

Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs; Part 6: Payment Mapping



Reference

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 6 of a multi-part deliverable covering Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs, as identified below:

- Part 1: "Common Mapping";
- Part 2: "Third Party Call Mapping";
- Part 3: "Call Notification Mapping";
- Part 4: "Short Messaging Mapping";
- Part 5: "Multimedia Messaging Mapping";
- Part 6: "Payment Mapping";**
- Part 7: "Account Management Mapping";
- Part 8: "Terminal Status Mapping";
- Part 9: "Terminal Location Mapping";
- Part 10: "Call Handling Mapping";
- Part 11: "Audio Call Mapping";
- Part 12: "Multimedia Conference Mapping";
- Part 14: "Presence Mapping".

NOTE: Part 13 has not been provided as there is currently no defined mapping between ES 202 391-13 [4] and the Parlay/OSA APIs. If a mapping is developed, it will become part 13 of this series.

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

1 Scope

The present document specifies the mapping of the Parlay X Payment Web Service to the Charging Service Capability Feature (SCF).

The Parlay X Web Services provide powerful yet simple, highly abstracted, imaginative, telecommunications functions that application developers and the IT community can both quickly comprehend and use to generate new, innovative applications.

The Open Service Access (OSA) specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e. the Parlay/OSA APIs.

2 References

For the purposes of this Technical Report (TR), the following references apply:

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

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

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

[3] ETSI TR 102 397-1: " Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs; Part 1: Common Mapping".

[4] ETSI ES 202 391-13: "Open Service Access (OSA); Parlay X Web Services; Part 13: Address List Management".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 102 397-1 [3] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 102 397-1 [3] apply.

4 Mapping description

The Payment capability can be implemented with Parlay/OSA Charging.

It is applicable to ETSI OSA 1.x/2.x/3.x, Parlay/OSA 3.x/4.x/5.x and 3GPP Releases 4 to 6.

5 Sequence diagrams

5.1 Direct charging

This use case shows an application debiting a specific amount from a customer account. The use cases are similar for all direct debits and credits however a different Payment Web Service operation is used for each. In the diagram below **VolumeCharging** could replace **AmountCharging** and **refundAmount/Volume** operations could replace **chargeAmount/Volume** operations.

