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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
Open Service Access (OSA);
Parlay X web services;
Part 8: Terminal status
(3GPP TS 29.199-08 version 6.3.0 Release 6)**



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 Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

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:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
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Introduction

The present document is part 8 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 8 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 Terminal Status Web Service aspects of the interface. All aspects of the Terminal Status 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

Terminal Status provides access to the status of a terminal through:

- Request for the status of a terminal.
- Request for the status of a group of terminals.
- Notification of a change in the status of a terminal.

The status of a terminal can be expressed as reachable, unreachable or busy - however not all terminals distinguish a busy status, so applications should be able to adapt to what information is available (using the service properties to determine available information).

When a request for a group of terminals is made, the response may contain a full or 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 requester to initiate additional requests for those terminals for which information was not provided.

5 Namespaces

The data types are defined in the namespace:

`http://www.csapi.org/schema/parlayx/terminal_status/v2_2`

The TerminalStatus interface uses the namespace:

`http://www.csapi.org/wsd/parlayx/terminal_status/v2_2`

The TerminalStatusNotificationManager interface uses the namespace:

`http://www.csapi.org/wsd/parlayx/terminal_status/notification_manager/v2_2`

The TerminalStatusNotification interface uses the namespace:

`http://www.csapi.org/wsd/parlayx/terminal_status/notification/v2_2`

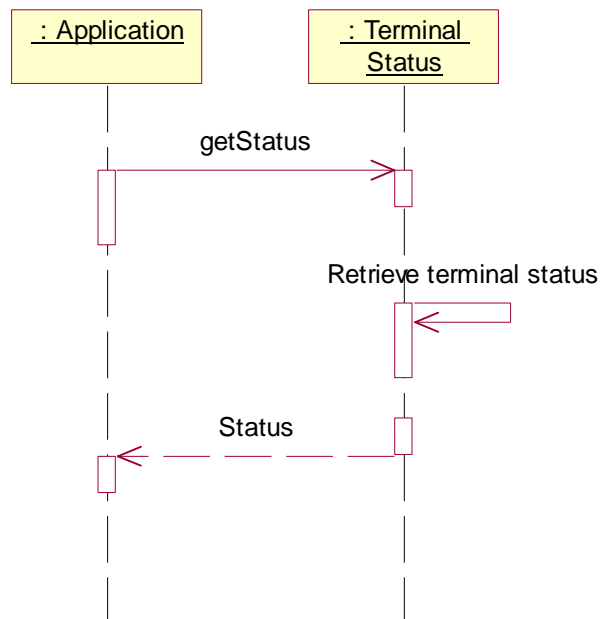
The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [5]. The use of the name 'xsd' is not semantically significant.

6 Sequence diagrams

6.1 Terminal status query

Pattern: Request / Response.

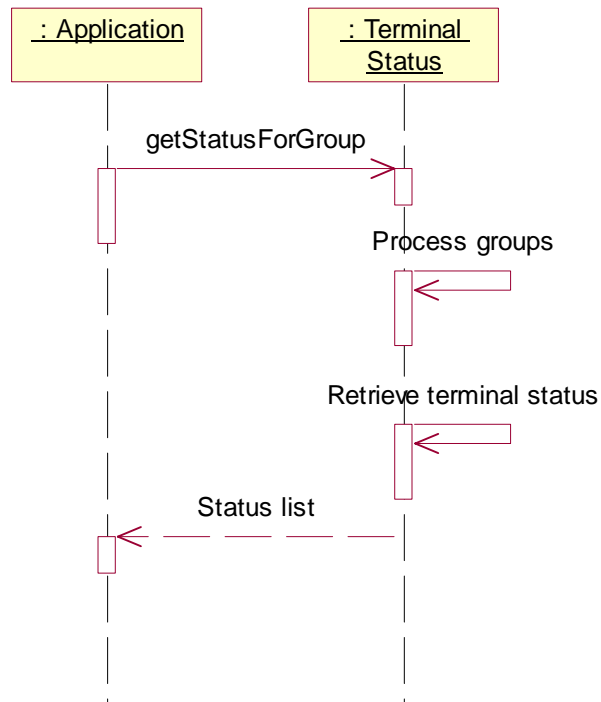
When an application is interested in determining the status of a terminal device, it may provide a terminal device address, and receive the status for the device requested.



6.2 Terminal status group query

Pattern: Request / Response.

