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*Technical Specification*

**Universal Mobile Telecommunications System (UMTS);  
Open Service Access (OSA);  
Application Programming Interface (API);  
Part 8: Data session control  
(3GPP TS 29.198-8 version 4.0.0 Release 4)**

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**Reference**

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## Foreword

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

## Introduction

The present document is part 8 of a multi-part TS covering the 3<sup>rd</sup> 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	
<b>Part 8:</b>	<b>Data Session Control SCF</b>	
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	<b>Part 1: Overview</b>	<b>29.998-1</b>	<b>Part 1: Overview</b>
29.198-2	<b>Part 2: Common Data Definitions</b>	29.998-2	Not Applicable
29.198-3	<b>Part 3: Framework</b>	29.998-3	Not Applicable
29.198-4	<b>Part 4: Call Control SCF</b>	<b>29.998-4-1</b>	<b>Subpart 1: Generic Call Control – CAP mapping</b>
		29.998-4-2	
29.198-5	<b>Part 5: User Interaction SCF</b>	<b>29.998-5-1</b>	<b>Subpart 1: User Interaction – CAP mapping</b>
		29.998-5-2	
		29.998-5-3	
		<b>29.998-5-4</b>	<b>Subpart 4: User Interaction – SMS mapping</b>
29.198-6	<b>Part 6: Mobility SCF</b>	<b>29.998-6</b>	<b>User Status and User Location – MAP mapping</b>
29.198-7	<b>Part 7: Terminal Capabilities SCF</b>	29.998-7	Not Applicable
29.198-8	<b>Part 8: Data Session Control SCF</b>	<b>29.998-8</b>	<b>Data Session Control – CAP mapping</b>
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	<b>Part 11: Account Management SCF</b>	29.998-11	Not Applicable
29.198-12	<b>Part 12: Charging SCF</b>	29.998-12	Not Applicable

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# 1 Scope

The present document is Part 8 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 Data Session Control Service Capability Feature (SCF) aspects of the interface. All aspects of the Data Session Control 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 SPAN 12 and the Parlay Consortium, in co-operation with the JAIN consortium.

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# 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-4217:1995: "".

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# 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

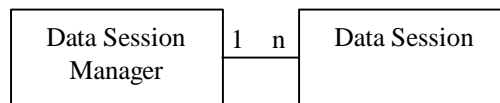
For the purposes of the present document, the abbreviations given in TS 29.198-1 [1] apply.

# 4 Data Session Control SCF

The Data Session Control network SCF consists of two interfaces:

- 1) Data Session manager, containing management functions for data session related issues;
- 2) Data Session, containing methods to control a session.

A session can be controlled by one Data Session Manager only. Data Session Manager can control several sessions.



NOTE: The term "data session" is used in a broad sense to describe a data connection/session. For example, it comprises a PDP context in GPRS.

**Figure 1: Data Session control interfaces usage relationship**

The Data Session Control SCFs are described in terms of the methods in the Data Session Control interfaces. Table 1 gives an overview of the Data Session Control methods and to which interfaces these methods belong.

**Table 1: Overview of Data Session Control interfaces and their methods**

Data Session Manager	Data Session
createNotification	connectReq
destroyNotification	connectRes
dataSessionNotificationInterrupted	connectErr
dataSessionNotificationContinued	release
reportNotification	superviseDataSessionReq
dataSessionAborted	superviseDataSessionRes
getNotification	superviseDataSessionErr
changeNotification	dataSessionFaultDetected
	setAdviceofCharge
	setDataSessionChargePlan

The session manager interface provides the management functions to the data session service capability features. The application programmer can use this interface to enable or disable data session-related event notifications.

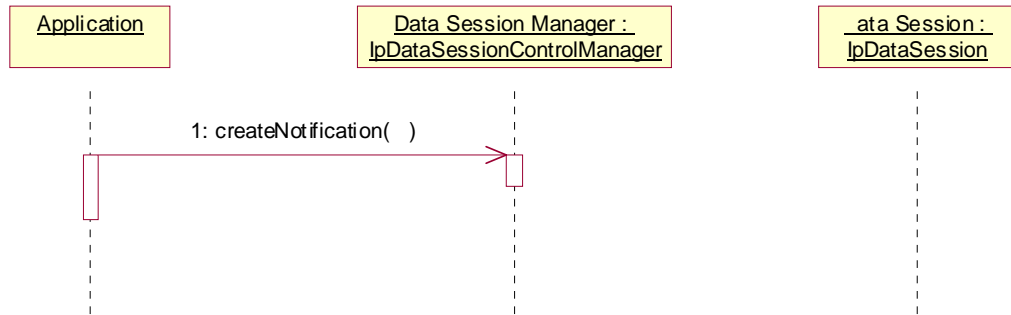
The following clauses describe each aspect of the Data Session Control Service Capability Feature (SCF).

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 progression of internal processes either in the application, or Gateway;
- the Data definitions clause show 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 (29.198-2).

