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| 3GPP TS 28.309 V16.0.0 (2020-09) | |
| Technical Specification | |
| 3rd Generation Partnership Project;  Technical Specification Group Services and System Aspects;  Telecommunication management;  Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP);  Solution Set (SS) definitions  (Release 16) | |
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| ***3GPP***  Postal address  3GPP support office address  650 Route des Lucioles - Sophia Antipolis  Valbonne - FRANCE  Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16  Internet  http://www.3gpp.org |
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# Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

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

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

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management, as identified below:

- TS 28.307: Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP); Requirements

- TS 28.308: Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP); Information Service (IS)

**- TS 28.309: Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP); Solution Set (SS) definitions**

The present document is part of a TS-family which describes the information service necessary for the Telecommunication Management (TM) of 3G systems. The TM principles and TM architecture are specified in 3GPP TS 32.101 [2] and 3GPP TS 32.102 [3].

Quality of Experience (QoE) information collection provides detailed information at session level on a number of UEs. The QoE information from a number of UEs is collected by the management system (e.g. an Operations System (OS) in TMN terminology) for analysis and/or KPI calculations.

# 1 Scope

The present document specifies the Solution Set definitions for the IRP whose semantics are specified in Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP): Information Service (3GPP TS 28.308 [19]). The present document is applicable to UMTS networks and EPS networks.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[3] 3GPP TS 32.102: "Telecommunication management; Architecture".

[4] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

[5] 3GPP TS 32.442: "Telecommunication management; Trace Management Integration Reference Point (IRP): Information Service (IS)".

[6] 3GPP TS 32.311: "Telecommunication management; Generic Integration Reference Point (IRP): Requirements".

[7] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[8] 3GPP TS 32.306: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Solution Set definitions".

[9] OMG TC Document telecom/98-11-01: "OMG Notification Service". (<http://www.omg.org/technology/documents/>)

[10] 3GPP TS 32.342: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP): Information Service (IS)".

[11] W3C REC-xml-20001006: "Extensible Markup Language (XML) 1.0 (Second Edition)".

[12] W3C REC-xmlschema-0-20010502: "XML Schema Part 0: Primer".

[13] W3C REC-xmlschema-1-20010502: "XML Schema Part 1: Structures".

[14] W3C REC-xmlschema-2-20010502: "XML Schema Part 2: Datatypes".

[15] W3C SOAP 1.1 specification (<http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>).

[16] W3C XPath 1.0 specification (<http://www.w3.org/TR/1999/REC-xpath-19991116>).

[17] W3C WSDL 1.1 specification (<http://www.w3.org/TR/2001/NOTE-wsdl-20010315>).

[18] W3C SOAP 1.2 specification (<http://www.w3.org/TR/soap12-part1/>).

[19] 3GPP TS 28.308: "Telecommunication management; Quality of Experience (QoE) measurement collection Integration Reference Point (IRP): Information Service (IS)".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in TR 21.905 [1] apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1] and 3GPP TS 32.150 [4].

**IRP document version number string (or "IRPVersion"):** See 3GPP TS 32.311 [6].

## 3.2 Symbols

Void.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], in 3GPP TS 32.150 [4], and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

DN Distinguished Name

SS Solution Set

# 4 Solution Set definitions

The present document defines the following 3GPP QMC Management IRP Solution Set definitions:

- Annex A provides the CORBA Solution Set.

- Annex B provides the XML definitions.

- Annex C provides the SOAP Solution Set.

Annex A (normative):  
CORBA Solution Set (SS)

# A.0 Introduction

This annex contains the CORBA Solution Set for the IRP whose semantics is specified in QoE Management IRP: Information Service (3GPP TS 28.308 [19]).

# A.1 Architectural features

The overall architectural feature of QMC Management IRP is specified in 3GPP TS 28.308 [19].

## A.1.1 Syntax for Distinguished Names (DN)

The format of a Distinguished Name (DN) is defined in 3GPP TS 32.300 [7].

The version of this IRP is represented as a string (see also 3GPP TS 32.311 [6]).

## A.1.2 Notification services

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.306 [8]).

The contents of the QMCIRP notifications are defined in the present document.

## A.1.3 Push and pull style

OMG Notification Service defines two styles of interaction. One is called push style. In this style, IRPAgent pushes notifications to IRPManager as soon as they are available. The other is called pull style. In this style, IRPAgent keeps the notifications till IRPManager requests for them.

This CORBA SS specifies that support of Push style is Mandatory (M) and that support of Pull style is Optional (O).

## A.1.4 Support multiple notifications in one push operation

For efficiency reasons, IRPAgent may send multiple notifications using one single push operation. To pack multiple notifications into one push operation, IRPAgent may wait and not invoke the push operation as soon as notifications are available. To avoid IRPAgent to wait for an extended period of time that is objectionable to IRPManager, IRPAgent shall implement an IRPAgent wide timer configurable by administrator. On expiration of this timer, IRPAgent shall invoke push if there is at least one notification to be conveyed to IRPManager. This timer is re-started after each push invocation.

## A.1.5 QoE management notification interface

### A.1.5.0 Introduction

OMG CORBA Notification push operation is used to realise the notification of QMCIRP Notifications. All the notifications in this interface are implemented using this push\_structured\_event method.

### A.1.5.1 Method push (M)

module CosNotifyComm {

…

Interface SequencePushConsumer : NotifyPublish {

void push\_structured\_events(

in CosNotification::EventBatch notifications)

raises( CosEventComm::Disconnected);

…

}; // SequencePushConsumer

…

}; // CosNotifyComm

NOTE 1: The push\_structured\_events method takes an input parameter of type EventBatch as defined in the OMG CosNotification module (OMG Notification Service [9]). This data type is the same as a sequence of Structured Events. Upon invocation, this parameter will contain a sequence of Structured Events being delivered to IRPManager by IRPAgent to which it is connected.