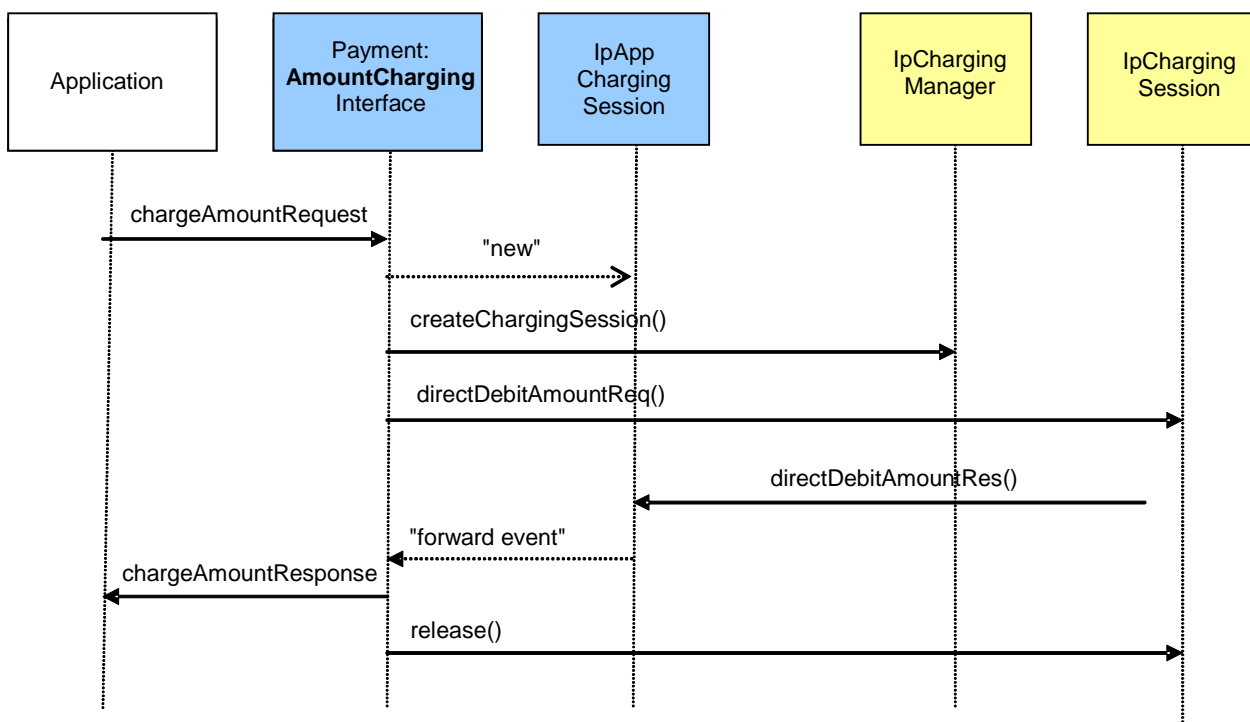


Figure 1

5.2 Reservation-based charging

This use case shows an application reserving a specific amount of credit in a customer account. The credit is increased and then deducted (charged against) at a later point. The use case is similar for a volume credit reservation and subsequent deduction although a different Payment Web Service interface (**ReserveVolumeCharging**) would be used instead.

