

**Open Service Access (OSA);
Parlay X Web Services;
Part 16: Geocoding
(Parlay X 3)**



Reference

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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN), and is now submitted for the ETSI standards Membership Approval Procedure.

The present document is part 16 of a multi-part deliverable covering Open Service Access (OSA); Parlay X 3 Web Services, as identified below:

- Part 1: "Common";
- Part 2: "Third Party Call";
- Part 3: "Call Notification";
- Part 4: "Short Messaging";
- Part 5: "Multimedia Messaging";
- Part 6: "Payment";
- Part 7: "Account Management";
- Part 8: "Terminal Status";
- Part 9: "Terminal Location";
- Part 10: "Call Handling";
- Part 11: "Audio Call";
- Part 12: "Multimedia Conference";
- Part 13: "Address List Management";
- Part 14: "Presence";
- Part 15: "Message Broadcast";
- Part 16: "Geocoding";**
- Part 17: "Application-driven Quality of Service (QoS)";
- Part 18: "Device Capabilities and Configuration";
- Part 19: "Multimedia Streaming Control";
- Part 20: "Multimedia Multicast Session Management".

The present document has been defined jointly between ETSI, The Parlay Group (<http://www.parlay.org>) and the 3GPP.

The present document forms part of the Parlay X 3.0 set of specifications.

The present document is equivalent to 3GPP TS 29.199-16 V7.1.2 (Release 7).

1 Scope

The present document is part 16 of the Stage 3 Parlay X 3 Web Services specification for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e. the OSA APIs.

The present document specifies the Geocoding Web Service. The following are defined here:

- Name spaces.
- Sequence diagrams.
- Data definitions.
- Interface specification plus detailed method descriptions.
- Fault definitions.
- Service Policies.
- WSDL Description of the interfaces.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
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 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] W3C Recommendation (2 May 2001): "XML Schema Part 2: Datatypes".

NOTE: Available at <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>.

- [2] ETSI ES 202 504-1: "Open Service Access (OSA); Parlay X Web Services; Part 1: Common (Parlay X 3)".
- [3] ETSI ES 202 504-9: "Open Service Access (OSA); Parlay X Web Services; Part 9: Terminal Location (Parlay X 3)".
- [4] ISO 3166: "Codes for the representation of names of countries and their subdivisions".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 202 504-1 [2] and the following apply.

address: Set of strings that represent address information for a geographical place. It consists of the country, state, district, city, street, house number and zip/postal code. In this specification, the address means a location address except where otherwise noted.

coordinates: latitude, longitude pair that identifies a point on the Earth's surface

geocoding: transformation of a description of a address, such as a place name, street address or postal code, into a normalized description of the location with a geographical coordinates

location: specific set of coordinates

reverse geocoding: transformation of a given location into a normalized description of address

terminal number: string of decimal digits that uniquely identify a terminal

NOTE: Address is a name that is used in both the Geocoding and Terminal Location Web Services. The former uses address in the customary sense of a location address, while the latter uses it in the sense of a terminal identifier represented as a URI string. So **terminal number** is a better name for what Parlay X Terminal Location calls an address.

3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in ES 202 504-1 [2], ES 202 504-9 [3] and the following apply:

GMLC	Gateway Mobile Location Center
MLP	Mobile Location Protocol
MMS	Multimedia Message
MPC	Mobile Positioning Center
OMA	Open Mobile Alliance
OpenLS	Open Location Services
URI	Uniform Resource Identifier
XML	Extensible Markup Language

4 Detailed service description

While the Parlay X Terminal Location Web Service provides access to the geographical coordinates at which a terminal is located, the Geocoding Web Service provides an additional level of refinement, allowing the service developer to work with actual location addresses and the like:

- Request the location address of a terminal number.
- Request the location address of a group of terminals.

- Request the distance of a terminal from a specific location address.

When a request is made on behalf of a group of terminals, the response may be a full or a partial set of results. This allows the service to provide results based on a number of criteria, including number of terminals for which the request is made and amount of time required to retrieve the information. This allows the requestor to initiate additional requests for those terminals for which information was not provided.