NOTE 2: The maximum number of events that will be transmitted within a single invocation of this operation is controlled by IRPAgent wide configuration parameter.

NOTE 3: The amount of time the supplier (IRPAgent) of a sequence of Structured Events will accumulate individual events into the sequence before invoking this operation is controlled by IRPAgent wide configuration parameter as well.

NOTE 4: IRPAgent may push EventBatch with only one Structured Event.

# A.2 Mapping

## A.2.1 Operation and notification mapping

QMCIRP: IS 3GPP TS 28.309 [19] defines semantics of operation and notification visible across the QMCIRP.   
Table A.2.1.1 indicates mapping of these operations and notifications to their equivalents defined in this SS.

Table A.2.1.1: Mapping from IS Operations and Notification to SS equivalents

|  |  |  |
| --- | --- | --- |
| IS Operations/ notification 3GPP TS 28.308 [19] | SS Method | Qualifier |
| activateAreaQMCJob | activateAreaQMCJob | M |
| deactivateQMCJob | deactivateQMCJob | M |
| listQMCJob | listQMCJob | M |
| listActivatedQMCJobs | listActivatedQMCJobs | M |
| notifyNetworkRequestSessionFailure | push\_structured\_events(See subclause A.1.5.1) | O |

## A.2.2 Operation parameter mapping

The QMCIRP: IS 3GPP TS 28.308 [19] defines semantics of parameters carried in operations across the QMCIRP. The following tables indicate the mapping of these parameters, as per operation, to their equivalents defined in this SS.

Table A.2.2.1: Mapping from IS activateAreaQMCJob parameters to SS equivalents

| IS Operation parameter | SS Method parameter | Qualifier |
| --- | --- | --- |
| iOCInstance | KernelCmConstDefs::DN moInstance | M |
| qoEReference | QmcIRPConstDefs::QoeReference qoeReference | M |
| qMCTarget | QmcIRPConstDefs::QmcTarget qmcTarget | M |
| qoECollectionEntityAddress | QmcIRPConstDefs::QoeCollectionEntityAddress qoeCollectionEntityAddress | M |
| serviceType | QmcIRPConstDefs:: ServiceType serviceType | M |
| areaScope | QmcIRPConstDefs::DNSet | M |
| pLMNTarget | QmcIRPConstDefs: PLMNTarget pLMNTarget | CM |
| qMCConfigurationFile | QmcIRPConstDefs: QmcConfigurationFile qmcConfigurationFile | M |
| unsupportedList | QmcIRPConstDefs: UnsupportedList unsupportedList | M |
| status | Return value of type QmcIRPConstDefs::Result  Exception:  ActivateAreaQMCJob  NotUniqueQoEReference  ManagedGenericIRPSystem::InvalidParameter, ManagedGenericIRPSystem::ValueNotSupported | M |

Table A.2.2.2: Mapping from IS deactivateQMCJob parameters to SS equivalents

| IS Operation parameter | SS Method parameter | Qualifier |
| --- | --- | --- |
| iOCInstance | KernelCmConstDefs::DN moInstance | M |
| qoEReference | QmcIRPConstDefs::QoeReference qoeReference | M |
| qMCTarget | QmcIRPConstDefs::QmcTarget qmcTarget | M |
| status | Return value of type QmcIRPConstDefs::Result  Exception:  DeactivateQMCJob  NotUniqueQoEReference | M |
| unsupportedList | QmcIRPConstDefs: UnsupportedList unsupportedList | M |

Table A.2.2.3: Mapping from IS listQMCJob parameters to SS equivalents

| IS Operation parameter | SS Method parameter | Qualifier |
| --- | --- | --- |
| iOCInstance | KernelCmConstDefs::DN moInstance | M |
| status | Return value of type QmcIRPConstDefs::Result  Exception:  ListQMCJob  NotUniqueQoEReference | M |
| qoEReference | QmcIRPConstDefs::QoeReference qoeReference | M |
| qMCTarget | QmcIRPConstDefs::QmcTarget qmcTarget | M |
| qoECollectionEntityAddress | QmcIRPConstDefs::QoeCollectionEntityAddress qoeCollectionEntityAddress | M |
| serviceType | QmcIRPConstDefs:: ServiceType serviceType | M |
| areaScope | QmcIRPConstDefs::DNSet | M |
| pLMNTarget | QmcIRPConstDefs: PLMNTarget pLMNTarget | CM |
| qMCConfigurationFile | QmcIRPConstDefs: QmcConfigurationFile qmcConfigurationFile | M |

Table A.2.2.4: Mapping from IS listActivatedQMCJobs parameters to SS equivalents

| IS Operation parameter | SS Method parameter | Qualifier |
| --- | --- | --- |
| qoEReferenceList | QmcIRPConstDefs::QoEReferenceList qoeReferenceList | M |
| status | Return value of type QmcIRPConstDefs::Result | M |

## A.2.3 Notification parameter mapping

The QMCIRP: IS 3GPP TS 28.309 [19] defines semantics of parameters carried in notifications. The following table indicates the mapping of these parameters to their OMG CORBA Structured Event (defined in OMG Notification Service [9]) equivalents. The composition of OMG Structured Event, as defined in the OMG Notification Service [9], is:

Header

Fixed Header

domain\_name

type\_name

event\_name

Variable Header

Body

filterable\_body\_fields

remaining\_body

The following tables list all OMG Structured Event attributes in the second column. The first column identifies the QMCIRP: IS 3GPP TS 28.308 [19] defined notification parameters.

