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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
Open Service Access (OSA);
Parlay X web services;
Part 3: Call notification
(3GPP TS 29.199-03 version 6.4.0 Release 6)**



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Foreword

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The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

3GPP acknowledges the contribution of the Parlay X Web Services specifications from The Parlay Group. The Parlay Group is pleased to see 3GPP acknowledge and publish the present document, and the Parlay Group looks forward to working with the 3GPP community to improve future versions of the present document.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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Introduction

The present document is part 3 of a multi-part deliverable covering the 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Open Service Access (OSA); Parlay X 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".

1 Scope

The present document is Part 3 of the Stage 3 Parlay X 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 concepts and the functional architecture for the OSA are contained in 3GPP TS 23.198 [3]. The requirements for OSA are contained in 3GPP TS 22.127 [2].

The present document specifies the Call Notification Web Service aspects of the interface. All aspects of the Call Notification Web Service are defined here, these being:

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

The present document has been defined jointly between 3GPP TSG CT WG5, ETSI TISPAN and The Parlay Group.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.127: "Service Requirement for the Open Services Access (OSA); Stage 1".

[3] 3GPP TS 23.198: "Open Service Access (OSA); Stage 2".

[4] 3GPP TS 22.101: "Service aspects; Service principles".

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

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

[6] 3GPP TS 29.199-1: "Open Service Access (OSA); Parlay X Web Services; Part 1: Common".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 29.199-1 [6] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 29.199-1 [6] apply.

4 Detailed service description

Currently, in order to determine the handling of a subscriber initiated call in telecommunication networks we have to write applications using specific protocols to access Call Control functions provided by network elements. This approach requires a high degree of network expertise. We can also use the OSA gateway approach, invoking standard interfaces to gain access to call control capabilities, but these interfaces are usually perceived to be quite complex by application IT developers. Developers must have advanced telecommunication skills to use Call Control OSA interfaces.

In this clause we will describe a Parlay X Web Service, Call Notification, for handling calls initiated by a subscriber in the network. A (third party) application determines how the call should be treated. The overall scope of this Web Service is to provide simple functions to application developers to determine how a call should be treated. Using the Web Services, application developers can perform simple handling of network-initiated calls without specific Telco knowledge.

Examples of usage include the following.

Incoming call handling: A subscriber receives a call while he is logged-on to the Internet. Since this occupies his telephone connection, he is regarded as busy by the network. The subscriber has an application that is invoked when somebody tries to call him while he is busy. The application provides the subscriber with a list of choices on how to handle the call (e.g. route the call to voicemail, redirect the call to a secretary, reject the call). Based on the response of the subscriber the call is handled in the network. Alternatively, the call is re-routed or released depending on the preferences of the subscriber and some context information (e.g. based on the status or location of the subscriber).

Service numbers: An application is triggered whenever a certain service number is dialled. This number is used to connect the caller to one of the maintenance personnel. The application redirects the call to the appropriate maintenance person based on, e.g. calling party number, time, location and availability of the maintenance personnel.

SMS notification of missed calls: An application offers the subscriber the possibility to be notified via SMS whenever he misses a call. The application registers to be notified when calls to its subscribers encounter busy, no-answer or not-reachable. The application does not influence the call treatment, but sends an SMS containing the calling party number, the time and reason why the call was missed.

5 Namespaces

The CallDirection interface uses the namespace:

http://www.csapi.org/wsd/parlayx/call_direction/v2_2

The CallNotification interface uses the namespace:

http://www.csapi.org/wsd/parlayx/call_notification/v2_2

The data types are defined in the namespace:

http://www.csapi.org/schema/parlayx/call_notification/v2_2

The CallNotificationManager interface uses the namespace:

http://www.csapi.org/wsd/parlayx/call_notification/notification_manager/v2_3

The CallDirectionNotificationManager interface uses the namespace:

http://www.csapi.org/wsd/parlayx/call_direction/notification_manager/v2_3

The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [5]. The use of the name 'xsd' is not semantically significant.

6 Sequence diagrams

6.1 SMS notification of a missed call

Showing the use of the Call Notification and Short Messaging Web Services, an SMS is sent to a person who misses a call (no answer). This sequence assumes that the provisioning of the 'no answer' call notification has occurred independently.