Figure 1 shows the Geocoding Web Service architecture comprising Parlay X Application, Parlay X Gateway, Parlay Gateway, GMLC/MPC, Addressing server. OMA/MLP is used between the Parlay X Gateway and GMLC/MPC and OpenLS/XML is used between the Parlay X Gateway and the Addressing server.

If the subscriber asks for someone's address or for group addresses, the Parlay X Application invokes the **getAddressOfTerminal** or **getAddressOfTerminalForGroup** operations of the Geocoding Web Service. The Parlay X gateway gets the geographical coordinates of the terminal from GMLC/MPC and then feeds the retrieved geographical coordinates to addressing server. Finally it obtains the location address.

In the **getTerminalDistanceFromAddress** operation, the subscriber asks for the distance of a terminal from a specific address; the Parlay X Application calls the Geocoding Web Service. The Parlay X gateway gets the geographical coordinates of the address from an addressing server. The Parlay X gateway gets the geographical coordinates of the terminal from GMLC/MPC. Finally it computes the distance between the two sets of geographical coordinates.

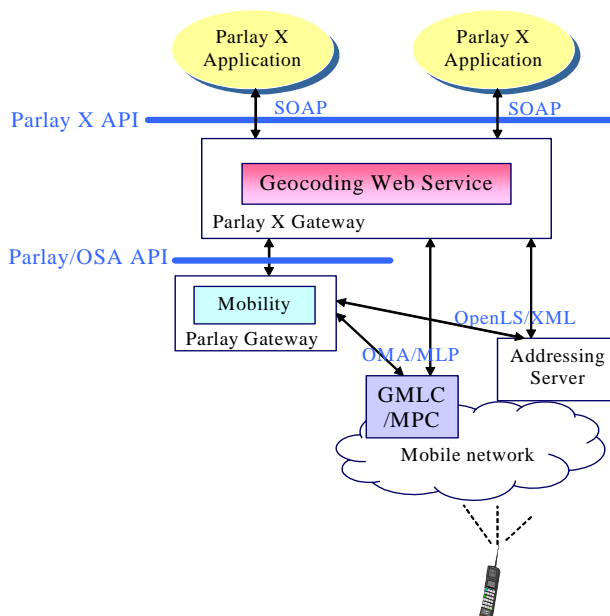


Figure 1: Geocoding Web Service architecture

5 Namespaces

The Geocoding interface uses the namespace:

http://www.csapi.org/wsd/parlayx/geocoding/terminal_address/v3_1

The data types are defined in the namespace:

http://www.csapi.org/schema/parlayx/geocoding/v3_0

The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [1]. The use of the name 'xsd' is not semantically significant.

6 Sequence diagrams

6.1 Get address of terminal

Pattern: Request / Response.

For an application to determine the address of terminal device, it provides a terminal number and desired accuracy, and receives the location address for the device requested.

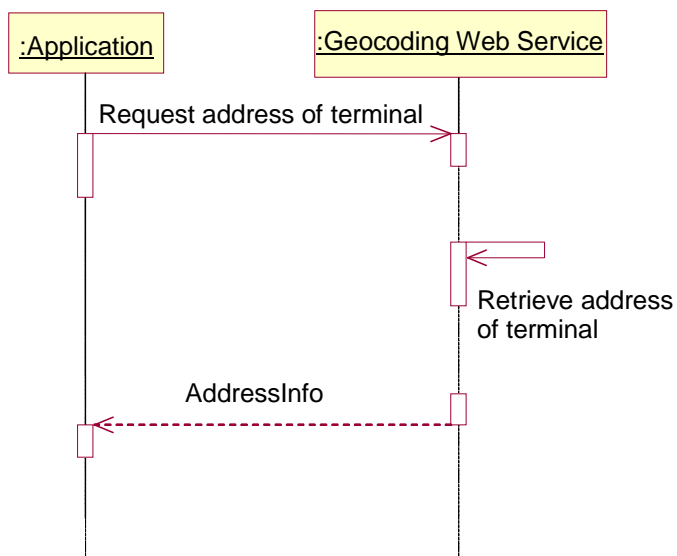


Figure 2: Get address of terminal operation

6.2 Get address of terminal for group

Pattern: Request / Response.

For an application to determine the addresses for a set of terminal devices, it provides an array of terminal numbers, and receives the location addresses for the set of devices requested.

