Specification of WAP Conformance Requirements

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Wireless Application Protocol
WAP-221-CREQ-20010425-a

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Document History	
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1. Scope

This document provides the rules and notation for specifying WAP conformance requirements. The rules cover specification of Static Conformance Requirements (SCR) for each specification and the Class Conformance Requirements (CCR) for each WAP conformance release, and have the expressive power to capture inter-specification conformance requirement dependencies.

All WAP specifications having Static Conformance Requirements MUST provide a normative reference to this document.

2. References

2.1. Normative References

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

[RFC2234] "Augmented BNF for Syntax Specifications: ABNF". D. Crocker, Ed., P. Overell. November 1997. URL:http://www.ietf.org/rfc/rfc2234.txt

2.2. Informative References

[ISO9646] "OSI Conformance Testing Methodology and Framework for Protocol Recommendations for ITU-T Applications – Implementation Conformance Statements", ITU-T Recommendation X.296, 11/95. Can be ordered from URL:http://www.ansi.com.

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”, are normative, unless they are explicitly indicated to be informative.

3.2. Definitions

Class Conformance Requirements – Define the list of features that are mandatory and optional for support by an implementation for conformance as a certain class of device in a WAP conformance release.

Static Conformance Requirements – Define the list of features that are mandatory and optional for support by an implementation for conformance to a given specification.

WAP Certification – The process by which implementations can get certified as being a certain class of device for a given WAP conformance release.

WAP Conformance Release – A rolled up set of WAP specifications that implementations can demonstrate conformance to. Different classes of devices are defined within a conformance release for implementations to claim conformance to.

3.3. Abbreviations

ABNF	Augmented Backus-Naur Form
CCR	Class Conformance Requirements
ICS	Implementation Conformance Statement
SCR	Static Conformance Requirements
WAP	Wireless Application Protocol

4. SCR, CCR and ICS

WAP certification requires that the conformance requirements for a WAP conformance release are specified in an unambiguous manner with explicit dependencies and validation rules for the requirements such that implementations can be statically validated for conformance prior to testing. Various documents and systems used for this purpose are discussed next.

4.1. SCR

Static Conformance Requirements (SCR) enable specification of conformance requirements for each WAP specification. The SCR for a given specification defines the list of mandatory and optional features of the specification to be supported by an implementation conformant to that specification.

The mandatory features represent the minimum set of features that facilitate usability and interoperability of an implementation conforming to the given WAP specification. As an example, the connect PDU for WSP needs to be defined as a mandatory feature, since otherwise, a WSP connection cannot be established and will prevent interoperability. Similarly, if the “A” element is not a mandatory feature, a WML user agent is not very useful.

An SCR needs to be carefully designed to have the appropriate resolution in the list of features it contains relative to the specification at hand. While a mandatory feature is likely to reference a section of the specification containing a MUST support feature, enumerating each and every specification text having a MUST in it as a SCR line item feature would probably be too much resolution. Similar comment applies for optional features, i.e., they are likely to correspond to SHOULD or MAY support features in the specification, but each SHOULD or MAY text in a specification would not be appropriate for the SCR. Section 8.5 of [ISO9646] provides some guidelines for protocol stack related elements that would be appropriate as SCR line items.

A SCR for a given WAP specification also expresses dependencies on other WAP specifications. A SCR feature of a given WAP specification can indicate that SCR features from other WAP specifications are required to be implemented, irrespective of whether the SCR of those specifications mark those features to be mandatory or optional for an implementation. This enables construction of a dependency hierarchy of features across WAP specifications, and validation of a given implementation as having all the inter-dependent features required to make it conformant to a given WAP conformance release.

4.2. CCR

Class Conformance Requirements (CCR) enable specification of conformance requirements for each class of device in a WAP conformance release. The WAP Forum defines various classes of client and server devices for each conformance release. The classes represent different profiles of higher level features that a device can claim to support.

The mandatory higher level features of a given class represent the minimum set of features that promote interoperability among that class of devices. As an example, a class of data profile device which requires basic browsing (but no telephony) as a mandatory higher level feature can be defined for a WAP conformance release.

4.3. ICS

Implementation Conformance Statement (ICS) is a statement of the capabilities and options that have been implemented so that an implementation can be tested for conformance against relevant requirements only. This translates to an implementation indicating the set of mandatory and optional features it supports for each specification and class in a conformance release.

An ICS is reviewed during WAP certification to ensure that all mandatory features are supported. In addition, for each supported feature (mandatory or optional) static review checks whether all features required by it (i.e., features it depends on) are also supported.

The above concepts of SCR, CCR and ICS have been adapted from similar concepts of SCR and Profile ICS defined and discussed in [ISO9646]. Section 9 in [ISO9646] defines a notation for expressing conformance requirements and

dependencies between them. However, since the ISO9646 notation allows for use of natural language prose, the process of statically reviewing the Profile ICS needs to be manual if ISO9646 notation is used.

The rest of this document specifies the rules for specifying the SCR and CCR for WAP. In particular, unlike ISO9646, a machine-readable notation is defined such that it can be used in an online WAP ICS system for automated static validation of the requirements and dependencies. Note that the online WAP ICS system may ask for additional extra testing related information (e.g. Frequencies for bearer support, WTLS encryption algorithm) that is needed over and above CCR and SCR information to configure test sessions.

4.4. SCR Rules

The SCR for a given WAP specification MUST be included in the specification itself, in a separate and clearly identifiable appendix titled “Static Conformance Requirements”.

The SCR appendix MUST NOT contain anything other than one or more SCR table(s).

