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Technical Specification

Universal Mobile Telecommunications System (UMTS); Open Service Access (OSA) Application Programming Interface (API); Part 11: Account management Service Capability Feature (SCF) (3GPP TS 29.198-11 version 4.6.0 Release 4)

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Foreword

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Contents

Foreword

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

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where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part 11 of a multi-part TS covering the 3rd Generation Partnership Project: Technical Specification Group Core Network; Open Service Access (OSA); Application Programming Interface (API), as identified below. The **API specification** (3GPP TS 29.198) is structured in the following Parts:

Part 1:	Overview
Part 2:	Common Data Definitions
Part 3:	Framework
Part 4:	Call Control SCF
Part 5:	User Interaction SCF
Part 6:	Mobility SCF
Part 7:	Terminal Capabilities SCF
Part 8:	Data Session Control SCF
Part 9:	Generic Messaging SCF (not part of 3GPP Release 4)
Part 10:	Connectivity Manager SCF (not part of 3GPP Release 4)
Part 11:	**Account Management SCF**
Part 12:	Charging SCF

The **Mapping specification of the OSA APIs and network protocols** (3GPP TR 29.998) is also structured as above. A mapping to network protocols is however not applicable for all Parts, but the numbering of Parts is kept. Also in case a Part is not supported in a Release, the numbering of the parts is maintained.

OSA API specifications 29.198-family		OSA API Mapping - 29.998-family	
29.198-1	**Part 1: Overview**	29.998-1	**Part 1: Overview**
29.198-2	**Part 2: Common Data Definitions**	*29.998-2*	*Not Applicable*
29.198-3	**Part 3: Framework**	*29.998-3*	*Not Applicable*
29.198-4	**Part 4: Call Control SCF**	29.998-4-1	**Subpart 1: Generic Call Control – CAP mapping**
		29.998-4-2	
29.198-5	**Part 5: User Interaction SCF**	29.998-5-1	**Subpart 1: User Interaction – CAP mapping**
		29.998-5-2	
		29.998-5-3	
		29.998-5-4	**Subpart 4: User Interaction – SMS mapping**
29.198-6	**Part 6: Mobility SCF**	29.998-6	**User Status and User Location – MAP mapping**
29.198-7	**Part 7: Terminal Capabilities SCF**	*29.998-7*	*Not Applicable*
29.198-8	**Part 8: Data Session Control SCF**	29.998-8	**Data Session Control – CAP mapping**
29.198-9	*Part 9: Generic Messaging SCF*	29.998-9	*Not Applicable*
29.198-10	*Part 10: Connectivity Manager SCF*	29.998-10	*Not Applicable*
29.198-11	**Part 11: Account Management SCF**	*29.998-11*	*Not Applicable*
29.198-12	**Part 12: Charging SCF**	*29.998-12*	*Not Applicable*

1 Scope

The present document is Part 11 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardised interface, i.e. the OSA APIs. The concepts and the functional architecture for the OSA are contained in 3GPP TS 23.127 [3]. The requirements for OSA are contained in 3GPP TS 22.127 [2].

The present document specifies the Account Management Service Capability Feature (SCF) aspects of the interface. All aspects of the Account Management SCF are defined here, these being:

- Sequence Diagrams

- Class Diagrams

- Interface specification plus detailed method descriptions

- State Transition diagrams

- Data definitions

- IDL Description of the interfaces

The process by which this task is accomplished is through the use of object modelling techniques described by the Unified Modelling Language (UML).

This specification has been defined jointly between 3GPP TSG CN WG5, ETSI TISPAN and the Parlay Group Inc., in co-operation with a number of JAIN™ Community member companies.

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 TS 29.198-1   "Open Service Access; Application Programming Interface; Part 1: Overview".

[2]   3GPP TS 22.127: "Stage 1 Service Requirement for the Open Service Access (OSA) (Release 4)".

[3]   3GPP TS 23.127: "Virtual Home Environment (Release 4)".

[4]   ISO 4217: "Codes for the representation of currencies and funds".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 29.198-1 [1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 29.198-1 [1] apply.

4 Account Management SCF

The following clauses describe each aspect of the Account Management Service Capability Feature (SCF).

The order is as follows:

- The Sequence diagrams give the reader a practical idea of how each of the SCFs is implemented.

- The Class relationships clause shows how each of the interfaces applicable to the SCF, relate to one another

- The Interface specification clause describes in detail each of the interfaces shown within the Class diagram part.

- The State Transition Diagrams (STD) show the progression of internal processes either in the application, or Gateway.

- The Data definitions section shows a detailed expansion of each of the data types associated with the methods within the classes. Note that some data types are used in other methods and classes and are therefore defined within the Common Data types part of this specification.

4.1 General requirements on support of methods

An implementation of this API which supports or implements a method described in the present document, shall support or implement the functionality described for that method, for at least one valid set of values for the parameters of that method.

Where a method is not supported by an implementation of a Service interface, the exception P_METHOD_NOT_SUPPORTED shall be returned to any call of that method.

Where a method is not supported by an implementation of an Application interface, a call to that method shall be possible, and no exception shall be returned.