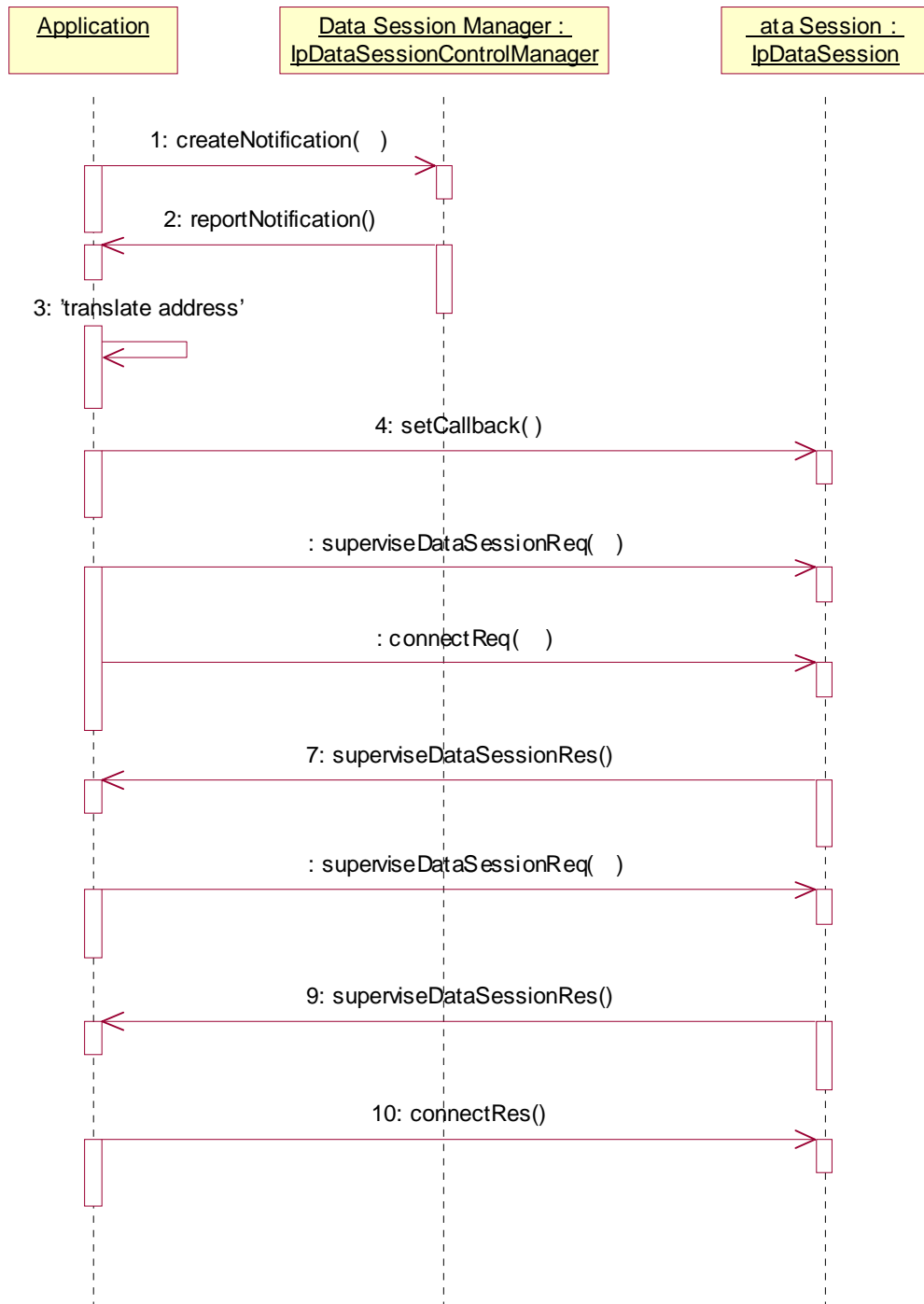
# 5 Sequence Diagrams

## 5.1 Enable Data Session Notification





## 5.2 Address Translation With Charging



# 6 Class Diagrams

Data Session Control Class Diagram:

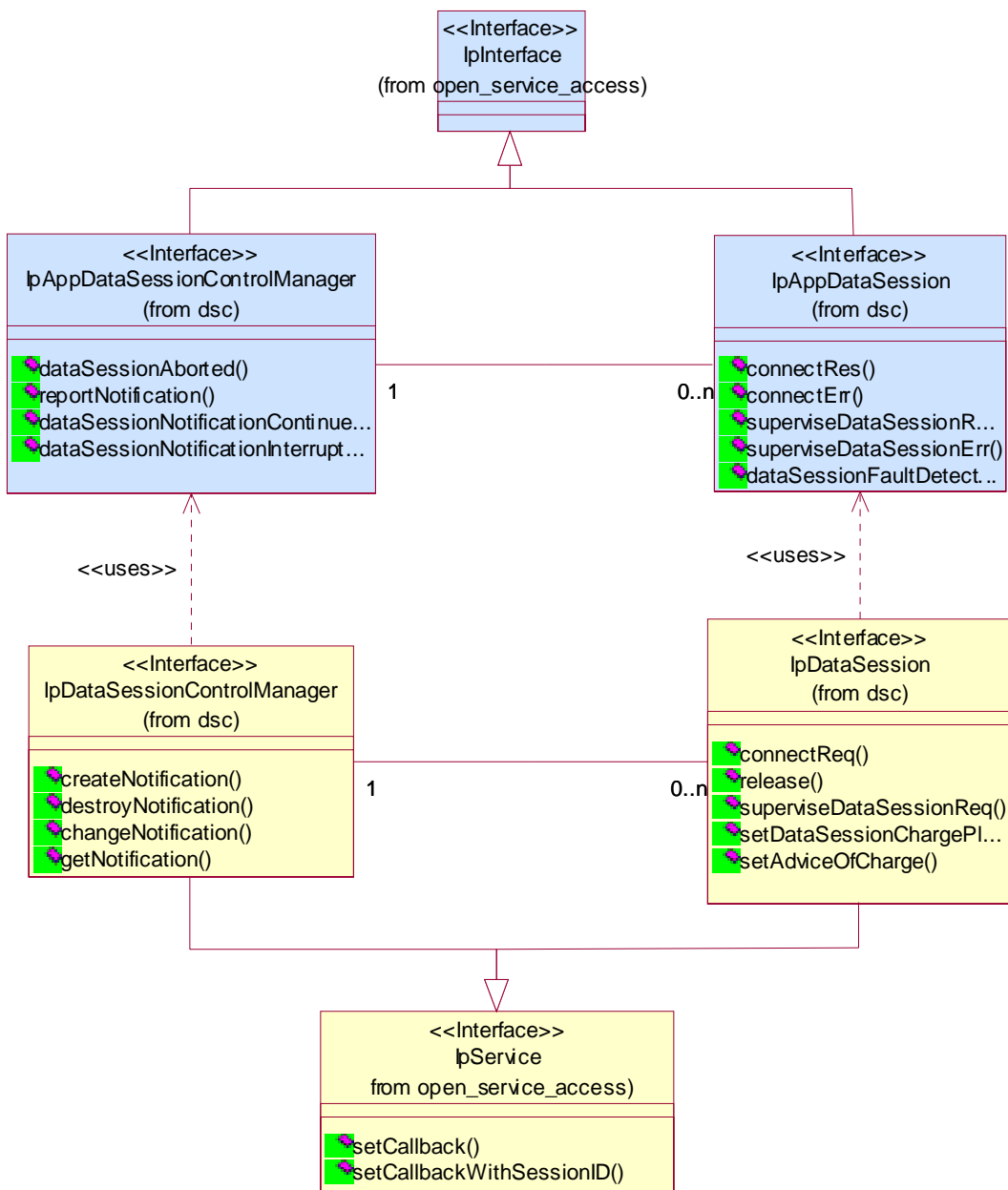


Figure: Package Overview

## 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. All methods in the API return a value of type `TpResult`, indicating, amongst other things, if the method invocation was successfully executed or not.

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 shall 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 shall 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.

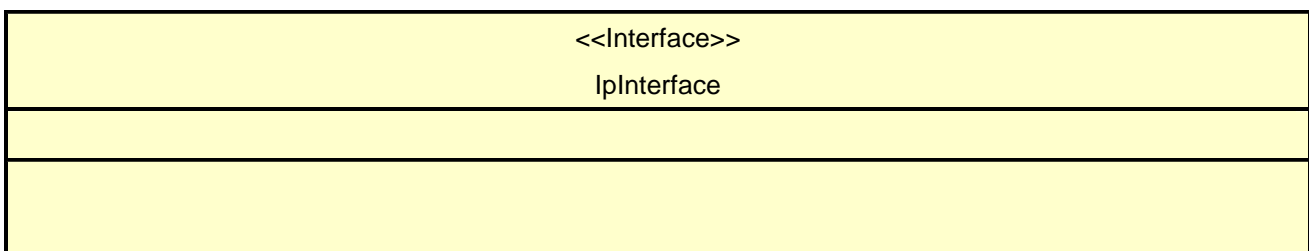
#### 7.1.4 State Model

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.



## 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 shall 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) : TpResult setCallbackWithSessionID (appInterface : in IpInterfaceRef, sessionID : in TpSessionID) : TpResult

#### *Method*

#### **setCallback( )**

This method specifies the reference address of the callback interface that a service uses to invoke methods on the application.

#### *Parameters*

#### **appInterface: in IpInterfaceRef**

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

#### *Raises*

#### **TpGeneralException**

#### *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.

*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***TpGeneralException**

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## 8 Data Session Control Interface Classes

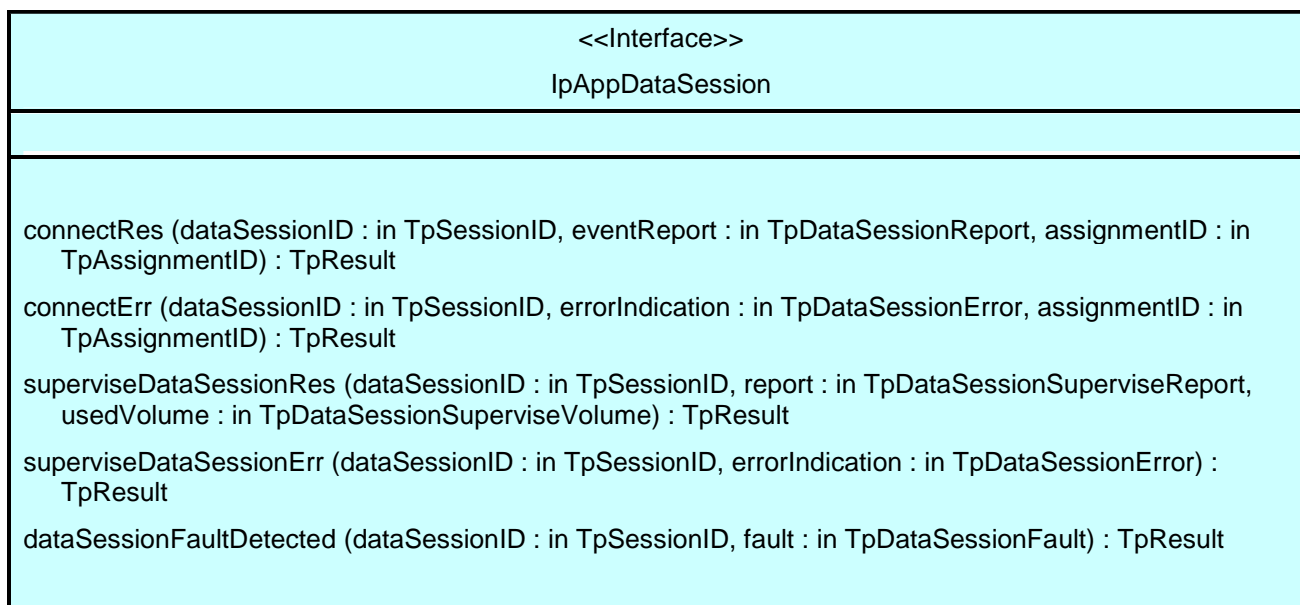
The Data Session Control provides a means to control per data session basis the establishment of a new data session. This means especially in the GPRS context that the establishment of a PDP session is modelled not the attach/detach mode. Change of terminal location is assumed to be managed by the underlying network and is therefore not part of the model. The underlying assumption is that a terminal initiates a data session and the application can reject the request for data session establishment, can continue the establishment or can continue and change the destination as requested by the terminal.