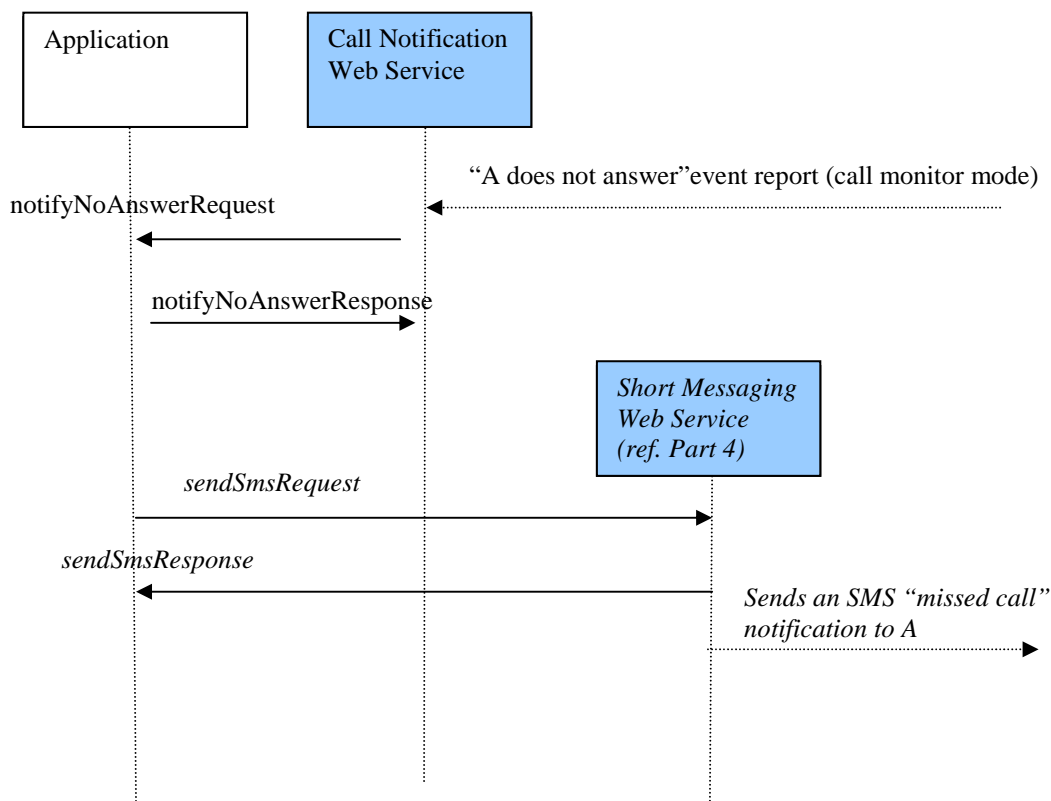


Figure 1

7 XML Schema data type definition

7.1 ActionValues enumeration

The **ActionValues** data type is an enumeration with the following values.

Enumeration	Description
Route	Request to (re-)route the call to the address indicated with routingAddress.
Continue	Request to continue the call without any changes. This will result in normal handling of the event in the network.
EndCall	Request to end the call. This will result in termination of the call. The callingParty will receive a tone or announcement.

7.2 Action structure

The **Action** data type is a structure containing the following parameters.

Element name	Element type	Optional	Description
ActionToPerform	ActionValues	No	Indicates the action as described below
RoutingAddress	xsd:anyURI	Yes	The address to be used in case the action indicates 'Route'
Charging	common:ChargingInformation	Yes	Charge to apply to this call

7.3 CallEvents enumeration

The **CallEvents** data type is an enumeration with the following values.

Enumeration value	Description
Busy	Called party is busy.
NotReachable	Called party is not reachable.
NoAnswer	Called party doesn't answer.
CalledNumber	A call between two parties is being attempted.

8 Web Service interface definition

8.1 Interface: CallDirection

This subclause describes an initial set of capabilities in terms of message invocations, parameters and data types. The message-based invocations are:

- handleBusy.
- handleNotReachable.
- handleNoAnswer.
- handleCalledNumber.

