

**Open Service Access (OSA);  
Application Programming Interface (API);  
Part 12: Charging SCF  
(Parlay 6)**



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# Contents

Intellectual Property Rights .....	7
Foreword.....	7
1 Scope .....	8
2 References .....	8
3 Definitions and abbreviations.....	8
3.1 Definitions .....	8
3.2 Abbreviations .....	8
4 Charging SCF.....	9
4.1 General requirements on support of methods.....	9
5 Sequence Diagrams .....	9
5.1 Reservation / payment in parts .....	9
5.2 Immediate Charge .....	11
6 Class Diagrams.....	13
7 The Service Interface Specifications .....	14
7.1 Interface Specification Format .....	14
7.1.1 Interface Class .....	15
7.1.2 Method descriptions.....	15
7.1.3 Parameter descriptions.....	15
7.1.4 State Model.....	15
7.2 Base Interface.....	15
7.2.1 Interface Class IpInterface .....	15
7.3 Service Interfaces .....	15
7.3.1 Overview .....	15
7.4 Generic Service Interface .....	16
7.4.1 Interface Class IpService .....	16
7.4.1.1 Method setCallback().....	16
7.4.1.2 Method setCallbackWithSessionID().....	16
8 Charging Interface Classes.....	17
8.1 Interface Class IpChargingManager.....	17
8.1.1 Method createChargingSession().....	18
8.1.2 Method createSplitChargingSession() .....	19
8.2 Interface Class IpAppChargingManager .....	19
8.2.1 Method sessionAborted().....	20
8.2.2 Method abortMultipleChargingSessions().....	20
8.3 Interface Class IpChargingSession.....	20
8.3.1 Method creditAmountReq().....	21
8.3.2 Method creditUnitReq().....	22
8.3.3 Method debitAmountReq().....	23
8.3.4 Method debitUnitReq().....	23
8.3.5 Method directCreditAmountReq().....	24
8.3.6 Method directCreditUnitReq().....	24
8.3.7 Method directDebitAmountReq().....	25
8.3.8 Method directDebitUnitReq() .....	26
8.3.9 Method extendLifeTimeReq() .....	26
8.3.10 Method getAmountLeft().....	26
8.3.11 Method getLifeTimeLeft().....	27
8.3.12 Method getUnitLeft().....	27
8.3.13 Method rateReq().....	27
8.3.14 Method release() .....	28
8.3.15 Method reserveAmountReq() .....	28
8.3.16 Method reserveUnitReq() .....	29

8.4	Interface Class IpAppChargingSession .....	29
8.4.1	Method creditAmountErr() .....	30
8.4.2	Method creditAmountRes() .....	31
8.4.3	Method creditUnitErr() .....	31
8.4.4	Method creditUnitRes() .....	32
8.4.5	Method debitAmountErr() .....	32
8.4.6	Method debitAmountRes() .....	32
8.4.7	Method debitUnitErr() .....	33
8.4.8	Method debitUnitRes() .....	33
8.4.9	Method directCreditAmountErr() .....	33
8.4.10	Method directCreditAmountRes() .....	34
8.4.11	Method directCreditUnitErr() .....	34
8.4.12	Method directCreditUnitRes() .....	34
8.4.13	Method directDebitAmountErr() .....	35
8.4.14	Method directDebitAmountRes() .....	35
8.4.15	Method directDebitUnitErr() .....	36
8.4.16	Method directDebitUnitRes() .....	36
8.4.17	Method extendLifeTimeErr() .....	36
8.4.18	Method extendLifeTimeRes() .....	37
8.4.19	Method rateErr() .....	37
8.4.20	Method rateRes() .....	37
8.4.21	Method reserveAmountErr() .....	37
8.4.22	Method reserveAmountRes() .....	38
8.4.23	Method reserveUnitErr() .....	38
8.4.24	Method reserveUnitRes() .....	38
8.4.25	Method sessionEnded() .....	39
9	State Transition Diagrams .....	40
9.1	State Transition Diagrams for IpChargingSession .....	40
9.1.1	Session Created State .....	41
9.1.2	Amount Reserved State .....	41
9.1.3	Volume Reserved State .....	41
9.1.4	Reservation Ended State .....	41
10	Content Based Charging Service Properties .....	41
11	Data Definitions .....	42
11.1	Charging Data Definitions .....	42
11.1.1	IpChargingManager .....	43
11.1.2	IpChargingManagerRef .....	43
11.1.3	IpAppChargingManager .....	43
11.1.4	IpAppChargingManagerRef .....	43
11.1.5	IpChargingSession .....	43
11.1.6	IpChargingSessionRef .....	43
11.1.7	IpAppChargingSession .....	43
11.1.8	IpAppChargingSessionRef .....	43
11.1.9	TpApplicationDescription .....	43
11.1.10	TpAppInformationSet .....	43
11.1.11	TpAppInformation .....	44
11.1.12	TpAppInformationType .....	44
11.1.13	TpSessionEndedCause .....	44
11.1.14	TpMerchantAccountID .....	44
11.1.15	TpCorrelationID .....	44
11.1.16	TpCorrelationType .....	44
11.1.17	TpChargingPrice .....	45
11.1.18	TpAmount .....	45
11.1.19	TpChargingParameterSet .....	45
11.1.20	TpChargingParameter .....	45
11.1.21	TpChargingParameterID .....	45
11.1.22	TpChargingParameterValue .....	45
11.1.23	TpChargingParameterValueType .....	46
11.1.24	TpVolumeSet .....	46
11.1.25	TpVolume .....	46