The modelling is hold similar to the Generic Call Control but assuming a simpler underlying state model. An IpDataSessionManager and IpData Session object are the interfaces used by the application, whereas the IpAppDataSessionManager and the IpAppDataSession interfaces are implemented by the application.

### 8.1 Interface Class IpAppDataSession

Inherits from: IpInterface.

The application side of the data session interface is used to handle data session request responses and state reports.

*Method***connectRes ( )**

This asynchronous method indicates that the request to connect a data session with the destination party was successful, and indicates the response of the destination party (e.g. connected, disconnected).

#### *Parameters*

**dataSessionID: in TpSessionID**

Specifies the session ID of the data session.

**eventReport: in TpDataSessionReport**

Specifies the result of the request to connect the data session. It includes the network event, date and time, monitoring mode and event specific information such as release cause.

**assignmentID: in TpAssignmentID**

#### *Raises*

**TpDSCSException, TpGeneralException**

#### *Method*

**connectErr( )**

This asynchronous method indicates that the request to connect a data session with the destination party was unsuccessful, e.g. an error detected in the network or the data session was abandoned.

#### *Parameters*

**dataSessionID: in TpSessionID**

Specifies the session ID.

**errorIndication: in TpDataSessionError**

Specifies the error which led to the original request failing.

**assignmentID: in TpAssignmentID**

#### *Raises*

**TpDSCSException, TpGeneralException**

#### *Method*

**superviseDataSessionRes( )**

This asynchronous method reports a data session supervision event to the application.

#### *Parameters*

**dataSessionID: in TpSessionID**

Specifies the data session.

**report: in TpDataSessionSuperviseReport**

Specifies the situation, which triggered the sending of the data session supervision response.

**usedVolume: in TpDataSessionSuperviseVolume**

Specifies the used volume for the data session supervision (in the same unit as specified in the request).

*Raises*

**TpDSCSException, TpGeneralException**

*Method***superviseDataSessionErr( )**

This asynchronous method reports a data session supervision error to the application.

*Parameters***dataSessionID: in TpSessionID**

Specifies the data session ID.

**errorIndication: in TpDataSessionError**

Specifies the error which led to the original request failing.

*Raises*

**TpDSCSException, TpGeneralException**

*Method***dataSessionFaultDetected( )**

This method indicates to the application that a fault in the network has been detected which can't be communicated by a network event, e.g., when the user aborts before any establishment method is called by the application.

The system purges the Data Session object. Therefore, the application has no further control of data session processing. No report will be forwarded to the application.

*Parameters***dataSessionID: in TpSessionID**

Specifies the data session ID of the Data Session object in which the fault has been detected

**fault: in TpDataSessionFault**

Specifies the fault that has been detected.

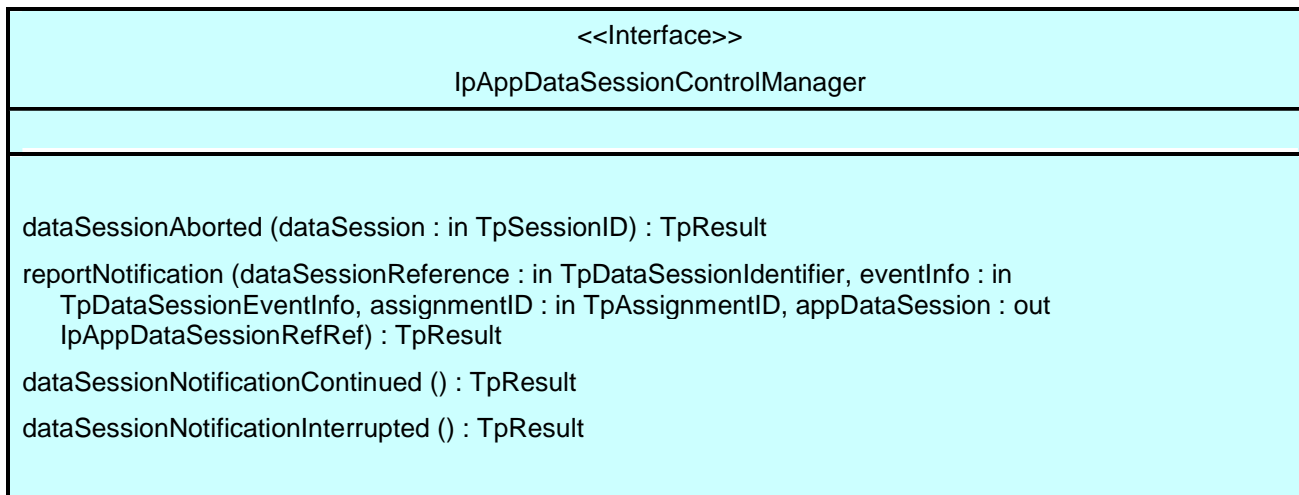
*Raises*

**TpDSCSException, TpGeneralException**

## 8.2 Interface Class IpAppDataSessionControlManager

Inherits from: IpInterface.

The data session control manager application interface provides the application data session control management functions to the Data Session Control SCF.



### Method

#### **dataSessionAborted()**

This method indicates to the application that the Data Session object has aborted or terminated abnormally. No further communication will be possible between the Data Session object and the application.

### Parameters

**dataSession: in TpSessionID**

Specifies the session ID of the data session that has aborted or terminated abnormally.

### Raises

**TpDSCSException, TpGeneralException**

### Method

#### **reportNotification()**

This method notifies the application of the arrival of a data session-related event.

### Parameters

**dataSessionReference: in TpDataSessionIdentifier**

Specifies the session ID and the reference to the Data Session object to which the notification relates.

**eventInfo: in TpDataSessionEventInfo**

Specifies data associated with this event. This data includes the destination address provided by the end-user.



**assignmentID: in TpAssignmentID**

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

**appDataSession: out IpAppDataSessionRefRef**

Specifies a reference to the application object which implements the callback interface for the new data session.

