Provisioning Content

Version 24-July-2001

Wireless Application Protocol
WAP-183-ProvCont-20010724-a

A list of errata and updates to this document is available from the WAP Forum™ Web site, http://www.wapforum.org/, in the form of SIN documents, which are subject to revision or removal without notice.

This document is available online in PDF format at http://www.wapforum.org/.

Known problems associated with this document are published at http://www.wapforum.org/.

Comments regarding this document can be submitted to the WAP Forum™ in the manner published at http://www.wapforum.org/.

Document History	
WAP-183-ProvCont-20010314-a	Approved
WAP-183_001-ProvCont-20010614-a	SIN
WAP-183-ProvCont-20010724-a	Current

Contents

1. Scope

The Wireless Application Protocol (WAP) is a result of continuous work to define an industry-wide specification for developing applications that operate over wireless communication networks. The scope for the WAP Forum is to define a set of specifications to be used by service applications. The wireless market is growing very quickly, and reaching new customers and services. To enable operators and manufacturers to meet the challenges in advanced services, differentiation and fast/flexible service creation WAP Forum defines a set of protocols in transport, security, transaction, session and application layers. For additional information on the WAP architecture, please refer to "*Wireless Application Protocol Architecture Specification*" [WAPARCH].

Provisioning is the process by which a WAP client is configured with a minimum of user interaction. The term covers both OTA provisioning and provisioning by means of, e.g., SIM cards. A WAP client may, for example, be provisioned with connectivity information by pushing configuration parameters over the air from a server to a WAP client. This specification defines the content encoding by which configuration parameters are presented to the WAP client in the provisioning framework. The content encoding is defined in terms of binary XML [WBXML] and is interpreted and handled at the application level of the WAP architecture. However, the handling and use of provisioned information is outside the scope of this specification. For an overview of the provisioning process architecture, please refer to "Wireless Application Protocol Provisioning Architecture Overview Specification", [PROVARCH].

2. Document Status

This document is available online in the following formats:

- PDF format at http://www.wapforum.org/.

2.1 Copyright Notice

2.2 Errata

Known problems associated with this document are published at http://www.wapforum.org/.

2.3 Comments

Comments regarding this document can be submitted to the WAP Forum in the manner published at http://www.wapforum.org/.

3. References

3.1 Normative References

[CREQ] "Specification of WAP conformance requirements", WAP Forum, WAP-221-CREQ, URL: http://www.wapforum.org/

[E212] "ITU-T E.212 Identification Plan For Land Mobile Stations", ITU, URL: http://www.itu.org/

[E2ESEC] "WAP Transport Layer E2E Security Specification", WAP Forum, WAP-187-E2ESEC, URL: http://www.wapforum.org/

[GENFORM] "WAP General Formats Document", WAP Forum, WAP-188-GENFORM, URL: http://www.wapforum.org/

[PROVBOOT] "WAP Provisioning Bootstrap Specification", WAP Forum, WAP-184-PROVBOOT, URL: http://www.wapforum.org/

[PROVUAB] "WAP Provisioning User Agent Behaviour Specification", WAP Forum, WAP-185-PROVUAB, URL: http://www.wapforum.org/

[RFC791] "Internet Protocol", Postel, J., September 1981, URL: http://www.ietf.org/

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

[RFC2373] "IP Version 6 Addressing Architecture", Hinden, R and S. Deering, July 1998, URL: http://www.ietf.org/

[RFC2396] "Uniform Resource Identifiers (URI): Generic Syntax", T.Berners-Lee, et al., August 1998, URL: http://www.ietf.org/

[TIA/EIA-136-005A] "Introduction, Identity, and Semi-Permanent Memory", TIA/EIA

[WAPWDP] "Wireless Datagram Protocol Specification", WAP Forum, WAP-200, URL: http://www.wapforum.org/

[WBXML] "WAP Binary XML Content Format", WAP Forum, WAP-192, URL: http://www.wapforum.org/

[WML] "Wireless Markup Language", WAP Forum, WAP-191-WML, URL: http://www.wapforum.org/

[XML] "Extensible Markup Language (XML)", W3C Recommendation 10-February-1998, REC-xml-19980210", T. Bray, et al, February 10, 1998, URL: http://www.w3.org/TR/REC-xml

[3GPP23107] "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; QoS Concept and Architecture (Release 1999)", (3G TS 23.107 V3.4.0 (2000-10)), URL: http://www.3gpp.org/

[3GPP24008] "3rd Generation Partnership Project; Technical Specification Group Core Network; Mobile radio interface layer 3 specification; Core Network Protocols - Stage 3; (Release 1999)", (3G TS 24.008 V3.5.0 (2000-09)), URL: http://www.3gpp.org/

3.2 Informative References

[CLIENTID] "WAP Client ID Specification", WAP Forum, WAP-196-ClientID, URL: http://www.wapforum.org/

[PROVARCH] “WAP Provisioning Architecture Overview Specification”, WAP Forum, WAP-182-PROVARCH, URL: http://www.wapforum.org/

[PROVSC] “WAP Smart Card Provisioning Specification”, WAP Forum, WAP-186-PROVSC, URL: http://www.wapforum.org/

[WAPARCH] “WAP Architecture Specification”, WAP Forum, WAP-100-WAPARCH, URL: http://www.wapforum.org/

4. Definitions and Abbreviations

4.1 Terminology

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].

4.2 Definitions

This section introduces a terminology that will be used throughout this document. Properties of specific elements are also defined.

Address Domain

IP domain

an IP sub-network, which can be the whole Internet, an Extranet, or a small corporate Intranet.

URL domain

A mask of netlocations used to conclude where services for a specific URL can be found. The URL domain concept is used both for bearer selection as well as for proxy selection.

Characteristics

This document uses the term characteristics to define the characteristics of, typically, a Network Element (access point, proxy). The word is broad enough to be used in all the required contexts.

Configuration Context

A Configuration Context is a set of connectivity and application configurations typically associated with a single TPS. However, the Configuration Context can also be independent of any TPS. A TPS can be associated with several Configuration Contexts, but a TPS cannot provision a device outside the scope of the Configuration Contexts associated with that particular TPS. In fact, all transactions related to provisioning are restricted to the Configuration Contexts associated with the TPS.

Connectivity document

A particular instance of a XML document encoded according to this specification. The MIME-type of the textual document is *text/vnd.wap.connectivity-xml*. The MIME-type of the tokenized document is *application/vnd.wap.connectivity-wbxml*.

Connectivity Information

This connectivity information relates to the parameters and means needed to access WAP infrastructure. This includes network bearers, protocols, access point addresses as well as proxy addresses and Trusted Provisioning Server URL.

Default Proxy

The default proxy, or home proxy, defines the preferred proxy of the configuration context. The preferred proxy is defined by the largest domain scope, and in case of conflict, is defined by the highest priority. Priority is defined as a function of order of discovery.

Domain descriptions

The navigation and configuration information defines addresses and access parameters to connect to proxies. Each proxy can serve one or more domains. The DOMAIN can be a partial URL, expressing wildcard characteristics.

www.service.com/protected/

www.service.com/

.service.com/

The DOMAIN of the proxy is defined as a parameter of the proxy characteristic.

Logical Proxy

A logical proxy is a set of physical proxies that MAY share the same WSP and WTLS context (shared session id value space). This implies that physical proxies within a logical proxy share the same WSP and WTLS session cache. For example, the device does not have to create a new WTLS session when switching from CSD to SMS if the target is the same logical proxy.

Network Access Point

A physical access point is an interface point between the wireless network and the fixed network. It is often a RAS (Remote Access Server), an SMSC, a USSDC, or something similar. It has an address (often a telephone number) and an access bearer.

Physical Proxy

A physical proxy is a specific address with a proxy functionality. It can be the IP address plus port for an IP accessible proxy, or the SME-address plus port for an SMS accessible proxy.

Proxy Discovery Mechanism

A mechanism used to inform the client device that it should use another proxy to access the requested information.

TPS

A TPS, Trusted Provisioning Server, is a source of provisioning information that can be trusted by a Configuration Context. They are the only entities that are allowed to provision the device with static configurations. In some cases, however, a single TPS is the only server allowed to configure the phone. Provisioning related to a specific TPS is restricted to Configuration Contexts that are associated with this TPS.

Trusted Proxy

The trusted (provisioning) proxy has a special position as it acts as a front end to a trusted provisioning server. The trusted proxy is responsible to protect the end-user from malicious configuration information.

WAP Proxy

The WAP proxy is an endpoint for the WTP, WSP and WTLS protocols, as well as a proxy that is able to access WAP content. A WAP Proxy can have functionality such as that of, for example, a WSP Proxy or a WTA Proxy.

WSP Proxy

A generic WAP proxy, similar in functionality to a HTTP proxy. It is a variant of a WAP Proxy.

WTA Proxy

The WTA Proxy is a Wireless Telephony proxy as defined by WAP.

4.3 Abbreviations

For the purposes of this specification the following abbreviations apply.

APN	Access Point Name
CDPD	Cellular Digital Packet Data
CHAP	Challenge Handshake Authentication Protocol
CSD	Circuit Switched Data
DNS	Domain Name System

DTD	Document Type Definition
GHOST	GSM Hosted SMS Teleservice
GPRS	General Packet Radio Service
GUTS	General UDP Transport Service
HTTP	HyperText Transfer Protocol
IP	Internet Protocol
ITSI	Individual TETRA Subscriber Identity
MAN	Mobitex Subscription Number
ME	Mobile Equipment
MIME	Multipurpose Internet Mail Extensions
NAP	Network Access Point
OTA	Over The Air
PAP	Password Authentication Protocol
PDP	Packet Data Protocol
RAS	Remote Access Server
SDS	Short Data Service
SID	System Identity
SIM	Subscriber Identity Module
SME	Short Message Entity
SMS	Short Message Service
SMSC	Short Message Service Centre
SOC	System Operator Code
TETRA	Terrestrial Trunked Radio
TPS	Trusted Provisioning Server
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USSD	Unstructured Supplementary Service Data
USSDC	Unstructured Supplementary Service Data Centre
WAP	Wireless Application Protocol
WBXML	WAP Binary XML
WSP	Wireless Session Protocol
WTA	Wireless Telephony Application
WTLS	Wireless Transport Layer Security
WTLS-SS	WTLS Shared Secret
WTP	Wireless Transaction Protocol
XML	Extensible Markup Language

5. Architectural Overview

Connectivity documents are binary encoded XML documents [WBXML] with a special MIME type that is interpreted at the application level on the ME. The handling and use of the provisioned information is outside the scope of this specification.

The XML DTD defines two elements; a CHARACTERISTIC element and a PARM element. The PARM element is used to provide values for the individual parameters, while the CHARACTERISTIC element is used to group parameters into logical entities that are related to a specific characteristic of the configuration space. Section 5.1 defines the XML DTD.

The configuration space may be defined in terms of the following main characteristics: Parameters related to logical proxies, parameters related to physical proxies, parameters related to network access points (NAPs), parameters related to the bootstrap process, parameters related to (ME) vendor specific configuration and parameters related to Client Identity. Additional characteristics may easily be added later by defining new characteristic types and parameter names. ME implementations MUST be designed with this in mind. An overview of the data model is presented in section 5.2.

Connectivity provisioning has been defined so that each connectivity document must be complete in the sense that information provided in one document cannot rely explicitly on information provided in another document. For example, if a physical proxy is to be used with a specific NAP, this NAP must be defined in the same connectivity document. Implicit reference to information defined in other documents is allowed. This is, for example, the case when using the INTERNET as a value for the TO-NAPID parameter, which means that reference is made to an arbitrary NAP definition that has an INTERNET parameter specified.