11.1.26	TpUnitID .....	46
11.1.27	TpChargingSessionID .....	46
11.1.28	TpPriceVolumeSet .....	47
11.1.29	TpPriceVolume .....	47
11.1.30	TpChargingError .....	47
12	Exception Classes .....	47
<b>Annex A (normative):</b>	<b>OMG IDL Description of Charging SCF .....</b>	<b>48</b>
<b>Annex B (informative):</b>	<b>W3C WSDL Description of Charging SCF .....</b>	<b>49</b>
<b>Annex C (informative):</b>	<b>Java™ API Description of the Charging SCF .....</b>	<b>50</b>
<b>Annex D (informative):</b>	<b>Contents of 3GPP OSA R7 Charging .....</b>	<b>51</b>
<b>Annex E (informative):</b>	<b>Description of Charging for 3GPP2 cdma2000 networks .....</b>	<b>52</b>
E.1	General Exceptions .....	52
E.2	Specific Exceptions .....	52
E.2.1	Clause 1: Scope .....	52
E.2.2	Clause 2: References .....	52
E.2.3	Clause 3: Definitions and abbreviations .....	52
E.2.4	Clause 4: Charging SCF .....	52
E.2.5	Clause 5: Sequence Diagrams .....	52
E.2.6	Clause 6: Class Diagrams .....	52
E.2.7	Clause 7: The Service Interface Specifications .....	52
E.2.8	Clause 8: Charging Interface Classes .....	53
E.2.9	Clause 9: State Transition Diagrams .....	53
E.2.10	Clause 10: Content Based Charging Service Properties .....	53
E.2.11	Clause 11: Data Definitions .....	53
E.2.12	Clause 12: Exception Classes .....	53
E.2.13	Annex A (normative): OMG IDL Description of Charging SCF .....	53
E.2.14	Annex B (informative): W3C WSDL Description of Charging SCF .....	53
E.2.15	Annex C (informative): Java™ API Description of the Charging SCF .....	53
<b>Annex F (informative):</b>	<b>Record of changes .....</b>	<b>54</b>
F.1	Interfaces .....	54
F.1.1	New .....	54
F.1.2	Deprecated .....	54
F.1.3	Removed .....	54
F.2	Methods .....	54
F.2.1	New .....	54
F.2.2	Deprecated .....	54
F.2.3	Modified .....	55
F.2.4	Removed .....	55
F.3	Data Definitions .....	55
F.3.1	New .....	55
F.3.2	Modified .....	55
F.3.3	Removed .....	55
F.4	Service Properties .....	55
F.4.1	New .....	55
F.4.2	Deprecated .....	56
F.4.3	Modified .....	56
F.4.4	Removed .....	56
F.5	Exceptions .....	56
F.5.1	New .....	56
F.5.2	Modified .....	56
F.5.3	Removed .....	56