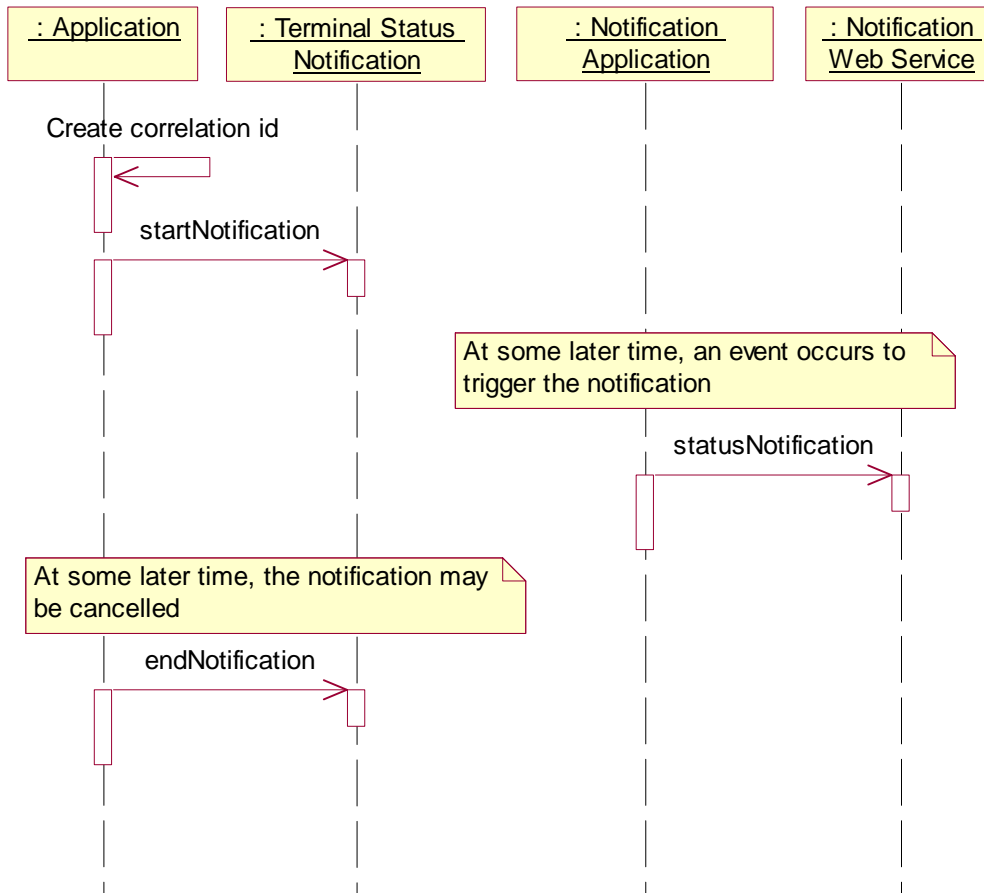
When an application is interested in determining the status of a set of terminal devices, it may provide an array of terminal device addresses, including network managed group addresses, and receive the status for the set of devices requested.



6.3 Terminal status notification

Pattern: Application Correlated Multiple Notification.