Logical proxies (the PXLOGICAL characteristic) have a number of physical instances, i.e., physical proxies (the PXPHYSICAL characteristic). Each logical proxy has a name, an unique ID, a startpage URL, and some parameters like port number values that are shared between all physical instances of the logical proxy.

Each proxy may serve one or several URL domains. Proxies may also vary in the protocols and services they support. To this end, PORT characteristics may be provided so that bindings between port numbers and protocols or services can be defined for each proxy.

The physical proxies refer to a number of NAP definitions (the NAPDEF characteristic), which can be used with the physical proxy in question. A NAPDEF characteristic has to supply definitions for all the parameters that are relevant to a particular NAP.

In the sections to follow, each of the characteristics and their associated parameters will be described along with the restrictions that apply to the occurrence and values of the parameters.

5.1 Connectivity Reference Information

Connectivity is an application of [XML] version 1.0. An implementation conforming to this specification MUST support the WAP-PROVISIONINGDOC DTD defined in this chapter.

5.1.1 Document Identifiers

5.1.1.1 SGML Public Identifier

-//WAPFORUM//DTD PROV 1.0//EN

5.1.1.2 Connectivity Media Type

Textual form:

```
text/vnd.wap.connectivity-xml
```

Tokenized form:

```
application/vnd.wap.connectivity-wbxml
```

5.1.2 Document Type Definition

The connectivity document format is based on a very simple XML DTD:

```
<!--
Connectivity Document Type Definition
Connectivity is an XML language. Typical Usage:

<?xml version="1.0"?>
<!doctype wap-provisioningdoc public "-//WAPFORUM//DTD PROV 1.0//EN"
"http://www.wapforum.org/DTD/prov.dtd">
<wap-provisioningdoc>
…
</wap-provisioningdoc>
-->

<!ELEMENT wap-provisioningdoc (characteristic+)>
<!ATTLIST wap-provisioningdoc
  version   CDATA #IMPLIED
>

<!ELEMENT characteristic (parm*, characteristic*)>
<!ATTLIST characteristic
  type CDATA #REQUIRED

>

<!ELEMENT parm EMPTY>
<!ATTLIST parm
  name  CDATA #REQUIRED
  value CDATA #IMPLIED
>
```

5.2 Overview of Data Model

The above XML DTD provides a flexible and extensible framework for parsing configuration parameters by means of PARM elements grouped by CHARACTERISTIC elements. The description of each of the possible PARM values and CHARACTERISTIC types is given in the following sections, while a short structural overview of the data model is given here.

The notation is such that **bold underlines** indicates parameters used for links, *italic* indicates parameters affected by external events, plus (+) indicates that the parameter can occur 1 or more times, star (*) indicates that the parameter can occur 0 or more times, question mark (?) indicates that the parameter can occur 0 or 1 times, empty ( ) indicates that the parameter is required within the scope of the encapsulating characteristic and that it can occur only once.

```
characteristic : PXLOGICAL +
{
    parm: PROXY-ID
    parm: PROXY-PROVIDER-ID ?
    parm: NAME
    parm: DOMAIN *
    parm: TRUST ?
    parm: MASTER ?
    parm: STARTPAGE ?
    parm: BASAUTH-ID ?
    parm: BASAUTH-PW ?
    parm: WSP-VERSION ?
    parm: PUSHENABLED ?

    characteristic: PXAUTHINFO *
    {
        parm: PXAUTH-TYPE
        parm: PXAUTH-ID ?
        parm: PXAUTH-PW ?
    }

    characteristic: PORT *
    {
        parm: PORTNBR
        parm: SERVICE *
    }

    characteristic: PXPHYSICAL +
    {
        parm: PHYSICAL-PROXY-ID
        parm: DOMAIN *
        parm: PXADDR
        parm: PXADDRTYPE ?
        parm: WSP-VERSION ?
        parm: PUSHENABLED ?
        parm: TO-NAPID +

        characteristic: PORT *
        {
            parm: PORTNBR
            parm: SERVICE *
        }
    }
}

characteristic: NAPDEF *
{
    parm: NAPID
    parm: BEARER *
    parm: NAME
    parm: INTERNET ?
    parm: NAP-ADDRESS
```

```
    parm: NAP-ADDRTYPE ?
    parm: CALLTYPE ?
    parm: LOCAL-ADDR ?
    parm: LOCAL-ADDRTYPE ?
    parm: LINKSPEED ?
    parm: DNLINKSPEED ?
    parm: LINGER ?
    parm: DELIVERY-ERR-SDU ?
    parm: DELIVERY-ORDER ?
    parm: TRAFFIC-CLASS ?
    parm: MAX-SDU-SIZE ?
    parm: MAX-BITRATE-UPLINK ?
    parm: MAX-BITRATE-DNLINK ?
    parm: RESIDUAL-BER ?
    parm: SDU-ERROR-RATIO ?
    parm: TRAFFIC-HANDL-PRIO ?
    parm: TRANSFER-DELAY ?
    parm: GUARANTEED-BITRATE-UPLINK ?
    parm: GUARANTEED-BITRATE-DNLINK ?

    characteristic: NAPAUTHINFO *
    {
        parm: AUTHTYPE
        parm: AUTHNAME ?
        parm: AUTHSECRET ?
    }

    characteristic: VALIDITY *
    {
        parm: COUNTRY ?
        parm: NETWORK ?
        parm: SID ?
        parm: SOC ?
        parm: VALIDUNTIL ?
    }
}

characteristic: BOOTSTRAP *
{
    parm: NAME ?
    parm: NETWORK *
    parm: COUNTRY ?
    parm: PROXY-ID *
    parm: PROVURL ?
    parm: CONTEXT-ALLOW ?
}

characteristic : CLIENTIDENTITY ?
{
    parm: CLIENT-ID
}

characteristic: VENDORCONFIG *
{
```

```
    parm: NAME
    parm: *
}
```

5.3 Media Type Parameter

The connectivity media type may contain security information, which is transported as parameters to the media type *application/vnd.wap.connectivity-wbxml*. The security information consists of the message authentication code and the security method. The parameters MAC and SEC have been defined for this purpose and these MUST be supported by the WAP client.

Parameters

SEC

The parameter specifies the security mechanism used (if it is not present, no security is used). If present it MUST take one of the values USERPIN, USERPINMAC, NETWPIN, USERNETWPIN ([PROVBOOT]). If the parameter MAC is provided, the parameter SEC MUST also be present.

The parameter SEC can have the following values:

Value	Meaning
0	NETWPIN
1	USERPIN
2	USERNETWPIN
3	USERPINMAC

MAC

This parameter contains an even number of (upper case) hexadecimal digits used to authenticate the sender of the document and ensure integrity of the document. Quote characters MUST NOT be placed around the parameter value. The calculation of the MAC is defined in other provisioning specifications, such as the "WAP Provisioning Bootstrap Specification" ([PROVBOOT]).

5.4 The WAP-PROVISIONINGDOC element

This element encapsulates all the provisioned information. It has the following attribute:

Attribute

version

An optional attribute that contains version information. The version for the current specification is the string "1.0". A ME MUST only use documents that either do not have this attribute or have a version number which matches the major version number of the provisioning content type that the ME understands.

Increase of the minor version number indicates that the changes introduced are backward compatible with the previous version(s), whereas increase of the major version number indicates introduction of non-backward compatible changes.

5.5 The CHARACTERISTIC element

This element is used to group the provisioned information into logical units. It has a required type attribute, which can take on the following values:

Attributes

type

PXLOGICAL, PXPHYSICAL, PXAUTHINFO, PORT, NAPDEF, NAPAUTHINFO, VALIDITY, BOOTSTRAP, CLIENTIDENTITY, VENDORCONFIG.

A characteristic of a particular type can only accept certain parameters, and parameters defined in one characteristic can generally not be overwritten by another.

Value	Meaning
PXLOGICAL	Definition of a logical proxy
PXPHYSICAL	Definition of a physical proxy
PXAUTHINFO	Definition of authentication information within a logical proxy
PORT	Defines port bindings
NAPDEF	Definition of a Network Access Point
NAPAUTHINFO	Definition of authentication information within a network access point
VALIDITY	Defines country, network, and/or period of time where a certain NAPDEF is valid
BOOTSTRAP	Defines parameters relevant for bootstrapping
CLIENTIDENTITY	Defines the client-ID
VENDORCONFIG	Vendor specific configuration

5.5.1 Characteristics of type PXLOGICAL

PXLOGICAL characteristics define logical proxies and may only occur at the root of a connectivity document. This characteristic MUST be supported by the WAP client.

5.5.2 Characteristics of type PXPHYSICAL

PXPHYSICAL characteristics convey information on physical instances of a logical proxy and should be listed according to priority inside a PXLOGICAL characteristic. The ME MAY choose to rely on the so defined priority to select a physical proxy. The ME MAY reuse WTLS sessions with all PXPHYSICAL defined in the scope of a single PXLOGICAL. For WSP sessions, on the other hand, the ME MAY use the suspend/resume functionality to move sessions between any of these physical proxies. This characteristic MUST be supported by the WAP client.

5.5.3 Characteristics of type PXAUTHINFO

PXAUTHINFO characteristics define the binding between a proxy authentication method and its corresponding authentication parameters. It may only occur in PXLOGICAL characteristic.

5.5.4 Characteristics of type PORT

PORT characteristics define the binding between a port number and one or more protocols or services. It may only occur in PXLOGICAL and PXPHYSICAL characteristics. This characteristic MUST be supported by the WAP client.

5.5.5 Characteristics of type NAPDEF

NAPDEF characteristics define network access points and may only occur at the root of a connectivity document. This characteristic MUST be supported by the WAP client.

5.5.6 Characteristics of type NAPAUTHINFO

NAPAUTHINFO characteristics define the binding between an authentication method and its corresponding authentication parameters. It may only occur at the root of a NAPDEF characteristic.

5.5.7 Characteristics of type VALIDITY

The VALIDITY characteristic indicates the range (in time as well as in terms of country and network codes) where a certain NAPDEF is valid. It may only occur at the root of a NAPDEF characteristic.

5.5.8 Characteristics of type BOOTSTRAP

The BOOTSTRAP characteristic is used to define parameters of use during the bootstrap process. This characteristic may only occur within the root of the connectivity document.

5.5.9 Characteristics of type CLIENTIDENTITY

ClientIdentity characteristics define a global identity. It may only occur at the root of a connectivity document.

5.5.10 Characteristics of type VENDORCONFIG

The VENDORCONFIG characteristic is used for (ME) vendor specific provisioning. It may only occur at the root of a connectivity document.

5.6 The PARM element

The PARM element is a general purpose slot for various parameters of each characteristic. The attribute NAME of the element defines the usage of the element.

A Parameter with a type that does not add value can be omitted from the definition. For example, if proxy authentication is not performed then the parameter PXAUTH-TYPE can be omitted, and subsequently the parameters PXAUTH-ID and PXAUTH-PW can also be omitted. Some parameters, like the DOMAIN, can be used multiple times within the characteristic.

Attributes

name
: The NAME of the parameter. Permitted values depend on the type of characteristics the PARM element is a sub-element of.

value
: The VALUE of the parameter. Permitted values depend on the NAME attribute of the element.

5.6.1 Parameters for PXLOGICAL characteristics

The PXLOGICAL characteristic indicates the name and parameters needed to access a particular logical WAP Proxy from the wireless terminal. The PXLOGICAL characteristic is linked to a NAPDEF element to provide all the necessary access information. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

PROXY-ID

The PROXY-ID is used to define one logical WAP proxy entity. It is also used to link a proxy to session and security contexts. A PROXY-ID MUST be globally unique. Uniqueness MUST be obtained by either using a fully qualified Internet domain name (i.e. hostname as defined in section 3.2.2 of [RFC2396]) or a globally unique IP address (IPv4 [RFC791] in decimal format with dots as delimiters or IPv6 [RFC2373], as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters). This parameter MUST be supported by the WAP client.