F.6 Others .....	56
History .....	57

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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 12 of a multi-part deliverable covering Open Service Access (OSA); Application Programming Interface (API), as identified below. The API specification (ES 204 915) is structured in the following parts:

- Part 1: "Overview";
- Part 2: "Common Data Definitions";
- Part 3: "Framework";
- Part 4: "Call Control";
- 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";
- Part 10: "Connectivity Manager SCF";
- Part 11: "Account Management SCF";
- Part 12: "Charging SCF";**
- Part 13: "Policy Management SCF";
- Part 14: "Presence and Availability Management SCF";
- Part 15: "Multi-Media Messaging SCF";
- Part 16: "Service Broker SCF".

The present document has been defined jointly between ETSI, The Parlay Group (<http://www.parlay.org>) and the 3GPP, in co-operation with a number of JAIN™ Community (<http://www.java.sun.com/products/jain>) member companies.

**The present document forms part of the Parlay 6.0 set of specifications.**

**The present document is equivalent to 3GPP TS 29.198-12 V7.0.0 (Release 7).**

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# 1 Scope

The present document is part 12 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 present document specifies the Charging Service Capability Feature (SCF) aspects of the interface. All aspects of the Charging 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.
- WSDL Description of the interfaces.
- Reference to the Java™ API 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).

---

# 2 References

The references listed in clause 2 of ES 204 915-1 contain provisions which, through reference in this text, constitute provisions of the present document.

ETSI ES 204 915-1: "Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (Parlay 6)".

---

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 204 915-1 apply.

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ES 204 915-1 apply.



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## 4 Charging SCF

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

The order is as follows:

- The Sequence diagrams give the reader a practical idea of how each of the SCF 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 transition between states in the SCF. The states and transitions are well-defined; either methods specified in the Interface specification or events occurring in the underlying networks cause state transitions.
- The Data Definitions clause 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 ES 204 915-2.

### 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.

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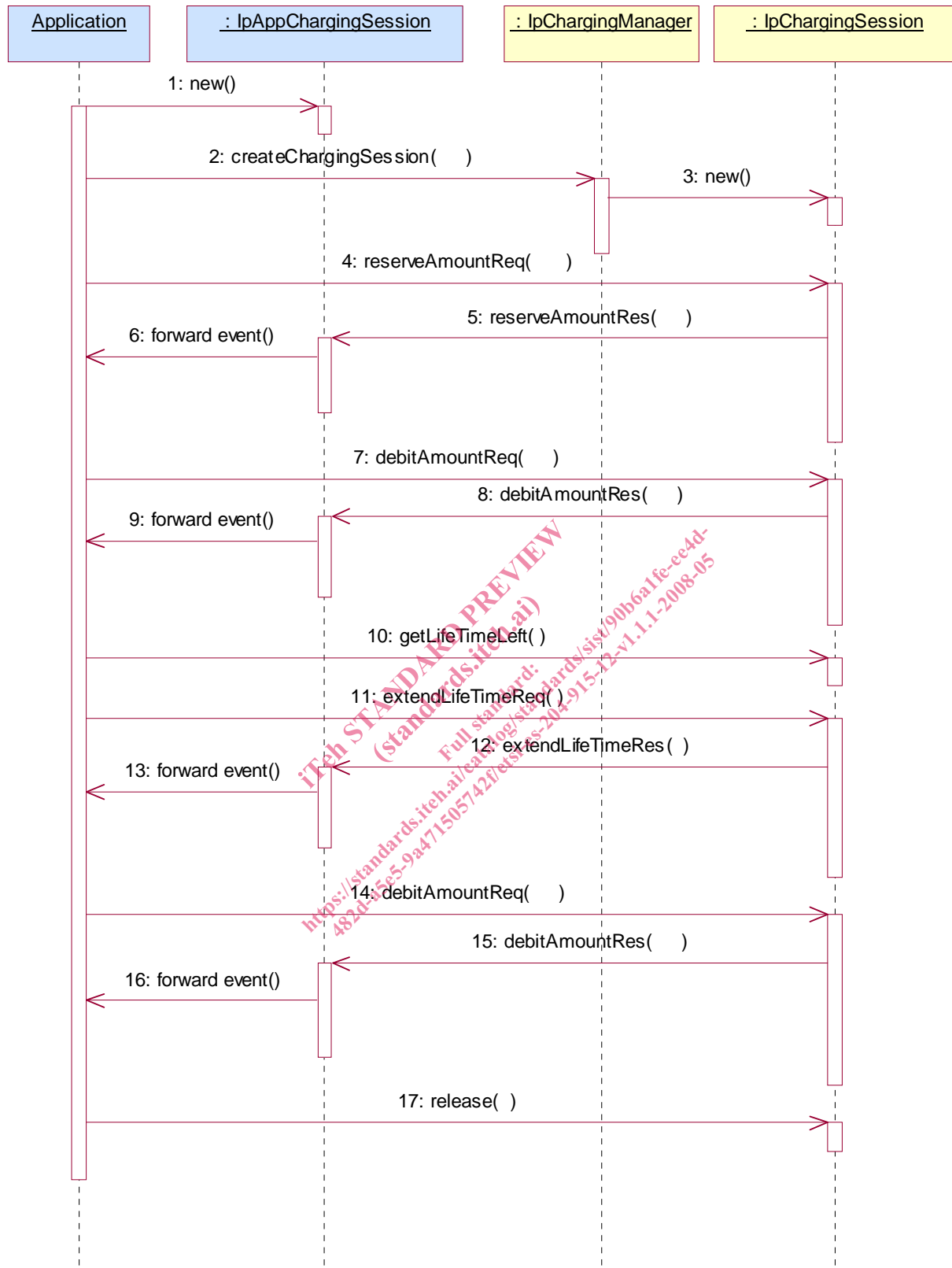
## 5 Sequence Diagrams