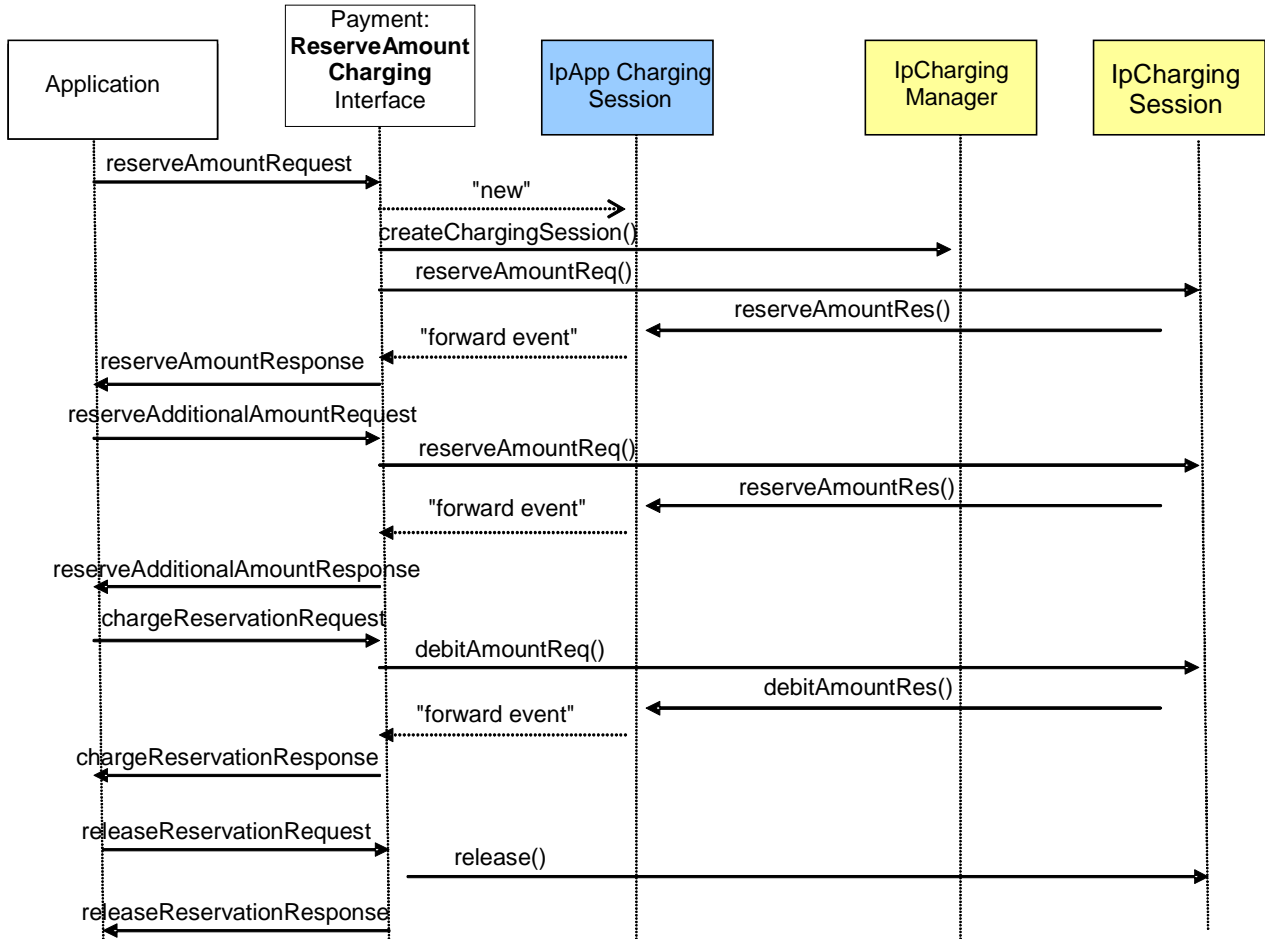


Figure 2

5.3 Conversion of volume to currency amount

This use case shows an application requesting the conversion of a specified volume to a currency amount. This use case also applies when the **getAmount** operation is invoked on the **ReserveVolumeCharging** interface.

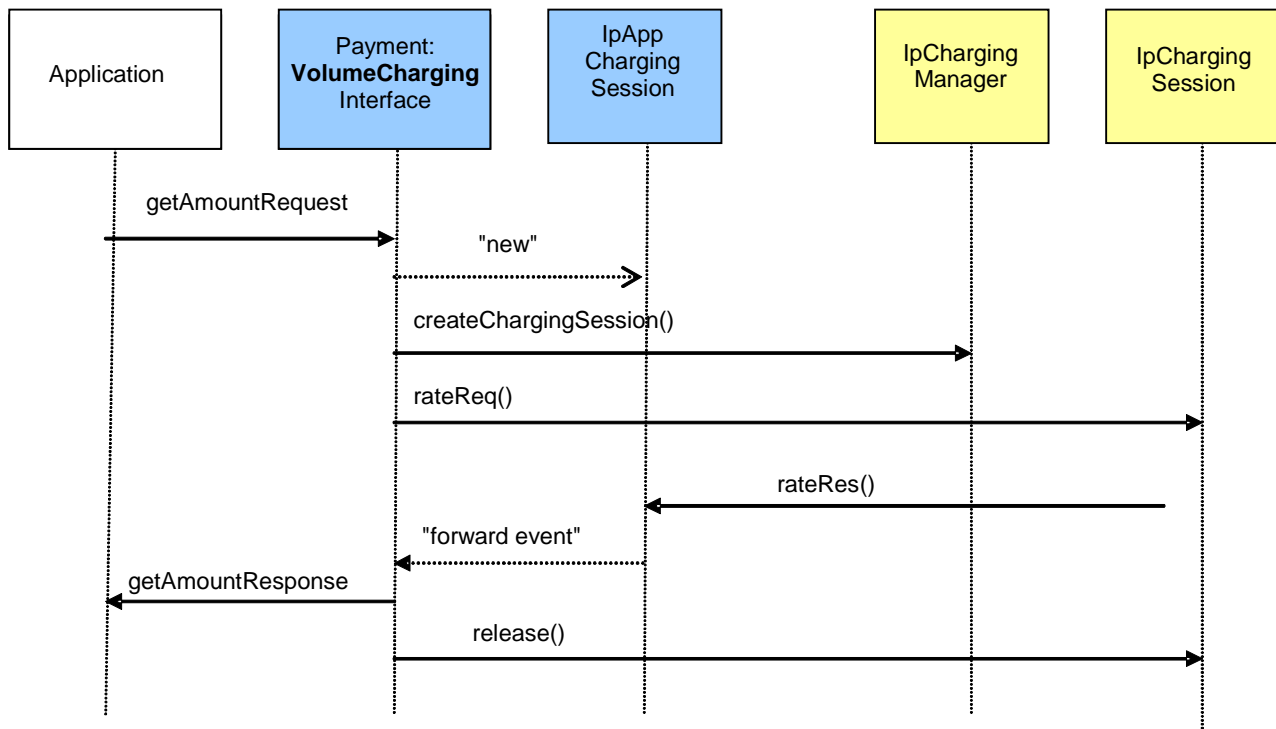


Figure 3

6 Detailed mapping information

6.1 Operations

6.1.1 chargeAmount

The sequence diagram in clause 5.1 illustrates the flow for the **chargeAmount** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.directDebitAmountReq;`
- `IpAppChargingSession.directDebitAmountRes;`
- `IpAppChargingSession.directDebitAmountErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.1.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
appChargingSession	IpAppChargingSessionRef	Reference to callback (internal).
sessionDescription	TpString	Not mapped [Descriptive text for informational purposes.]
merchantAccount	TpMerchantAccountID	Not mapped [Identifies the account of the party providing the application to be used.]
user	TpAddress	Specifies the address associated with the account to be charged. It is constructed based on the URI provided in the endUserIdentifier part of chargeAmountRequest message, mapped as described in TR 102 397-1 [3].
correlationID	TpCorrelationID	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.1.2 Mapping to `IpChargingSession.directDebitAmountReq`