*Raises*

**TpDSCSException, TpGeneralException**

*Method***dataSessionNotificationContinued( )**

This method indicates to the application that all event notifications are resumed.

*Parameters*

No Parameters were identified for this method

*Raises*

**TpDSCSException, TpGeneralException**

*Method***dataSessionNotificationInterrupted( )**

This method indicates to the application that event notifications will no longer be sent (for example, due to faults detected).

*Parameters*

No Parameters were identified for this method

*Raises*

**TpDSCSException, TpGeneralException**

## 8.3 Interface Class IpDataSession

Inherits from: IpService.

The Data Session interface provides basic methods for applications to control data sessions.

<<Interface>> IpDataSession
connectReq (dataSessionID : in TpSessionID, responseRequested : in TpDataSessionReportRequestSet, targetAddress : in TpAddress, assignmentID : out TpAssignmentIDRef) : TpResult release (dataSessionID : in TpSessionID, cause : in TpDataSessionReleaseCause) : TpResult superviseDataSessionReq (dataSessionID : in TpSessionID, treatment : in TpDataSessionSuperviseTreatment, bytes : in TpDataSessionSuperviseVolume) : TpResult setDataSessionChargePlan (dataSessionID : in TpSessionID, dataSessionChargePlan : in TpDataSessionChargePlan) : TpResult setAdviceOfCharge (dataSessionID : in TpSessionID, aoCInfo : in TpAoCInfo, tariffSwitch : in TpDuration) : TpResult

### Method

#### **connectReq ( )**

This asynchronous method requests the connection of a data session with the destination party (specified in the parameter TargetAddress). The Data Session object is not automatically deleted if the destination party disconnects from the data session.

### Parameters

**dataSessionID: in TpSessionID**

Specifies the session ID.

**responseRequested: in TpDataSessionReportRequestSet**

Specifies the set of observed data session events that will result in a connectRes() being generated.

**targetAddress: in TpAddress**

Specifies the address of destination party.

**assignmentID: out TpAssignmentIDRef**

Specifies the ID assigned to the request. The same ID will be returned in the connectRes or Err. This allows the application to correlate the request and the result.

### Raises

**TpDSCSException, TpGeneralException**

*Method***release()**

This method requests the release of the data session and associated objects.

*Parameters*

**dataSessionID: in TpSessionID**

Specifies the session.

**cause: in TpDataSessionReleaseCause**

Specifies the cause of the release.

*Raises*

**TpDSCSException, TpGeneralException**

*Method***superviseDataSessionReq()**

The application calls this method to supervise a data session. The application can set a granted data volume for this data session. If an application calls this function before it calls a connectReq() or a user interaction function the time measurement will start as soon as the data session is connected. The Data Session object will exist after the data session has been terminated if information is required to be sent to the application at the end of the data session

*Parameters*

**dataSessionID: in TpSessionID**

Specifies the data session.

**treatment: in TpDataSessionSuperviseTreatment**

Specifies how the network should react after the granted data volume has been sent.

**bytes: in TpDataSessionSuperviseVolume**

Specifies the granted number of bytes that can be transmitted for the data session.

*Raises*

**TpDSCSException, TpGeneralException**

*Method***setDataSessionChargePlan()**

Allows an application to include charging information in network generated CDR.

*Parameters*

**dataSessionID: in TpSessionID**

Specifies the session ID of the data session.

**dataSessionChargePlan:** in TpDataSessionChargePlan

Specifies the charge plan used.

*Raises*

**TpDSCSEException, TpGeneralException**

*Method*

**setAdviceOfCharge()**

This method allows the application to determine the charging information that will be send to the end-users terminal.

*Parameters*

**dataSessionID:** in TpSessionID

Specifies the session ID of the data session.

**aoCInfo:** in TpAoCInfo

Specifies two sets of Advice of Charge parameter according to GSM.

**tariffSwitch:** in TpDuration

Specifies the tariff switch that signifies when the second set of AoC parameters becomes valid.

*Raises*

**TpDSCSEException, TpGeneralException**

## 8.4 Interface Class IpDataSessionControlManager

Inherits from: IpService.

This interface is the SCF manager' interface for Data Session Control.

<<Interface>> IpDataSessionControlManager
createNotification (appDataSessionControlManager : in IpAppDataSessionControlManagerRef, eventCriteria : in TpDataSessionEventCriteria, assignmentID : out TpAssignmentIDRef) : TpResult destroyNotification (assignmentID : in TpAssignmentID) : TpResult changeNotification (assignmentID : in TpAssignmentID, eventCriteria : in TpDataSessionEventCriteria) : TpResult getNotification (eventCriteria : out TpDataSessionEventCriteriaRef) : TpResult

*Method***createNotification()**

This method is used to enable data session notifications.

*Parameters*

**appDataSessionControlManager: in IpAppDataSessionControlManagerRef**

If this parameter is set (i.e. not NULL) it specifies a reference to the application interface which is used for callbacks. If set to NULL, the application interface defaults to the interface specified via the setCallback() method.

**eventCriteria: in TpDataSessionEventCriteria**

Specifies the event specific criteria used by the application to define the event required. Individual addresses or address ranges may be specified for destination and/or origination. Examples of events are "Data Session set up".

**assignmentID: out TpAssignmentIDRef**

Specifies the ID assigned by the Data Session Manager object for this newly-enabled event notification.

*Raises*

**TpDSCSEException, TpGeneralException**

*Method***destroyNotification()**

This method is used by the application to disable data session notifications.

*Parameters*

**assignmentID: in TpAssignmentID**

Specifies the assignment ID given by the data session manager object when the previous createNotification() was done.