### 5.1 Reservation / payment in parts

The sequence diagram illustrates how to request a reservation and how to charge a user from the reserved amount, for instance to charge a user for a streamed video which lasts 10 minutes and costs a total of \$2.00. The operations and interfaces that do not provide rating are employed throughout this sequence diagram.

We assume the application has already discovered the Charging SCF. As a result, the application received an object reference pointing to an object that implements the IpChargingManager interface.

The operations which handle units are used exactly the same, except that the amount of application usage is indicated instead of a price.



- 1: The application creates a local object implementing the IpAppChargingSession interface. This object will receive response messages from the IpChargingSession object.
- 2: The application opens a charging session, a reference to a new or existing object implementing IpChargingSession is returned together with a unique session ID.

- 3: In this case a new object is used.
- 4: The application requests the reservation of \$2.00.
- 5: Assuming the criteria for requesting a reservation are met (the application provider has permission to charge the requested amount, the charged user has agreed to pay the requested amount), the amount is reserved in the session. At this point, the application provider knows that the network operator will accept later debit requests up to the reserved amount. So, the application may start serving the user, for instance by sending the video stream.
- 6: The successful reservation is reported back to the application.

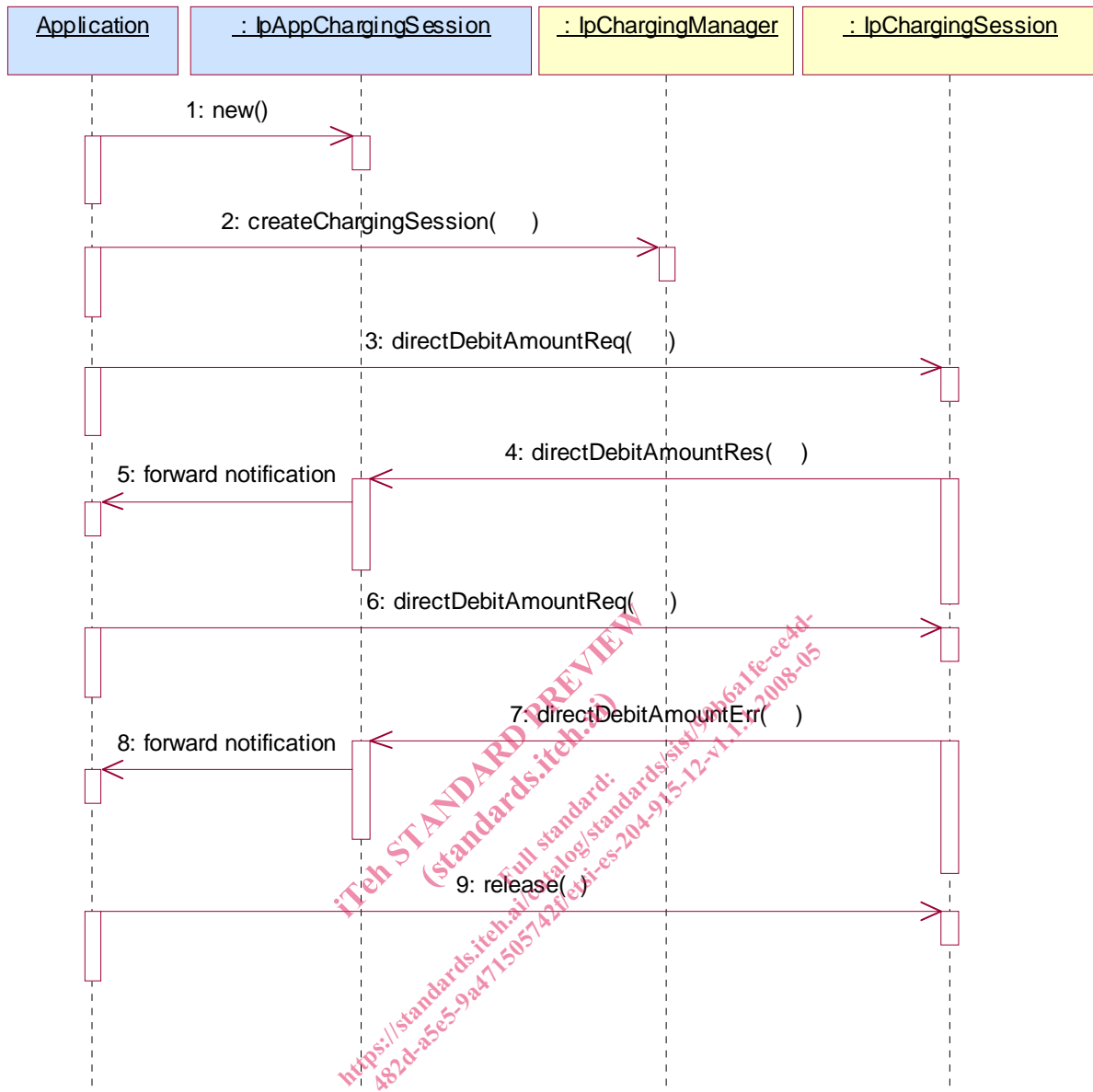