The `IpChargingSession.directDebitAmountReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part. Optionally this may be concatenated with the text string value of the referenceCode part.
chargingParameters	TpChargingParameterSet	Not mapped.
amount	TpChargingPrice	The Amount element of this parameter matches the value of the amount part. The Currency element of this parameter matches the value defined in the Currency service policy.
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.directDebitAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.1.3 Mapping from `IpAppChargingSession.directDebitAmountRes`

The invocation of the `IpAppChargingSession.directDebitAmountRes` callback method triggers the transmission of the **chargeAmountResponse** message to the Parlay X application.

6.1.1.4 Mapping from `IpAppChargingSession.directDebitAmountErr`

The invocation of the `IpAppChargingSession.directDebitAmountErr` callback method results in a Parlay X exception: **SVC0270 - Charge Failed**.

6.1.1.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.directDebitAmountRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.1.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.directDebitAmountRes` callback method results in a Parlay X exception: **SVC0270: Charge failed.**

6.1.2 refundAmount

The sequence diagram in clause 5.1 illustrates the flow for the **chargeAmount** operation. The flow for the **refundAmount** operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.directCreditAmountReq;`
- `IpAppChargingSession.directCreditAmountRes;`
- `IpAppChargingSession.directCreditAmountErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.2.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
<code>appChargingSession</code>	<code>IpAppChargingSessionRef</code>	Reference to callback (internal)
<code>sessionDescription</code>	<code>TpString</code>	Not mapped [Descriptive text for informational purposes.]
<code>merchantAccount</code>	<code>TpMerchantAccountID</code>	Not mapped [Identifies the account of the party providing the application to be used.]
<code>user</code>	<code>TpAddress</code>	Specifies the address associated with the account to be refunded. It is constructed based on the URI provided in the endUserIdentifier part of the refundAmountRequest message, mapped as described in TR 102 397-1 [3]
<code>correlationID</code>	<code>TpCorrelationID</code>	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.2.2 Mapping to `IpChargingSession.directCreditAmountReq`

The `IpChargingSession.directCreditAmountReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
application Description	TpApplication Description	The <code>Text</code> element of this parameter matches the value of the billingText part. Optionally this may be concatenated with the text string value of the referenceCode part.
charging Parameters	TpCharging ParameterSet	Not mapped.
amount	TpChargingPrice	The <code>Amount</code> element of this parameter matches the value of the amount part. The <code>Currency</code> element of this parameter matches the value defined in the Currency service policy.
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.directCreditAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.2.3 Mapping from `IpAppChargingSession.directCreditAmountRes`

The invocation of the `IpAppChargingSession.directCreditAmountRes` callback method triggers the transmission of the **refundAmountResponse** message to the Parlay X application.

6.1.2.4 Mapping from `IpAppChargingSession.directCreditAmountErr`

The invocation of the `IpAppChargingSession.directCreditAmountErr` callback method results in a Parlay X exception: **SVC0270 - Charge failed**.

6.1.2.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.directCreditAmountRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.2.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.directCreditAmountRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.3 chargeVolume

The sequence diagram in clause 5.1 illustrates the flow for the **chargeAmount** operation. The flow for the **chargeVolume** operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.directDebitUnitReq;`
- `IpAppChargingSession.directDebitUnitRes;`
- `IpAppChargingSession.directDebitUnitErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.3.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
appChargingSession	IpAppChargingSessionRef	Reference to callback (internal).
sessionDescription	TpString	Not mapped [Descriptive text for informational purposes.]
merchantAccount	TpMerchantAccountID	Not mapped [Identifies the account of the party providing the application to be used.]
user	TpAddress	Specifies the address associated with the account to be charged. It is constructed based on the URI provided in the endUserIdentifier part of chargeVolumeRequest message, mapped as described in TR 102 397-1 [3].
correlationID	TpCorrelationID	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.3.2 Mapping to `IpChargingSession.directDebitUnitReq`

The `IpChargingSession.directDebitUnitReq` method is invoked with the following parameters.