5 Sequence Diagrams

5.1 Standard Transaction History Retrieval
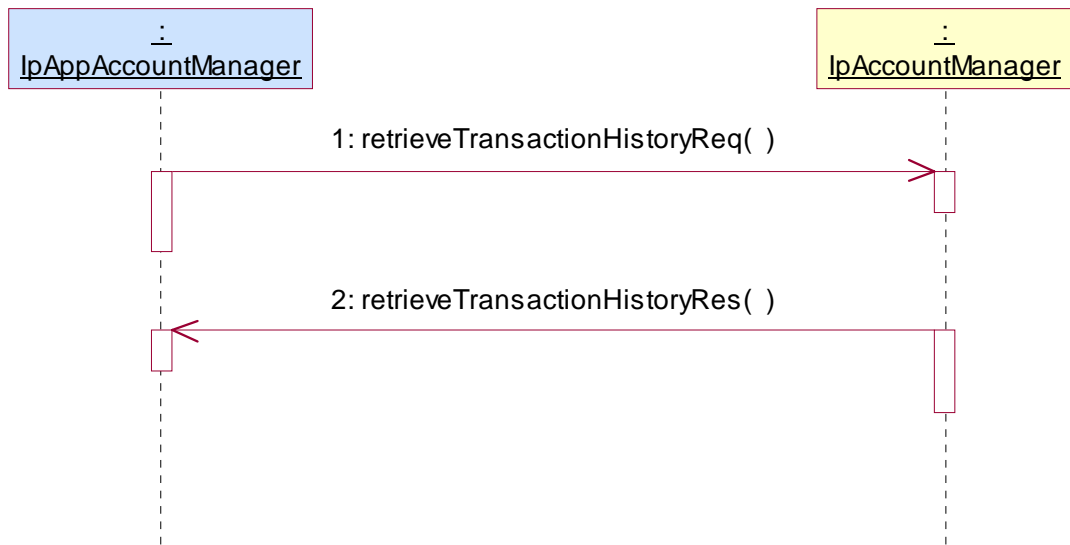
1: This message is used by the application to retrieve a transaction history for a certain subscriber's account.

2: This method passes the result of the transaction history retrieval request for a specific user to its callback object.

5.2 Standard Query Handling
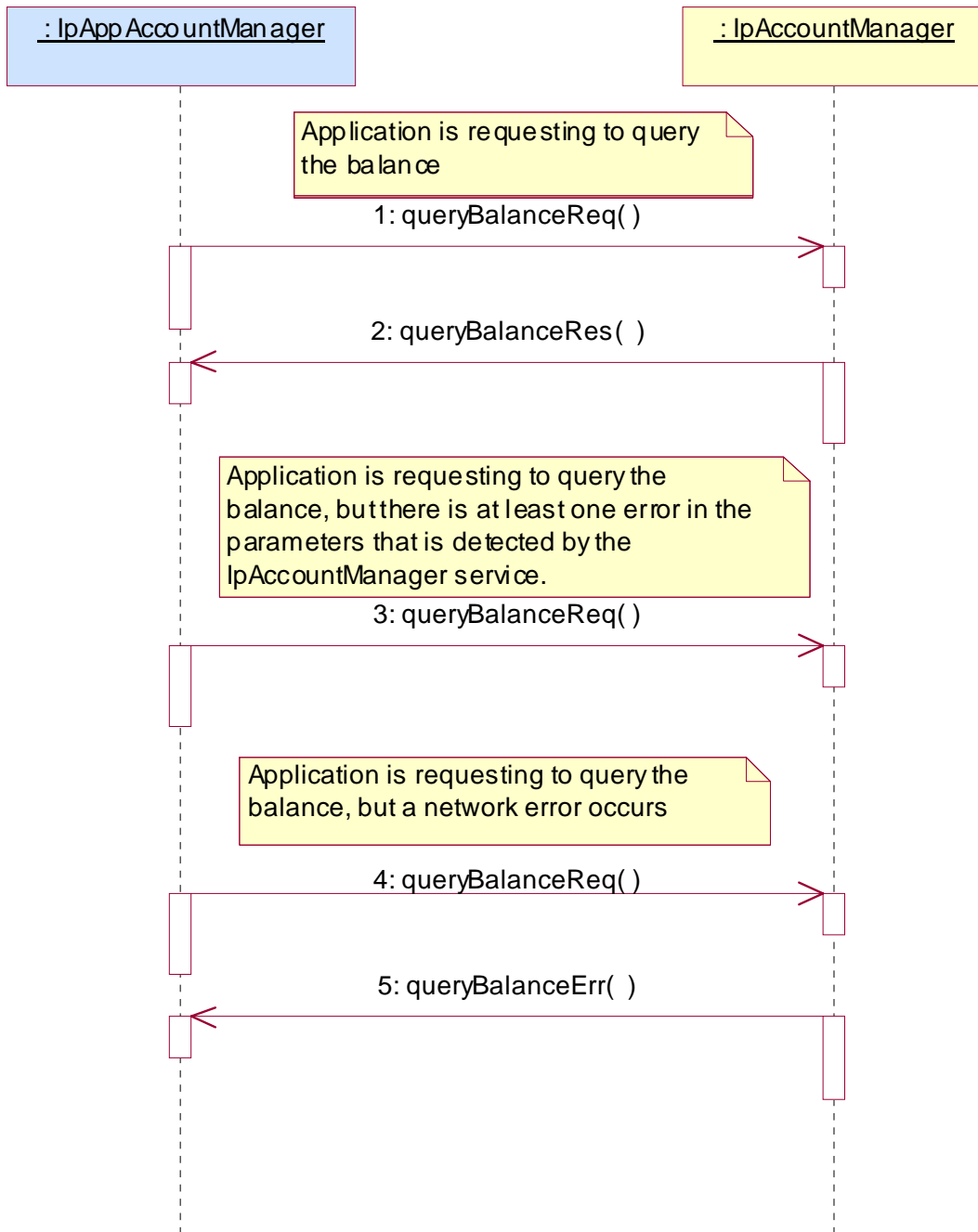
1: This message is used to query the balance of the account of one or several users.

2: This message passes the result of the balance query for one or several users to its callback object.

3: This scenario shows the case where at least one error in the parameters of the message is detected by the IpAccountManager object. An exception will be thrown.