Table A.2.3.1: Mapping for notifyNetworkRequestSessionFailure

| IS Parameters | OMG CORBA Structured Event attribute | Qualifier | Comment |
| --- | --- | --- | --- |
| There is no corresponding IS attribute. | domain\_name | M | It carries the IRP document version number string. See subclause 3.1.  It indicates the syntax and semantics of the Structured Event as defined by the present document. |
| notificationType | type\_name | M | This is constant string "notifyNetworkRequestSessionFailure". |
| There is no corresponding IS attribute. | event\_name | M | It carries no information. |
| There is no corresponding IS attribute. | Variable Header | M | The Variable Header consists of a single name/value (NV) pair, namely Priority. |
| objectClass, objectInstance | One NV pair of filterable\_body\_fields | M | NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string.  Name of this NV pair is the MANAGED\_OBJECT\_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.306 [8]). |
| notificationId | One NV pair of remaining\_body | O | Name of NV pair is the NOTIFICATION\_ID of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.306 [8]). |
| eventTime | One NV pair of filterable\_body\_fields | M | Name of NV pair is the EVENT\_TIME of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is IRPTime. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.306 [8]). |
| systemDN | One NV pair of filterable\_body\_fields | M | Name of NV pair is the SYSTEM\_DN of interface AttributeNameValue of module NotificationIRPConstDefs.  Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.306 [8]). |
| qoEReference | One NV pair of filterable\_body\_fields | M | Name of NV pair is the QOE\_REFERENCE of qmcIRPNotifications::notifyNetworkRequestSessionFailure.  Value of NV pair is QoeReference of module QmcIRPConstDefs. |
| reason | One NV pair of remaining\_body | O | Name of NV pair is the REASON of  qmcIRPNotifications:: notifyNetworkRequestSessionFailure.  Value of NV pair is a string. |

# A.3 Solution Set (SS) definitions

## A.3.1 IDL definition structure

Clause A.3.2 defines the constants and types used by the QMC Management IRP.

Clause A.3.3 defines the operations which are performed by the QMC Management IRP agent.

Clause A.3.4 defines the notifications which are emitted by the QMC Management IRP agent.

## A.3.2 IDL specification (file name "QMCIRPConstDefs.idl")

//File: QMCIRPConstDefs.idl

#ifndef \_QMC\_IRP\_CONST\_DEFS\_IDL\_

#define \_QMC\_IRP\_CONST\_DEFS\_IDL\_

#include <KernelCmConstDefs.idl>

// This statement shall appear after all include statements

#pragma prefix "3gppsa5.org"

/\* ## Module: QMCIRPConstDefs

This module contains commonly used definitions for QMC IRP

===============================================================

\*/

module QMCIRPConstDefs

{

enum Result Enum {SUCESS, FAILURE, PARTIAL\_SUCCESS};

typedef struct QoeReference

{

short mcc;

short mnc;

unsigned long qmcId;

};

typedef sequence<QoEReference> QoEReferenceList;

typedef string QoeCollectionEntityAddress;

enum QmcTarget {AREA\_BASED\_QMC,INDIVIDUAL\_BASED\_UE };

enum ServiceType {DASH,MTSI};

typedef string QmcConfigurationFile;

typedef sequence <KernelCmConstDefs::DN> DNSet;

enum UnsupportedItem {MANAGED\_ENTITY, QMC\_TARGET, AREA\_SCOPE, SERVICE\_TYPE, PLMN\_TARGET};

typedef sequence<UnsupportedItem> UnsupportedList;

/\*\*

\* This block identifies attributes which are included as part of the

\* notifications defined within QMCIRP. These attribute values should not

\* clash with those defined for the attributes of notification

\* header (see IDL of Notification IRP).

\*/

interface AttributeNameValue

{

const string QOE\_REFERENCE = "QOE\_REFERENCE";

const string QMC\_TARGET = "QMC\_TARGET";

const string MO\_INSTANCE = "MO\_INSTANCE";

const string REASON = "REASON";

};

};

## A.3.3 IDL specification (file name “QMCIRPSystem.idl”)

//File: QMCIRPSystem.idl

#ifndef \_QMC\_IRP\_SYSTEM\_IDL\_

#define \_QMC\_IRP\_SYSTEM\_IDL\_

#include <KernelCmConstDefs.idl>

#include <GenericIRPManagementConstDefs.idl>

#include <GenericIRPManagementSystem.idl>

#include <QMCIRPConstDefs.idl>

//This statement shall appear after all include statements

#pragma prefix "3gppsa5.org"

/\* Module: QMCIRPSystem

This module contains the specification of all operations of QMC IRP Agent.

=============================================================================

\*/

module QMCIRP

{

exception ActivateAreaQMCJob { string reason; };

exception NotUniqueQMCReference { string reason; };

exception DeactivateQMCJob { string reason; };

exception ListQMCJob { string reason; };

exception ListActivatedQMCJob { string reason; };

interface QMCIRP

{

/\*\*

\* Request to activate a QMCJob through Itf-N.

\*\*/

QMCIRPConstDefs::ResultEnum activateAreaQMCJob (

in KernelCmConstDefs::DN moInstance,

in QMCIRPConstDefs::QoeReference qoeReference,

in QMCIRPConstDefs::QmcTarget qmcTarget,

in QMCIRPConstDefs::QoeCollectionEntityAddress qoeCollectionEntityAddress,

in QMCIRPConstDefs::DNSet areaScope,

in QMCIRPConstDefs::ServiceType serviceType,

in QMCIRPConstDefs::PLMNTarget pLMNTarget,

in QMCIRPConstDefs::QmcConfigurationFile qmcConfigurationFile,

out QMCIRPConstDefs:: UnsupportedList unsupportedList

)

raises (ActivateAreaQMCJob,

NotUniqueQoEReference,

GenericIRPManagementSystem::InvalidParameter,

GenericIRPManagementSystem::ValueNotSupported,

GenericIRPManagementSystem::OperationNotSupported

);

/\*\*

\* Request to deactivate a QMCJob through Itf-N.