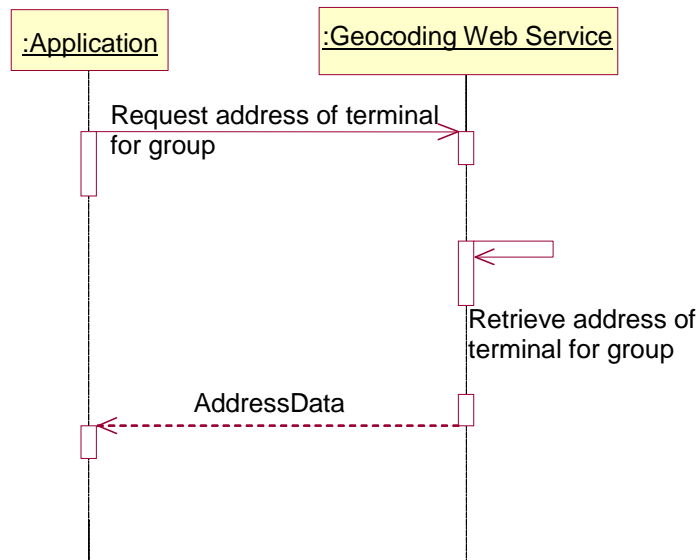


Figure 3: Get address of terminal for group operation

6.3 Get terminal distance from address

Pattern: Request / Response.

For an application to determine the distance from terminal to address, it provides a terminal number and address, and receives the distance between location of terminal and address.

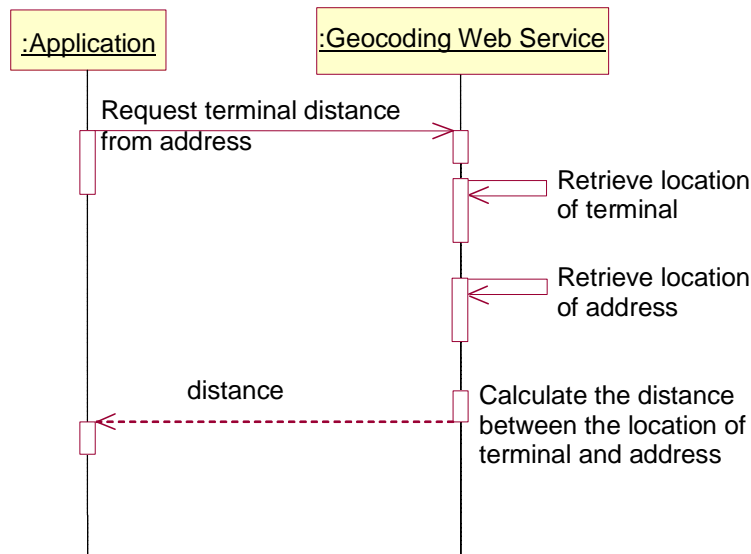


Figure 4: Get terminal distance from address operation

7 XML Schema data type definition

7.1 Accuracy values

Two accuracy values used in the three operations are defined in clause 7 of ES 202 504-9 [3]. The "requested accuracy" is the desired accuracy for the terminal location that will be used to generate the address and the "acceptable accuracy" sets a lower bound on accuracy.

7.2 AddressInfo structure

Data structure of location address composed of country, state, district, city, street, house number, additional information, and zip/postal code.

Element name	Element type	Optional	Description
country	xsd:string	Yes	The country is identified by the ISO 3166 [4] code
state	xsd:string	Yes	National subdivision name (e.g. state, province)
district	xsd:string	Yes	District name
city	xsd:string	Yes	City or township name
street	xsd:string	Yes	Street name
houseNumber	xsd:string	Yes	House number
additionalInfo	xsd:string	Yes	Additional location information
code	xsd:string	Yes	Zip/Postal code

7.3 AddressData structure

Data structure containing terminal number and address information for a geographic place.

Element name	Element type	Optional	Description
terminalNumber	xsd:anyURI	No	URI of the terminal for which address information is being requested.
currentAddress	AddressInfo	No	Address of terminal, composed of country, state, city, street, house number, additional information, and zip/postal code.

