Enabler Release Definition for Browsing

Candidate Version 2.2 – 09 Jun 2004

Open Mobile Alliance

OMA-ERELD-Browsing-V2_2-20040609-C

Contents

1. Scope

The scope of this document is limited to the Enabler Release Definition (ERELD) of Browsing V2.2 according to OMA Release process and the Enabler Release specification baseline listed in section 5.

The Browsing enabler defines application-level protocols, semantics, syntax and user agent behaviours to provide a browsing capability suitable for mobile and wireless handheld devices.

2. References

2.1 Normative References

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

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[W-HTTP] "WAP Wireless Profiled HTTP", WAP Forum™. WAP-229-HTTP. URL:http://www.openmobilealliance.org/

[WSP] "Wireless Session Protocol", WAP Forum™. WAP-230-WSP. URL:http://www.openmobilealliance.org/

[WTP] "Wireless Transaction Protocol Specification", WAP Forum™. WAP-224-WTP. 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” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

The formal notation convention used in sections **Error! Reference source not found.** and 9 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [IOPP].

3.2 Definitions

Client - a device (or application) that initiates a request for connection with a server.

Content - synonym for data objects.

Content Format (or Format) - actual representation of content.

Deprecated - A deprecated feature (e.g. specification, element or attribute) is one that has been outdated by a newer feature. Deprecated features are defined in the specification and are clearly marked as deprecated. Deprecated features may become obsolete in a future version.

Device - a network entity that is capable of sending and receiving packets of information and has a unique device address. A device can act as both a client and a server within a given context or across multiple contexts. For example, a device can service a number of clients (as a server) while being a client to another server.

ECMAScript – a scripting language produced and managed by the European Computer Manufacturers Association (ECMA) that provides a common scripting language for the computer industry.

Enabler Release – a 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.

Gateway (or WAP Gateway) – a server which acts as an intermediary for some other server. A gateway performs protocol transformation as well as encoding/decoding content.

Host Object – ECMAScript objects provided by the user agent for the purpose of interaction with the loaded document.

Hypermedia Transfer - The hypermedia transfer services provides for the transfer of self-describing hypermedia resources. The combination of WSP (Wireless Session Protocol) [WSP] and WTP (Wireless Transaction Protocol) [WTP] provide the hypermedia transfer service over secure and non-secure datagram transports over datagram-based protocol stack. The W-HTTP (Wireless Profiled Hypertext Transfer Protocol) [W-HTTP], a profile of HTTP/1.1 [HTTP/1.1] provides the hypermedia transfer service over secure and non-secure connection-oriented transports over connection-oriented protocol stack.

Origin Server - the server on which a given resource resides or is to be created. Often referred to as a web server or an HTTP server.

Media type - a MIME media type or an identifier for a given data type.

Minimum Functionality Description – Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.

PC Browser - an existing Web browser that already supports text/html.

Resource - a network data object or service that can be identified by a URL. Resources may be available in multiple representations (e.g., multiple languages, data formats, size, and resolutions) or vary in other ways.

Server - a device (or application) that passively waits for connection requests from one or more clients. A server may accept or reject a connection request from a client. Also Origin Server.

Terminal - a device typically used by a user to request and receive information. Also called a mobile terminal or mobile station.

User - a user is a person who interacts with a User Agent to access a resource.

WAE User Agent (or User Agent) - a User Agent is any software or device that interprets markup and scripting languages or other content. This may include textual browsers, voice browsers, search engines, etc.

WAE version – the version of the WAE User Agent. The version of the WAE User Agent may be uniquely identifiable by the WAP version, e.g. WAP version 1.1 contains WAE version 1.1, or it may be a feature of the WAP version in which case the WAE versioning mechanisms are used to determine the WAE User Agent version.

WAP1 – WAP Version 1, nominally the latest point release, e.g. WAP V1.2.1, unless otherwise noted.

WAP2 - WAP Version 2. When used as a prefix, it indicates that something is compliant to the WAP Version 2 conformance requirements, e.g., a WAP2 client is a client that fulfils all the requirements for a user agent of WAP Version 2. WAP2 content is content with a media type specified in WAP Version 2.

WAP Proxy - an intermediary program which acts as both a server and a client for the purpose of making requests on behalf of other clients. Requests are serviced internally or by passing them on, with possible translation, to other servers. It may provide functions of protocol enhancement, transcoding or any number of other optimisation or transformation functions and may be associated with any gateways, proxies or servers being used in the deployment architecture. WAP gateway is one of the optional functionalities of WAP proxy.

WML - The Wireless Markup Language is a hypertext markup language used to represent information for delivery to a narrowband device, e.g., a phone.