\*\*/

QMCIRPConstDefs::ResultEnum deactivateQMCJob (

in KernelCmConstDefs::DN moInstance,

in QMCIRPConstDefs::QoeReference qoeReference,

in QMCIRPConstDefs::QmcTarget qmcTarget,

out QMCIRPConstDefs:: UnsupportedList unsupportedList)

raises (DeactivateQMCJob,

NotUniqueQoEReference,

GenericIRPManagementSystem::InvalidParameter,

GenericIRPManagementSystem::ValueNotSupported,

GenericIRPManagementSystem::OperationNotSupported);

/\*\*

\* Request to list the parameters of a specific QMCJob through Itf-N.

\*\*/

QMCIRPConstDefs::ResultEnum listQMCJob (

in QMCIRPConstDefs::QoeReference qoeReference,

out KernelCmConstDefs::DN moInstance,

out QMCIRPConstDefs::QoeReference qoeReference,

out QMCIRPConstDefs::QmcTarget qmcTarget,

out QMCIRPConstDefs::QoeCollectionEntityAddress qoeCollectionEntityAddress,

out QMCIRPConstDefs::ServiceType serviceType,

out QMCIRPConstDefs::DNSet areaScope,

out QMCIRPConstDefs::PLMNTarget pLMNTarget,

out QMCIRPConstDefs::QmcConfigurationFile qmcConfigurationFile

)

raises (ListQMCJob,

NotUniqueQoEReference,

GenericIRPManagementSystem::InvalidParameter,

GenericIRPManagementSystem::ValueNotSupported,

GenericIRPManagementSystem::OperationNotSupported);

/\*\*

\* Request to list the activated QMCJobs through Itf-N.

\*\*/

QMCIRPConstDefs::ResultEnum listActivatedQMCJob (

out QMCIRPConstDefs:: QoEReferenceList qoeReferenceList)

raises (ListActivatedQMCJob,

GenericIRPManagementSystem::InvalidParameter,

GenericIRPManagementSystem::ValueNotSupported,

GenericIRPManagementSystem::OperationNotSupported);

};

};

#endif // \_QMC\_IRP\_SYSTEM\_IDL\_

## A.3.4 IDL specification (file name “QMCIRPNotifications.idl”)

//File: QMCIRPNotifications.idl

#ifndef \_QMC\_IRP\_NOTIFICATIONS\_IDL\_

#define \_QMC\_IRP\_NOTIFICATIONS\_IDL\_

#include <QMCIRPConstDefs.idl>

#include <NotificationIRPNotifications.idl>

// This statement shall appear after all include statements

#pragma prefix "3gppsa5.org"

/\* Module: QMCIRPNotifications

This module contains the specification of all notifications of QMC IRP Agent.

=============================================================================

\*/

module QMCIRPNotifications

{

/\*\*

\* Constant definitions for the notifyNetworkRequestSessionFailure notification

\*\*/

interface NotifyNetworkRequestSessionFailure: NotificationIRPNotifications::Notify

{

const string EVENT\_TYPE = "notifyNetworkRequestSessionFailure";

/\*\*

\* This constant defines the name of the QoeReference property.

\* The data type for the value of this property is

\* QMCIRPConstDefs::QoeReference.

\*\*/

const string QOE\_REFERENCE = QMCIRPConstDefs::AttributeNameValue::QOE\_REFERENCE;

/\*\*

\* This constant defines the name of the reason property.

\* The data type for the value of this property is string.

\*/

const string REASON = QMCIRPConstDefs::AttributeNameValue::REASON;

};

};

#endif // \_QMC\_IRP\_NOTIFICATIONS\_IDL\_

Annex B (normative):  
XML definitions

# B.0 Introduction

This annex contains the XML definitions for the QMC ManagementIRP for the IRP whose semantics is specified in QMC ManagementIRP: Information Service (3GPP TS 28.308 [19]).

This XML definitions specification defines the XML syntax of the QMC Management IRP XML Data File.

# B.1 Architectural Features

The overall architectural feature of QMC Management IRP is specified in 3G TS 28.308 [19]. This clause specifies features that are specific to the XML definitions.

## B.1.1 Syntax for Distinguished Names (DN)

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [7].

## B.1.2 Notification services

This annex defines the XML syntax of QMC Management IRP notifications that is to be used for the QMC Management IRP SOAP Solution Set and in conjunction with Notification Log IRP XML definitions for Notification Log IRP XML Data File and the NL IRP XML Notification Format.

## B.1.3 IOC definitions

This annex defines the XML syntax for the IOC definitions of the QMC Management IRP IS [19], which are used by the XML definitions for the QMC Management IRP notifications and the QMC Management IRP IS operations.

## B.1.4 Supported W3C specification

The Extensible Markup Language (XML) 1.0 (Second Edition) [11], XML Schema Part 0: Primer [12], XML Schema Part 1: Structures[13] and XML Schema Part 2: Datatypes [14] are supported.

# B.2 Mapping

Not present in the current version of the present document.

# B.3 Solution Set (SS) definitions

## B.3.1 XML definition structure

Clause B.3.2 provides XML definitions of QMC Management IRP notifications as defined in [19]. These definitions are to be used for the QMC Management IRP SOAP Solution Set. For QMC IRP XML File Name Conventions the generic file name definitions as specified by the FT IRP apply (see [10]).

Clause B.3.3 provides XML definitions of QMC Management IOC as defined in [19].