*Raises*

**TpDSCSEException, TpGeneralException**

*Method***changeNotification()**

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

*Parameters*

**assignmentID: in TpAssignmentID**

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

**eventCriteria: in TpDataSessionEventCriteria**

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

*Raises***TpDSCSException, TpGeneralException***Method***getNotification()**

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

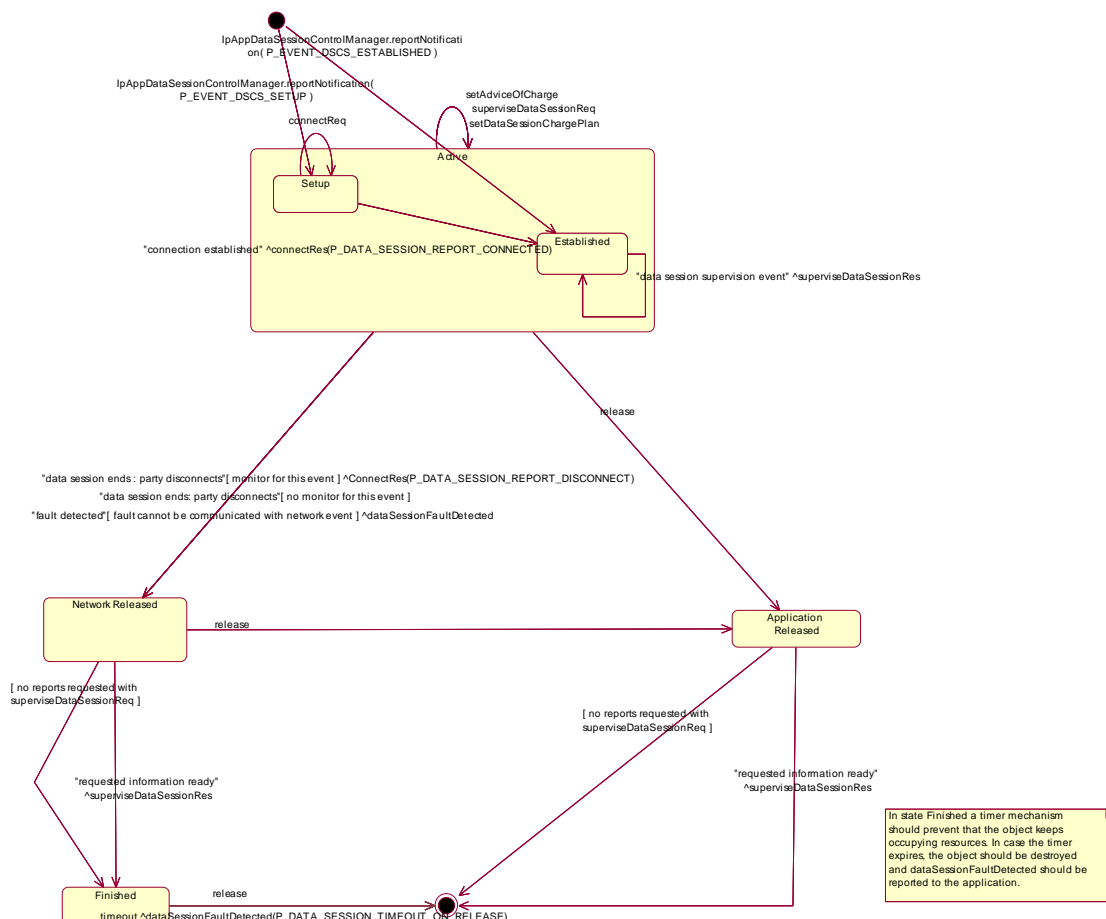
*Parameters***eventCriteria: out TpDataSessionEventCriteriaRef**

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

# 9 State Transition Diagrams

## 9.1 State Transition Diagrams for IpDataSession

The state transition diagram shows the application view on the Data Session object. This diagram shows only the part of the state transition diagram valid for 3GPP (UMTS) Release 99.



### 9.1.1 Network Released State

In this state the data session has ended. In the case on a normal user disconnection the transition to this state is indicated to the application by the disconnect report of connectRes(). But this will only happen if the application requested monitoring of the disconnect event before. An abnormal disconnection is indicated by dataSessionFaultDetected(). The application may wait for outstanding superviseDataSessionRes().

### 9.1.2 Finished State

In this state the data session has ended and no further data session related information is to be send to the application. The application can only release the data session object. If the application fails to invoke release() within a certain period of time the gateway should automatically release the object and send a timeout indication to the application.

### 9.1.3 Application Released State

In this state the application has released the data session object. If supervision has been requested the gateway will collect the information and send `superviseDataRes()` to the application.

### 9.1.4 Active State

In this state a data connection between two parties is being setup or established (refer to the substates for more details). The application can request the gateway for a certain type of charging by calling `setDataSessionChargePlan()`, send advice of charge information by calling `setAdviceOfCharge()`, and request supervision of the data session by calling `superviseDataSessionReq()`.

### 9.1.5 Setup State

The Setup state is reached after a `reportNotification()` indicates to the application that a data session is interested in being connected. If the application is going to connect the two parties by invoking `connectReq()` it may call the charging or supervision methods before.

### 9.1.6 Established State

In this state the data connection is established. If supervision has been requested the application expects the corresponding `superviseDataSessionRes()`.

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## 10 Data Definitions

### 10.1 Data Session Control Data Definitions

#### **IpAppDataSession**

Defines the address of an `IpAppDataSession` Interface.

#### **IpAppDataSessionRef**

Defines a Reference to type `IpAppDataSession`

#### **IpAppDataSessionRefRef**

Defines a Reference to type `IpAppDataSessionRef`.

#### **IpAppDataSessionControlManager**

Defines the address of an `IpAppDataSessionControlManager` Interface.

#### **IpAppDataSessionControlManagerRef**

Defines a Reference to type `IpAppDataSessionControlManager`.

#### **IpDataSession**

Defines the address of an `IpDataSession` Interface.

#### **IpDataSessionRef**

Defines a Reference to type `IpDataSession`.

#### **IpDataSessionRefRef**

Defines a Reference to type `IpDataSessionRef`.