PROXY-PROVIDER-ID (0 or 1 entries)

The PROXY-PROVIDER-ID is used to verify the identity of a proxy when using certificate based server authentication. If server certificate authentication is used, and the PROXY-PROVIDER-ID has been defined, then service credentials of the certificate MUST match the PROXY-PROVIDER-ID. The format MUST be either a fully qualified Internet domain name (i.e. hostname as defined in section 3.2.2 of [RFC2396]) or a globally unique IP address (IPv4 [RFC791] in decimal format with dots as delimiters or IPv6 [RFC2373], as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters).

NAME

The NAME indicates a logical, user readable, identity (property) of the configuration element. This parameter MUST be supported by the WAP client.

DOMAIN (0 to 4 entries)

The DOMAIN parameter indicates a domain, for which the proxy is responsible. The proxy might support multiple domains. The DOMAIN parameter MUST be either in the syntax described in [PROVUAB] or an absolute URI [RFC2396]. If the DOMAIN parameter contains an IPv4-address, it MUST be given in decimal format with dots as delimiters as defined in [RFC2396]. If the DOMAIN parameter contains an IPv6-address [RFC2373], it MUST be given as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters. If the DOMAIN parameter is missing, this MUST be interpreted as if an empty value was given. This parameter MUST be supported by the WAP client.

TRUST (0 or 1 entries)

The TRUST can be used to define that a particular proxy is trusted. For example, provisioning information received from the trusted proxy can be accepted. Note that it is possible that the user does not have a trusted proxy. The trusted proxy does not have to be the home (default) proxy. The parameter does not take a value.

MASTER (0 or 1 entries)

The MASTER is used to define that a particular proxy is allowed to send navigation documents to the device, using the Proxy Discovery Mechanism defined in [E2ESEC]. The parameter does not take a value.

STARTPAGE (0 or 1 entries)

The STARTPAGE parameter MUST be an absolute URI [RFC2396] and defines the homepage or start page associated with the services accessible from the proxy. The STARTPAGE MAY be used to provide different services to different users. If the scheme is missing from the STARTPAGE parameter, then “http” is assumed. This parameter MUST be supported by the WAP client.

BASAUTH-ID (0 or 1 entries)

The BASAUTH-ID indicates the basic authentication identifier for the startpage. This parameter MUST be supported by the WAP client.

BASAUTH-PW (0 or 1 entries)

The BASAUTH-PW indicates the basic authentication password for the startpage. This parameter MUST be supported by the WAP client.

WSP-VERSION (0 or 1 entries)

The WSP-VERSION indicates the WSP encoding version that the proxy in question supports. The format of this parameter is an integer representing the major version number followed by a "." and an integer representing the minor version number. If the parameter is not present or if no value is given, then the default value 1.2 should be assumed.

PUSHENABLED (0 or 1 entries)

This parameter takes one of the values 0 or 1. If the value is 1 for a given logical proxy, this proxy will support push. The ME is consequently advised to enable push. If the value is 0 for a given logical proxy, this proxy will not support push. If the parameter is not present or if no value is given, then the default value 0 should be assumed. The parameter is advisory only and a ME might override the recommendation.

5.6.2 Parameters for PXPHYSICAL characteristics

The PXPHYSICAL characteristic is only allowed to be used within the characteristic of a logical PROXY. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

PHYSICAL-PROXY-ID

The PHYSICAL-PROXY-ID is used to define one physical WAP proxy entity. The PHYSICAL-PROXY-ID MUST be unique within its enclosed structure, i.e. within the PXLOGICAL characteristic. This parameter MUST be supported by the WAP client.

DOMAIN (0 to 4 entries)

The DOMAIN parameter indicates a domain, for which the proxy is responsible. The proxy might support multiple domains. The DOMAIN parameter MUST be either in the syntax described in [PROVUAB] or an absolute URI [RFC2396]. If the DOMAIN parameter contains an IPv4-address, it MUST be given in decimal format with dots as delimiters as defined in [RFC2396]. If the DOMAIN parameter contains an IPv6-address [RFC2373], it MUST be given as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters.

The domain definition must be interpreted as a subset of all the URI defined by the domain parameter of PXLOGICAL. The DOMAIN is used to select the physical instance of the logical proxy, and thus for example bearer and network access point. If no DOMAIN parameter is supplied for a physical proxy definition, the corresponding parameter value from the logical proxy definition is assumed to apply for the physical proxy as well.

PXADDR

The PXADDR can store addresses of different kinds, for example an IP address or a SME number. The type of address in the field is defined by the PXADDRTYPE parameter. This parameter MUST be supported by the WAP client.

PXADDRTYPE	Content of PXADDR
IPV4	An IPv4 address [RFC791] represented in decimal format with dots as delimiters
IPV6	An IPv6 address [RFC2373] represented as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters
E164	A phone number according to the E164 scheme [GENFORM]
ALPHA	Generic alphanumeric address (as defined by alphanum in [RFC2396])

PXADDRTYPE (0 or 1 entries)

The PXADDRTYPE indicates the format and the interpretation of the PXADDR attribute. The PXADDRTYPE can indicate an IP address, a phone number according to the E164 scheme, or a generic alphanumeric address format. This parameter MUST be supported by the WAP client.

Value

IPV4 (default)
IPV6
E164
ALPHA

WSP-VERSION (0 or 1 entries)

The WSP-VERSION indicates the WSP encoding version that the proxy in question supports. The format of this parameter is an integer representing the major version number followed by a "." and an integer representing the minor version number. If no WSP-VERSION parameter is supplied for a physical proxy definition, the corresponding parameter value from the logical proxy definition is assumed to apply for the physical proxy as well.

PUSHENABLED (0 or 1 entries)

This parameter takes one of the values 0 or 1. If the value is 1 for a given physical proxy, this physical proxy will support push. The ME is consequently advised to enable push. If the value is 0 for a given physical proxy, this proxy will not support push. If no PUSHENABLED parameter is supplied for a physical proxy definition, the corresponding parameter value from the logical proxy definition is assumed to apply for the physical proxy as well. The parameter is advisory only and a ME might override the recommendation.

TO-NAPID (1 or more entries)

This parameter refers to a network access point with a matching NAPID parameter. It is only possible to refer to network access points defined within the same connectivity document (except if the INTERNET attribute is set in the NAPDEF). Several TO-NAPID parameters may be listed for a given physical proxy. The order of the list indicates the priority of the individual network access points. However, client preferences MAY also be considered which might affect the priority order (see also [PROVUAB]). One TO-NAPID has a special predefined meaning. If the TO-NAPID is INTERNET, it implies that the ME can select any network access point with the attribute INTERNET defined. This parameter MUST be supported by the WAP client.

5.6.3 Parameters for PXAUTHINFO characteristics

The PXAUTHINFO characteristic is only allowed to be used within a PXLOGICAL characteristic. Note that the parameters listed below are described in the scope of this particular characteristic.

PXAUTH-TYPE

The PXAUTH-TYPE indicates the proxy authentication method: HTTP proxy authentication or WTLS methods. Possible values are HTTP BASIC, HTTP DIGEST and WTLS SS. This parameter does not indicate the actual authentication method to use when connecting to the proxy, but links the authentication parameters PXAUTH-ID and PXAUTH-PW to an authentication method. The PXAUTH-TYPE MUST be unique within its enclosed structure, i.e. within the PXLOGICAL characteristic.

PXAUTH-ID (0 or 1 entries)

The PXAUTH-ID indicates the proxy authentication identifier. If it is missing then the global id of the device should be used (see section 6.4). The global identifier can be defined for example using the ClientIdentity characteristic.

PXAUTH-PW (0 or 1 entries)

The PXAUTH-PW indicates the proxy authentication secret. The usage of the parameter is defined by the PXAUTH-TYPE.

5.6.4 Parameters for PORT characteristics

The PORT characteristic is only allowed to be used within a PXLOGICAL or a PXPHYSICAL characteristic. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

PORTNBR

The PORTNBR parameter contains the value of the port number. The port number must be given as a decimal number and must fit within the range of a 16 bit unsigned integer. The PORTNBR MUST be unique within its enclosed structure, i.e. within the PXLOGICAL or the PXPHYSICAL characteristic.

If the port number is well known, then the service behind the port is implied and the parameter SERVICE MAY be omitted [WAPWDP]. If the port number is not well known, then no service is implied and the service behind the port is defined in parameter SERVICE. If the port number is not well known and the parameter SERVICE is omitted, then the ME MUST assume a service according to its preferences.

If the parameter SERVICE is present, then the definition in the SERVICE parameter overrides the implicit meaning.

This parameter MUST be supported by the WAP client.

SERVICE (0 or more entries)

The SERVICE parameter specifies which service is available behind this particular port number. Possible values are defined in the table below. This parameter MUST be supported by the WAP client.

Service	Explanation
CL-WSP	WAP connection-less session service
CO-WSP	WAP session service
CL-SEC-WSP	WAP secure connection-less session service
CO-SEC-WSP	WAP secure session service
CO-SEC-WTA	WAP WTA secure session service
CL-SEC-WTA	WAP WTA secure connection-less session service

5.6.5 Parameters for NAPDEF characteristics

This section defines permitted parameters for the NAPDEF type of the characteristic, i.e. the names and parameters needed to access the backbone data network from the wireless terminal. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

NAPID

The NAPID is used to link to the TO-NAPID parameter of the PXPHYSICAL characteristic. The NAPID MUST be unique within its enclosed structure, i.e. within the configuration context. This parameter MUST be supported by the WAP client.

BEARER (0 or more entries)

The BEARER indicates which network type (in addition to address type) the definition is valid for. This parameter MUST be supported by the WAP client.

Value
GSM-USSD
GSM-SMS
ANSI-136-GUTS
IS-95-CDMA-SMS
IS-95-CDMA-CSD
IS-95-CDMA-PACKET
ANSI-136-CSD
ANSI-136-GPRS
GSM-CSD
GSM-GPRS
AMPS-CDPD
PDC-CSD
PDC-PACKET
IDEN-SMS
IDEN-CSD
IDEN-PACKET
FLEX/REFLEX
PHS-SMS
PHS-CSD
TETRA-SDS
TETRA-PACKET
ANSI-136-GHOST
MOBITEX MPAK

NAME

The NAME indicates a logical, user readable, identity (property) of the configuration element. In the NAPDEF element it typically indicates the "owner" of the RAS, and if the element is to be used while in the home network or while roaming. This parameter MUST be supported by the WAP client.

INTERNET (0 or 1 entries)

This parameter does not take any values. If it is present, it indicates that the network access point can be used to access proxies that are located on an IP-routable network segment, which is generic within the scope of the configuration context. The existence of the parameter does not imply that the IP routable network that can be accessed is similar in scope to the world wide Internet.

NAP-ADDRESS

Contains all the digits and pauses needed to communicate with a remote entity and is defined in [GENFORM]. The format and the content of the parameter depend on the bearer type. The NAP-ADDRESS might contain for example

- The phone number of an access router
- A calling card dialling sequence.
- A GPRS APN, which is an indirect address that has to be resolved by a network specific DNS mechanism.
- An address of an SMSC, or any other message centre.

The NAP-ADDRESS should be in international format whenever possible, for example using the "+" notation as in GSM.

The type of address in the NAP-ADDRESS field is defined by the NAP-ADDRTYPE parameter. This parameter MUST be supported by the WAP client.