4: This scenario shows the case where a network error occurs.

5: This message passes the error of the balance query. No exception is thrown.

5.3   Standard Notification handling
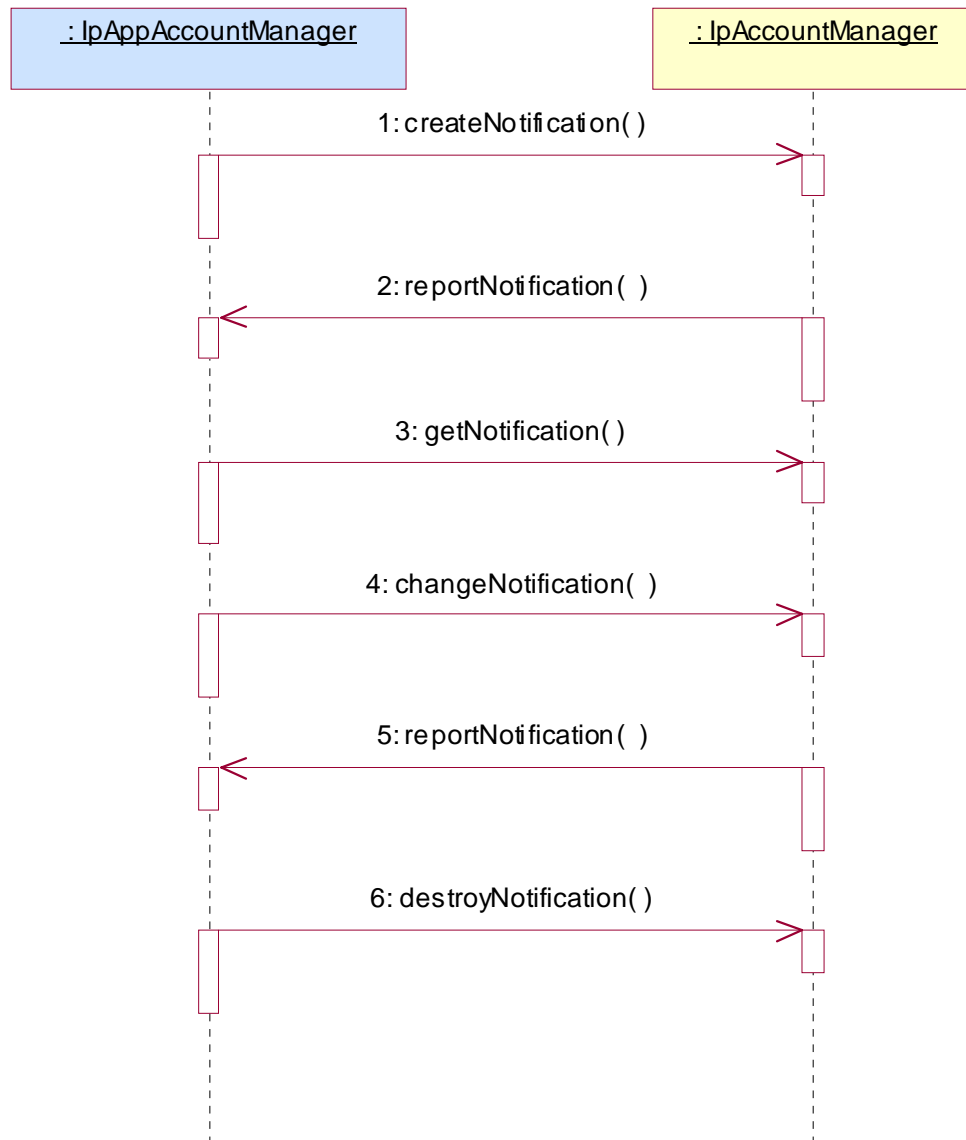
1: This message is used by the application to request notifications from the IpAccountManager service on certain criteria for one or several users.

2: This message is used by the IpAccountManager service to report a charging event that meets the criteria set in the createNotification message.

3: The application can request the current criteria set in the IpAccountManager service by invoking the getNotification method.

4: This message is used by the application to change the criteria initially created by createNotification, and previously obtained by getNotification.

5: This message is used by the IpAccountManager service to report a charging event that meets the new criteria.

6: This method is used by the application to disable the charging notifications.

6   Class Diagrams

IpInterface

<<Interface>>
IpAppAccountManager

reportNotification()
queryBalanceRes()
queryBalanceErr()
retrieveTransactionHistoryRes()
retrieveTransactionHistoryErr()