After half of the video has been sent to the user, the application may choose to capture half of the price already:

- 7: The application requests to debit \$1.00 from the reservation.
- 8: The successful debit is reported back to the application.
- 9: The acknowledge is forwarded to the application.
- 10: The application checks if the remaining lifetime of the reservation will cover the remaining 5 minutes of video. Let us assume, it does not.
- 11: The application asks the IpChargingSession object to extend the lifetime of the reservation.
- 12: Assuming that the application provider is allowed to keep reservations open for longer than 10 minutes, the extendLifeTimeReq() will be honoured and confirmed properly.
- 13: The confirmation is forwarded to the application.
- 14: When the complete video has been transmitted to the user without errors, the application charges another \$1.00.
- 15: The IpChargingSession object acknowledges the successful debit at the IpAppChargingSession callback object.
- 16: The IpAppChargingSession object forwards the acknowledge to the application.
- 17: Since the service is complete, the application frees all resources associated with the reservation and session.

## 5.2 Immediate Charge

This sequence diagram illustrates how immediate charging is used. Assume a WAP gateway that charges the user \$0.01 per requested URL. Since it is acceptable to lose one tick worth \$0.01, no prior reservations are made. The WAP gateway sends an immediate debit for each requested URL, and should a payment have as result failure, the user is disconnected.

The operations which handle units are used exactly the same, except that the amount of application usage is indicated instead of a price.