NAP-ADDRTYPE	Content of NAP-ADDRESS
IPV4	An IPv4 address [RFC791] represented in decimal format with dots as delimiters
IPV6	An IPv6 address [RFC2373] represented as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters
E164	A phone number according to the E164 scheme [GENFORM]
ALPHA	Generic alphanumeric address (as defined by alphanum in [RFC2396])
APN	A GPRS APN as defined in [GENFORM]
SCODE	A USSD service code as defined in [GENFORM]
TETRA-ITSI	A TETRA SDS address with digits in decimal format [WAPWDP]
MAN	A Mobitex MAN address with digits in decimal format [WAPWDP]

NAP-ADDRTYPE (0 or 1 entries)

The NAP-ADDRTYPE indicates the format of the address in the NAP-ADDRESS. This parameter MUST be supported by the WAP client.

Value
IPV4
IPV6
E164 (default)
ALPHA
APN
SCODE
TETRA-ITSI
MAN

CALLTYPE (0 or 1 entries)

Some bearers may support different types of calls or different protocols to be used for data exchange. The CALLTYPE parameter is used to define this protocol or call type.

Value
ANALOG_MODEM (default)
V.120
V.110
X.31
BIT_TRANSPARENT
DIRECT_ASYNCHRONOUS_DATA_SERVICE

LOCAL-ADDR (0 or 1 entries)

If this parameter is provided, it defines the local address of the WAP Client according to the format specified by the LOCAL-ADDRTYPE parameter.

The type of address in the LOCAL-ADDR field is defined by the LOCAL-ADDRTYPE parameter.

LOCAL-ADDRTYPE	Content of LOCAL-ADDR
IPV4	An IPv4 address [RFC791] represented in decimal format with dots as delimiters
IPV6	An IPv6 address [RFC2373] represented as hexadecimal numbers with colons as delimiters or as a combination of hexadecimal and decimal numbers with dots and colons as delimiters

LOCAL-ADDRTYPE (0 or 1 entries)

The LOCAL-ADDRTYPE indicates the format of the address in the LOCAL-ADDR parameter.

Value
IPV4
IPV6 (default)

LINKSPEED (0 or 1 entries)

Defines the speed on the up-link channel and optionally the down-link channel for circuit switched bearers. Possible values are "autobauding" or a number (baud in decimal format).

DNLINKSPEED (0 or 1 entries)

Defines the speed on the down-link channel for circuit switched bearers. Possible values are "autobauding" or a number (baud in decimal format). If this parameter is missing or if the ME does not support different up- and down-link speeds, the value of the LINKSPEED parameter may be assumed to be effective for the down-link channel as well.

LINGER (0 or 1 entries)

The LINGER parameter is used to define how long a connection should be kept active without any traffic. The parameter value is a decimal value expressed in seconds.

DELIVERY-ERR-SDU (0 or 1 entries)

The DELIVERY-ERR-SDU parameter indicates whether SDUs detected as erroneous shall be delivered or discarded. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

DELIVERY-ORDER (0 or 1 entries)

The DELIVERY-ORDER parameter indicates whether the PDP context bearer shall provide in-sequence SDU delivery or not. Values are defined in [3GPP24008] and are represented as hexadecimal numbers. Bits not part of the DELIVERY-ORDER parameter are set to zero, e.g. the value "with delivery order" is represented as 0x08.

TRAFFIC-CLASS (0 or 1 entries)

The TRAFFIC-CLASS defines the type of application for which the PDP context bearer service is optimised. For class descriptions see [3GPP23107] and values are defined in [3GPP24008]. The values are represented as hexadecimal numbers. Bits not part of the TRAFFIC-CLASS parameter are set to zero, e.g. the value "interactive class" is represented as 0x60.

MAX-SDU-SIZE (0 or 1 entries)

The MAX-SDU-SIZE parameter defines the maximum allowed SDU size and is used for admission control and policing. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

MAX-BITRATE-UPLINK (0 or 1 entries)

The MAX-BITRATE-UPLINK parameter defines the maximum number of bits delivered during a period of time in uplink. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

MAX-BITRATE-DNLINK (0 or 1 entries)

The MAX-BITRATE-DNLINK parameter defines the maximum number of bits delivered during a period of time in downlink. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

RESIDUAL-BER (0 or 1 entries)

The RESIDUAL-BER parameter indicates the undetected bit error ratio in the delivered SDUs. Values are defined in [3GPP24008] and are represented as hexadecimal numbers. Bits not part of the RESIDUAL-BER parameter are set to zero, e.g. the value "$1*10^{-5}$" is represented as 0x70.

SDU-ERROR-RATIO (0 or 1 entries)

The SDU-ERROR-RATIO parameter indicates the fraction of SDUs lost or detected as erroneous and is defined only for conforming traffic. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

TRAFFIC-HANDL-PRIO (0 or 1 entries)

The TRAFFIC-HANDL-PRIO parameter specifies the relative importance for handling of all SDUs belonging to the PDP context bearer compared to the SDUs of other bearers. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

TRANSFER-DELAY (0 or 1 entries)

The TRANSFER-DELAY parameter indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a bearer service. Delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP. Values are defined in [3GPP24008] and are represented as hexadecimal numbers. Bits not part of the TRANSFER-DELAY parameter are set to zero, e.g. the value "300 ms" is represented as 0x48.

GUARANTEED-BITRATE-UPLINK (0 or 1 entries)

The GUARANTEED-BITRATE-UPLINK parameter indicates the guaranteed number of bits delivered by the PDP context at a SAP within a period of time, divided by the duration of the period. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

GUARANTEED-BITRATE-DNLINK (0 or 1 entries)

The GUARANTEED-BITRATE-DNLINK parameter indicates the guaranteed number of bits delivered by the PDP context at a SAP within a period of time, divided by the duration of the period. Values are defined in [3GPP24008] and are represented as hexadecimal numbers.

5.6.6 Parameters for NAPAUTHINFO characteristics

The NAPAUTHINFO characteristic is only allowed to be used within a NAPDEF characteristic. Note that the parameters listed below are described in the scope of this particular characteristic.

AUTHTYPE

The AUTHTYPE is a parameter indicating the authentication protocol. Possible values are PAP and CHAP. This parameter does not indicate the actual authentication method to use when connecting to the network access point, but links the authentication parameters AUTHNAME and AUTHSECRET to the authentication method. The AUTHTYPE MUST be unique within its enclosed structure, i.e. within the NAPDEF characteristic.

AUTHNAME (0 or 1 entries)

The AUTHNAME parameter can contain the id (plaintext) needed to authenticate the user. This parameter is only needed if the AUTHTYPE parameter takes one of the values PAP or CHAP.

AUTHSECRET (0 or 1 entries)

The AUTHSECRET parameter can contain the password (plaintext) needed to authenticate the user. This parameter is only needed if the AUTHTYPE parameter takes one of the values PAP or CHAP.

5.6.7 Parameters for VALIDITY characteristics

The VALIDITY element is used to define country code and network code parameters, or system identity and system operator code parameters, as well as the period of time in which a certain NAPDEF is valid. If NETWORK is defined, then COUNTRY MUST be present. If SID is defined, then SOC MUST be present. The VALIDITY characteristic is only allowed to be used

within the characteristic of type NAPDEF. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

COUNTRY (0 or 1 entries)

The COUNTRY indicates a Mobile Country Code as defined by ITU-T [E212]. The parameter is used to identify what resources to use when a mobile is in its home network or when the mobile is roaming. The COUNTRY MUST be unique within its enclosed structure, i.e. within the NAPDEF characteristic.

NETWORK (0 or 1 entries)

The NETWORK indicates a list of comma separated Mobile Network Codes in decimal format as defined by ITU-T [E212]. The parameter is used to identify what resources the mobile should use when it is registered to a particular network.

SID (0 or 1 entries)

The SID indicates a list of comma separated System IDs in decimal format as defined by [TIA/EIA-136-005A]. The parameter is used to identify what resources the mobile should use when it is registered to a particular network.

SOC (0 or 1 entries)

The SOC indicates a System Operator Code as defined by [TIA/EIA-136-005A]. The parameter is used to identify what resources the mobile should use when it is registered to a particular network. The SOC MUST be unique within its enclosed structure, i.e. within the NAPDEF characteristic.

VALIDUNTIL (0 or 1 entries)

Defines the end of the (time) period of validity. The parameter is expressed in seconds, from the time it is received by the client device.

5.6.8 Parameters for BOOTSTRAP characteristics

This section defines permitted parameters for the BOOTSTRAP characteristic. This characteristic is typically used within the bootstrap message. If NETWORK is defined, then COUNTRY MUST be present. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

NAME (0 or 1 entries)

The NAME indicates a logical, user readable, identity (property) of the configuration context.

NETWORK (0 or more entries)

The NETWORK parameter MUST contain a decimal value that indicates for which network code (as defined in ITU-T [E212]) the bootstrap information is valid.

COUNTRY (0 or 1 entries)

The COUNTRY parameter defines the Mobile Country Codes as defined by ITU-T [E212]. The parameter is used to identify which country code the bootstrap information is valid.

PROXY-ID (0 or more entries)

The PROXY-ID parameter contains the ID of a proxy that is available with this particular set of bootstrap information. It is only possible to refer to proxies defined within the same connectivity document.

PROVURL (0 or 1 entries)

The PROVURL MUST be an absolute URI [RFC2396] and defines the authority and path of the TPS. The path of a request can be extended, and still be within the scope of the TPS, but it cannot be shortened. The URL to be used to

contact the Trusted Provisioning Server, for example, for requests for re-provisioning (roaming). The PROVURL MUST be globally unique and is the unique identifier of the configuration context. If the scheme is missing from the PROVURL parameter, then "http" is assumed.

CONTEXT-ALLOW (0 or 1 entries)

The CONTEXT-ALLOW parameter defines how many additional configuration contexts the privileged context allows to the ME to support. It may have the following values.

Value	Meaning
0	No other configuration context than the privileged context is allowed (default)
1....254	Describes how many ADDITIONAL configuration contexts beyond the privileged context are allowed. If the value exceeds the maximum number of supported contexts of the ME, the maximum number of supported contexts is used instead
255	Allows for the use of the maximum number of configuration contexts the ME supports

5.6.9 Parameters for CLIENTIDENTITY characteristics

The CLIENT-ID characteristics may be used to provide ME identity. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

CLIENT-ID

The identifier of the mobile device, which for example could be the assigned-client-id as defined in [CLIENTID]. The parameter CLIENT-ID MUST NOT be defined more than once in a configuration context as it is global within the context.

5.6.10 Parameters for VENDORCONFIG characteristics

The VENDORCONFIG characteristics may be used to provide (ME) vendor specific configuration parameters. Note that the parameters listed below are described in the scope of this particular characteristic.

Names and values of parameters

NAME

The name of the product. The NAME MUST be unique within its enclosed structure, i.e. within the configuration context.

The actual configuration data is provided by means of vendor specific parameter names and values.

5.7 Connectivity Character Set

The connectivity content type MUST use the same character set rules as specified in [WML], except the rules for meta-information placed within the content, since such information is not supported in connectivity.

6. Well-formed Connectivity documents

6.1 The Length of parameter fields

The parameter length definitions in the table below express a minimum requirement on the Provisioning Agent and for every supported parameter the minimum length MUST be supported. The Provisioning Server can assume that parameters with a length shorter or equal to the definitions will be accepted (and stored) by the device.

Name	***Length (byte)***
NAME	16
NAP-ADDRESS	16 *)
AUTHNAME	16
AUTHSECRET	16
PROXY-ID	32
DOMAIN	64
PROVURL	64
PXAUTH-ID	16
PXAUTH-PW	16
STARTPAGE	64
BASAUTH-ID	16
BASAUTH-PW	16
PXADDR	40
LINKSPEED	6
DNLINKSPEED	6
LINGER	4
VALIDUNTIL	8
PHYSICAL-PROXY-ID	16
NAPID	16
CLIENT-ID	32
PROXY-PROVIDER-ID	32

*) The default dialstring is 16 bytes, but in networks where calling cards can be used the user agent has to support 64 bytes. Also GPRS terminals have to support 64 byte dialstrings.