Name	Type	Comment
sessionId	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part. Optionally this may be concatenated with the text string value of the referenceCode part.
chargingParameters	TpChargingParameterSet	Not mapped.
volumes	TpVolumeSet	The set consists of a single element of type <code>TpVolume</code> . The Amount element of this parameter matches the value of the volume part. The Unit element of this parameter is undefined: <code>P_CHS_UNIT_UNDEFINED</code> .
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.directDebitUnitReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.3.3 Mapping from `IpAppChargingSession.directDebitUnitRes`

The invocation of the `IpAppChargingSession.directDebitUnitRes` callback method triggers the transmission of the **chargeVolumeResponse** message to the Parlay X application.

6.1.3.4 Mapping from `IpAppChargingSession.directDebitUnitErr`

The invocation of the `IpAppChargingSession.directDebitUnitErr` callback method results in a Parlay X exception: **SVC0270 - Charge Failed**.

6.1.3.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.directDebitUnitRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.3.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.directDebitUnitRes` callback method results in a Parlay X exception: **SVC0270: Charge failed.**

6.1.4 refundVolume

The sequence diagram in clause 5.1 illustrates the flow for the **chargeAmount** operation. The flow for the **refundVolume** operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.directCreditUnitReq;`
- `IpAppChargingSession.directCreditUnitRes;`
- `IpAppChargingSession.directCreditUnitErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.4.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
<code>appChargingSession</code>	<code>IpAppChargingSessionRef</code>	Reference to callback (internal).
<code>sessionDescription</code>	<code>TpString</code>	Not mapped [Descriptive text for informational purposes.]
<code>merchantAccount</code>	<code>TpMerchantAccountID</code>	Not mapped [Identifies the account of the party providing the application to be used.]
<code>user</code>	<code>TpAddress</code>	Specifies the address associated with the account to be refunded. It is constructed based on the URI provided in the endUserIdentifier part of the refundVolumeRequest message, mapped as described in TR 102 397-1 [3].
<code>correlationID</code>	<code>TpCorrelationID</code>	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.4.2 Mapping to `IpChargingSession.directCreditUnitReq`

The `IpChargingSession.directCreditUnitReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
application Description	TpApplication Description	The Text element of this parameter matches the value of the billingText part. Optionally this may be concatenated with the text string value of the referenceCode part.
charging Parameters	TpCharging ParameterSet	Not mapped.
volumes	TpVolumeSet	The set consists of a single element of type <code>TpVolume</code> . The Amount element of this parameter matches the value of the volume part. The Unit element of this parameter is undefined: <code>P_CHS_UNIT_UNDEFINED</code> .
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.directCreditUnitReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.4.3 Mapping from `IpAppChargingSession.directCreditUnitRes`

The invocation of the `IpAppChargingSession.directCreditUnitRes` callback method triggers the transmission of the **refundVolumeResponse** message to the Parlay X application.

6.1.4.4 Mapping from `IpAppChargingSession.directCreditUnitErr`

The invocation of the `IpAppChargingSession.directCreditUnitErr` callback method results in a Parlay X exception: **SVC0270 - Charge failed**.

6.1.4.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.directCreditUnitRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.4.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.directCreditUnitRes` callback method results in a Parlay X exception: **SVC0270: Charge failed**.

6.1.5 getAmount

The sequence diagram in clause 5.3 illustrates the flow for the **getAmount** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.rateReq;`
- `IpAppChargingSession.rateRes;`
- `IpAppChargingSession.rateErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.5.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
appChargingSession	IpAppChargingSessionRef	Reference to callback (internal).
sessionDescription	TpString	Not mapped [Descriptive text for informational purposes.]
merchantAccount	TpMerchantAccountID	Not mapped [Identifies the account of the party providing the application to be used.]
user	TpAddress	Specifies the address associated with the account to be refunded. It is constructed based on the URI provided in the endUserIdentifier part of the getAmountRequest message, mapped as described in TR 102 397-1 [3].
correlationID	TpCorrelationID	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.5.2 Mapping to `IpChargingSession.rateReq`

The `IpChargingSession.rateReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
chargingParameters	TpChargingParameterSet	Derived from the volume and parameters parts of the getAmountRequest message via a vendor/operator-specific mapping.

Parlay exceptions thrown by `IpChargingSession.rateReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.5.3 Mapping from `IpAppChargingSession.rateRes`

The invocation of the `IpAppChargingSession.rateRes` callback method triggers the transmission of the **getAmountResponse** message to the Parlay X application.