These messages are initiated by the Call Notification Web Service (running in a Parlay X Gateway) and invoke an application Web Service(s), as a result of activity in the network. The result of the invocation of a handle<Event> operation is used as an indication on how the call should be handled in the network. The application can not keep control over the call after handling the event; every event handling is a separate occurrence.

Note that because the results of the invocations of the application Web Service(s) determine call handling in the network, the names of the methods are prefixed with 'handle', rather than 'notify'. The prefix 'notify' would imply a more asynchronous behaviour, whereas 'handle' shows the synchronous nature of these invocations.

8.1.1 Operation: HandleBusy

The invocation of **handleBusy** requests the application to inform the gateway how to handle the call between two addresses, the **callingParty** and the **calledParty**, where the **calledParty** is busy when the call is received. Optionally, the caller's name is provided. The application returns the **action**, which directs the gateway to perform one of the following actions:

- "Continue", resulting in normal handling of the busy event in the network, e.g. playing of a busy tone to the **callingParty**.
- "EndCall", resulting in the call being terminated; the exact tone or announcement that will be played to the **callingParty** is operator-specific.
- "Route", resulting in the call being re-routed to a **calledParty** specified by the application.

Optionally, in the **action** parameter, the application can also indicate the charging information.

8.1.1.1 Input message: handleBusyRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party is busy

8.1.1.2 Output message: handleBusyResponse

Part name	Part type	Optional	Description
result	Action	No	It indicates the action to be performed by the gateway

8.1.1.3 Referenced faults

None.

8.1.2 Operation: HandleNotReachable

The invocation of **handleNotReachable** requests the application to inform the gateway how to handle the call between two addresses, the **callingParty** and the **calledParty**, where the **calledParty** is not reachable when the call is received. Optionally, the caller's name is provided. The application returns the **action**, which directs the gateway to perform one of the following actions:

- "Continue", resulting in normal handling of the 'not reachable' event in the network, e.g. playing of a busy tone to the **callingParty**.
- "EndCall", resulting in the call being terminated; the exact tone or announcement that will be played to the **callingParty** is operator-specific.
- "Route", resulting in the call being re-routed to a **calledParty** specified by the application.

Optionally, in the **action** parameter, the application can also indicate the charging information.

8.1.2.1 Input message: handleNotReachableRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party is not reachable

8.1.2.2 Output message: handleNotReachableResponse

Part name	Part type	Optional	Description
result	Action	No	It indicates the action to be performed by the gateway

8.1.2.3 Referenced faults

None.

8.1.3 Operation: HandleNoAnswer

The invocation of **handleNoAnswer** requests the application to inform the gateway how to handle the call between two addresses, the **callingParty** and the **calledParty**, where the **calledParty** does not answer the received call. Optionally, the caller's name is provided. The application returns the **action**, which directs the gateway to perform one of the following actions:

- "Continue", resulting in normal handling of the 'no answer' event in the network, e.g. playing of a busy tone to the **callingParty**.
- "EndCall", resulting in the call being terminated; the exact tone or announcement that will be played to the **callingParty** is operator-specific.
- "Route", resulting in the call being re-routed to a **calledParty** specified by the application.

Optionally, in the **action** parameter, the application can also indicate the charging information.

8.1.3.1 Input message: handleNoAnswerRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party does not answer the call

8.1.3.2 Output message: handleNoAnswerResponse

Part name	Part type	Optional	Description
result	Action	No	It indicates the action to be performed by the gateway

8.1.3.3 Referenced faults

None.

8.1.4 Operation: HandleCalledNumber

The invocation of **handleCalledNumber** requests the application to inform the gateway how to handle the call between two addresses, the **callingParty** and the **calledParty**. The method is invoked when the **callingParty** tries to call the **calledParty**, but before the network routes the call to the **calledParty**. For example, the **calledParty** does not have to refer to a real end user, i.e., it could be a service number. Optionally, the caller's name is provided. The application returns the **action**, which directs the gateway to perform one of the following actions:

- "Continue", resulting in normal handling in the network, i.e. the call will be routed to the **calledParty** number, as originally dialed.

- "EndCall", resulting in the call being terminated; the exact tone or announcement that will be played to the **callingParty** is operator-specific.
- "Route", resulting in the call being re-routed to a **calledParty** specified by the application.

Optionally, in the **action** parameter, the application can also indicate the charging information.