6.2 The Use of PORT Characteristics

The total set of port bindings available for a given physical proxy is the port bindings defined for the logical proxy, appended with the port bindings given within the PXPHYSICAL characteristic. If the resulting set of port bindings is empty, then the ME MUST assume a port and service according to its preferences. Each port can support multiple services. If more than one service is supported then all services must be explicitly defined. A ME implementation MUST reject new port bindings if any inconsistencies occur between the port bindings in the root of the PXLOGICAL or in the root of the PXPHYSICAL characteristics.

6.3 Missing VALIDITY characteristics

If a VALIDITY characteristic is absent inside a NAPDEF characteristic, the NAP definition is always valid.

6.4 The Use of PXAUTHINFO and CLIENTIDENTITY Characteristics

The use of the parameters PXAUTH-ID and CLIENT-ID is defined by the following set of rules, which MUST be used if the parameters are supported:

1. Use parameter PXAUTH-ID if it is present and a value is given
2. Expect user input if parameter PXAUTH-ID is present but no value is given (empty string)
3. If parameter PXAUTH-ID is not present, use parameter CLIENT-ID if it is present and a value is given
4. If parameter PXAUTH-ID is not present and parameter CLIENT-ID is present but no value is given (empty string) then use a possible built-in-device identity. The use of the built-in-device identity MAY be prohibited depending on the client's own privacy policies.
5. If parameters PXAUTH-ID and CLIENT-ID are not present, then user input is expected

If the parameter PXAUTH-PW is missing despite indications from PXAUTH-TYPE that it should be used, then user input is expected.

6.5 Missing AUTHTYPE-parameters

If either AUTHNAME or AUTHSECRET are missing despite indications from AUTHTYPE that they should be used, the user MUST be prompted for input for the missing AUTHNAME, AUTHSECRET or both. If AUTHNAME or AUTHSECRET are supposed to be empty strings, it must be explicitly declared by inserting the appropriate AUTHNAME or AUTHSECRET with the value of an empty string into the provisioning document.

7. Examples and discussions

This section is informative only.

7.1 Example 1

This example shows a connectivity document containing infrastructure information related to a single logical and physical WSP proxy for a service domain with a single access point.

```
<?xml version="1.0"?>
<!DOCTYPE wap-provisioningdoc PUBLIC "-//WAPFORUM//DTD PROV 1.0//EN"
"http://www.wapforum.org/DTD/prov.dtd">

<wap-provisioningdoc>

 <characteristic type="PXLOGICAL">
   <parm name="PROXY-ID" value="170.187.51.4"/>
   <parm name="NAME" value="BankMainProxy"/>
   <parm name="STARTPAGE" value="http://www.bank.com/startpage.wml"/>
   <characteristic type="PXAUTHINFO">
     <parm name="PXAUTH-TYPE" value="HTTP BASIC"/>
     <parm name="PXAUTH-ID" value="pxusername"/>
     <parm name="PXAUTH-PW" value="pxuserpassw"/>
   </characteristic>
   <characteristic type="PXPHYSICAL">
     <parm name="PHYSICAL-PROXY-ID" value="PROXY 1"/>
     <parm name="DOMAIN" value="www.bank.com/"/>
     <parm name="PXADDR" value="170.187.51.3"/>
     <parm name="PXADDRTYPE" value="IPV4"/>
     <parm name="TO-NAPID" value="INTERNET"/>
     <parm name="TO-NAPID" value="NAP1"/>
     <characteristic type="PORT">
       <parm name="PORTNBR" value="9203"/>
     </characteristic>
   </characteristic>
</characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP1"/>
   <parm name="BEARER" value="GSM-CSD"/>
   <parm name="NAME" value="MY ISP CSD"/>
   <parm name="NAP-ADDRESS" value="+35808124002"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
   <parm name="CALLTYPE" value="ANALOG_MODEM"/>
   <characteristic type="NAPAUTHINFO">
     <parm name="AUTHTYPE" value="PAP"/>
     <parm name="AUTHNAME" value="wwwmmmuser"/>
     <parm name="AUTHSECRET" value="wwwmmmsecret"/>
   </characteristic>
   <characteristic type="VALIDITY">
     <parm name="COUNTRY" value="228"/>
     <parm name="NETWORK" value="001"/>
```

```
   </characteristic>
 </characteristic>

</wap-provisioningdoc>
```

7.2 Example 2

Infrastructure information with two bearers and thus two network access points.

```
<?xml version="1.0"?>
<!DOCTYPE wap-provisioningdoc PUBLIC "-//WAPFORUM//DTD PROV 1.0//EN"
"http://www.wapforum.org/DTD/prov.dtd">

<wap-provisioningdoc>

 <characteristic type="PXLOGICAL">
   <parm name="PROXY-ID" value="170.187.51.4"/>
   <parm name="NAME" value="DefaultProxy"/>
   <parm name="STARTPAGE" value="http://www.operator.com/start.wml"/>
   <characteristic type="PXAUTHINFO">
     <parm name="PXAUTH-TYPE" value="HTTP BASIC"/>
     <parm name="PXAUTH-ID" value="pxusername"/>
     <parm name="PXAUTH-PW" value="pxuserpassw"/>
   </characteristic>
   <characteristic type="PXPHYSICAL">
    <parm name="PHYSICAL-PROXY-ID" value="PROXY 1"/>
     <parm name="DOMAIN" value=" "/>
     <parm name="PXADDR" value="221.125.51.4"/>
     <parm name="PXADDRTYPE" value="IPV4"/>
     <parm name="TO-NAPID" value="NAP1"/>
     <characteristic type="PORT">
       <parm name="PORTNBR" value="9203"/>
     </characteristic>
   </characteristic>
   <characteristic type="PXPHYSICAL">
     <parm name="PHYSICAL-PROXY-ID" value="PROXY 2"/>
     <parm name="DOMAIN" value="/SMSContent/"/>
     <parm name="DOMAIN" value="sms.operator.com/"/>
     <parm name="PXADDR" value="9400410"/>
     <parm name="PXADDRTYPE" value="E164"/>
     <parm name="TO-NAPID" value="NAP2"/>
     <characteristic type="PORT">
       <parm name="PORTNBR" value="9201"/>
     </characteristic>
   </characteristic>
 </characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP1"/>
   <parm name="BEARER" value="GSM/CSD"/>
   <parm name="NAME" value="ANY NAME 1"/>
   <parm name="NAP-ADDRESS" value="+4520671023"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
```

```
   <parm name="CALLTYPE" value="ANALOG_MODEM"/>
   <parm name="LINKSPEED" value="AUTOBAUDING"/>
   <characteristic type="NAPAUTHINFO">
     <parm name="AUTHTYPE" value="PAP"/>
     <parm name="AUTHNAME" value="roamwapuser"/>
     <parm name="AUTHSECRET" value="roamwappassw"/>
   </characteristic>
   <characteristic type="VALIDITY">
     <parm name="COUNTRY" value="228"/>
   </characteristic>
 </characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP2"/>
   <parm name="BEARER" value="GSM-SMS"/>
   <parm name="NAME" value="ANY NAME 2"/>
   <parm name="NAP-ADDRESS" value="+35809503401"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
 </characteristic>

</wap-provisioningdoc>
```

In the above example, bearer selection policies for GSM/CSD and GSM/SMS are shown.

The document provides information on how to access the default gateway via two NAP's. Note that complete information on NAP's as well as the physical proxies is given since it is not known in advance how much knowledge the ME has about the infrastructure.

7.3 Example 3

Infrastructure information related to several logical WSP proxies for a service domain with multiple access points. Vendor specific configuration data is also supplied. This situation is typically encountered when fetching connectivity documents from a SIM card [PROVSC].

```
<?xml version="1.0"?>
<!DOCTYPE wap-provisioningdoc PUBLIC "-//WAPFORUM//DTD PROV 1.0//EN"
"http://www.wapforum.org/DTD/prov.dtd">

<wap-provisioningdoc>

 <characteristic type="PXLOGICAL">
   <parm name="PROXY-ID" value="www.operator.com"/>
   <parm name="NAME" value="DefaultProxy"/>
   <parm name="MASTER"/>
   <parm name="PUSHENABLED" value="1"/>
   <parm name="STARTPAGE" value="http://www.operator.com/start.wml"/>
   <characteristic type="PXAUTHINFO">
     <parm name="PXAUTH-TYPE" value="HTTP BASIC"/>
     <parm name="PXAUTH-ID" value="httpusername"/>
     <parm name="PXAUTH-PW" value="httpuserpassw"/>
   </characteristic>
   <characteristic type="PXPHYSICAL">
     <parm name="PHYSICAL-PROXY-ID" value="PROXY 1"/>
```

```
     <parm name="DOMAIN" value=" "/>
     <parm name="PXADDR" value="215.221.51.5"/>
     <parm name="PXADDRTYPE" value="IPV4"/>
     <parm name="TO-NAPID" value="NAP1"/>
     <characteristic type="PORT">
       <parm name="PORTNBR" value="9203"/>
     </characteristic>
   </characteristic>
   <characteristic type="PXPHYSICAL">
     <parm name="PHYSICAL-PROXY-ID" value="PROXY 2"/>
     <parm name="DOMAIN" value=" "/>
     <parm name="DOMAIN" value="/SMS/"/>
     <parm name="PXADDR" value="9201611"/>
     <parm name="PXADDRTYPE" value="E164"/>
     <parm name="TO-NAPID" value="NAP3"/>
     <characteristic type="PORT">
       <parm name="PORTNBR" value="9201"/>
     </characteristic>
   </characteristic>
 </characteristic>

<characteristic type="PXLOGICAL">
  <parm name="PROXY-ID" value="163.187.51.4"/>
  <parm name="NAME" value="EcommerceProxy"/>
  <parm name="STARTPAGE" value="http://www.ecom.com/startpage.wml"/>
  <characteristic type="PXAUTHINFO">
    <parm name="PXAUTH-TYPE" value="HTTP BASIC"/>
    <parm name="PXAUTH-ID" value="httpusername"/>
    <parm name="PXAUTH-PW" value="httpuserpassw"/>
  </characteristic>
  <characteristic type="PXPHYSICAL">
    <parm name="PHYSICAL-PROXY-ID" value="PROXY 1"/>
    <parm name="DOMAIN" value="www.ecom.com/"/>
    <parm name="PXADDR" value="166.224.1.68"/>
    <parm name="PXADDRTYPE" value="IPV4"/>
    <parm name="TO-NAPID" value="NAP1"/>
    <parm name="TO-NAPID" value="NAP2"/>
    <characteristic type="PORT">
       <parm name="PORTNBR" value="9203"/>
    </characteristic>
  </characteristic>
  <characteristic type="PXPHYSICAL">
    <parm name="PHYSICAL-PROXY-ID" value="PROXY 2"/>
    <parm name="DOMAIN" value="www.ecom.com/SMSContent/"/>
    <parm name="DOMAIN" value="www.ecom.com/SMS/"/>
    <parm name="PXADDR" value="9400410"/>
    <parm name="PXADDRTYPE" value="E164"/>
    <parm name="TO-NAPID" value="NAP3"/>
    <parm name="TO-NAPID" value="NAP4"/>
    <characteristic type="PORT">
       <parm name="PORTNBR" value="9203"/>
    </characteristic>
  </characteristic>
 </characteristic>
```

```
 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP1"/>
   <parm name="BEARER" value="GSM-CSD"/>
   <parm name="NAME" value="ANY NAME 3"/>
   <parm name="NAP-ADDRESS" value="+35808124303"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
   <parm name="CALLTYPE" value="ANALOG_MODEM"/>
   <characteristic type="NAPAUTHINFO">
     <parm name="AUTHTYPE" value="PAP"/>
     <parm name="AUTHNAME" value="wapuser"/>
     <parm name="AUTHSECRET" value="wappassw"/>
   </characteristic>
   <characteristic type="VALIDITY">
     <parm name="COUNTRY" value="228"/>
     <parm name="NETWORK" value="001"/>
   </characteristic>
 </characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP2"/>
   <parm name="BEARER" value="GSM-CSD"/>
   <parm name="NAME" value="ANY NAME 4"/>
   <parm name="NAP-ADDRESS" value="+35808124002"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
   <parm name="CALLTYPE" value="ANALOG_MODEM"/>
   <parm name="LINKSPEED" value="AUTOBAUDING"/>
   <characteristic type="NAPAUTHINFO">
     <parm name="AUTHTYPE" value="PAP"/>
     <parm name="AUTHNAME" value="wwwmmmuser"/>
     <parm name="AUTHSECRET" value="wwwmmmsecret"/>
   </characteristic>
   <characteristic type="VALIDITY">
     <parm name="COUNTRY" value="113"/>
     <parm name="NETWORK" value="004"/>
   </characteristic>
 </characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP3"/>
   <parm name="BEARER" value="GSM-SMS"/>
   <parm name="NAME" value="ANY NAME 5"/>
   <parm name="NAP-ADDRESS" value="+35809503401"/>
   <parm name="NAP-ADDRTYPE" value="E164"/>
 </characteristic>

 <characteristic type="NAPDEF">
   <parm name="NAPID" value="NAP4"/>
   <parm name="BEARER" value="GSM-SMS"/>
   <parm name="NAME" value="ANY NAME 6"/>
   <parm name="NAP-ADDRESS" value="+36209400400"/>
 </characteristic>

<characteristic type="NAPDEF">
```

```
   <parm name="NAPID" value="INTERNET"/>
   <parm name="BEARER" value="GSM-GPRS"/>
   <parm name="NAME" value="MY ISP GPRS"/>
   <parm name="NAP-ADDRESS" value="MYISP.gprs"/>
   <parm name="NAP-ADDRTYPE" value="APN"/>
   <parm name="DELIVERY-ERR-SDU" value="3"/>
   <parm name="RESIDUAL-BER" value="70"/>
   <parm name="SDU-ERROR-RATIO" value="6"/>
   <parm name="TRAFFIC-CLASS" value="60"/>
   <parm name="TRAFFIC-HANDL-PRIO" value="1"/>
   <parm name="MAX-BITRATE-DNLINK" value="8"/>
   <characteristic type="NAPAUTHINFO">
     <parm name="AUTHTYPE" value="PAP"/>
     <parm name="AUTHNAME" value="wwwmmmuser"/>
     <parm name="AUTHSECRET" value="wwwmmmsecret"/>
   </characteristic>
</characteristic>

 <characteristic type="VENDORCONFIG">
   <parm name="NAME" value="PRODUCT"/>
   <parm name="RINGTONES" value="http://www.sonera.fi/music.wml"/>
 </characteristic>

</wap-provisioningdoc>
```