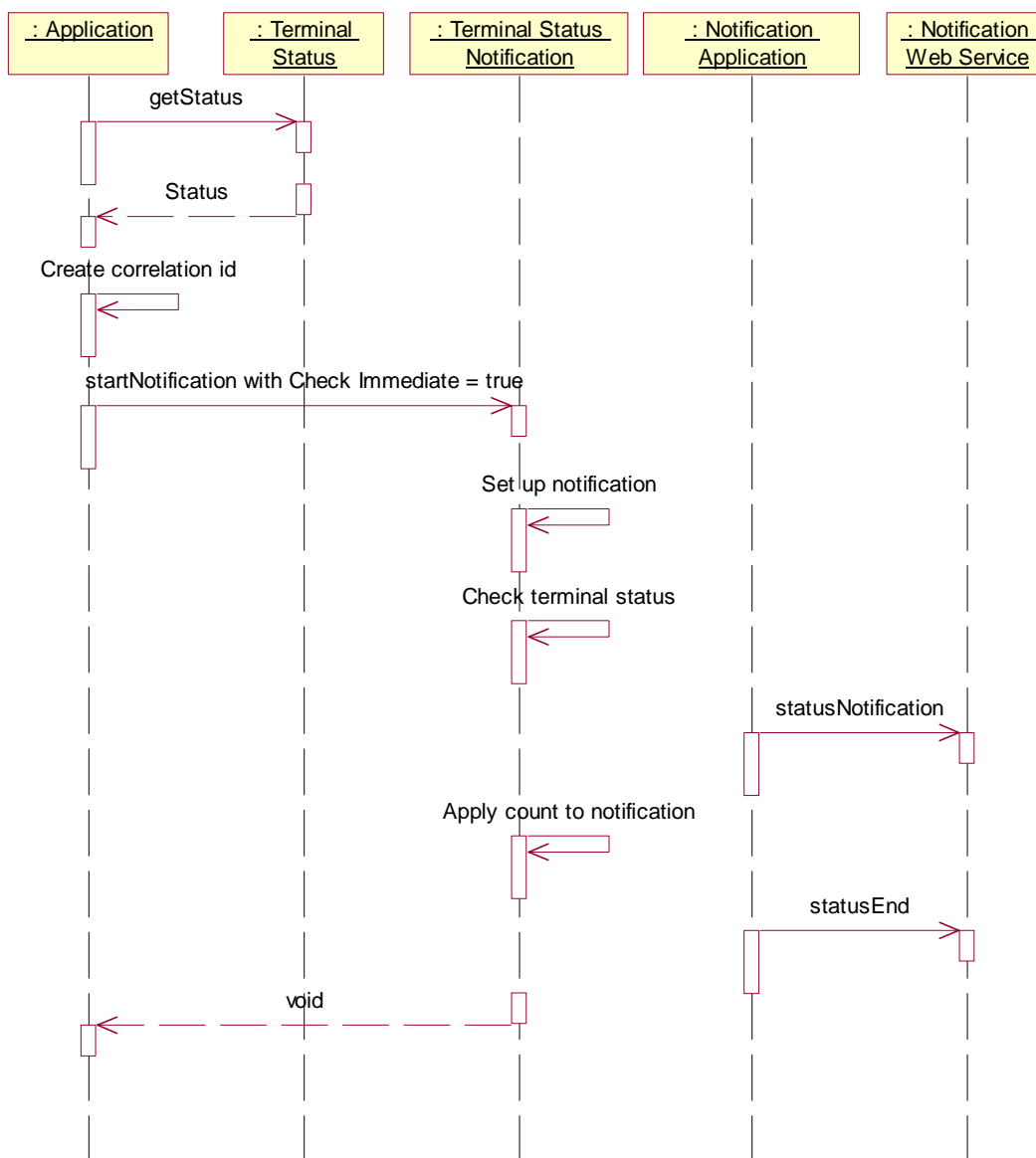
An application can be notified of a change in the status of terminal devices. When the status of a terminal device changes, a notification message will be sent to the application.



6.4 Terminal Status Notification with Check Immediate

In some applications, the terminal status notification will be used to watch for a specific status change. An example is a 'call when available' service, where the terminal status is checked and determined to be not reachable or busy, and a notification is set up to notify the application when the terminal becomes reachable. Between the time that the original status determination and the time the notification is set up, the terminal status could change to reachable - thus the notification on change to reachable would not be sent.

Using the check immediate flag, after the notification is established, the value of the terminal status will be determined, and if the criteria is matched then a notification will be sent immediately. The following sequence diagram shows this scenario.



This sequence shows:

- The Enterprise Application checks the status of a terminal, and receives its status (in this scenario receiving Unreachable or Busy).
- The Enterprise Application generates a correlator, and starts a notification with criteria defined to notify the Enterprise Web Service when the terminal state becomes Reachable and the check immediate flag set to true.
- Sets up the notification to monitor terminal status changes.
- Check the current status of the terminal, and determine if the status matches the criteria.
- In this case, the criteria matches, and a notification is delivered to the Enterprise Web Service.
- The count of notifications is incremented and compared to the notification count limit.
- In this case, a single notification was requested, and the end notification message is sent.
- The startNotification operation completes.

This scenario includes the full set of interactions in one sequence, which also shows that the notifications can be received concurrent with the creation of the notification.

7 XML Schema data type definition

7.1 Status enumeration

List of possible status values.

Enumeration	Description
Reachable	Terminal is reachable
Unreachable	Terminal is not reachable
Busy	Terminal is busy

7.2 RetrievalStatus enumeration

Enumeration of the status items that are related to an individual retrieval in a set.