## IpDataSessionControlManager

Defines the address of an IpDataSessionManager Interface.

## IpDataSessionManagerRef

Defines a Reference to type IpDataSessionControlManager.

## 10.2 Event Notification data definitions

### TpDataSessionEventName

Defines the names of events being notified with a new call request. The following events are supported. The values may be combined by a logical 'OR' function when requesting the notifications. Additional events that can be requested / received during the call process are found in the TpDataSessionReportType data-type.

Name	Value	Description
P_EVENT_NAME_UNDEFINED	0	Undefined
P_EVENT_DSCS_SETUP	1	The data session is going to be setup.
P_EVENT_DSCS_ESTABLISHED	2	The data session is established by the network.

### TpDataSessionMonitorMode

Defines the mode that the call will monitor for events, or the mode that the call is in following a detected event.

Name	Value	Description
P_DATA_SESSION_MONITOR_MODE_INTERRUPT	0	The data session event is intercepted by the data session control service and data session establishment is interrupted. The application is notified of the event and data session establishment resumes following an appropriate API call or network event (such as a data session release)
P_DATA_SESSION_MONITOR_MODE_NOTIFY	1	The data session event is detected by the data session control service but not intercepted. The application is notified of the event and data session establishment continues
P_DATA_SESSION_MONITOR_MODE_DO_NOT_MONITOR	2	Do not monitor for the event

### TpDataSessionEventCriteria

Defines the Sequence of Data Elements that specify the criteria for a event notification.

Of the addresses only the Plan and the AddrString are used for the purpose of matching the notifications against the criteria.

Sequence Element Name	Sequence Element Type	Description
DestinationAddress	TpAddressRange	Defines the destination address or address range for which the notification is requested.
OriginatingAddress	TpAddressRange	Defines the origination address or a address range for which the notification is requested.
DataSessionEventName	TpDataSessionEventName	Name of the event(s)
MonitorMode	TpDataSessionMonitorMode	Defines the mode that the Data Session is in following the notification. Monitor mode P_DATA_SESSION_MONITOR_MODE_DO_NOT_MONITOR is not a legal value here.

### TpDataSessionEventInfo

Defines the Sequence of Data Elements that specify the information returned to the application in a Data Session event notification.

Sequence Element Name	Sequence Element Type
DestinationAddress	TpAddress
OriginatingAddress	TpAddress
DataSessionEventName	TpDataSessionEventName
MonitorMode	TpDataSessionMonitorMode

## TpDataSessionChargePlan

Defines the Sequence of Data Elements that specify the charge plan for the call.

Sequence Element Name	Sequence Element Type	Description
ChargeOrderType	TpDataSessionChargeOrder	Charge order
Currency	TpString	Currency unit according to ISO-4217:1995 [4]
AdditionalInfo	TpString	Descriptive string which is sent to the billing system without prior evaluation. Could be included in the ticket.

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,  
 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.

## TpDataSessionChargeOrder

Defines the Tagged Choice of Data Elements that specify the charge plan for the call.

Tag Element Type
TpDataSessionChargeOrderCategory

Tag Element Value	Choice Element Type	Choice Element Name
P_DATA_SESSION_CHARGE_PER_VOLUME	TpChargePerVolume	ChargePerVolume
P_DATA_SESSION_CHARGE_NETWORK	TpString	NetworkCharge

## TpDataSessionChargeOrderCategory

Name	Value	Description
P_DATA_SESSION_CHARGE_PER_VOLUME	0	Charge per volume
P_DATA_SESSION_CHARGE_NETWORK	1	Operator specific charge plan specification, e.g. charging table name / charging table entry

## TpChargePerVolume

Defines the Sequence of Data Elements that specify the time based charging information. The volume is the sum of uplink and downlink transfer data volumes.

Sequence Element Name	Sequence Element Type	Description
InitialCharge	TpInt32	Initial charge amount (in currency units * 0.0001)
CurrentChargePerKilobyte	TpInt32	Current tariff (in currency units * 0.0001)
NextChargePerKilobyte	TpInt32	Next tariff (in currency units * 0.0001) after tariff switch. Only used in setAdviceOfCharge()

## TpDataSessionIdentifier

Defines the Sequence of Data Elements that unambiguously specify the Data Session object

Sequence Element Name	Sequence Element Type	Sequence Element Description
DataSessionReference	IpDataSessionRef	This element specifies the interface reference for the Data Session object.
DataSessionSessionID	TpSessionID	This element specifies the data session ID of the Data Session.

## TpDataSessionError

Defines the Sequence of Data Elements that specify the additional information relating to a call error.

Sequence Element Name	Sequence Element Type
ErrorTime	TpDateAndTime
ErrorType	TpDataSessionErrorType
AdditionalErrorInfo	TpDataSessionAdditionalErrorInfo

## TpDataSessionAdditionalErrorInfo

Defines the Tagged Choice of Data Elements that specify additional Data Session error and Data Session error specific information.

Tag Element Type
TpDataSessionErrorType

Tag Element Value	Choice Element Type	Choice Element Name
P_DATA_SESSION_ERROR_UNDEFINED	NULL	Undefined
P_DATA_SESSION_ERROR_INVALID_ADDRESS	TpAddressError	DataSessionErrorInvalidAddress
P_DATA_SESSION_ERROR_INVALID_STATE	NULL	Undefined

## TpDataSessionErrorType

Defines a specific Data Session error.

Name	Value	Description
P_DATA_SESSION_ERROR_UNDEFINED	0	Undefined; the method failed or was refused, but no specific reason can be given.
P_DATA_SESSION_ERROR_INVALID_ADDRESS	1	The operation failed because an invalid address was given
P_DATA_SESSION_ERROR_INVALID_STATE	2	The data session was not in a valid state for the requested operation

## TpDataSessionFault

Defines the cause of the data session fault detected.