7.4 Example 4

Bootstrap information.

```
<?xml version="1.0"?>
<!DOCTYPE wap-provisioningdoc PUBLIC "-//WAPFORUM//DTD PROV 1.0//EN"
"http://www.wapforum.org/DTD/prov.dtd">

<wap-provisioningdoc>

<characteristic type="BOOTSTRAP">
  <parm name="CONTEXT-ALLOW" value="0"/>
  <parm name="PROVURL" value="http://www.operator.com/TPS/"/>
</characteristic>


 <characteristic type="PXLOGICAL">
  <parm name="PROXY-ID" value="170.187.51.4"/>
  <parm name="NAME" value="TrustedProvProxy"/>
  <parm name="TRUST"/>
  <parm name="PUSHENABLED" value="1"/>
  <parm name="STARTPAGE" value="http://www.operator.com/home.wml"/>
  <characteristic type="PXAUTHINFO">
    <parm name="PXAUTH-TYPE" value="HTTP BASIC"/>
    <parm name="PXAUTH-ID" value="subscribername"/>
    <parm name="PXAUTH-PW" value="subscriberpassw"/>
  </characteristic>
  <characteristic type="PXPHYSICAL">
```

```
   <parm name="PHYSICAL-PROXY-ID" value="PROXY 1"/>
   <parm name="DOMAIN" value=".operator.com/"/>
   <parm name="PXADDR" value="221.125.33.5"/>
   <parm name="PXADDRTYPE" value="IPV4"/>
   <parm name="TO-NAPID" value="NAP1"/>
  </characteristic>
  <characteristic type="PXPHYSICAL">
   <parm name="PHYSICAL-PROXY-ID" value="PROXY 2"/>
   <parm name="DOMAIN" value="www.operator.com/"/>
   <parm name="PXADDR" value="9201612"/>
   <parm name="PXADDRTYPE" value="E164"/>
   <parm name="TO-NAPID" value="NAP2"/>
  </characteristic>
 </characteristic>

 <characteristic type="NAPDEF">
  <parm name="NAPID" value="NAP1"/>
  <parm name="BEARER" value="GSM-CSD"/>
  <parm name="NAME" value="ANY NAME 7"/>
  <parm name="NAP-ADDRESS" value="+35808124303"/>
  <parm name="NAP-ADDRTYPE" value="E164"/>
  <parm name="CALLTYPE" value="ANALOG_MODEM"/>
  <characteristic type="NAPAUTHINFO">
    <parm name="AUTHTYPE" value="PAP"/>
    <parm name="AUTHNAME" value="wapuser"/>
    <parm name="AUTHSECRET" value="wappassw"/>
  </characteristic>
  <characteristic type="VALIDITY">
   <parm name="COUNTRY" value="228"/>
   <parm name="NETWORK" value="001"/>
  </characteristic>
 </characteristic>


<characteristic type="NAPDEF">
  <parm name="NAPID" value="NAP2"/>
  <parm name="BEARER" value="GSM-SMS"/>
  <parm name="NAME" value="ANY NAME 8"/>
  <parm name="NAP-ADDRESS" value="+35809503401"/>
 </characteristic>
</wap-provisioningdoc>
```

8. WBXML Encoding

8.1 Element Tokens

The following token codes represent tags in code page zero (0). All numbers are in hexadecimal.

Tag Name	***Token***
wap-provisioningdoc	5
characteristic	6
parm	7

8.2 Attribute Start Tokens

The following token codes represent the start of an attribute in code page zero (0). All numbers are in hexadecimal.

8.2.1 Wap-provisioningdoc Attribute Start Tokens

Attribute Name	***Attribute Value Prefix***	***Token***
version		45
version	1.0	46

8.2.2 Characteristic Attribute Start Tokens

Attribute Name	***Attribute Value Prefix***	***Token***
type		50
type	PXLOGICAL	51
type	PXPHYSICAL	52
type	PORT	53
type	VALIDITY	54
type	NAPDEF	55
type	BOOTSTRAP	56
type	VENDORCONFIG	57
type	CLIENTIDENTITY	58
type	PXAUTHINFO	59
type	NAPAUTHINFO	5A

8.2.3 Parm Attribute Start Tokens

Attribute Name		***Token***
name		5
value		6
name	NAME	7
name	NAP-ADDRESS	8
name	NAP-ADDRTYPE	9
name	CALLTYPE	A
name	VALIDUNTIL	B

Attribute Name		***Token***
name	AUTHTYPE	C
name	AUTHNAME	D
name	AUTHSECRET	E
name	LINGER	F
name	BEARER	10
name	NAPID	11
name	COUNTRY	12
name	NETWORK	13
name	INTERNET	14
name	PROXY-ID	15
name	PROXY-PROVIDER-ID	16
name	DOMAIN	17
name	PROVURL	18
name	PXAUTH-TYPE	19
name	PXAUTH-ID	1A
name	PXAUTH-PW	1B
name	STARTPAGE	1C
name	BASAUTH-ID	1D
name	BASAUTH-PW	1E
name	PUSHENABLED	1F
name	PXADDR	20
name	PXADDRTYPE	21
name	TO-NAPID	22
name	PORTNBR	23
name	SERVICE	24
name	LINKSPEED	25
name	DNLINKSPEED	26
name	LOCAL-ADDR	27
name	LOCAL-ADDRTYPE	28
name	CONTEXT-ALLOW	29
name	TRUST	2A
name	MASTER	2B
name	SID	2C
name	SOC	2D
name	WSP-VERSION	2E
name	PHYSICAL-PROXY-ID	2F
name	CLIENT-ID	30
name	DELIVERY-ERR-SDU	31
name	DELIVERY-ORDER	32
name	TRAFFIC-CLASS	33
name	MAX-SDU-SIZE	34
name	MAX-BITRATE-UPLINK	35
name	MAX-BITRATE-DNLINK	36
name	RESIDUAL-BER	37
name	SDU-ERROR-RATIO	38
name	TRAFFIC-HANDL-PRIO	39
name	TRANSFER-DELAY	3A
name	GUARANTEED-BITRATE-UPLINK	3B
name	GUARANTEED-BITRATE-DNLINK	3C

8.3 Parameter Token Values

Here, values of parameters, and their tokenization, are defined within each parameter description. The token table is logically divided in different subsections, however the token values are for global use within the attribute Value of the PARM element.

The following token codes represent attribute values in code page zero (0). All numbers are in hexadecimal.

8.3.1 ADDRTYPE Value

Attribute Value	***Token***
IPV4	85
IPV6	86
E164	87
ALPHA	88
APN	89
SCODE	8A
TETRA-ITSI	8B
MAN	8C

8.3.2 CALLTYPE Value

Attribute Value	***Token***
ANALOG-MODEM	90
V.120	91
V.110	92
X.31	93
BIT-TRANSPARENT	94
DIRECT-ASYNCHRONOUS-DATA-SERVICE	95

8.3.3 AUTHTYPE/PXAUTH-TYPE Value

Attribute Value	***Token***
PAP	9A
CHAP	9B
HTTP-BASIC	9C
HTTP-DIGEST	9D
WTLS-SS	9E

8.3.4 BEARER Value

Attribute Value	***Token***
GSM-USSD	A2
GSM-SMS	A3
ANSI-136-GUTS	A4
IS-95-CDMA-SMS	A5
IS-95-CDMA-CSD	A6
IS-95-CDMA-PACKET	A7
ANSI-136-CSD	A8
ANSI-136-GPRS	A9

Attribute Value	***Token***
GSM-CSD	AA
GSM-GPRS	AB
AMPS-CDPD	AC
PDC-CSD	AD
PDC-PACKET	AE
IDEN-SMS	AF
IDEN-CSD	B0
IDEN-PACKET	B1
FLEX/REFLEX	B2
PHS-SMS	B3
PHS-CSD	B4
TETRA-SDS	B5
TETRA-PACKET	B6
ANSI-136-GHOST	B7
MOBITEX-MPAK	B8

8.3.5 LINKSPEED Value

Attribute Value	***Token***
AUTOBAUDING	C5

8.3.6 SERVICE Value

Attribute Value	***Token***
CL-WSP	CA
CO-WSP	CB
CL-SEC-WSP	CC
CO-SEC-WSP	CD
CL-SEC-WTA	CE
CO-SEC-WTA	CF