The `IpChargingSession.rateRes` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
rates	TpPriceVolumeSet	Maps to the result part of the getAmountResponse message when applied as a multiplier to the value of the volume part of the getAmountRequest message.
validityTimePeriod	TpDuration	Not mapped.

6.1.5.4 Mapping from `IpAppChargingSession.rateErr`

The invocation of the `IpAppChargingSession.rateErr` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.5.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.rateRes` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.5.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.rateRes` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.6 reserveAmount

The sequence diagram in clause 5.2 illustrates the flow for the **reserveAmount** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.reserveAmountReq;`
- `IpAppChargingSession.reserveAmountRes;`
- `IpAppChargingSession.reserveAmountErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.6.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
<code>appChargingSession</code>	<code>IpAppChargingSessionRef</code>	Reference to callback (internal).
<code>sessionDescription</code>	<code>TpString</code>	Not mapped [Descriptive text for informational purposes.]
<code>merchantAccount</code>	<code>TpMerchantAccountID</code>	Not mapped [Identifies the account of the party providing the application to be used.]
<code>user</code>	<code>TpAddress</code>	Specifies the address associated with the account to be charged. It is constructed based on the URI provided in the endUserIdentifier part of reserveAmountRequest message, mapped as described in TR 102 397-1 [3].
<code>correlationID</code>	<code>TpCorrelationID</code>	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.6.2 Mapping to `IpChargingSession.reserveAmountReq`

The `IpChargingSession.reserveAmountReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
application Description	TpApplication Description	The Text element of this parameter matches the value of the billingText part.
charging Parameters	TpCharging ParameterSet	Not mapped.
preferredAmount	TpChargingPrice	The Amount element of this parameter matches the value of the amount part. The Currency element of this parameter matches the value defined in the Currency service policy.
minimumAmount	TpChargingPrice	Not mapped. (May be assigned the same value as the <code>preferredAmount</code> parameter.)
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.reserveAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.6.3 Mapping from `IpAppChargingSession.reserveAmountRes`

The invocation of the `IpAppChargingSession.reserveAmountRes` callback method triggers the transmission of the **reserveAmountResponse** message to the Parlay X application.

6.1.6.4 Mapping from `IpAppChargingSession.reserveAmountErr`

The invocation of the `IpAppChargingSession.reserveAmountErr` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.6.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.reserveAmountRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.6.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.reserveAmountRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.7 reserveAdditionalAmount

The sequence diagram in clause 5.2 illustrates the flow for the **reserveAdditionalAmount** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingSession.reserveAmountReq`;
- `IpAppChargingSession.reserveAmountRes`;
- `IpAppChargingSession.reserveAmountErr`;
- `IpAppChargingSession.sessionEnded`;
- `IpAppChargingManager.sessionAborted`.

6.1.7.1 Mapping to `IpChargingSession.reserveAmountReq`

The `IpChargingSession.reserveAmountReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part.
chargingParameters	TpChargingParameterSet	Not mapped.
preferredAmount	TpChargingPrice	The Amount element of this parameter matches the value of the amount part. The Currency element of this parameter matches the value defined in the Currency service policy.
minimumAmount	TpChargingPrice	Not mapped. (May be assigned the same value as the <code>preferredAmount</code> parameter.)
requestNumber	TpInt32	Not mapped. [The value of the <code>requestNumberNextRequest</code> parameter of the preceding callback method invoked during this charging session].

Parlay exceptions thrown by `IpChargingSession.reserveAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.7.2 Mapping from `IpAppChargingSession.reserveAmountRes`

The invocation of the `IpAppChargingSession.reserveAmountRes` callback method triggers the transmission of the **reserveAdditionalAmountResponse** message to the Parlay X application.

6.1.7.3 Mapping from `IpAppChargingSession.reserveAmountErr`

The invocation of the `IpAppChargingSession.reserveAmountErr` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.7.4 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.reserveAmountRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.7.5 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.reserveAmountRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.8 chargeReservation (Amount)

The sequence diagram in clause 5.2 illustrates the flow for the **chargeReservation** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingSession.debitAmountReq;`
- `IpAppChargingSession.debitAmountRes;`
- `IpAppChargingSession.debitAmountErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.8.1 Mapping to `IpChargingSession.debitAmountReq`

The `IpChargingSession.debitAmountReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part.
amount	TpChargingPrice	The Amount element of this parameter matches the value of the amount part. The Currency element of this parameter matches the value defined in the Currency service policy.
closeReservation	TpBoolean	Not mapped. (Should be assigned the value: FALSE).
requestNumber	TpInt32	Not mapped. [The value of the <code>requestNumberNextRequest</code> parameter of the preceding callback method invoked during this charging session].