<<uses>>

<<Interface>>
IpAccountManager

createNotification()
destroyNotification()
queryBalanceReq()
changeNotification()
getNotification()
retrieveTransactionHistoryReq()
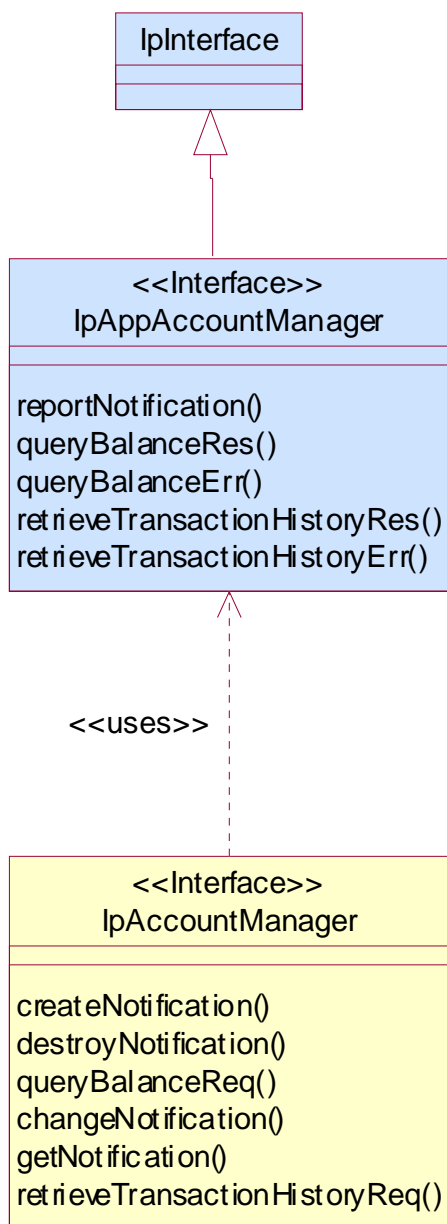
Figure: Application Interfaces
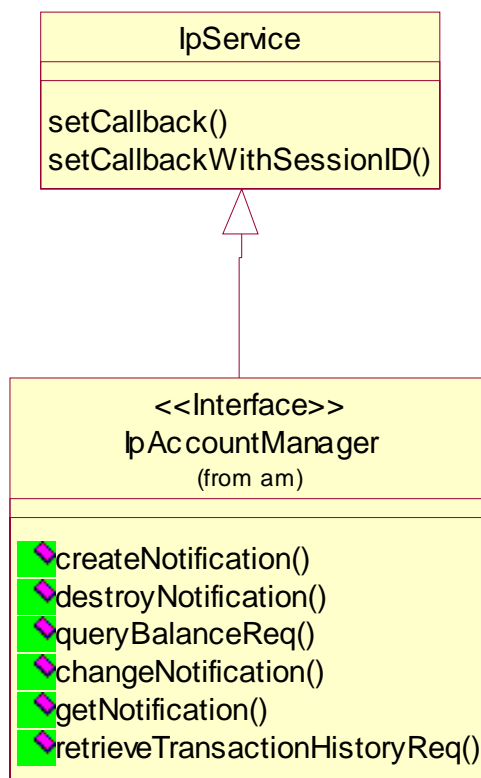
Figure: Service Interfaces

7 The Service Interface Specifications

7.1 Interface Specification Format

This clause defines the interfaces, methods and parameters that form a part of the API specification. The Unified Modelling Language (UML) is used to specify the interface classes. The general format of an interface specification is described below.

7.1.1 Interface Class

This shows a UML interface class description of the methods supported by that interface, and the relevant parameters and types. The Service and Framework interfaces for enterprise-based client applications are denoted by classes with name Ip<name>. The callback interfaces to the applications are denoted by classes with name IpApp<name>. For the interfaces between a Service and the Framework, the Service interfaces are typically denoted by classes with name IpSvc<name>, while the Framework interfaces are denoted by classes with name IpFw<name>

7.1.2 Method descriptions

Each method (API method 'call') is described. Both synchronous and asynchronous methods are used in the API. Asynchronous methods are identified by a 'Req' suffix for a method request, and, if applicable, are served by

asynchronous methods identified by either a `'Res'` or `'Err'` suffix for method results and errors, respectively. To handle responses and reports, the application or service developer must implement the relevant `IpApp<name>` or `IpSvc<name>` interfaces to provide the callback mechanism.

7.1.3 Parameter descriptions

Each method parameter and its possible values are described. Parameters described as 'in' represent those that must have a value when the method is called. Those described as 'out' are those that contain the return result of the method when the method returns.

7.1.4 State Model

If relevant, a state model is shown to illustrate the states of the objects that implement the described interface.

7.2 Base Interface

7.2.1 Interface Class IpInterface

All application, framework and service interfaces inherit from the following interface. This API Base Interface does not provide any additional methods.

<<Interface>>
IpInterface
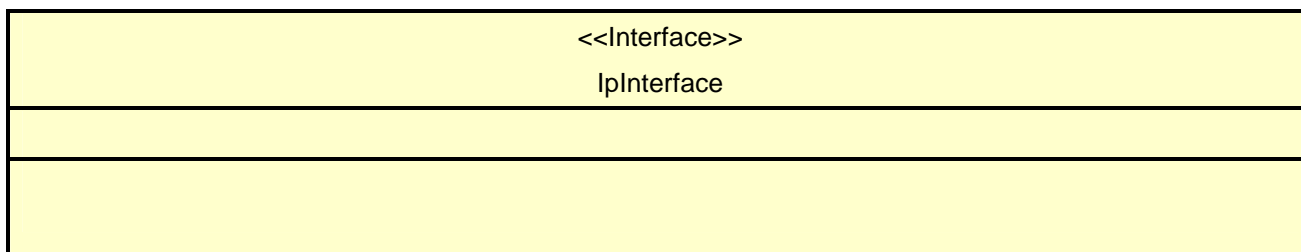
7.3 Service Interfaces

7.3.1 Overview

The Service Interfaces provide the interfaces into the capabilities of the underlying network - such as call control, user interaction, messaging, mobility and connectivity management.

The interfaces that are implemented by the services are denoted as 'Service Interface'. The corresponding interfaces that must be implemented by the application (e.g. for API callbacks) are denoted as 'Application Interface'.

7.4 Generic Service Interface

7.4.1 Interface Class IpService

Inherits from: IpInterface

All service interfaces inherit from the following interface.

| <<Interface>> |
| IpService |
| |
| setCallback (appInterface : in IpInterfaceRef) : void |
| setCallbackWithSessionID (appInterface : in IpInterfaceRef, sessionID : in TpSessionID) : void |

Method
setCallback()

This method specifies the reference address of the callback interface that a service uses to invoke methods on the application. It is not allowed to invoke this method on an interface that uses SessionIDs.