Appendix A. Static Conformance Requirements

A.1 Client Features

A.1.1 Character Set and Encoding

Item	Function	Reference	Status	Requirement
ProvCont-CSE-C-001	UTF-8 Encoding.	5.7, [WML]	O	
ProvCont-CSE-C-002	UTF-16 Encoding.	5.7, [WML]	O	
ProvCont-CSE-C-003	UCS-4 Encoding.	5.7, [WML]	O	
ProvCont-CSE-C-004	Other character encoding.	5.7, [WML]	O	
ProvCont-CSE-C-005	Reference processing (no meta-information).	5.7, [WML]	M	
ProvCont-CSE-C-006	Character entities.	5.7, [WML]	M	

A.1.2 Content Format and Tokenization

Item	Function	Reference	Status	Requirement
ProvCont-CO-C-001	Support for the WAP-PROVISIONINGDOC DTD.	5.1	M	
ProvCont-CO-C-002	Support for WAP-PROVISIONINGDOC in textual form (text/vnd.wap.connectivity-xml).	5.2	O	
ProvCont-CO-C-003	Support for WAP-PROVISIONINGDOC in tokenized form (application/vnd.wap.connectivity-wbxml).	8	M	WBXML-1 AND WBXML-11
ProvCont-CO-C-004	Support for media type parameter MAC	5.3	M	
ProvCont-CO-C-005	Support for media type parameter SEC	5.3	M	

A.1.3 Elements and attributes

Item	Function	Reference	Status	Requirement
ProvCont-CEA-C-001	Support for the element wap-provisioningdoc	5.4	M	
ProvCont-CEA-C-002	Support for the element characteristic	5.5	M	
ProvCont-CEA-C-003	Support for the element parm	5.6	M	
ProvCont-CEA-C-004	Support for the wap-provisioningdoc attribute “version”	5.4	M	
ProvCont-CEA-C-005	Support for the characteristic attribute “type”	5.5	M	
ProvCont-CEA-C-006	Support for the parm attribute “name”	5.6	M	
ProvCont-CEA-C-007	Support for the parm attribute “value”	5.6	M	

A.1.4 Characteristics

Item	Function	Reference	Status	Requirement
ProvCont-CC-C-001	Support for the characteristic PXLOGICAL	5.5.1	M	
ProvCont-CC-C-002	Support for the characteristic PXPHYSICAL	5.5.2	M	
ProvCont-CC-C-003	Support for the characteristic PXAUTHINFO	5.5.3	O	ProvCont-CPA-C-001 AND ProvCont-CPA-C-002
ProvCont-CC-C-004	Support for the characteristic NAPDEF	5.5.5	M	
ProvCont-CC-C-005	Support for the characteristic NAPAUTHINFO	5.5.6	O	ProvCont-CNA-C-001 AND ProvCont-CNA-C-002 AND ProvCont-CNA-C-003
ProvCont-CC-C-006	Support for the characteristic PORT	5.5.4, 6.2	M	
ProvCont-CC-C-007	Support for the characteristic VALIDITY	5.5.7	O	ProvCont-CV-C-005 AND (ProvCont-CV-C-001 AND

Item	Function	Reference	Status	Requirement
				ProvCont-CV-C-002) OR (ProvCont-CV-C-003 AND ProvCont-CV-C-004)
ProvCont-CC-C-008	Support for the characteristic BOOTSTRAP	5.5.8	O	ProvCont-CB-C-002
ProvCont-CC-C-009	Support for the characteristic CLIENTIDENTITY	5.5.9	O	ProvCont-CID-C-001
ProvCont-CC-C-010	Support for the characteristic VENDORCONFIG	5.5.10	O	ProvCont-CVC-C-001

A.1.5 Characteristic PXLOGICAL

Item	Function	Reference	Status	Requirement
ProvCont-CPL-C-001	Support for the parm PROXY-ID	5.6.1	M	ProvCont-MLP-C-005
ProvCont-CPL-C-002	Support for the parm PROXY-PROVIDER-ID	5.6.1	O	ProvCont-MLP-C-021
ProvCont-CPL-C-003	Support for the parm NAME	5.6.1	M	ProvCont-MLP-C-001
ProvCont-CPL-C-004	Support for the parm DOMAIN	5.6.1	M	ProvCont-MLP-C-006
ProvCont-CPL-C-005	Support for the parm TRUST	5.6.1	O	
ProvCont-CPL-C-006	Support for the parm MASTER	5.6.1	O	
ProvCont-CPL-C-007	Support for the parm STARTPAGE	5.6.1	M	ProvCont-MLP-C-010
ProvCont-CPL-C-008	Support for the parm BASAUTH-ID	5.6.1	M	ProvCont-MLP-C-011
ProvCont-CPL-C-009	Support for the parm BASAUTH-PW	5.6.1	M	ProvCont-MLP-C-012
ProvCont-CPL-C-010	Support for the parm WSP-VERSION	5.6.1	O	
ProvCont-CPL-C-011	Support for the parm PUSHENABLED	5.6.1	O	
ProvCont-CPL-C-012	Support for PORT characteristic within PXLOGICAL	5.5.4	M	
ProvCont-CPL-C-013	Support for multiple PORT characteristics within PXLOGICAL	5.5.4	O	

A.1.6 Characteristic PXPHYSICAL

Item	Function	Reference	Status	Requirement
ProvCont-CPP-C-001	Support for the parm PHYSICAL-PROXY-ID	5.6.2	M	ProvCont-MLP-C-018
ProvCont-CPP-C-002	Support for the parm PXADDR	5.6.2	M	ProvCont-MLP-C-013
ProvCont-CPP-C-003	Support for the parm PXADDRTYPE	5.6.2	M	ProvCont-CPP-C-009 OR ProvCont-CPP-C-010 OR ProvCont-CPP-C-011 OR ProvCont-CPP-C-012
ProvCont-CPP-C-004	Support for the parm TO-NAPID	5.6.2	M	
ProvCont-CPP-C-005	Support for the parm DOMAIN	5.6.2	O	ProvCont-MLP-C-006
ProvCont-CPP-C-006	Support for the parm WSP-VERSION	5.6.2	O	
ProvCont-CPP-C-007	Support for the parm PUSHENABLED	5.6.2	O	
ProvCont-CPP-C-008	Support for the TO-NAPID value “INTERNET”	5.6.2	O	
ProvCont-CPP-C-009	Support for PXADDRTYPE value “IPV4”	5.6.2	O	
ProvCont-CPP-C-010	Support for PXADDRTYPE value “IPV6”	5.6.2	O	
ProvCont-CPP-C-011	Support for PXADDRTYPE value “E164”	5.6.2	O	
ProvCont-CPP-C-012	Support for PXADDRTYPE value “ALPHA”	5.6.2	O	
ProvCont-CPP-C-013	Support for PORT characteristic within PXPHYSICAL	5.5.4	M	
ProvCont-CPP-C-014	Support for multiple PORT characteristics within PXPHYSICAL	5.5.4	O	
ProvCont-CPP-C-015	Support for multiple TO-NAPID within one PXPHYSICAL	5.6.2	O	

A.1.7 Characteristic PXAUTHINFO

Item	Function	Reference	Status	Requirement
ProvCont-CPA-C-001	Support for the parm PXAUTH-TYPE	5.6.3	O	ProvCont-CPA-C-004 OR ProvCont-CPA-C-005 OR ProvCont-CPA-C-006
ProvCont-CPA-C-002	Support for the parm PXAUTH-ID	5.6.3	O	ProvCont-CPA-C-007 AND ProvCont-MLP-C-008
ProvCont-CPA-C-003	Support for the parm PXAUTH-PW	5.6.3	O	ProvCont-MLP-C-009
ProvCont-CPA-C-004	Support for PXAUTH-TYPE value “HTTP-BASIC”	5.6.3	O	ProvCont-CPA-C-003
ProvCont-CPA-C-005	Support for PXAUTH-TYPE value “HTTP-DIGEST”	5.6.3	O	ProvCont-CPA-C-003
ProvCont-CPA-C-006	Support for PXAUTH-TYPE value “WTLS-SS”	5.6.3	O	
ProvCont-CPA-C-007	Usage of parm PXAUTH-ID	6.4	O	

A.1.8 Characteristic PORT

Item	Function	Reference	Status	Requirement
ProvCont-CP-C-001	Support for the parm PORTNBR	5.6.4	M	
ProvCont-CP-C-002	Support for the parm SERVICE	5.6.4	M	ProvCont-CP-C-003 OR ProvCont-CP-C-004 OR ProvCont-CP-C-005 OR ProvCont-CP-C-006 OR ProvCont-CP-C-007 OR ProvCont-CP-C-008
ProvCont-CP-C-003	Support for SERVICE value “CL-WSP”	5.6.4	O	
ProvCont-CP-C-004	Support for SERVICE value “CO-WSP”	5.6.4	O	

Item	Function	Reference	Status	Requirement
ProvCont-CP-C-005	Support for SERVICE value “CL-SEC-WSP”	5.6.4	O	
ProvCont-CP-C-006	Support for SERVICE value “CO-SEC-WSP”	5.6.4	O	
ProvCont-CP-C-007	Support for SERVICE value “CO-SEC-WTA”	5.6.4	O	
ProvCont-CP-C-008	Support for SERVICE value “CL-SEC-WTA”	5.6.4	O	

A.1.9 Characteristic NAPDEF

Item	Function	Reference	Status	Requirement

Item	Function	Reference	Status	Requirement
ProvCont-CND-C-001	Support for the parm NAPID	5.6.5	M	ProvCont-MLP-C-019
ProvCont-CND-C-002	Support for the parm BEARER	5.6.5	M	ProvCont-CBS-C-001 OR ProvCont-CBS-C-002 OR ProvCont-CBS-C-003 OR ProvCont-CBS-C-004 OR ProvCont-CBS-C-005 OR ProvCont-CBS-C-006 OR ProvCont-CBS-C-007 OR ProvCont-CBS-C-008 OR ProvCont-CBS-C-009 OR ProvCont-CBS-C-010 OR ProvCont-CBS-C-011 OR ProvCont-CBS-C-012 OR ProvCont-CBS-C-013 OR ProvCont-CBS-C-014 OR ProvCont-CBS-C-015 OR ProvCont-CBS-C-016 OR ProvCont-CBS-C-017 OR ProvCont-CBS-C-018 OR ProvCont-CBS-C-019 OR ProvCont-CBS-C-020 OR ProvCont-CBS-C-021 OR ProvCont-CBS-C-022 OR ProvCont-CBS-C-023
ProvCont-CND-C-003	Support for the parm NAME	5.6.5	M	ProvCont-MLP-C-001

Item	Function	Reference	Status	Requirement
ProvCont-CND-C-004	Support for the parm INTERNET	5.6.5	O	
ProvCont-CND-C-005	Support for the parm NAP-ADDRESS	5.6.5	M	ProvCont-MLP-C-002
ProvCont-CND-C-006	Support for the parm NAP-ADDRTYPE	5.6.5	M	ProvCont-CND-C-026 OR ProvCont-CND-C-027 OR ProvCont-CND-C-028 OR ProvCont-CND-C-029 OR ProvCont-CND-C-030 OR ProvCont-CND-C-031 OR ProvCont-CND-C-032 OR ProvCont-CND-C-033
ProvCont-CND-C-007	Support for the parm CALLTYPE	5.6.5	O	ProvCont-CND-C-034 OR ProvCont-CND-C-035 OR ProvCont-CND-C-036 OR ProvCont-CND-C-037 OR ProvCont-CND-C-038 OR ProvCont-CND-C-039
ProvCont-CND-C-008	Support for the parm LOCAL-ADDR	5.6.5	O	ProvCont-CND-C-009
ProvCont-CND-C-009	Support for the parm LOCAL-ADDRTYPE	5.6.5	O	ProvCont-CND-C-040 OR ProvCont-CND-C-041
ProvCont-CND-C-010	Support for the parm LINKSPEED	5.6.5	O	ProvCont-MLP-C-014
ProvCont-CND-C-011	Support for the parm DNLINKSPEED	5.6.5	O	ProvCont-MLP-C-015
ProvCont-CND-C-012	Support for the parm LINGER	5.6.5	O	ProvCont-MLP-C-016