## B.3.2 XML schema "QMCIRPNotif.xsd"

<?xml version="1.0" encoding="UTF-8"?>

<!--

3GPP TS 28.309 QMC Management IRP Notification

QMC IRP specific data file XML schema

qMCIRPNotif.xsd

-->

<schema xmlns="http://www.w3.org/2001/XMLSchema" xmlns:tr="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#qMCIRPNotif" xmlns:xe="http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#notification" targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#qMCIRPNotif" elementFormDefault="qualified">

<import namespace="http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#notification"/>

<!-- XML types specific for QMC IRP notifications -->

<complexType name="QoeReference">

<sequence>

<element name="MCC" type="short"/>

<element name="MNC" type="short"/>

<element name="QMC\_ID" type="integer"/>

</sequence>

</complexType>

<complexType name="NotifyNetworkRequestSessionFailure">

<complexContent>

<extension base="xe:Notification">

<sequence>

<element name="body">

<complexType>

<sequence>

<element name="QoeReference" type="tr:QoeReference"/>

<element name="Reason" type="string" minOccurs="0"/>

</sequence>

</complexType>

</element>

</sequence>

</extension>

</complexContent>

</complexType>

<element name="NotifyNetworkRequestSessionFailure" type="tr:NotifyNetworkRequestSessionFailure"/>

</schema>

## B.3.3 XML schema "QMCIRPIOCs.xsd"

<?xml version="1.0" encoding="UTF-8"?>

<!--

3GPP TS 28.309 Trace Management IRP IOC XML Schema

qMCIRPIOCs.xsd

-->

<schema xmlns:xti="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#tMIRPIOCs" xmlns:xe="http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#notification"

xmlns:xn=http://www.3gpp.org/ftp/specs/archive/32\_series/32.626#genericNrm

xmlns="http://www.w3.org/2001/XMLSchema" targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#tMIRPIOCs" <import namespace="http://www.3gpp.org/ftp/specs/archive/32\_series/32.626#genericNrm"/>

elementFormDefault="qualified" attributeFormDefault="unqualified">

<complexType name="DNSet">

<sequence>

<element name="DN" type="xn:DN" minOccurs="0" maxOccurs="unbounded"/>

</sequence>

</complexType>

<simpleType name="QMCTargetType">

<restriction base="string">

<enumeration value="AREA\_BASED\_QMC"/>

<enumeration value="INDIVIDUAL\_BASED\_QMC"/>

</restriction>

</simpleType>

<complexType name="QMCTarget">

<sequence>

<element name="typeFlag" type="xti: QMCTargetType"/>

<element name="QMCTargetId" type="string"/>

</sequence>

</complexType>

<simpleType name="UnsupportedItem">

<restriction base="string">

<enumeration value="MANAGED\_ENTITY"/>

<enumeration value="QMC\_AREA\_SCOPE"/>

<enumeration value="QMC\_TARGET"/>

<enumeration value="PLMN\_TARGET"/>

<enumeration value="QMC\_SERVICE\_TYPE"/>

</restriction>

</simpleType>

<complexType name="UnsupportedList">

<sequence>

<element name="UnsupportedItem" type="xti:UnsupportedItem" minOccurs="0" maxOccurs="unbounded"/>

</sequence>

</complexType>

<simpleType name="ServiceType">

<restriction base="string">

<enumeration value="DASH"/>

<enumeration value="MTSI"/>

</restriction>

</simpleType>

<element name="serviceType" type="xti:ServiceType"/>

<element name="qoEReference" type="unsignedLong"/>

<element name="qmcTarget" type="xti:QMCTarget"/>

<element name="qoeCollectionEntityAddress" type="string"/>

<element name="areaScope" type="xti:DNSet"/>

<element name="qmcConfigurationFile" type="string"/>

</schema>

Annex C (normative):  
SOAP Solution Set

# C.0 Introduction

This annex specifies the SOAP Solution Set for the IRP whose semantics are specified in QMC Management IRP: Information Service (3GPP TS 28.308 [19]).

# C.1 Architectural features

## C.1.0 General

The overall architectural feature of the QMC Management IRP is specified in 3GPP TS 28.308 [19]. This clause specifies features that are specific to the SOAP solution set.

## C.1.1 Syntax for Distinguished Names (DN)

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [7].

## C.1.2 Notification services

The Trace Management IRP SOAP SS uses the Notification IRP SOAP SS of 3GPP TS 32.306 [8]. The IRPAgent shall support the push interface model, which means that the IRPAgent sends trace management notifications to the IRPManager as soon as new events occur. The IRPManager does not need to check ("pull") for events.

## C.1.3 Supported W3C specifications

The SOAP 1.1 specification [15] and WSDL 1.1 specification [17] are supported.

The SOAP 1.2 specification [18] is supported optionally.

The present document uses "document" style in WSDL file.

The present document uses "literal" encoding style in WSDL file.

The filter language used in the SS is the XPath Language (see W3C XPath 1.0 specification [16]). IRPAgents may throw a FilterComplexityLimit fault when a given filter is too complex.

Relevant definitions are imported from the QMC Management IRP XML definitions of Annex B

## C.1.4 Prefixes and namespaces

The present document uses a number of namespace prefixes throughout that are listed in Table C.1.4.1.

Table C.1.4.1: Prefixes and Namespaces used in the present document

|  |  |
| --- | --- |
| **PREFIX** | **NAMESPACE** |
| (no prefix) | http://schemas.xmlsoap.org/wsdl/ |
| soap | http://schemas.xmlsoap.org/wsdl/soap/ |
| QMCIRPSystem | http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPSystem |
| QMCIRPData | http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPData |
| xti | http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPIOCs |
| xn | http://www.3gpp.org/ftp/specs/archive/32\_series/32.626#genericNrm |
| genericIRPSystem | http://www.3gpp.org/ftp/specs/archive/32\_series/32.316#GenericIRPSystem |
| ntfIRPNtfSystem | http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#NotificationIRPNtfSystem |

# C.2 Mapping

## C.2.1 Operation and notification mapping

The QMC Management IRP IS (3GPP TS 28.308 [19]) defines semantics of operation and notification visible across the Itf-N. Table C.2.1.1 indicates mapping of these operations and notifications to their equivalents defined in this SS.