Parlay exceptions thrown by `IpChargingSession.debitAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.8.2 Mapping from `IpAppChargingSession.debitAmountRes`

The invocation of the `IpAppChargingSession.debitAmountRes` callback method triggers the transmission of the **chargeReservationResponse** message to the Parlay X application.

6.1.8.3 Mapping from `IpAppChargingSession.debitAmountErr`

The invocation of the `IpAppChargingSession.debitAmountErr` callback method results in a Parlay X exception: **SVC0270 - Charge failed**.

6.1.8.4 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.debitAmountRes` callback method results in a Parlay X exception **SVC0270 - Charge failed**.

6.1.8.5 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.debitAmountRes` callback method results in a Parlay X exception **SVC0270 - Charge failed**.

6.1.9 releaseReservation

The sequence diagram in clause 5.2 illustrates the flow for the **releaseReservation** operation. It is mapped to the following Parlay/OSA methods:

- `IpChargingSession.release`.

6.1.9.1 Mapping to `IpChargingSession.release`

The `IpChargingSession.release` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
requestNumber	TpInt32	Not mapped. [Either the original value returned in the result from <code>IpChargingManager.createChargingSession</code> or the value of the <code>requestNumberNextRequest</code> parameter of the preceding callback method invoked during this charging session].

Parlay exceptions thrown by `IpChargingSession.release` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.10 reserveVolume

The sequence diagram in clause 5.2 illustrates the flow for the **reserveAmount** operation. The flow for the **reserveVolume** operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingManager.createChargingSession;`
- `IpChargingSession.reserveUnitReq;`
- `IpAppChargingSession.reserveUnitRes;`
- `IpAppChargingSession.reserveUnitErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.10.1 Mapping to `IpChargingManager.createChargingSession`

The `IpChargingManager.createChargingSession` method is invoked with the following parameters.

Name	Type	Comment
appChargingSession	IpAppChargingSessionRef	Reference to callback (internal).
sessionDescription	TpString	Not mapped [Descriptive text for informational purposes.]
merchantAccount	TpMerchantAccountID	Not mapped [Identifies the account of the party providing the application to be used.]
user	TpAddress	Specifies the address associated with the account to be charged. It is constructed based on the URI provided in the endUserIdentifier part of reserveVolumeRequest message, mapped as described in TR 102 397-1 [3].
correlationID	TpCorrelationID	Not mapped [Used to correlate the charging with network activity.]

The result from `IpChargingManager.createChargingSession` is of type `TpChargingSessionID` and is used internally to correlate the callbacks.

Parlay exceptions thrown by `IpChargingManager.createChargingSession` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.10.2 Mapping to `IpChargingSession.reserveUnitReq`

The `IpChargingSession.reserveUnitReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part.
chargingParameters	TpChargingParameterSet	Not mapped.
volumes	TpVolumeSet	The set consists of a single element of type <code>TpVolume</code> . The Amount element of this parameter matches the value of the volume part. The Unit element of this parameter is undefined: <code>P_CHS_UNIT_UNDEFINED</code> .
requestNumber	TpInt32	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].

Parlay exceptions thrown by `IpChargingSession.reserveUnitReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.10.3 Mapping from `IpAppChargingSession.reserveUnitRes`

The invocation of the `IpAppChargingSession.reserveUnitRes` callback method triggers the transmission of the **reserveVolumeResponse** message to the Parlay X application.

6.1.10.4 Mapping from `IpAppChargingSession.reserveUnitErr`

The invocation of the `IpAppChargingSession.reserveUnitErr` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.10.5 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.reserveUnitRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.10.6 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.reserveUnitRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.11 reserveAdditionalVolume

The sequence diagram in clause 5.2 illustrates the flow for the **reserveAdditionalAmount** operation. The flow for the **reserveAdditionalVolume** operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingSession.reserveUnitReq;`
- `IpAppChargingSession.reserveUnitRes;`
- `IpAppChargingSession.reserveUnitErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.11.1 Mapping to `IpChargingSession.reserveUnitReq`

The `IpChargingSession.reserveUnitReq` method is invoked with the following parameters.