Item	Function	Reference	Status	Requirement
ProvCont-CND-C-013	Support for the parm DELIVERY-ERR-SDU	5.6.5	O	
ProvCont-CND-C-014	Support for the parm DELIVERY-ORDER	5.6.5	O	
ProvCont-CND-C-015	Support for the parm TRAFFIC-CLASS	5.6.5	O	
ProvCont-CND-C-016	Support for the parm MAX-SDU-SIZE	5.6.5	O	
ProvCont-CND-C-017	Support for the parm MAX-BITRATE-UPLINK	5.6.5	O	
ProvCont-CND-C-018	Support for the parm MAX-BITRATE-DNLINK	5.6.5	O	
ProvCont-CND-C-019	Support for the parm RESIDUAL-BER	5.6.5	O	
ProvCont-CND-C-020	Support for the parm SDU-ERROR-RATIO	5.6.5	O	
ProvCont-CND-C-021	Support for the parm TRAFFIC-HANDL-PRIO	5.6.5	O	
ProvCont-CND-C-022	Support for the parm TRANSFER-DELAY	5.6.5	O	
ProvCont-CND-C-023	Support for the parm GUARANTEED-BITRATE-UPLINK	5.6.5	O	
ProvCont-CND-C-024	Support for the parm GUARANTEED-BITRATE-DNLINK	5.6.5	O	
ProvCont-CND-C-025	Support for multiple BEARER within one NAPDEF	5.6.5	O	
ProvCont-CND-C-026	Support for NAP-ADDRTYPE value “IPV4”	5.6.5	O	
ProvCont-CND-C-027	Support for NAP-ADDRTYPE value “IPV6”	5.6.5	O	
ProvCont-CND-C-028	Support for NAP-ADDRTYPE value “E164”	5.6.5	O	
ProvCont-CND-C-029	Support for NAP-ADDRTYPE value “ALPHA”	5.6.5	O	
ProvCont-CND-C-030	Support for NAP-ADDRTYPE value “APN”	5.6.5	O	
ProvCont-CND-C-031	Support for NAP-ADDRTYPE value “SCODE”	5.6.5	O	
ProvCont-CND-C-032	Support for NAP-ADDRTYPE value “TETRA-ITSI”	5.6.5	O	
ProvCont-CND-C-033	Support for NAP-ADDRTYPE value “MAN”	5.6.5	O	
ProvCont-CND-C-034	Support for CALLTYPE value “ANALOG-MODEM”	5.6.5	O	

Item	Function	Reference	Status	Requirement
ProvCont-CND-C-035	Support for CALLTYPE value “V.120”	5.6.5	O	
ProvCont-CND-C-036	Support for CALLTYPE value “V.110”	5.6.5	O	
ProvCont-CND-C-037	Support for CALLTYPE value “X.31”	5.6.5	O	
ProvCont-CND-C-038	Support for CALLTYPE value “BIT-TRANSPARENT”	5.6.5	O	
ProvCont-CND-C-039	Support for CALLTYPE value “DIRECT-ASYNCHRONOUS-DATA-SERVICE”	5.6.5	O	
ProvCont-CND-C-040	Support for LOCAL-ADDRTYPE value “IPV4”	5.6.5	O	
ProvCont-CND-C-041	Support for LOCAL-ADDRTYPE value “IPV6”	5.6.5	O	

A.1.10 Bearers supported within NAPDEF characteristic

Item	Function	Reference	Status	Requirement
ProvCont-CBS-C-001	Support for BEARER value “GSM-USSD”	5.6.5	O	
ProvCont-CBS-C-002	Support for BEARER value “GSM-SMS”	5.6.5	O	
ProvCont-CBS-C-003	Support for BEARER value “ANSI-136-GUTS”	5.6.5	O	
ProvCont-CBS-C-004	Support for BEARER value “IS-95-CDMA-SMS”	5.6.5	O	
ProvCont-CBS-C-005	Support for BEARER value “IS-95-CDMA-CSD”	5.6.5	O	
ProvCont-CBS-C-006	Support for BEARER value “IS-95-CDMA-PACKET”	5.6.5	O	
ProvCont-CBS-C-007	Support for BEARER value “ANSI-136-CSD”	5.6.5	O	
ProvCont-CBS-C-008	Support for BEARER value “ANSI-136-GPRS”	5.6.5	O	
ProvCont-CBS-C-009	Support for BEARER value “GSM-CSD”	5.6.5	O	
ProvCont-CBS-C-010	Support for BEARER value “GSM-GPRS”	5.6.5	O	
ProvCont-CBS-C-011	Support for BEARER value “AMPS-CDPD”	5.6.5	O	
ProvCont-CBS-C-012	Support for BEARER value “PDC-CSD”	5.6.5	O	
ProvCont-CBS-C-013	Support for BEARER value “PDC-PACKET”	5.6.5	O	

Item	Function	Reference	Status	Requirement
ProvCont-CBS-C-014	Support for BEARER value “IDEN-SMS”	5.6.5	O	
ProvCont-CBS-C-015	Support for BEARER value “IDEN-CSD”	5.6.5	O	
ProvCont-CBS-C-016	Support for BEARER value “IDEN-PACKET”	5.6.5	O	
ProvCont-CBS-C-017	Support for BEARER value “FLEX/REFLEX”	5.6.5	O	
ProvCont-CBS-C-018	Support for BEARER value “PHS-SMS”	5.6.5	O	
ProvCont-CBS-C-019	Support for BEARER value “PHS-CSD”	5.6.5	O	
ProvCont-CBS-C-020	Support for BEARER value “TETRA-SDS”	5.6.5	O	
ProvCont-CBS-C-021	Support for BEARER value “TETRA-PACKET”	5.6.5	O	
ProvCont-CBS-C-022	Support for BEARER value “ANSI-136-GHOST”	5.6.5	O	
ProvCont-CBS-C-023	Support for BEARER value “MOBITEX-MPAK”	5.6.5	O	

A.1.11 Characteristic NAPAUTHINFO

Item	Function	Reference	Status	Requirement
ProvCont-CNA-C-001	Support for the parm AUTHTYPE	5.6.6	O	ProvCont-CNA-C-004 OR ProvCont-CNA-C-005
ProvCont-CNA-C-002	Support for the parm AUTHNAME	5.6.6	O	ProvCont-MLP-C-003
ProvCont-CNA-C-003	Support for the parm AUTHSECRET	5.6.6	O	ProvCont-MLP-C-004
ProvCont-CNA-C-004	Support for AUTHTYPE value “PAP”	5.6.6	O	
ProvCont-CNA-C-005	Support for AUTHTYPE value “CHAP”	5.6.6	O	

A.1.12 Characteristic VALIDITY

Item	Function	Reference	Status	Requirement
ProvCont-CV-C-001	Support for the parm COUNTRY	5.6.7	O	
ProvCont-CV-C-002	Support for the parm NETWORK	5.6.7	O	ProvCont-CV-C-001
ProvCont-CV-C-003	Support for the parm SID	5.6.7	O	ProvCont-CV-C-004
ProvCont-CV-C-004	Support for the parm SOC	5.6.7	O	
ProvCont-CV-C-005	Support for the parm VALIDUNTIL	5.6.7	O	ProvCont-MLP-C-017
ProvCont-CV-C-006	Support for multiple MNC in NETWORK value field	5.6.7	O	
ProvCont-CV-C-007	Support for multiple SID in SID value field	5.6.7	O	

A.1.13 Characteristic BOOTSTRAP

Item	Function	Reference	Status	Requirement
ProvCont-CB-C-001	Support for the parm PROVURL	5.6.8	O	ProvCont-MLP-C-007
ProvCont-CB-C-002	Support for the parm CONTEXT-ALLOW	5.6.8	O	
ProvCont-CB-C-003	Support for the parm PROXY-ID	5.6.8	O	ProvCont-MLP-C-005
ProvCont-CB-C-004	Support for parm NETWORK	5.6.8	O	ProvCont-CB-C-005
ProvCont-CB-C-005	Support for parm COUNTRY	5.6.8	O	
ProvCont-CB-C-006	Support for the parm NAME	5.6.8	O	ProvCont-MLP-C-001

A.1.14 Characteristic CLIENTIDENTITY

Item	Function	Reference	Status	Requirement
ProvCont-CID-C-001	Support for parm CLIENT-ID	5.6.9	O	ProvCont-CID-C-002 AND ProvCont-MLP-C-020
ProvCont-CID-C-002	Usage of parm CLIENT-ID	6.4	O	

A.1.15 Characteristic VENDORCONFIG

Item	Function	Reference	Status	Requirement
ProvCont-CVC-C-001	Support for parm NAME	5.6.10	O	ProvCont-MLP-C-001
ProvCont-CVC-C-002	Support for other parameters than NAME	5.6.10	O	

A.1.16 Minimum Length of parameter fields

Item	Function	Reference	Status	Requirement
ProvCont-MLP-C-001	Support for minimum length of parm NAME	6.1	O	

Item	Function	Reference	Status	Requirement
ProvCont-MLP-C-002	Support for minimum length of parm NAP-ADDRESS	6.1	M	
ProvCont-MLP-C-003	Support for minimum length of parm AUTHNAME	6.1	O	
ProvCont-MLP-C-004	Support for minimum length of parm AUTHSECRET	6.1	O	
ProvCont-MLP-C-005	Support for minimum length of parm PROXY-ID	6.1	O	
ProvCont-MLP-C-006	Support for minimum length of parm DOMAIN	6.1	O	
ProvCont-MLP-C-007	Support for minimum length of parm PROVURL	6.1	O	
ProvCont-MLP-C-008	Support for minimum length of parm PXAUTH-ID	6.1	O	
ProvCont-MLP-C-009	Support for minimum length of parm PXAUTH-PW	6.1	O	
ProvCont-MLP-C-010	Support for minimum length of parm STARTPAGE	6.1	M	
ProvCont-MLP-C-011	Support for minimum length of parm BASAUTH-ID	6.1	M	
ProvCont-MLP-C-012	Support for minimum length of parm BASAUTH-PW	6.1	M	
ProvCont-MLP-C-013	Support for minimum length of parm PXADDR	6.1	M	
ProvCont-MLP-C-014	Support for minimum length of parm LINKSPEED	6.1	O	
ProvCont-MLP-C-015	Support for minimum length of parm DNLINKSPEED	6.1	O	
ProvCont-MLP-C-016	Support for minimum length of parm LINGER	6.1	O	
ProvCont-MLP-C-017	Support for minimum length of parm VALIDUNTIL	6.1	O	
ProvCont-MLP-C-018	Support for minimum length of parm PHYSICAL-PROXY-ID	6.1	M	
ProvCont-MLP-C-019	Support for minimum length of parm NAPID	6.1	M	

Item	Function	Reference	Status	Requirement
ProvCont-MLP-C-020	Support for minimum length of parm CLIENT-ID	6.1	O	
ProvCont-MLP-C-021	Support for minimum length of parm PROXY-PROVIDER-ID	6.1	O	

A.2 Server Features

Item	Function	Reference	Status	Requirement
ProvCont-SG-S-001	Encoding between textual and tokenized version of provisioning content	8	M	WBXML-1 AND WBXML-2 AND WBXML-4 AND WBXML-5 AND WBXML-6 AND WBXML-8

Appendix B. History and Contact Information

Document history		
Date	**Status**	**Comment**
14-March-2001	Approved	Baseline specification
24-July-2001	Approved	SIN WAP-183_001-ProvCont-20010614-a incorporated in the specification.

Contact Information

http://www.wapforum.org.

technical.comments@wapforum.org