WMLScript - A scripting language used to program the mobile device. WMLScript is an extended subset of the ECMAScript scripting language.

XHTML – The W3Cs codification of HTML version 4.01 in an XML.

XML - the Extensible Markup Language is a World Wide Web Consortium (W3C) standard for Internet markup languages, of which WML is one such language. XML is a restricted subset of SGML.

vCalendar - Internet Mail Consortium (IMC) electronic calendar record.

vCard - Internet Mail Consortium (IMC) electronic business card.

3.3 Abbreviations

CSS	Cascading Style Sheets
DRM	Digital Rights Management
ECMA	European Computer Manufacturer Association
EFI	External Functionality Interface
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition
ESMP	ECMAScript Mobile Profile
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol [HTTP/1.1]
OMA	Open Mobile Alliance
UAProf	User Agent Profile
W3C	World Wide Web Consortium
W-HTTP	Wireless Profiled HTTP
WML	Wireless Markup Language (WML1 or WML2)
WML1	Wireless Markup Language Version 1.3
WML2	Wireless Markup Language Version 2.0
WWW	World Wide Web
WSP	Wireless Session Protocol
WAP	Wireless Application Protocol
WAE	Wireless Application Environment. Unless otherwise stated it refers to this version.
WAE20	Wireless Application Environment version 2.0 [WAE20]
WCSS	Wireless Cascading Style Sheets (also previously know as WAP CSS)
WTA	Wireless Telephony Application

WTAI	Wireless Telephony Application Interface (an API defined in WTA
WBMP	Wireless BitMaP
XHTML	Extensible HyperText Markup Language

4. Introduction

This document outlines the Enabler Release Definition for Browsing V2.2 and the respective conformance requirements for clients and servers implementing claiming compliance to it as defined by Open Mobile Alliance across the specification baseline.

Browsing V2.2 provides OMA browsing capability for mobile and wireless handheld devices and the any necessary or optional supporting network services which may be provided on a gateway or proxy. Browsing V2.2 uses much of the internet technology used in today's PC Browsers to access content on the WorldWide Web (WWW) but limits the specified profiles of this technology to that appropriate to the constrained resources and user interface of mobile and wireless handheld devices, e.g. reduced memory, processing power, communications bandwidth, display and user input capabilities, including some extensions to improve the user experience.

Browing V2.2 builds on the browsing feature defined in Browsing 2.1 [Browsing21] by providing a significant minimum level of support for presentational control when the Wireless Cascading Style Sheets specification V1.1 [WCSS] is supported. The intent is that devices will support style, and in particular [WCSS], unless it is impractal for that class of device, e.g. it has insufficient user interface capabilities to utilise it. This will provide content providers and service providers with better and consistent control over the presentation of their content to users of devices supporting [WCSS] without having to tailor content to the capabilities of individual devices.

As with the Browsing V2.1 particular attention has been placed on enabling backwards compatibility, thereby allowing new devices conforming to the Browser enabler V2.2 to access legacy content and services where the specified set of features to facilitate such access are provided by the devices or supporting network based features. Devices conformant to [Browsing 2.1] will also be able to access content intended for Browsing V2.2 devices but the presentational control will depend on the devices' level of support for WCSS V1.0 [WCSS10].

The suite of specifications defining Browsing V2.2 defines the application-level protocols, semantics, syntax, content formats, user agent behaviour, and the use of hypermedia transfer protocols required to achieve consistent function and interoperability of services.

The Browsing V2.2 enabler maintains the approach of using the Wireless Application Environment [WAESpec] specification to define which markup languages, and script languages, content types and formats and other features of the browser are supported, the use of the hypermedia feature in the WAP 2.0 architecture [WAPArch], and whether they are mandatory or optional. Further it enables extensibility to a number of other features.

Browsing 2.2, or the WAE User Agent, supports the following features directly through the WAE Specification [WAESpec], which is updated in this enabler release:

- Markup language based content to be rendered to the user of the device;
    - WML V1.3 [WML1], WML V2.0 [WML2], XHTMLMP V1.0[XHTMLMP10] and XHTMLMP1.1[XHTMLMP] are specified. The XHTMLMP specification also provides HTML rendering capability within the limit of the device's capabilities.
- Scripting language augmentation of the markup content to allow extended functionality and user experience;
    - WMLScript [WMLScript], with its associated WMLScript Library [WMLStdLib], and
    - ECMAScript Mobile Profile [ESMP] along with a well-known set of host objects.
- Style capabilities to enhance the presentation of markup on devices supporting it.
    - The style is provided by the Wireless Cascading Style Sheets [WCSS] V1.1 specification , one of the updated specifications in this enabler release. [WCSS] is a profile of the W3C's CSS2 [CSS2] and being inspired by the CSS2 mobile profile [CSSMP] extended with some other desirable features not available in [CSS2] to suite the needs of the mobile Browsing environment. [WCSS] provides significantly more content styling capabilities in devices providing only minimum support for [WCSS] compared to that available in [Browsing 2.1] or the browsing feature of WAP 2.0 [WAE20].

