP as a new protocol variant, based upon [SIPPush]

8. ERDEF for Push - Client Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-Push-C-001	Push Client	M	[PushOTA]: MCF AND [PushMsg]: MCF AND [PushSI]: MCF

Table 1 ERDEF for Push Client-side Requirements

9. ERDEF for Push - Server Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-Push-S-001	Push Server	M	[PAP]:MCF AND [PPGService]:MCF AND [PushOTA]: MCF AND [PushMsg]: MCF AND [PushSI]: MCF AND

Table 2 ERDEF for Push Server-side Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
Approved Version: OMA-ERELD-Push-V2_2-20110809-A	09 Aug 2011	Status changed to Candidate by TP: OMA-TP-2011-0282-INP_Push_V2_2_ERP_for_Final_Approval