Parameters

appInterface : in IpInterfaceRef

Specifies a reference to the application interface, which is used for callbacks

Raises

TpCommonExceptions, P_INVALID_INTERFACE_TYPE

Method
setCallbackWithSessionID()

This method specifies the reference address of the application's callback interface that a service uses for interactions associated with a specific session ID: e.g. a specific call, or call leg. It is not allowed to invoke this method on an interface that does not use SessionIDs.

Parameters

appInterface : in IpInterfaceRef

Specifies a reference to the application interface, which is used for callbacks

sessionID : in TpSessionID

Specifies the session for which the service can invoke the application's callback interface.

Raises

TpCommonExceptions, P_INVALID_SESSION_ID, P_INVALID_INTERFACE_TYPE

8   Account Management Interface Classes

8.1   Interface Class IpAccountManager

Inherits from: IpService.

The account manager interface provides methods for monitoring accounts. Applications can use this interface to enable or disable charging-related event notifications and to query account balances.

This interface shall be implemented by an Account Management SCF. The queryBalanceReq() method, or the retrieveTransactionHistoryReq() method , or both the createNotification() and destroyNotification methods shall be implemented as a minimum requirement.

<<Interface>>
IpAccountManager
createNotification (chargingEventCriteria : in TpChargingEventCriteria) : TpAssignmentID
destroyNotification (assignmentId : in TpAssignmentID) : void
queryBalanceReq (users : in TpAddressSet) : TpAssignmentID
changeNotification (assignmentID : in TpAssignmentID, eventCriteria : in TpChargingEventCriteria) : void
getNotification () : TpChargingEventCriteriaResultSet
retrieveTransactionHistoryReq (user : in TpAddress, transactionInterval : in TpTimeInterval) : TpAssignmentID

Method
createNotification()

This method is used by the application to enable charging event notifications to be sent to the application.

Returns assignmentId : Specifies the ID assigned by the account management object for this newly enabled event notification.

Parameters

chargingEventCriteria : in TpChargingEventCriteria

Specifies the event specific criteria used by the application to define the charging event required. Individual addresses or address ranges may be specified for subscriber accounts. Example of events are "charging" and "recharging".

Returns

TpAssignmentID

Raises

TpCommonExceptions, P_INVALID_ADDRESS, P_INVALID_CRITERIA, P_INVALID_EVENT_TYPE, P_UNKNOWN_SUBSCRIBER

Method
destroyNotification()

This method is used by the application to disable charging notifications.

Parameters

assignmentId : in TpAssignmentID

Specifies the assignment ID that was given by the account management object when the application enabled the charging notification.

Raises

TpCommonExceptions, P_INVALID_ASSIGNMENT_ID

Method
queryBalanceReq()

This method is used by the application to query the balance of an account for one or several users.

Returns queryId : Specifies the ID of the balance query request.

Parameters

users : in TpAddressSet

Specifies the user(s) for which the balance is queried.

Returns

TpAssignmentID

Raises

TpCommonExceptions, P_UNKNOWN_SUBSCRIBER, P_UNAUTHORIZED_APPLICATION

Method
changeNotification()

This method is used by the application to change the event criteria introduced with createNotification. Any stored criteria associated with the specified assignmentID will be replaced with the specified criteria.

Parameters

assignmentID : in TpAssignmentID

Specifies the ID assigned by the manager interface for the event notification.

eventCriteria : in TpChargingEventCriteria

Specifies the new set of event criteria used by the application to define the event required. Only events that meet these criteria are reported

Raises

TpCommonExceptions, P_INVALID_ASSIGNMENT_ID, P_INVALID_CRITERIA,
P_INVALID_EVENT_TYPE, P_UNKNOWN_SUBSCRIBER, P_INVALID_ADDRESS

Method
getNotification()

This method is used by the application to query the event criteria set with createNotification or changeNotification.

Returns eventCriteria : Specifies the event criteria used by the application to define the event required. Only events that meet these criteria are reported.

Parameters
No Parameters were identified for this method

Returns

TpChargingEventCriteriaResultSet

Raises

TpCommonExceptions

Method
retrieveTransactionHistoryReq()

This asynchronous method is used by the application to retrieve a transaction history of a subscriber's account. The history is a set of Detailed Records.

Returns retrievalID : Specifies the retrieval ID of the transaction history retrieval request.

Parameters

user : in TpAddress

Specifies the subscriber for whose account the transaction history is to be retrieved.

transactionInterval : in TpTimeInterval

Specifies the time interval for which the application history is to be retrieved.

Returns

TpAssignmentID

Raises

TpCommonExceptions, P_UNKNOWN_SUBSCRIBER, P_UNAUTHORIZED_APPLICATION, P_INVALID_TIME_AND_DATE_FORMAT

8.2   Interface Class IpAppAccountManager

Inherits from: IpInterface.

The account manager application interface is implemented by the client application developer and is used to handle charging event notifications and query balance responses.

<<Interface>>
IpAppAccountManager
reportNotification (chargingEventInfo : in TpChargingEventInfo, assignmentId : in TpAssignmentID) : void
queryBalanceRes (queryId : in TpAssignmentID, balances : in TpBalanceSet) : void
queryBalanceErr (queryId : in TpAssignmentID, cause : in TpBalanceQueryError) : void
retrieveTransactionHistoryRes (retrievalID : in TpAssignmentID, transactionHistory : in TpTransactionHistorySet) : void
retrieveTransactionHistoryErr (retrievalID : in TpAssignmentID, transactionHistoryError : in TpTransactionHistoryStatus) : void

Method
reportNotification()

This method is used to notify the application of a charging event.