Each SCR table MUST have a title and MUST have only the following columns:

- Item : Identifier for a feature. It MUST be of type ScrItem in the dependency grammar in Section 5.
- Function : Short description of the feature.
- Reference : Section(s) of the specification(s) with more details on the feature.
- Status : Whether support for the feature is mandatory or optional. MUST use “M” for mandatory support and “O” for optional support in this column.
- Requirement : Other features required by this feature, independent of whether those other features are mandatory or optional. The notation in the dependency grammar in Section 5 MUST be used for this column when other features are required, else the column MUST be left empty.

Each SCR table SHOULD be used to represent related SCR entries (e.g. create tables according to the system component such as device, proxy, origin server etc. to which they apply).. For specifications involving client and server features, the client related SCR features MUST be in separate SCR table(s) from the server related SCR features.

4.5. CCR Rules

The CCR for each WAP conformance release MUST be specified in a separate document.

The different classes of devices for a CCR MUST be identified in CCR table(s) with the following columns:

- Class : Class of device. The different classes of devices for a WAP conformance release MUST be identified elsewhere in the CCR.
- Status : Whether support for the class is mandatory or optional. MUST use “M” for mandatory support and “O” for optional support in this column.
- Requirement : The set of features that are required to be supported by a given device to be of this class. The notation in the dependency grammar in Section 5 MUST be used for this column when other features are required, else the column MUST be left empty.

Separate CCR tables MUST be used for client and server devices.

5. Dependency Grammar

This section describes the dependency grammar notation to be used in the Requirement column of the SCR and CCR tables using ABNF [RFC2234].

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

ScrReference = ScrItem
             / ScrGroup

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

ScrGroup = SpecScrName ":" FeatureType

SpecScrName = 1*Character       ; See Section 5.1

GroupType = 1*Character         ; See Section 5.3

DeviceType = "C" / "S" / "ICC"  ; C – client, S – server, ICC – integrated circuit card

NumericId = Number Number Number

LogicalOperator = "AND" / "OR"  ; AND has higher precedence than OR

FeatureType = "MCF" / "OCF" / "MSF" / "OSF" / "MICCF" / "OICCF" ; See Section 5.2

Character = %x41-5A ; A-Z

Number = %x30-39 ; 0-9
```

5.1. SpecScrName

The values for SpecScrName and the corresponding specification whose SCR is referenced is given at http://www1.wapforum.org/member/speccomm/DocSec/documents.html.

Look at the "WAP Document Identifier" table, and the column in it for "Document Name & Date". The "Document Name" part of the "Document Name & Date" values are to be used for SpecScrName. As an example, for WAP-105, "Document Name & Date" is WDP-19980430, and SpecScrName is "WDP". As another example, for WAP-198, "Document Name & Date" is WIM, and SpecScrName is WIM. Note that moving forward, the intent is for the table to contain only the "Document Name" portion, and the "Date" part has been left for previous documents to retain backwards compatibility.

When used in the CCR of a WAP Conformance Release, the SpecScrName refers to the specification version comprising that WAP Conformance Release.

5.2. FeatureType

The values for FeatureType and the corresponding meaning is given below:

FeatureType	Meaning
• MCF	: All mandatory client features of the specification's SCR.
• OCF	: All optional client features of the specification's SCR
• MSF	: All mandatory server features of the specification's SCR.
• OSF	: All optional server features of the specification's SCR.
• MICCF	: All mandatory integrated circuit card features of the specification's SCR
• OICCF	: All optional integrated circuit card features of the specification's SCR

5.3. GroupType

GroupType can be used in naming related SCR items such that the SCR table is easier to read by humans. For example, all the validation features of a Push Proxy Gateway SCR can be sub grouped as VAL, leading to SCR line items of the form PPG-VAL-S-001, PPG-VAL-S-002 etc.

6. Example Usage

This section provides a hypothetical example of WAE, WSP and WDP SCR table with WAE requirements on WSP and WSP requirements on WDP.

WAE SCR

Item	Function	Reference	Status	Requirement
WAE-C-001	Something mandatory	Section x.x	M	
WAE-C-002	Something optional	Section x.y	O	
WAE-C-003	Requires something	Section x.z	O	WSP-C-002

WSP SCR

Item	Function	Reference	Status	Requirement
WSP-C-001	Something mandatory	Section x.x	M	WDP-C-001 OR WDP-C-002
WSP-C-002	Something optional	Section x.y	O	WDP: OCF

WDP SCR

Item	Function	Reference	Status	Requirement
WDP-C-001	Something optional	Section x.x	O	
WDP-C-002	Something optional	Section x.y	O	

WAE-C-001 is a mandatory WAE feature and WAE-C-002 is an optional WAE feature. Note that the ‘C’ in the middle represents that these are client device features.

WAE-C-003 is an optional feature, but if implemented, it requires WSP-C-002 to be implemented, i.e., WSP-C-002 becomes mandatory in the presence of WAE-C-003, though WSP SCR stipulates WSP-C-002 to be optional.

WSP-C-001 is a mandatory feature that requires WDP-C-001 or WDP-C-002, i.e., one of them is mandatory in the presence of WSP-C-001, though WDP SCR itself only requires both to be optional.

WSP-C-002 is an optional feature, but if present, requires all optional client features of WDP to be implemented. In other words, if WAE-C-003 is implemented, it would end up requiring all optional client features of WDP to be implemented since it requires WSP-C-002.

Appendix A. Change History (Informative)

Type of Change	Date	Section	Description
Class 0	25-Apr-2001		The initial version of this document.