Table C.2.1.1: Mapping from IS Operation to SS Equivalents

|  |  |  |  |
| --- | --- | --- | --- |
| IS Operations in 3GPP TS 32.442 [5] | SS Operations | SS Port | Qualifier |
| activateAreaQMCJob | activateAreaQMCJob | QMCIRPManagementPort | M |
| deactivateQMCJob | deactivateQMCJob | QMCIRPManagementPort | M |
| listQMCJob | listQMCJob | QMCIRPManagementPort | M |
| listActivatedQMCJobs | listActivatedQMCJobs | QMCIRPManagementPort | O |
| notifyNetworkRequestSessionFailure | notify (note 1) | NotificationIRPNtfPort | O |
| NOTE 1: The IS equivalent maps to an XML definition specified in Annex B, and this being an input parameter to the operation notify under the port type ntfIRPNtfSystem:NotificationIRPNtf and under the binding ntfIRPNtfSystem:NotificationIRPNtf of 3GPP TS 32.306 [8]. | | | |

## C.2.2 Operation parameter mapping

The QMC Management IRP IS (3GPP TS 28.308 [19]) defines semantics of parameters carried in the operations. The tables below show the mapping of these parameters, as per operation, to their equivalents defined in this SS.

Table C.2.2.1: Mapping from IS activateAreaQMCJob parameters to SS equivalents

|  |  |  |
| --- | --- | --- |
| IS Operation parameter | SS Method parameter | Qualifier |
| iOCInstance | iOCInstance | M |
| qoEReference | qoEReference | M |
| qMCTarget | qMCTarget | M |
| qoECollectionEntityAddress | qoECollectionEntityAddress | M |
| areaScope | areaScope | M |
| unsupportedList | unsupportedList | M |
| status | status | M |
| pLMNTarget | pLMNTarget | CM |
| qMCConfigurationFile | qMCConfigurationFile | M |
| serviceType | serviceType | M |

Table C.2.2.2: Mapping from IS deactivateQMCJob parameters to SS equivalents

|  |  |  |
| --- | --- | --- |
| IS Operation parameter | SS Method parameter | Qualifier |
| qoEReference | qoEReference | M |
| qMCTarget | qMCTarget | M |
| status | status | M |
| unsupportedList | unsupportedList | M |

Table C.2.2.3: Mapping from IS listQMCJob parameters to SS equivalents

|  |  |  |
| --- | --- | --- |
| IS Operation parameter | SS Method parameter | Qualifier |
| iOCInstance | iOCInstance | M |
| qoEReference | qoEReference | M |
| qMCTarget | qMCTarget | M |
| qoECollectionEntityAddress | qoECollectionEntityAddress | M |
| areaScope | areaScope | M |
| status | status | M |
| pLMNTarget | pLMNTarget | CM |
| qMCConfigurationFile | qMCConfigurationFile | M |
| serviceType | serviceType | M |

Table C.2.2.4: Mapping from IS listActivatedQMCJobs parameters to SS equivalents

|  |  |  |
| --- | --- | --- |
| IS Operation parameter | SS Method parameter | Qualifier |
| qoEReferenceList | qoEReferenceList | M |
| status | status | M |

## C.2.3 Notification parameter mapping

The QMC Management IRP IS (3GPP TS 28.308 [19]) defines semantics of parameters carried in notifications. The following tables indicate the mapping of these parameters to their SS equivalents.

Table C.2.3.1: Mapping for notifyNetworkRequestSessionFailure

|  |  |  |  |
| --- | --- | --- | --- |
| IS Parameters | <SS> Parameters | Qualifier | Comment |
| objectClass | objectClass | M |  |
| objectInstance | objectInstance | M |  |
| eventTime | eventTime | M |  |
| notificationType | notificationType | M |  |
| systemDN | systemDN | M |  |
| notificationID | notificationID | O |  |
| qoEReference | qoEReference | M |  |
| reason | reason | O |  |

# C.3 Solution Set (SS) definitions

## C.3.1 WSDL definition structure

Clause C.3.2 defines the services which are supported the QMC Management IRP agent.

## C.3.2 WSDL specification "QMCIRPSystem.wsdl"

<?xml version="1.0" encoding="UTF-8"?>

<!--

3GPP TS 28.309 QMC Management IRP SOAP Solution Set

-->

<definitions xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:traceIRPSystem="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPSystem" xmlns:traceIRPData="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPData" xmlns:xn="http://www.3gpp.org/ftp/specs/archive/32\_series/32.626#genericNrm" xmlns:genericIRPSystem="http://www.3gpp.org/ftp/specs/archive/32\_series/32.316#GenericIRPSystem" xmlns:ntfIRPNtfSystem="http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#NotificationIRPNtfSystem" targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPSystem">

<import namespace="http://www.3gpp.org/ftp/specs/archive/32\_series/32.316#GenericIRPSystem"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/32\_series/32.307/schema/32306#notification/NotificationIRPNtfSystem"/>

<types>

<schema targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPData" xmlns="http://www.w3.org/2001/XMLSchema" xmlns:xti="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRPIOCs">