Name	Type	Comment
sessionID	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The <code>Text</code> element of this parameter matches the value of the billingText part.
chargingParameters	TpChargingParameterSet	Not mapped.
volumes	TpVolumeSet	The set consists of a single element of type <code>TpVolume</code> . The <code>Amount</code> element of this parameter matches the value of the volume part. The <code>Unit</code> element of this parameter is undefined: <code>P_CHS_UNIT_UNDEFINED</code> .
requestNumber	TpInt32	Not mapped. [The value of the <code>requestNumberNextRequest</code> parameter of the preceding callback method invoked during this charging session].

Parlay exceptions thrown by `IpChargingSession.reserveAmountReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.11.2 Mapping from `IpAppChargingSession.reserveUnitRes`

The invocation of the `IpAppChargingSession.reserveUnitRes` callback method triggers the transmission of the **reserveAdditionalVolumeResponse** message to the Parlay X application.

6.1.11.3 Mapping from `IpAppChargingSession.reserveUnitErr`

The invocation of the `IpAppChargingSession.reserveUnitErr` callback method results in a Parlay X exception: **SVC0001 - Service error**.

6.1.11.4 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.reserveUnitRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.11.5 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.reserveUnitRes` callback method results in a Parlay X exception **SVC0001 - Service error**.

6.1.12 chargeReservation (Volume)

The sequence diagram in clause 5.2 illustrates the flow for the **chargeReservation** (Amount) operation. The flow for the **chargeReservation** (Volume) operation is similar. It is mapped to the following Parlay/OSA methods:

- `IpChargingSession.debitUnitReq;`
- `IpAppChargingSession.debitUnitRes;`
- `IpAppChargingSession.debitUnitErr;`
- `IpAppChargingSession.sessionEnded;`
- `IpAppChargingManager.sessionAborted.`

6.1.12.1 Mapping to `IpChargingSession.debitUnitReq`

The `IpChargingSession.debitUnitReq` method is invoked with the following parameters.

Name	Type	Comment
sessionId	TpSessionID	Not mapped. [The value returned in the result from <code>IpChargingManager.createChargingSession</code>].
applicationDescription	TpApplicationDescription	The Text element of this parameter matches the value of the billingText part.
volumes	TpVolumeSet	The set consists of a single element of type <code>TpVolume</code> . The Amount element of this parameter matches the value of the volume part. The Unit element of this parameter is undefined: <code>P_CHS_UNIT_UNDEFINED</code> .
closeReservation	TpBoolean	Not mapped. (Should be assigned the value: FALSE).
requestNumber	TpInt32	Not mapped. [The value of the <code>requestNumberNextRequest</code> parameter of the preceding callback method invoked during this charging session].

Parlay exceptions thrown by `IpChargingSession.debitUnitReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.12.2 Mapping from `IpAppChargingSession.debitUnitRes`

The invocation of the `IpAppChargingSession.debitUnitRes` callback method triggers the transmission of the **chargeReservationResponse** message to the Parlay X application.

6.1.12.3 Mapping from `IpAppChargingSession.debitUnitErr`

The invocation of the `IpAppChargingSession.debitUnitErr` callback method results in a Parlay X exception: **SVC0270 - Charge failed**.

6.1.12.4 Mapping from `IpAppChargingSession.sessionEnded`

The invocation of the `IpAppChargingSession.sessionEnded` callback method prior to the invocation of the `IpAppChargingSession.debitUnitRes` callback method results in a Parlay X exception **SVC0270 - Charge failed**.

6.1.12.5 Mapping from `IpAppChargingManager.sessionAborted`

The invocation of the `IpAppChargingManager.sessionAborted` callback method prior to the invocation of the `IpAppChargingSession.debitUnitRes` callback method results in a Parlay X exception **SVC0270 - Charge failed**.

6.2 Exceptions

In addition to the common mapping of Parlay/OSA API method exceptions to Parlay X Web Service exceptions, which is defined in TR 102 397-1 [3], there are the following service-specific exception mappings:

Parlay/OSA Exception	Service Exception	Notes
P_INVALID_USER	SVC0002	
P_INVALID_ACCOUNT	SVC0002	
P_INVALID_AMOUNT	SVC0002	
P_INVALID_VOLUME	SVC0002	
P_INVALID_CURRENCY	SVC0001	With error number
P_INVALID_REQUEST_NUMBER	SVC0001	With error number

7 Additional notes

No additional notes.

History

Document history		
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