Enumeration	Description
Retrieved	Status retrieved, with result in CurrentStatus element.
NotRetrieved	Status not retrieved, CurrentStatus is not provided (does not indicate an error, no attempt may have been made).
Error	Error retrieving status.

7.3 StatusData structure

Data structure containing device identifier and its status. As this can be related to a query of a group of terminal devices, the ResultStatus element is used to indicate whether the information for the device was retrieved or not, or if an error occurred.

Name	Type	Optional	Description
Address	xsd:anyURI	No	Address of the Terminal Device to which the status information applies.
ReportStatus	RetrievalStatus	No	Status of retrieval for this address.
CurrentStatus	Status	Yes	Status of terminal. It is only provided if ReportStatus=Retrieved.
ErrorInformation	common:ServiceError	Yes	If ReportStatus is Error, this is the reason for the error. Error due to privacy verification will be expressed as POL0002 in the ServiceError.

7.4 StatusInformation structure

Name	Type	Optional	Description
Address	xsd:anyURI	No	Address of the Terminal Device to which the status information applies.
CurrentStatus	Status	No	Status of terminal.

8 Web service interface definition

8.1 Interface: TerminalStatus

Request the status for a terminal or set of terminals.

8.1.1 Operation: GetStatus

This operation is intended to retrieve the status for a single terminal. 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.

8.1.1.1 Input message: GetStatusRequest

Part name	Part type	Optional	Description
Address	xsd:anyURI	No	Terminal to request status for

8.1.1.2 Output message: GetStatusResponse

Part name	Part type	Optional	Description
Result	Status	No	Status for the terminal for which status was requested

8.1.1.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.

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

8.1.2 Operation: GetStatusForGroup

The getStatusForGroup operation initiates a retrieval activity, where one or more terminals, or groups of terminals, may have their status determined.

The Web Service may return a result set that does not include complete information, allowing the Web Service implementation to choose to deliver a partial set of results to accommodate other conditions, such as avoiding timeouts. In this case, the addresses for which no attempt was made to provide data will be marked NotRetrieved in the result for each address this applies to.

8.1.2.1 Input message: GetStatusForGroupRequest

Part name	Part type	Optional	Description
Addresses	xsd:anyURI [1..unbounded]	No	List of URIs to get status for, including group URIs

8.1.2.2 Output message: GetStatusForGroupResponse

Part name	Part type	Optional	Description
Result	StatusData [1..unbounded]	No	Set of results for the request

8.1.2.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0004: No valid addresses.
- SVC0006: Invalid group.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0003: Too many addresses.
- POL0006: Groups not allowed.
- POL0007: Nested groups not allowed.

8.2 Interface: TerminalStatusNotificationManager

Set up notifications for terminal status changes.

8.2.1 Operation: StartNotification

Notifications of status changes are made available to applications. The number and duration of notifications may be requested as part of the setup of the notification or may be governed by service policies, or a combination of the two.

If CheckImmediate is set to true, then the notification will be set up, and then the current value of the terminal status will be checked. If the terminal status meets the criteria provided, a notification will be sent to the application. This notification will count against the count requested. This addresses the case where the status of the device changes during the time the notification is being set up, which may be appropriate in some applications.

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

If the frequency requested is more often than allowed by the service policy, then the value in the service policy will be used. If the duration requested exceeds the time allowed in the service policy, then the value in the service policy will be used. If the notification period (duration) ends before all of the notifications (count) have been delivered, then the notification terminates. In all cases, when the notifications have run their course (by duration or count), an end of notifications message will be provided to the application.

Service policies may govern what count values can be requested, including maximum number of notifications allowed and whether unlimited notifications can be requested (i.e. either by not specifying the optional Count message part or by specifying it with a value of zero). If the count value requested is not in policy, a PolicyException (POL0004 or POL0005 as appropriate) will be returned.

8.2.1.1 Input message: StartNotificationRequest

Part name	Part type	Optional	Description
Reference	common:SimpleReference	No	Notification endpoint definition
Addresses	xsd:anyURI [1..unbounded]	No	Addresses of terminals to monitor
Criteria	Status [1..unbounded]	No	List of status values to generate notifications for (these apply to all addresses specified)
CheckImmediate	xsd:boolean	No	Check status immediately after establishing notification
Frequency	common:TimeMetric	No	Maximum frequency of notifications (can also be considered minimum time between notifications)
Duration	common:TimeMetric	Yes	Length of time notifications occur for, do not specify to use default notification time defined by service policy
Count	xsd:integer	Yes	Maximum number of notifications. For no maximum, either do not specify this part or specify a value of zero.