Parameters

chargingEventInfo : in TpChargingEventInfo

Specifies data associated with this charging event. These data include the charging event being notified, the current value of the balance after the notified event occurred, and the time at which the charging event occurred.

assignmentId : in TpAssignmentID

Specifies the assignment ID that was returned by the createNotification() method. The application can use the assignment ID to associate events with event-specific criteria and to act accordingly.

Method
queryBalanceRes()

This method indicates that the request to query the balance was successful and it reports the requested balance of an account to the application.

Parameters

queryId : in TpAssignmentID

Specifies the ID of the balance query request.

balances : in TpBalanceSet

Specifies the balance for one or more user accounts.

Method
queryBalanceErr()

This method indicates that the request to query the balance failed and it reports the cause of failure to the application.

Parameters

queryId : in TpAssignmentID

Specifies the ID of the balance query request.

cause : in TpBalanceQueryError

Specifies the error that led to the failure.

Method
retrieveTransactionHistoryRes()

This method indicates that the request to retrieve the transaction history was successful and it returns the requested transaction history.

Parameters

retrievalID : in TpAssignmentID

Specifies the retrievalID of the transaction history retrieval request.

transactionHistory : in TpTransactionHistorySet

Specifies the requested transaction history.

Method
retrieveTransactionHistoryErr()

This method indicates that the request to retrieve the transaction history failed and it reports the cause of failure to the application.

Parameters

retrievalID : in TpAssignmentID

Specifies the retrievalID of the transaction history retrieval request.

transactionHistoryError : in TpTransactionHistoryStatus

Specifies the error that occurred while retrieving the transaction history.

9 State Transition Diagrams

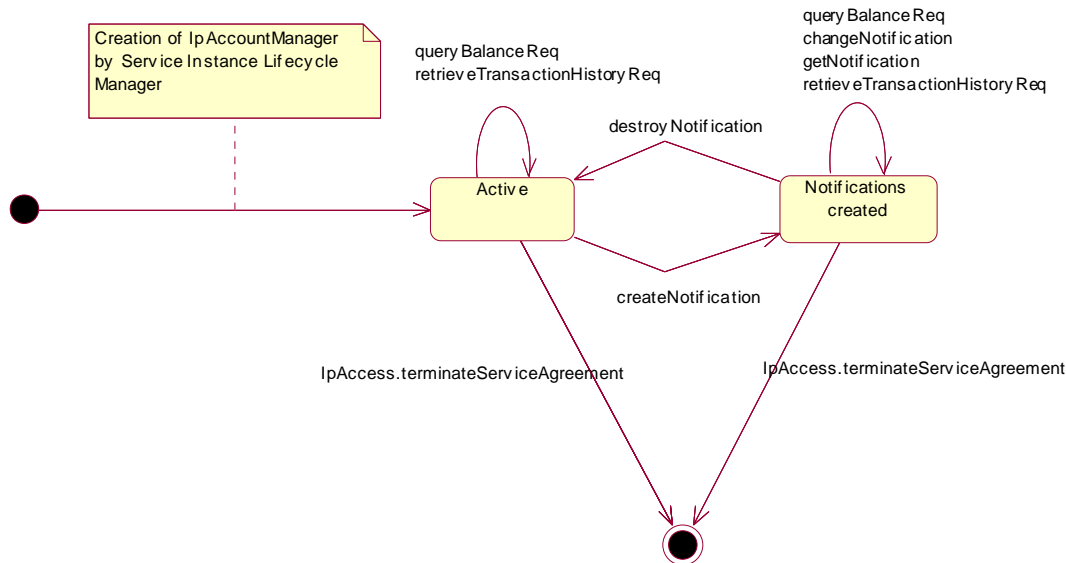## 9.1 State Transition Diagrams for IpAccountManager

Figure : Application view on the IpAccountManager

9.1.1 Active State

In this state a relation between the Application and the Account Management has been established. The state allows the application to indicate that it is interested in charging related events, by calling createNotification. In case such an event occurs, Account Manager will inform the application by invoking the operation reportNotification() on the IpAppAccountManager interface. The application can also indicate it is no longer interested in certain charging related events by calling destroyNotification().

9.1.2 Notifications created State

When the Account Manager is in the Notifications created state, events requested with createNotification() will be forwarded to the application. In this state the application can request to change the notifications or query the Account Manager for the notifications currently set.

10 Account Management Service Properties

The following table lists properties relevant for the Account Management API.

Property	Type	Description/Interpretation
P_ EVENT_TYPES	INTEGER_SET	Indicates the event types supported by the SCS. Static events are the events by which applications are initiated.
P_ADDRESSPLAN	INTEGER_SET	Indicates the supported address plans (defined in TpAddressPlan.) E.g. {P_ADDRESS_PLAN_E164, P_ADDRESS_PLAN_IP}) Note that more than one address plan may be supported.

The previous table lists properties related to the capabilities of the SCS itself. The following table lists properties that are used in the context of the Service Level Agreement, e.g. to restrict the access of applications to the capabilities of the SCS.

Property	Type	Description/Interpretation
P_TRIGGERING_ADDRESSES (Deprecated)	ADDRESSRANGE_SET	Indicates for which numbers the notification may be set. For terminating notifications it applies to the terminating number, for originating notifications it applies only to the originating number.
P_NOTIFICATION_ADDRESS_RANGES	XML_ADDRESS_RANGE_SET	Indicates for which numbers notifications may be set. More than one range may be present. For terminating notifications they apply to the terminating number, for originating notifications they apply only to the originating number.
P_CURRENCY_ALLOWED	STRING_SET	Indicates the currencies that can be returned in the queryBalanceRes. The valid values for the string set are according to ISO-4217. E.g. {'EUR', 'NLG'}.
P_HISTORY_ALLOWED	STRING_SET	Indicates the length of the transaction history interval that is allowed to be retrieved by the application. The valid values for the string are according to TpDateAndTime. The string-set will be of format {"lower_start_time", "upper_stop_time"}, e.g. {"1998-12-04 10:30", "1999-12-04 10:30"}
P_BULK_QUERY_ALLOWED	BOOLEAN_SET	Indicates whether the application is allowed to issue a queryBalanceReq for more than one user. Value = TRUE : the users parameter of type TpAddressSet may contain more than one user. Value = FALSE : the users parameter of type TpAddressSet may contain only one user.