Name	Value	Description
P_DATA_SESSION_FAULT_UNDEFINED	0	Undefined
P_DATA_SESSION_USER_ABORTED	1	User has finalised the data session before any message could be sent by the application
P_DATA_SESSION_TIMEOUT_ON_RELEASE	2	This fault occurs when the final report has been sent to the application, but the application did not explicitly release data session object, within a specified time. The timer value is operator specific.
P_DATA_SESSION_TIMEOUT_ON_INTERRUPT	3	This fault occurs when the application did not instruct the gateway how to handle the call within a specified time, after the gateway reported an event that was requested by the application in interrupt mode. The timer value is operator specific.

## TpDataSessionReleaseCause

Defines the Sequence of Data Elements that specify the cause of the release of a data session.

Sequence Element Name	Sequence Element Type
Value	TpInt32
Location	TpInt32
NOTE: the Value and Location are specified as in ITU-T Recommendation Q.850.	

## TpDataSessionSuperviseVolume

Defines the Sequence of Data Elements that specify the amount of volume that is allowed to be transmitted for the specific connection.

Sequence Element Name	Sequence Element Type	Sequence Element Description
VolumeQuantity	<u>TpInt32</u>	This data type is identical to a TpInt32, and defines the quantity of the granted volume that can be transmitted for the specific connection. The volume specifies the sum of uplink and downlink transfer data volumes.
VolumeUnit	<u>TpInt32</u>	In Order to enlarge the range of the volume quantity value the exponent of a scaling factor ( $10^{\text{VolumeUnit}}$ ) is provided. When the unit is for example in kilobytes, VolumeUnit shall be set to 3.

## TpDataSessionSuperviseReport

Defines the responses from the data session control service for calls that are supervised. The values may be combined by a logical 'OR' function.

Name	Value	Description
P_DATA_SESSION_SUPERVISE_VOLUME_REACHED	01h	The maximum volume has been reached.
P_DATA_SESSION_SUPERVISE_DATA_SESSION_ENDED	02h	The data session has ended, either due to data session party to reach of maximum volume or calling or called release.
P_DATA_SESSION_SUPERVISE_MESSAGE_SENT	04h	A warning message has been sent.

## TpDataSessionSuperviseTreatment

Defines the treatment of the call by the data session control service when the supervised volume is reached. The values may be combined by a logical 'OR' function.

Name	Value	Description
P_DATA_SESSION_SUPERVISE_RELEASE	01h	Release the data session when the data session supervision volume is reached.
P_DATA_SESSION_SUPERVISE_RESPOND	02h	Notify the application when the call supervision volume is reached.
P_DATA_SESSION_SUPERVISE_INFORM	04h	Send a warning message to the originating party when the maximum volume is reached. If data session release is requested, then the data session will be released following the message after an administered time period

## TpDataSessionReport

Defines the Sequence of Data Elements that specify the data session report specific information.

Sequence Element Name	Sequence Element Type
MonitorMode	TpDataSessionMonitorMode
DataSessionEventTime	TpDateAndTime
DataSessionReportType	TpDataSessionReportType
AdditionalReportInfo	TpDataSessionAdditionalReportInfo

## TpDataSessionAdditionalReportInfo

Defines the Tagged Choice of Data Elements that specify additional data session report information for certain types of reports.

Tag Element Type
TpDataSessionReportType

Tag Element Value	Choice Element Type	Choice Element Name
P_DATA_SESSION_REPORT_UNDEFINED	NULL	Undefined
P_DATA_SESSION_REPORT_CONNECTED	NULL	Undefined
P_DATA_SESSION_REPORT_DISCONNECT	TpDataSessionReleaseCause	DataSessionDisconnect

## TpDataSessionReportRequest

Defines the Sequence of Data Elements that specify the criteria relating to data session report requests.

Sequence Element Name	Sequence Element Type
MonitorMode	TpDataSessionMonitorMode
DataSessionReportType	TpDataSessionReportType

## TpDataSessionReportRequestSet

Defines a Numbered Set of Data Elements of TpDataSessionReportRequest.

## TpDataSessionReportType

Defines a specific data session event report type.

Name	Value	Description
P_DATA_SESSION_REPORT_UNDEFINED	0	Undefined
P_DATA_SESSION_REPORT_CONNECTED	1	Data session established.
P_DATA_SESSION_REPORT_DISCONNECT	2	Data session disconnect requested by data session party

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## Annex A (normative): OMG IDL Description of Data Session Control SCF

The OMG IDL representation of this interface specification is contained in a text file (dsc.idl contained in archive 2919808IDL.ZIP) which accompanies the present document.

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## Annex B (informative): Differences between this draft and 3GPP TS 29.198 R99

### C.1 Interface IpAppDataSessionControlManager

~~reportNotificationDataSessionEventNotify~~ (dataSessionReference : in TpDataSessionIdentifier, eventInfo : in TpDataSessionEventInfo, assignmentID : in TpAssignmentID, appInterfaceDataSession : out IpAppDataSessionRefRef) : TpResult

### C.2 Interface IpDataSessionControlManager

~~createNotificationenableDataSessionNotification~~ (appDataSessionControlManagerInterface : in IpAppDataSessionControlManagerRef, eventCriteria : in TpDataSessionEventCriteria, assignmentID : out TpAssignmentIDRef) : TpResult

~~destroyNotificationdisableDataSessionNotification~~ (assignmentID : in TpAssignmentID) : TpResult

~~changeNotification~~ (assignmentID : in TpAssignmentID, eventCriteria : in TpDataSessionEventCriteria) : TpResult

~~getNotification~~ (eventCriteria : out TpDataSessionEventCriteriaRef) : TpResult

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## Annex C (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
16 Mar 2001	CN_11	NP-010134	047	-	CR 29.198: for moving TS 29.198 from R99 to Rel 4 (N5-010158)	3.2.0	1.0.0



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## History

<b>Document history</b>		
V4.0.0	March 2001	Publication