8.1.4.1 Input message: handleCalledNumberRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party

8.1.4.2 Output message: handleCalledNumberResponse

Part name	Part type	Optional	Description
result	Action	No	It indicates the action to be performed by the gateway

8.1.4.3 Referenced faults

None.

8.2 Interface: CallNotification

When call events occur in the network, the application may be notified of these events. The application does not have the ability to influence the call, as call processing continues.

Notifications are provided for call attempt, busy, not reachable and no answer events.

8.2.1 Operation: NotifyBusy

A busy notification informs the application that a call between two parties was attempted, but the called party was busy.

8.2.1.1 Input message: NotifyBusyRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party is busy

8.2.1.2 Output message: NotifyBusyResponse

Part name	Part type	Optional	Description
None		No	

8.2.1.3 Referenced faults

None.

8.2.2 Operation: NotifyNotReachable

A not reachable notification informs the application that a call between two parties was attempted, but the called party was not reachable.

8.2.2.1 Input message: NotifyNotReachableRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party is not reachable

8.2.2.2 Output message: NotifyNotReachableResponse

Part name	Part type	Optional	Description
None		No	

8.2.2.3 Referenced faults

None.

8.2.3 Operation: NotifyNoAnswer

A no answer notification informs the application that a call between two parties was attempted, but the called party did not answer.

8.2.3.1 Input message: NotifyNoAnswerRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party. This party did not answer

8.2.3.2 Output message: NotifyNoAnswerResponse

Part name	Part type	Optional	Description
None		No	

8.2.3.3 Referenced faults

None.

8.2.4 Operation: NotifyCalledNumber

A called number notification informs the application that a call between two parties is being attempted.

8.2.4.1 Input message: NotifyCalledNumberRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
CallingParty	xsd:anyURI	No	It contains the address of the caller
CallingPartyName	xsd:string	Yes	It contains the name of the caller
CalledParty	xsd:anyURI	No	It contains the address of the called party

8.2.4.2 Output message: NotifyCalledNumberResponse

Part name	Part type	Optional	Description
None		No	

8.2.4.3 Referenced faults

None.

8.3 Interface: CallNotificationManager

The call notification manager enables applications to set up and tear down notifications for calls online.

8.3.1 Operation: StartCallNotification

Start notifications to the application for given called party addresses. The addresses are Address Data items as defined in 3GPP TS 29.199-1 [6].

The correlator provided in the reference must be unique for the application Web Service at the time the notification is initiated, otherwise a ServiceException (SVC0005) will be returned to the application.

The *criteria* specify the event specific criteria used by application to define the event required. Only events that meet these criteria are notified. If the criteria parameter is not present, all call events will be notified.

8.3.1.1 Input message: StartCallNotificationRequest

Part name	Part type	Optional	Description
Reference	common:SimpleReference	No	Notification endpoint definition
Addresses	xsd:anyURI [1..unbounded]	No	Called party addresses to receive notifications on
Criteria	CallEvents [0..unbounded]	Yes	List of Call Event values to generate notification.

8.3.1.2 Output message: StartCallNotificationResponse

Part Name	Part Type	Optional	Description
none			

8.3.1.3 Referenced Faults

ServiceException from [6]

- SVC0001 – Service error
- SVC0002 – Invalid input value
- SVC0005 – Duplicate correlator

PolicyException from [6]

- POL0001 – Policy error

8.3.2 Operation: StopCallNotification

The application may end a call notification using this operation

8.3.2.1 Input message: StopCallNotificationRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator of request to end

8.3.2.2 Output message: StopCallNotificationResponse

Part Name	Part Type	Optional	Description
None			

8.3.2.3 Referenced Faults

ServiceException from [6]

- SVC0001 – Service error
- SVC0002 – Invalid input value

PolicyException from [6]

- POL0001 – Policy error

8.4 Interface: CallDirectionManager

The call direction manager enables applications to set up and tear down notifications for calls online.

8.4.1 Operation: StartCallDirectionNotification

Start notifications to the application for given called party addresses. The addresses are Address Data items as defined in 3GPP TS 29.199-1 [6].

The correlator provided in the reference must be unique for the application Web Service at the time the notification is initiated, otherwise a ServiceException (SVC0005) will be returned to the application.