7.4 DelayTolerance enumeration

Enumeration of the delay tolerance items that forms part of the address or terminal number request.

Enumeration value	Description
NoDelay	The server should immediately return any result estimate that it currently has. If no estimate is available, the server shall return the failure indication and may optionally initiate procedures to obtain a result estimate (e.g. to be available for a later request).
LowDelay	Fulfilment of the response time requirement takes precedence over fulfilment of the accuracy requirement. The server shall return any current result estimate with minimum delay. The server shall attempt to fulfil any accuracy requirement, but in doing so shall not add any additional delay (i.e. a quick response with lower accuracy is more desirable than waiting for a more accurate response).
DelayTolerant	Fulfilment of the accuracy requirement takes precedence over fulfilment of the response time requirement. If necessary, the server should delay providing a response until the accuracy requirement of the requesting application is met. The server shall obtain a current result with regard to fulfilling the accuracy requirement.

8 Web Service interface definition

8.1 Interface: TerminalAddress

Request the address of a terminal, addresses of a group of terminals, and URIs of terminals at a given address.

8.1.1 Operation: getAddressOfTerminal

This operation retrieves address information for a single terminal. The value of the **requestedAccuracy** part is the desired accuracy for the terminal location that will be used to generate the address. The value of the **acceptableAccuracy** part sets a lower bound on accuracy. If **requestedAccuracy** is not possible, a PolicyException (POL0230) is returned. If the accuracy is not within the limit set by **acceptableAccuracy**, no address information is returned. Instead, a ServiceException (SVC0200) is returned. The URI provided is for a single terminal, not a group URI. If a group URI is provided, a PolicyException (POL0006) is returned.

If tolerance is indicated this affects the priority of accuracy, response time and maximum estimate age.

8.1.1.1 Input message: getAddressOfTerminalRequest

Part name	Part type	Optional	Description
requester	xsd:anyURI	Yes	It identifies the entity that is requesting the information. The application invokes this operation on behalf of this entity. However, it should NOT be assumed that the application has authenticated the requester. If this part is not present, the requesting entity is the application itself.
terminalNumber	xsd:anyURI	No	URI of the terminal for which address information is being requested.
requestedAccuracy	xsd:int	No	Accuracy of terminal location on which returned address will be based.
acceptableAccuracy	xsd:int	No	Accuracy of terminal location that is acceptable for determining the returned address.
maximumAge	common:TimeMetric	Yes	Maximum acceptable age, in seconds, of the address information that is returned.
responseTime	common:TimeMetric	Yes	Indicates the maximum time that the application can accept to wait for a response.
tolerance	DelayTolerance	No	Indicates the priority of response time versus accuracy.

8.1.1.2 Output message: getAddressOfTerminalResponse

Part name	Part type	Optional	Description
result	AddressInfo	No	Address of the terminal for which address information was requested.

8.1.1.3 Referenced Faults

ServiceException from ES 202 504-1 [2]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0200: Accuracy out of limit.
- SVC0370: No valid terminal number(s).

PolicyException from ES 202 504-1 [2]:

- POL0001: Policy error.
- POL0002: Privacy error.

- POL0006: Groups not allowed.
- POL0230: Requested accuracy not supported.

8.1.2 Operation: getAddressOfTerminalForGroup

This operation retrieves address information for one or more terminals or groups of terminals. The value of the **requestedAccuracy** part is the accuracy of terminal location used to generate addresses. The value of the **acceptableAccuracy** part sets a lower bound on that accuracy. If the **requestedAccuracy** is not possible, a **PolicyException** (POL0230) is returned. If the accuracy is not within the limit set by **acceptableAccuracy**, then the address data will contain a **ServiceError** (SVC0200).

If tolerance is indicated this affects the priority of accuracy, response time and maximum estimate age.