<!-- activateAreaQMCJob Request -->

<element name="activateAreaQMCJobRequest">

<complexType>

<sequence>

<element name="iOCInstance" type="xn:dn"/>

<element name="qoEReference" type="unsignedLong"/>

<element name="qmcTarget" type="xti:QMCTarget"/>

<element name="qoeCollectionEntityAddress" type="string" minOccurs="0"/>

<element name="serviceType" type="xti:ServiceType"/>

<element name="areaScope" type="xti:DNSet" minOccurs="0"/>

<element name="pLMNTarget" type="xti:pLMNTarget" minOccurs="0"/>

<element name="qmcConfigurationFile" type="string"/>

</sequence>

</complexType>

</element>

<!-- activateAreaQMCJob Response -->

<element name="activateAreaQMCJobResponse">

<complexType>

<sequence>

<element name="status">

<simpleType>

<restriction base="string">

<enumeration value="Success"/>

<enumeration value="Failure"/>

<enumeration value="PartialSuccess"/>

</restriction>

</simpleType>

</element>

<element name="unsupportedList" type="xti:UnsupportedList" minOccurs="0"/>

<element name="failureReason" minOccurs="0">

<simpleType>

<restriction base="string">

<enumeration value="invalidManagedEntity"/>

<enumeration value="invalidQMCTarget"/>

<enumeration value="invalidAreaScope"/>

<enumeration value="invalidSeviceType"/>

<enumeration value="invalidPLMNTarget"/>

<enumeration value="operation\_failed\_unsupported\_input\_parameter\_qoeCollectionEntityAddress"/>