- Image and other content support;
    - WBMP is a unique, efficient, monochrome format for Browsing V2.2 devices and predecessor devices but other types are supported, the types dependent on the device. WBMP is defined in the WAE Media Types specification [WAEMedia].
    - Vcard[VCARD] and Vcalendar[VCAL] are supported formats for the exchange of electronic business cards and calendar information
- Local caching of content to improve user experience and reduce network usage.[CacheMod];
- HTTP State Management [HTTPSM], or cookies in common terminology, to provide the means to convey state and state information between user and application server, e.g. session identifiers, time and date information of last access, recent enquiries to that application, to aid the user's access to that application;
- Pictograms [PICT] to provide an enhanced user experience through the use of small images to augment or even replace textural information, e.g. the use of common weather symbols to illustrate the current weather;

and in which combinations and whether they are mandatory or optional.

The Browsing V2.2 enabler also supports optional extensions to this basic browsing environment, namely

- Download and DRM ERELD ([DL-ERELD] & [DRM-ERELD]
    - Download and DRM provide a common means to download content over the air and manage the lifecycle of the content using Digital Rights Management with the rights expressed in a Rights Expression Language.
- External Functionality Interface ERELD [EFI-ERELD]
    - EFI extends the browser to include other hardware or software elements through the use of markup and script interfaces. The discovery of these elements is enabled thereby allowing them to be used, e.g. start or stop another application, retrieve a digital photograph from a camera, etc. EFI support is updated to version 1.1 in this enabler release.
- Push ([PushArch], [CacheOp], [PushMessage], [PushOTA], [PAP], [PPGService], [ServiceInd], [ServiceLoad])
    - PUSH provides an alert mechanism with the ability to have the alert provide a link to content which is subsequently pulled using the browser
- MMS ERELD [MMS-ERELD]
    - The Multimedia Messaging Service (MMS) provides the means to send and receive rich media messages and uses Push for the alert mechanism.
- Synchronisation [Sync]
- Application level signing of content
    - This is provided through the use of scripting extensions of the basic scripting environment by the ECMA Script Cypto Object [ESMPCrypto] and WMLScript Crypto Library [CryptoLib] features
- WBXML [WBXML]
    - WBXML is a compact format used for WAP Version 1.x browsers and still supported for other features though not required for the Browser per se.
- Wireless Telephony Application Interface [WTAI]
    - The Public Wireless Telephony Application Interface (WTAI) [WTAI] support allows applications to utilise a basic set of telephony features, e.g. make a call.

- Persistent Storage [PSTOR]
    - This provides a means to store data objects locally, personal details, applications, etc., within a device for use by applications and allows improved user experience

Features such as Provisioning, [ProvArch], [ProvCont] and [ProvUAB], and UAPROF [UAPROF] are not specifically called out but are related and presented in the [WAESpec].

5. Enabler Release Specification Baseline

This section is normative.

The following list of specifications form the total core Browsing V2.2 Enabler Release, though a given device or proxy or server may support a valid subset of these specifications and the features contained within those specifications. The actual minimum profile for a device is defined in section **Error! Reference source not found.** "ERDEF for Browsiing V2.2 – Client Requirements". The minimum profile for the proxy in section 9 "ERDEF for Browsing V2.2 – Server Requirements". A description of the minimum browsing service being in section **Error! Reference source not found.** "Minimum Functionality Description for Browsing V2.2".

"Wireless Application Environment, Version 2.2" [WAE]

"WAE Media Types" [WAEMedia]

"XHTML Mobile Profile Version 1.1"[XHTMLMP]

"XHTML Mobile Profile Version 1.0" [XHTMLMP10]

"Wireless Markup Language Version 1.3" [WML1]

"Wireless Markup Language Version 2.0" [WML2]

"ECMAScript Mobile Profile Version 1.0" [ESMP]

"WMLScript Language" [WMLScript]

"WMLScript Standard Libraries" [WMLStdLib]

"Wireless Cascading Style Sheet V1.1" [WCSS]

"User Agent Caching Model" [CacheMod]

"HTTP State Management" [HTTPSM]

"Wireless Binary eXtended Markup Language" [WBXML]

"WMLScript Crypto Library" [CryptoLib]

The following enablers and specifications form non-core extensions to the core Browsing V2.1 Enabler Release or optional additional enablers or features which have some dependency on the Browsing V2, 1 Enabler Release.