8.2.1.2 Output message: StartNotificationResponse

Part name	Part type	Optional	Description
None			

8.2.1.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0004: No valid addresses.
- SVC0005: Duplicate correlator.
- SVC0006: Invalid group.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0003: Too many addresses.
- POL0004: Unlimited notifications not supported.
- POL0005: Too many notifications requested.
- POL0006: Groups not allowed.
- POL0007: Nested groups not allowed.

- POL0009: Invalid frequency requested.
- POL0200: Busy criteria not supported.

8.2.2 Operation: EndNotification

The application may end a notification using this operation. Until this operation returns, notifications may continue to be received by the application.

An end of notification (statusEnd) message will not be delivered to the application for a notification ended using this operation.

8.2.2.1 Input message: EndNotificationRequest

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

8.2.2.2 Output message: EndNotificationResponse

Part name	Part type	Optional	Description
None			

8.2.2.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.

8.3 Interface: TerminalNotification

Notification interface to which notifications are delivered.

8.3.1 Operation: StatusNotification

When the status of monitored devices change, a notification is delivered to the application with the new status information for each of the devices. If a group identifier was used, the terminal device URI is provided, not the group URI.

8.3.1.1 Input message: StatusNotificationRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification
TerminalStatus	StatusInformation [1..unbounded]	No	List of Statusinformation elements describing address and new terminal status.

8.3.1.2 Output message: StatusNotificationResponse

Part name	Part type	Optional	Description
None			

8.3.1.3 Referenced faults

None.

8.3.2 Operation: StatusError

The status changed error message is sent to the application to indicate that the notification is being cancelled by the Web Service.

8.3.2.1 Input message: StatusErrorRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification.
Address	xsd:anyURI	Yes	Address of terminal if the error applies to an individual terminal, or not specified if it applies to the whole notification.
Reason	common:ServiceError	No	Reason notification is being discontinued.

8.3.2.2 Output message: StatusErrorResponse

Part name	Part type	Optional	Description
None			

8.3.2.3 Referenced faults

None.

8.3.3 Operation: StatusEnd

The notifications have completed for this correlator. This message will be delivered when the duration or count for notifications have been completed. This message will not be delivered in the case of an error ending the notifications or deliberate ending of the notifications (using endNotification operation).

8.3.3.1 Input message: StatusEndRequest

Part name	Part type	Optional	Description
Correlator	xsd:string	No	Correlator provided in request to set up this notification.

8.3.3.2 Output message: StatusEndResponse

Part name	Part type	Optional	Description
None			

8.3.3.3 Referenced faults

None.

9 Fault definitions

New fault definitions for this service.

9.1 Fault: PolicyException

Busy criteria not supported.

Name	Description
Message Id	<POL0200>
Text	Busy criteria is not supported.
Variables	None.

10 Service policies

Name	Type	Description
BusyAvailable	xsd:boolean	Can busy be returned as a status or be a trigger
MaximumNotificationAddresses	xsd:int	Maximum number of addresses for which a notification can be set up
MaximumNotificationFrequency	common:TimeMetric	Maximum rate of notification delivery (also can be considered minimum time between notifications)
MaximumNotification Duration	common:TimeMetric	Maximum amount of time a notification may be set up for
MaximumCount	xsd:int	Maximum number of notifications that may be requested
UnlimitedCountAllowed	xsd:boolean	Allowed to specify unlimited notification count (i.e. either by not specifying the optional Count message part in StartNotificationRequest or by specifying a value of zero)
GroupSupport	xsd:boolean	Groups may be included with addresses
NestedGroupSupport	xsd:boolean	Are nested groups supported in group definitions

Annex A (normative): WSDL for Terminal Status

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 29199-08-630-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-050221	0001	--	Optionals for Part 8	F	6.0.0	6.1.0
Dec 2005	CT_30	CP-050573	0002	--	Make the CurrentStatus element an optional parameter	F	6.1.0	6.2.0
Dec 2005	CT_30	CP-050573	0003	--	Allow list of addresses in StatusNotificationRequest	F	6.1.0	6.2.0
Jun 2006	CT_32	CP-060195	0004	--	Change reference to OSA Stage 2 from 23.127 to 23.198	F	6.2.0	6.3.0

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