<enumeration value="notuniqueQoEReference"/>

</restriction>

</simpleType>

</element>

</sequence>

</complexType>

</element>

<!-- activateAreaQMCJob Fault -->

<element name="activateAreaQMCJobFault">

<simpleType>

<restriction base="string">

<enumeration value="OperationFailed"/>

</restriction>

</simpleType>

</element>

<!-- deactivateQMCJob Request -->

<element name="deactivateQMCJobRequest">

<complexType>

<sequence>

<element name="qoEReference" type="unsignedLong"/>

<element name="qMCTarget" type="xti:QMCTarget"/>

</sequence>

</complexType>

</element>

<!-- deactivateQMCJob Response -->

<element name="deactivateQMCJobResponse">

<complexType>

<sequence>

<element name="status">

<simpleType>

<restriction base="string">

<enumeration value="Success"/>

<enumeration value="Failure"/>

<enumeration value="PartialSuccess"/>

</restriction>

</simpleType>

</element>

<element name="unsupportedList" type="xti:UnsupportedList" minOccurs="0"/>

<element name="failureReason" minOccurs="0">

<simpleType>

<restriction base="string">

<enumeration value="notuniqueqoeReference"/>

<enumeration value="invalidManagedEntity"/>

<enumeration value="invalidQMCTarget"/>

<enumeration value="operation\_failed"/>

<enumeration value="operation\_failed\_internal\_problem"/>

</restriction>

</simpleType>

</element>

</sequence>

</complexType>

</element>

<!-- deactivateQMCJob Fault -->

<element name="deactivateQMCJobFault">

<simpleType>

<restriction base="string">

<enumeration value="OperationFailed"/>

</restriction>

</simpleType>

</element>

<!-- listQMCJob Request -->

<element name="listQMCJobRequest">

<complexType>

<sequence>

<element name="qoEReference" type="unsignedLong"/>

</sequence>

</complexType>

</element>

<!-- listQMCJob Response -->

<element name="listQMCJobResponse">

<complexType>

<sequence>

<element name="iOCInstance" type="xn:dn"/>

<element name="status">

<simpleType>

<restriction base="string">

<enumeration value="Success"/>

<enumeration value="Failure"/>

</restriction>

</simpleType>

</element>

<element name="qoEReference" type="unsignedLong"/>

<element name="qmcTarget" type="xti:QMCTarget"/>

<element name="qoeCollectionEntityAddress" type="string" minOccurs="0"/>

<element name="serviceType" type="xti:ServiceType"/>

<element name="areaScope" type="xti:DNSet" minOccurs="0"/>

<element name="pLMNTarget" type="xti:pLMNTarget" minOccurs="0"/>

<element name="qmcConfigurationFile" type="string"/>

<element name="failureReason" minOccurs="0">

<simpleType>

<restriction base="string">

<enumeration value="notuniqueTraceReference"/>

<enumeration value="operation\_failed"/>

<enumeration value="operation\_failed\_internal\_problem"/>

</restriction>

</simpleType>

</element>

</sequence>

</complexType>

</element>

<!-- listQMCJob Fault -->

<element name="listQMCJobFault">

<simpleType>

<restriction base="string">

<enumeration value="OperationFailed"/>

</restriction>

</simpleType>

</element>

<!-- listActivatedQMCJobs Request -->

<element name="listActivatedQMCJobsRequest">

</element>

<!-- listActivatedQMCJobs Response -->

<element name="listActivatedQMCJobsResponse">

<complexType>

<sequence>

<element name="qoEReferenceList">

<complexType>

<sequence minOccurs="0" maxOccurs="unbounded">

<element name="qoEReference" type="unsignedLong"/>

</sequence>

</complexType>

</element>

<element name="status">

<simpleType>

<restriction base="string">

<enumeration value="Success"/>

<enumeration value="Failure"/>

</restriction>

</simpleType>

</element>

<element name="failureReason" minOccurs="0">

<simpleType>

<restriction base="string">

<enumeration value="operation\_failed"/>

<enumeration value="operation\_failed\_internal\_problem"/>

</restriction>

</simpleType>

</element>

</sequence>

</complexType>

</element>

<!-- listActivatedQMCJobs Fault -->

<element name="listActivatedQMCJobsFault">

<simpleType>

<restriction base="string">

<enumeration value="OperationFailed"/>

</restriction>

</simpleType>

</element>

</schema>

</types>

<message name="activateQMCJobRequest">

<part name="parameter" element="qmcIRPData:activateQMCJobRequest"/>

</message>

<message name="activateQMCJobResponse">

<part name="parameter" element="qmcIRPData:activateQMCJobResponse"/>

</message>

<message name="activateQMCJobFault">

<part name="parameter" element="qmcIRPData:activateTraceJobFault"/>

</message>

<message name="deactivateQMCJobRequest">

<part name="parameter" element="qmcIRPData:deactivateQMCJobRequest"/>

</message>

<message name="deactivateQMCJobResponse">

<part name="parameter" element="qmcIRPData:deactivateQMCJobResponse"/>

</message>

<message name="deactivateQMCJobFault">

<part name="parameter" element="qmcIRPData:deactivateQMCJobFault"/>

</message>

<message name="listTraceQMCRequest">

<part name="parameter" element="qmcIRPData:listQMCJobRequest"/>

</message>

<message name="listQMCJobResponse">

<part name="parameter" element="qmcIRPData:listQMCJobResponse"/>

</message>

<message name="listQMCJobFault">

<part name="parameter" element="qmcIRPData:listQMCJobFault"/>

</message>

<message name="listActivatedQMCJobsRequest">

<part name="parameter" element="qmcIRPData:listActivatedQMCJobsRequest"/>

</message>

<message name="listActivatedQMCJobsResponse">

<part name="parameter" element="traceIRPData:listActivatedQMCJobsResponse"/>

</message>

<message name="listActivatedQMCJobsFault">

<part name="parameter" element="traceIRPData:listActivatedQMCJobsFault"/>

</message>

<portType name="QMCIRPManagement">

<operation name="activateQMCJob">

<input message="qmcIRPSystem:activateQMCJobRequest"/>

<output message="qmcIRPSystem:activateQMCJobResponse"/>

<fault name="activateQMCJobFault" message="qmcIRPSystem:activateQMCJobFault"/>

</operation>

<operation name="deactivateQMCJob">

<input message="qmcIRPSystem:deactivateQMCJobRequest"/>

<output message="qmcIRPSystem:deactivateQMCJobResponse"/>

<fault name="deactivateQMCJobFault" message="qmcIRPSystem:deactivateQMCJobFault"/>

</operation>

<operation name="listQMCJob">

<input message="qmcIRPSystem:listQMCJobRequest"/>

<output message="qmcIRPSystem:listQMCJobResponse"/>

<fault name="listQMCJobFault" message="qmcIRPSystem:listQMCJobFault"/>

</operation>

<operation name="listActivatedQMCJobs">

<input message="qmcIRPSystem:listActivatedQMCJobsRequest"/>

<output message="qmcIRPSystem:listActivatedQMCJobsResponse"/>

<fault name="listActivatedQMCJobsFault" message="qmcIRPSystem:listActivatedQMCJobsFault"/>

</operation>

</portType>

<binding name="QMCIRPManagement" type="qmcIRPSystem:QMCIRPManagement">

<soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>

<operation name="activateQMCJob">

<soap:operation soapAction="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#activateQMCJob" style="document"/>

<input>

<soap:body use="literal"/>

</input>

<output>

<soap:body use="literal"/>

</output>

<fault name="activateQMCJobFault">

<soap:fault name="activateTraceJobFault" use="literal"/>

</fault>

</operation>

<operation name="deactivateQMCJob">

<soap:operation soapAction="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#deactivateQMCJob" style="document"/>

<input>

<soap:body use="literal"/>

</input>

<output>

<soap:body use="literal"/>

</output>

<fault name="deactivateTraceJobFault">

<soap:fault name="deactivateTraceJobFault" use="literal"/>

</fault>

</operation>

<operation name="listQMCJob">

<soap:operation soapAction="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#listQMCJob" style="document"/>

<input>

<soap:body use="literal"/>

</input>

<output>

<soap:body use="literal"/>

</output>

<fault name="listQMCJobFault">

<soap:fault name="listQMCJobFault" use="literal"/>

</fault>

</operation>

<operation name="listActivatedQMCJobs">

<soap:operation soapAction="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#listActivatedQMCJobs" style="document"/>

<input>

<soap:body use="literal"/>

</input>

<output>

<soap:body use="literal"/>

</output>

<fault name="listActivatedQMCJobsFault">

<soap:fault name="listActivatedQMCJobsFault" use="literal"/>

</fault>

</operation>

</binding>

<service name="QMCIRPService">

<port name="QMCIRPManagementPort" binding="qmcIRPSystem:QMCIRPManagement">

<soap:address location="http://www.3gpp.org/ftp/specs/archive/28\_series/28.309#QMCIRP"/>

</port>

<port name="GenericIRPPort" binding="genericIRPSystem:GenericIRPBinding">

<soap:address location="http://www.3gpp.org/ftp/specs/archive/32\_series/32.316#GenericIRP"/>

</port>

<port name="NotificationIRPNtfPort" binding="ntfIRPNtfSystem:NotificationIRPNtf">

<soap:address location="http://www.3gpp.org/ftp/specs/archive/32\_series/32.306#NotificationIRPNtf"/>

</port>

</service>

</definitions>

Annex D (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **Tdoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2020-08 |  | S5-204317 |  |  |  | TS skeleton including the solution set | 0.0.0 |
| 2020-08 |  | S5-204670 |  |  |  | Draft TS 28.309 | 0.1.0 |
| 2020-09 | SA#89e | SP-200757 |  |  |  | Presented for approval | 1.0.0 |
| 2020-09 | SA#89e |  |  |  |  | Upgrade to change control version + EditHelp review | 16.0.0 |