8.1.2.1 Input message: getAddressOfTerminalForGroupRequest

Part name	Part type	Optional	Description
requester	xsd:anyURI	Yes	It identifies the entity that is requesting the information. The application invokes this operation on behalf of this entity. However, it should NOT be assumed that the application has authenticated the requester. If this part is not present, the requesting entity is the application itself.
terminalNumbers	xsd:anyURI [1...unbounded]	No	List of URIs, including group URIs, of the terminals for which address information is being requested.
requestedAccuracy	xsd:int	No	Accuracy of terminal location on which returned address will be based.
acceptableAccuracy	xsd:int	No	Accuracy of terminal location that is acceptable for determining the returned address.
maximumAge	common: TimeMetric	Yes	Maximum acceptable age, in seconds, of the address information that is returned.
responseTime	common: TimeMetric	Yes	Indicates the maximum time that the application can accept to wait for a response.
tolerance	DelayTolerance	No	Indicates the priority of response time versus accuracy.

8.1.2.2 Output message: getAddressOfTerminalForGroupResponse

Part name	Part type	Optional	Description
result	AddressData [1...unbounded]	No	Addresses of the terminals for which address information was requested.

8.1.2.3 Referenced faults

ServiceException from ES 202 504-1 [2]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0006: Invalid group.
- SVC0200: Accuracy out of limit.
- SVC0370: No valid terminal number(s).

PolicyException from ES 202 504-1 [2]:

- POL0001: Policy error.
- POL0002: Privacy error.
- POL0006: Groups not allowed.

- POL0007: Nested groups not allowed.
- POL0230: Requested accuracy not supported.
- POL0350: Too many terminal numbers.

8.1.3 Operation: getTerminalDistanceFromAddress

This operation is intended to determine the distance of a terminal from an address. The URI provided is for a single terminal, not a group URI. If a group URI is provided, a PolicyException will be returned to the application.

8.1.3.1 Input message: GetTerminalDistanceFromAddressRequest

Part name	Part type	Optional	Description
requester	xsd:anyURI	Yes	It identifies the entity that is requesting the information. The application invokes this operation on behalf of this entity. However, it should NOT be assumed that the application has authenticated the requester. If this part is not present, the requesting entity is the application itself.
terminalNumber	xsd:anyURI	No	URI of the terminal for which distance information is being requested.
address	AddressInfo	No	Address of the location from which to measure.

8.1.3.2 Output message: GetTerminalDistanceFromAddressResponse

Part name	Part type	Optional	Description
result	xsd:int	No	Distance in meters from the terminal to the location address.

8.1.3.3 Referenced faults

ServiceException from ES 202 504-1 [2]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0370: No valid terminal number(s).

PolicyException from ES 202 504-1 [2]:

- POL0001: Policy error.
- POL0002: Privacy error.
- POL0006: Groups not allowed.

9 Fault definitions

9.1 ServiceException

9.1.1 SVC0200: Accuracy out of limit

Name	Description
messageId	SVC0200
text	Accuracy of location is not within acceptable limits.
variables	None

9.1.2 SVC0370: No valid terminal number(s)

Name	Description
messageId	SVC0370
text	No valid terminal number(s) provided in message part %1
variables	%1 - message part

9.2 PolicyException

9.2.1 POL0230: Requested accuracy not supported

Name	Description
messageId	POL0230
text	Requested accuracy is not supported.
variables	None

9.2.2 POL0350: Too many terminal numbers

Name	Description
messageId	POL0350
text	Too many terminal numbers specified in message part %1
variables	%1 - message part

10 Service policies

Service policies for this service.

Name	Type	Description
MinimumAcceptableAccuracy	xsd:int	Minimum value for acceptable accuracy
GroupSupport	xsd:boolean	Groups URIs may be used
NestedGroupSupport	xsd:boolean	Are nested groups supported in group definitions

Annex A (normative): WSDL for Geocoding

The document/literal WSDL representation of this interface specification is compliant to ES 202 504-1 [2] and is contained in text files (contained in archive es_20250416v010101m0.zip) which accompany the present document.

Annex B (informative): Bibliography

ETSI TR 121 905: "Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3GPP TR 21.905)".

OMA TS MLP: "Mobile Location Protocol".

OGC: "OpenGIS Location Services (OpenLS): Core Services".
<http://www.opengeospatial.org/standards/olscore>

IETF RFC 4119: "A Presence-based GEOPRIV Location Object Format".
<http://www.ietf.org/rfc/rfc4119.txt?number=4119>.

History

Document history		
V1.1.1	February 2008	Membership Approval Procedure MV 20080425: 2008-02-26 to 2008-04-25