11 Data Definitions

11.1 Account Management Data Definitions

This clause provides the Account Management specific data definitions necessary to support the OSA interface specification.

The general format of a data definition specification is the following:

- Data type, that shows the name of the data type.

- Description, that describes the data type.

- Tabular specification, that specifies the data types and values of the data type.

- Example, if relevant, shown to illustrate the data type.

All data types referenced but not defined in this clause are common data definitions which may be found in 3GPP TS 29.198-2.

11.1.1 IpAppAccountManager

Defines the address of an `IpAppAccountManager` Interface.

11.1.2 IpAppAccountManagerRef

Defines a Reference to type `IpAppAccountManager`

11.1.3 IpAccountManager

Defines the address of an `IpAccountManager` Interface.

11.1.4   IpAccountManagerRef

Defines a Reference to type `IpAccountManager`

11.1.5   TpBalanceQueryError

Defines an error that is reported by the Charging service capability feature as a result of a balance query request.

Name	Value	Description
P_BALANCE_QUERY_OK	0	No error occurred while processing the request
P_BALANCE_QUERY_ERROR_UNDEFINED	1	General error, unspecified
P_BALANCE_QUERY_UNKNOWN_SUBSCRIBER	2	Subscriber for which balance is queried is unknown
P_BALANCE_QUERY_UNAUTHORIZED_APPLICATION	3	Application is not authorized to query balance
P_BALANCE_QUERY_SYSTEM_FAILURE	4	System failure. The request could not be handled

11.1.6   TpChargingEventName

Defines the charging event for which notifications can be requested by the application.

Name	Value	Description
P_AM_CHARGING	0	End user's account has been charged by an application
P_AM_RECHARGING	1	End user has recharged the account
P_AM_ACCOUNT_LOW	2	Account balance is below the balance threshold
P_AM_ACCOUNT_ZERO	3	Account balance is at zero
P_AM_ACCOUNT_DISABLED	4	Account has been disabled

11.1.7   TpBalanceInfo

Defines the structure of data elements that specifies detailed balance info.

Structured Member Name	Structured Member Type	Description
Currency	TpString	Currency unit according to ISO-4217 [4]
ValuePartA	TpInt32	This data type is identical to a TpInt32 and specifies the most significant part of the composed value. A currency amount is composed as follows: ((ValuePartA*2^{32}+ ValuePartB) * 0,0001)
ValuePartB	TpInt32	This data type is identical to a TpInt32 and specifies the least significant part of the composed value.
Exponent	TpInt32	Specifies the position of the decimal point in the currency amount made up of the ValuePartA and the ValuePartB, as described above. E.g. an exponent of 4 means a pure integer value, whereas an exponent of 2 means an accuracy of 0,01.
AdditionalInfo	TpString	Descriptive string, containing additional information, which is sent to the application without prior evaluation.

As an example, the currency amount composed of a Currency of EUR, a ValuePartA of 0, a ValuePartB of 10 000, and an exponent of 2 yields a currency amount of € 100,00.

Valid Currencies are:

```
ADP, AED, AFA, ALL, AMD, ANG, AON, AOR, ARS, ATS, AUD, AWG, AZM, BAM,

BBD, BDT, BEF, BGL, BGN, BHD, BIF, BMD, BND, BOB, BOV, BRL, BSD, BTN,

BWP, BYB, BZD, CAD, CDF, CHF, CLF, CLP, CNY, COP, CRC, CUP, CVE, CYP,

CZK, DEM, DJF, DKK, DOP, DZD, ECS, ECV, EEK, EGP, ERN, ESP, ETB, EUR,

FIM, FJD, FKP, FRF, GBP, GEL, GHC, GIP, GMD, GNF, GRD, GTQ, GWP, GYD,

HKD, HNL, HRK, HTG, HUF, IDR, IEP, ILS, INR, IQD, IRR, ISK, ITL, JMD,

JOD, JPY, KES, KGS, KHR, KMF, KPW, KRW, KWD, KYD, KZT, LAK, LBP, LKR,
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LRD, LSL, LTL, LUF, LVL, LYD, MAD, MDL, MGF, MKD, MMK, MNT, MOP, MRO,
MTL, MUR, MVR, MWK, MXN, MXV, MYR, MZM, NAD, NGN, NIO, NLG, NOK, NPR,
NZD, OMR, PAB, PEN, PGK, PHP, PKR, PLN, PTE, PYG, QAR, ROL, RUB, RUR,
RWF, SAR, SBD, SCR, SDD, SEK, SGD, SHP, SIT, SKK, SLL, SOS, SRG, STD,
SVC, SYP, SZL, THB, TJR, TMM, TND, TOP, TPE, TRL, TTD, TWD, TZS, UAH,
UGX, USD, USN, USS, UYU, UZS, VEB, VND, VUV, WST, XAF, XAG, XAU, XBA,
XBB, XBC, XBD, XCD, XDR, XFO, XFU, XOF, XPD, XPF, XPT, XTS, XXX, YER,
YUM, ZAL, ZAR, ZMK, ZRN, ZWD.
```

XXX is used for transactions where no currency is involved.

11.1.8   TpChargingEventInfo

Defines the structure of data elements that specifies charging event information.