The *criteria* specify the event specific criteria used by application to define the event required. Only events that meet these criteria are notified. If the criteria parameter is not present, all call events will be notified.

8.4.1.1 Input message: StartCallDirectionNotificationRequest

Part name	Part type	Optional	Description
Reference	common:SimpleReference	No	Notification endpoint definition
Addresses	xsd:anyURI [1..unbounded]	No	Called party addresses to receive notifications on
Criteria	CallEvents [0..unbounded]	Yes	List of Call Event values to generate notification.

8.4.1.2 Output message: StartCallDirectionNotificationResponse

Part Name	Part Type	Optional	Description
none			

8.4.1.3 Referenced Faults

ServiceException from [6]

- SVC0001 – Service error
- SVC0002 – Invalid input value
- SVC0005 – Duplicate correlator

PolicyException from [6]

- POL0001 – Policy error

8.4.2 Operation: StopCallDirectionNotification

The application may end a call notification using this operation

8.4.2.1 Input message: StopCallDirectionNotificationRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator of request to end

8.4.2.2 Output message: StopCallDirectionNotificationResponse

Part Name	Part Type	Optional	Description
None			

8.4.2.3 Referenced Faults

ServiceException from [6]

- SVC0001 – Service error
- SVC0002 – Invalid input value

PolicyException from [6]

- POL0001 – Policy error

9 Fault definitions

No new faults defined for this service.

10 Service policies

No service policies are defined for this service.

Annex A (normative): WSDL for call notification

The document/literal WSDL representation of this interface specification is compliant to 3GPP TS 29.199-1 [6] and is contained in text files (contained in archive 29199-03-640-doclit.zip) which accompanies the present document.

Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Dec 2003	CN_21	NP-030552	--	--	Submitted to CN#22 for Information	--	1.0.0	--
Jan 2004	--	--	--	--	Added The W3C WSDL representation of the APIs specified in the present document is contained in a set of files which accompany the present document: px0326rpcenc.zip px0326rpclit.zip	--	1.0.1	--
Jun 2004	CN_24	NP-040274	--	--	Split into multi-part specification. 29.199-0n, for n=1,2...9. Submitted to CN#24 for Information	--	1.0.3	--
Sep 2004	CN_25	NP-040360	--	--	Draft v200 submitted to TSG CN#25 for Approval.	--	2.0.0	6.0.0
Jun 2005	CT_28	CP-050159	0001	--	Incorrect method names in WSDL files for Call Notification Interface	F	6.0.0	6.1.0
Jun 2005	CT_28	CP-050159	0002	--	Add display name data	F	6.0.0	6.1.0
Jun 2005	CT_28	CP-050221	0003	--	Optionals for Part 3	F	6.0.0	6.1.0
Dec 2005	CT_30	CP-050567	0004	--	Clarify sequence diagram	F	6.1.0	6.2.0
Dec 2005	CT_30	CP-050567	0005	--	Correction to Call Notification for missing management interface	F	6.1.0	6.2.0
Dec 2005	CT_30	CP-050567	0006	--	Inconsistent part naming in PX response messages	F	6.1.0	6.2.0
Jun 2006	CT_32	CP-060199	0007	--	Change reference to OSA Stage 2 from 23.127 to 23.198	F	6.2.0	6.3.0
Jun 2006	CT_32	CP-060199	0008	--	Add missing correlator parameter to the operations for call notification	F	6.2.0	6.3.0
Jun 2006	CT_32	CP-060199	0009	--	Correct Call Notification for optional routing address	F	6.2.0	6.3.0
Jun 2006	CT_32	CP-060199	0010	--	Correct Call Notification for multiple addresses	F	6.2.0	6.3.0
Jun 2006	CT_32	CP-060199	0011	--	Add missing criteria parameter to the operations for starting call notifications	F	6.2.0	6.3.0
Dec 2006	CT_34	CP-060589	0012	--	Correction to CN WSDL files	F	6.3.0	6.4.0
Dec 2006	CT_34	CP-060589	0013	--	Clarify that events are associated with called party address	F	6.3.0	6.4.0

History

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V6.0.0	January 2005	Publication
V6.1.0	June 2005	Publication
V6.2.0	December 2005	Publication
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