"Cypto Object for the ECMAScript Mobile Profile" [ESMPCrypto]

"Enabler Release Definition for Download Version 1.0" [DL-ERELD]

"Enabler Release Definition for DRM Version 1.0" [DRM-ERELD]

"Enabler Definition for EFI V1.1 [EFI-ERELD]

"Enabler Release Definition for MMS Version 1.1" [MMS-ERELD]

"Persistent Storage", [PSTOR]

"Synchronisation", [Sync]

"Wireless Telephony Application Interface", [WTAI]

Push "Push Architecture Overview", [PushArch]
"Push OTA Protocol", [PushOTA]
"Push Access Protocol" [PAP]
"Push Proxy Gateway Service", [PPGService]
"Push Message", [PushMessage]
"WAP Service Indication", [ServiceInd]
"WAP Service Loading", [ServiceLoad]
"WAP Cache Operation", [CacheOp]

"WAP Pictogram", WAP-213-WAPInterPic.

6. Minimum Functionality Description for Browsing V2.2

This section is informative

The minimum functionality description for the Browsing Version 2.2 enabler release is the support for the minimum requirements of the "Wireless Application Environment, Version 2.2" [WAE], and the HTTP State Management specification [HTTPSM]. This provides a minimum browser experience without any of the optional extra features, i.e. no Style, images, Vcard, or Vcalendar from the core browser features and no optional enablers or specifications as listed in section 5.

The minimum functionality is the minimum set of requirements from:

- XHTML Mobile Profile V1.1 for renderable content
- ECMAScript Mobile Profile
- User Agent Caching Model
- Behaviour of the user agent during navigation between displayable pages of content
- Content retrieval using HTTP semantics and where HTTPS semantics are used via a secure session. The HTTP semantics are used via the Hypermedia Transfer service as defined in [WAPArch].
- General behaviour of the Browser in its use of protocols, supported media types etc.
- WBMP Images support if the device supports graphics
- HTTP State Management (mandated through this document)

WCSS should be supported in the minimum requirements for a Browsing Version 2.2 comformant implementation unless it is impractical to do so for a class of device, i.e. the device has insufficient user interface capabilities which prevents its meaningful use.

7. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

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

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

Status:
Entry in this column MUST accurately reflect the architectural status of the **Item** in question.
- M means the **Item** is mandatory for the class
- O means the **Item** is optional for the class
- NA means the **Item** is not applicable for the class

Requirement:
Expression in the column MUST be a valid TerminalExpression according to [10PProc] and it MUST accurately reflect the architectural requirement of the **Item** in question.

8. ERDEF for Browsing V2.2 - Client Requirements

This section is normative.

Table 1 ERDEF for Browsing V2_2 Client-side Requirements

Item	Feature / Application	Status	Requirement
OMA-ERDEF-BROWSING-C-001	Browsing V2.2 Client	M	WAESpec:MCF AND HTTPSM:MCF

9. ERDEF for Browsing V2.2 - Server Requirements

This section is normative.

Table 2 ERDEF for Browsing V2_2 Server-side Requirements

Item	Feature / Application	Status	Requirement
OMA-ERDEF-BROWSING-S-001	Browsing V2.2 Server	M	WAESpec:MCF AND HTTPSM:MCF

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No previous version within OMA

A.2 Draft/Candidate Version 2.2 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-ERELD-Browsing-V2_2	20 Jun 2003	All	Initial draft formed with CB based on OMA-ERELD-Browsing-V2_1. Main changes were the introduction of WCSS V1.1 and change to EFI V1.1 in the references.
	16 Jul 2003	Various	Updated draft
	27 Nov 2003	Template,	Change template to 20030912 vesion. Update section 4 to highlight changes from Browsing 2.2. Correct [IOPProc] citation in section 7. Correct reference to IOPProc by removing date. Correct title of [Browsing21] in section 2.1.
	01 Feb 2004	n/a	Editorial changes to references: MMS V1.1 to V1.2 IOPProc V1.0 to V1.1 WAP-234 to DS V1.1.2 with minor changes to text
	02 Feb 2004	n/a	Editorial change re running header date and year in copyright statement
Candidate Version OMA-ERELD-Browsing-V2_2	09 Jun 2004	n/a	Status changed to Candidate by TP TP ref # OMA-TP-2004-0190-Browsing-V2_2-for-Candidate