- 1: The application creates a local object implementing the IpAppChargingSession interface. This object will receive response messages from the IpChargingSession object.
  - 2: The application orders the creation of a session. No new object is created for the charging session handling in this example implementation.
  - 3: The application requests to charge the user \$0.01.
  - 4: The payment is acknowledged.
  - 5: The acknowledgement is forwarded in the application.
  - 6: The application requests to charge the user \$0.01.
  - 7: The payment is reported to fail.
  - 8: The failure report is forwarded in the application.
- (repeat steps 3 to 5 and 6 to 8 as long as you want to in any order you want to).
- 9: The application releases the session.

## 6 Class Diagrams

This class diagram shows the application interfaces for charging and their relations to the service interfaces.

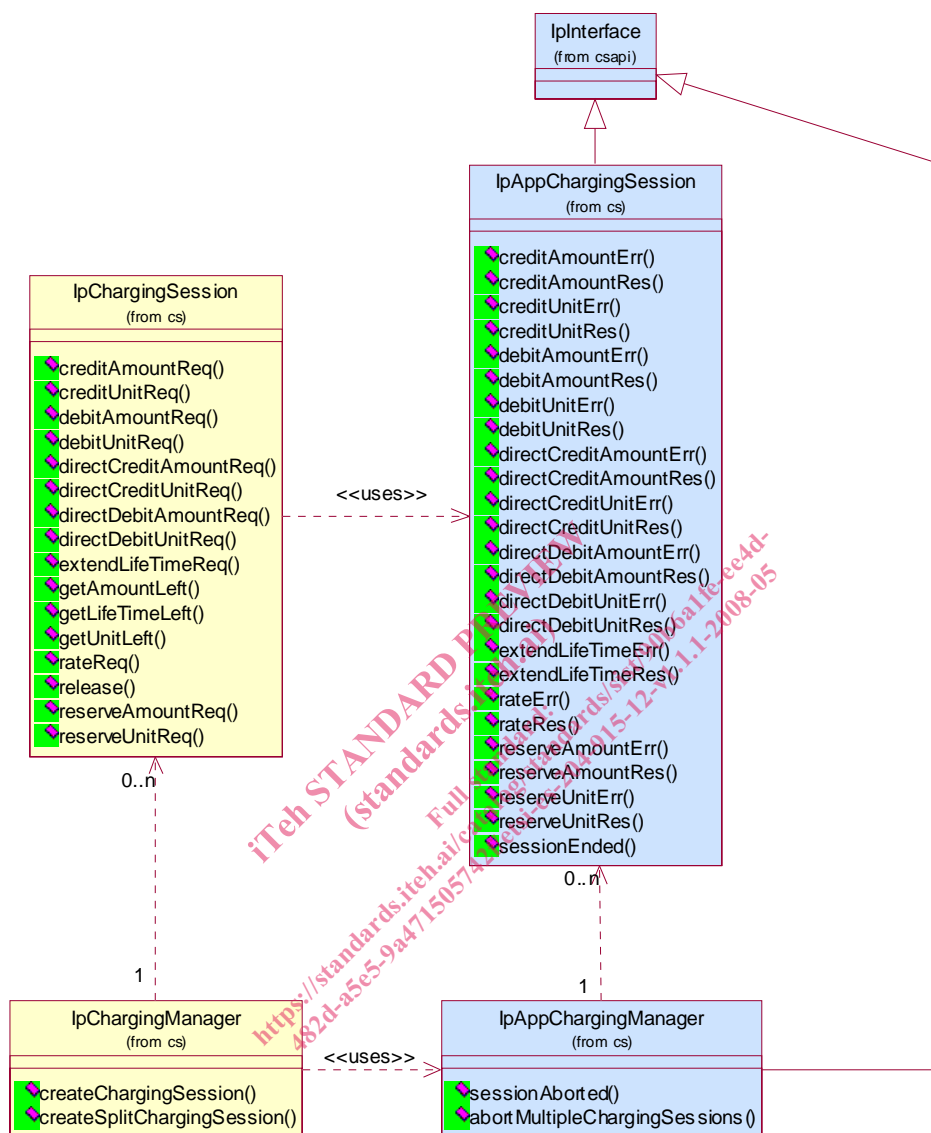


Figure 1: Application Interfaces

This class diagram shows the interfaces of the charging SCF.