Structured Member Name	Structured Member Type	Description
ChargingEventName	TpChargingEventName	The charging event for which notifications can be requested by the application
CurrentBalanceInfo	TpBalanceInfo	The current balance of the user"s account
ChargingEventTime	TpTime	The time at which the charging event occurred.

11.1.9   TpChargingEventCriteria

Defines the structure of data elements that specifies charging event criteria.

Structured Member Name	Structured Member Type	Description
ChargingEvents	TpChargingEventNameSet	Specifies the specific charging event criteria used by the application to define the event required.
Users	TpAddressSet	Specifies the user(s) for which the charging events are requested to be reported.

11.1.10   TpChargingEventNameSet

Defines a collection of TpChargingEventName elements.

11.1.11   TpChargingEventCriteriaResult

Defines the Sequence of Data Elements that specify the criteria relating to event requests.

Sequence Element Name	Sequence Element Type
ChargingEventCriteria	TpChargingEventCriteria
AssignmentID	TpAssignmentID

11.1.12   TpChargingEventCriteriaResultSet

Defines a collection of TpChargingEventCriteriaResult elements.

11.1.13 TpBalance

Defines the structure of data elements that specifies a balance.

Structured Member Name	Structured Member Type	Description
UserID	TpAddress	Specifies the user to whom the account belongs.
StatusCode	TpBalanceQueryError	Specifies the status code for the balance query request.
BalanceInfo	TpBalanceInfo	Specifies the balance information for the user.

11.1.14 TpBalanceSet

Defines a collection of TpBalance elements.

11.1.15 TpTransactionHistory

This data type is a sequence of data elements that describes the transaction history.

Sequence Element Name	Sequence Element Type	Description
TransactionID	TpAssignmentID	Specifies the ID of the specific transaction
TimeStamp	TpDateAndTime	Specifies the date and time when the specific transaction was processed.
AdditionalInfo	TpString	Specifies a free format string providing additional information on the specific transaction. This could be the applicationDescription provided with the actual transaction.

11.1.16 TpTransactionHistorySet

Defines a collection of TpTransactionHistory elements.

11.1.17 TpTransactionHistoryStatus

Defines a status code that is reported by the Account Manager service capability feature as a result of a transaction history retrieval request.

Name	Value	Description
P_AM_TRANSACTION_ERROR_UNSPECIFIED	0	General error, unspecified
P_AM_TRANSACTION_INVALID_INTERVAL	1	An invalid interval for the transaction history was specified.
P_AM_TRANSACTION_UNKNOWN_ACCOUNT	2	No account for the specified user is known.
P_AM_TRANSACTION_UNAUTHORIZED_APPLICATION	3	Application is not authorized to query balance.
P_AM_TRANSACTION_PROCESSING_ERROR	4	A processing error occurred while compiling the transaction history.
P_AM_TRANSACTION_SYSTEM_FAILURE	5	System failure. The request could not be handled

12   Exception Classes

The following are the list of exception classes, which are used in this interface of the API.

Name	Description
P_UNAUTHORIZED_APPLICATION	Application is not authorized to perform charging operations

Each exception class contains the following structure:

Structure Element Name	Structure Element Type	Structure Element Description
ExtraInformation	TpString	Carries extra information to help identify the source of the exception, e.g. a parameter name

Annex A (normative):
OMG IDL Description of Account Management SCF

The OMG IDL representation of this interface specification is contained in a text file (am.idl contained in archive 2919811V460IDL.ZIP) which accompanies the present document.

Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment		Old	New
Mar 2001	CN_11	NP-010134	0047	--	CR 29.198: for moving TS 29.198 from R99 to Rel 4 (N5-010158)		3.2.0	1.0.0
Jun 2001	CN_12	NP-010327	--	--	Approved at TSG CN#12 and placed under Change Control		2.0.0	4.0.0
Sep 2001	CN_13	NP-010472	0001	--	Changing references to JAIN		4.0.0	4.1.0
Sep 2001	CN_13	NP-010472	0002	--	Missing exceptions for enabling and changing the notifications		4.0.0	4.1.0
Dec 2001	CN_14	NP-010602	0003	--	Replace Out Parameters with Return Types		4.1.0	4.2.0
Dec 2001	CN_14	NP-010602	0004	--	Replace erroneous use of incorrect data type TpSessionID by TpAssignmentID in Account Management interface		4.1.0	4.2.0
Mar 2002	CN_15	NP-020111	0005	--	Add P_INVALID_INTERFACE_TYPE exception to IpService.setCallback() and IpService.setCallbackWithSessionID()		4.2.0	4.3.0
Mar 2002	CN_15	NP-020111	0006	--	Correction of parameter name in IpAccountManager.createNotification()		4.2.0	4.3.0
Mar 2002	CN_15	NP-020111	0007	--	Correction of result parameter of getNotification, set in stead of single result		4.2.0	4.3.0
Mar 2003	CN_19	NP-030025	0015	--	Correction to TpChargingEventCriteria in Account Management		4.3.0	4.4.0
Mar 2003	CN_19	NP-030025	0017	--	Correction of status of methods to Account Management interfaces		4.3.0	4.4.0
Jun 2004	CN_24	NP-040256	0025	--	Correct the P_TRIGGERING_ADDRESSES service property		4.4.0	4.5.0
Dec 2005	CT-30	CP-050562	0035	--	Correct references to ISO 4217 to make them undated		4.5.0	4.6.0

History

Document history		
V4.0.0	June 2001	Publication
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V4.2.0	December 2001	Publication
V4.3.0	March 2002	Publication
V4.4.0	March 2003	Publication
V4.5.0	June 2004	Publication
V4.6.0	December 2005	Publication