

# ETSI TS 128 308 V17.0.0 (2022-04)



**Universal Mobile Telecommunications System (UMTS);  
LTE;  
5G;  
Telecommunication management;  
Quality of Experience (QoE)  
measurement collection Integration Reference Point (IRP);  
Information Service (IS)  
(3GPP TS 28.308 version 17.0.0 Release 17)**



---

**Reference**

RTS/TSGS-0528308vh00

---

**Keywords**

5G,LTE,UMTS

**ETSI**

---

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our  
Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

---

**Notice of disclaimer & limitation of liability**

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2022.  
All rights reserved.

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

---

# Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

---

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Contents

Intellectual Property Rights .....	2
Legal Notice .....	2
Modal verbs terminology.....	2
Foreword.....	5
Introduction .....	6
1 Scope .....	7
2 References .....	7
3 Definitions of terms, symbols and abbreviations .....	8
3.1 Terms.....	8
3.2 Symbols.....	8
3.3 Abbreviations .....	8
4 System Overview .....	8
4.1 System context .....	8
4.2 Compliance rules.....	9
5 Information Object Classes .....	9
5.1 Imported and associated information entities .....	9
5.1 Imported information entities and local labels.....	9
5.2 Class diagram .....	10
5.2.1 Relationships.....	10
5.2.2 Inheritance .....	10
5.3 Class definitions .....	10
5.3.1 QMCJob.....	10
5.3.1.1 Definition .....	10
5.3.1.2 Attributes.....	11
5.3.1.3 Attribute constraints .....	11
5.3.1.4 Notifications.....	11
5.3.1.5 State diagram.....	11
5.3.2 QMCRecord.....	11
5.3.2.1 Definition .....	11
5.3.2.2 Attributes.....	11
5.3.3 QMCIRP.....	12
5.3.3.1 Definition .....	12
5.3.4 ManagedEntity .....	12
5.3.4.1 Definition .....	12
5.4 Information relationship definitions .....	12
5.4.1 relation-qMCIRP-qMCJob (M).....	12
5.4.1.1 Definition .....	12
5.4.1.2 Roles .....	12
5.4.2 relation-qMCJob-managedEntity (M).....	12
5.4.2.1 Definition .....	12
5.4.2.2 Roles .....	12
5.4.3 relation-qMCJob-qMCRecord (M) .....	12
5.4.3.1 Definition .....	12
5.4.3.2 Roles .....	13
5.5 Attribute definitions .....	14
5.5.1 Attribute properties .....	14
6 Interface Definition .....	16
6.1 Class diagram representing interfaces .....	16
6.2 Generic rules .....	16
6.3 QoEIRPManagement Interface (M) .....	17
6.3.1 Operation activateAreaQMCJob (M).....	17

6.3.1.1	Definition .....	17
6.3.1.2	Input parameters.....	17
6.3.1.3	Output parameters .....	18
6.3.1.4	Pre-condition.....	19
6.3.1.5	Post-condition .....	19
6.3.1.6	Exceptions .....	19
6.3.1.6.1	notuniqueQoEReference .....	19
6.3.2	Operation deactivateQMCJob (M).....	19
6.3.2.1	Definition .....	19
6.3.2.2	Input parameters.....	19
6.3.2.3	Output parameters .....	20
6.3.2.4	Pre-condition.....	20
6.3.2.5	Post-condition .....	20
6.3.2.6	Exceptions .....	20
6.3.3	Operation listQMCJob (M) .....	20
6.3.3.1	Definition .....	20
6.3.3.2	Input parameters.....	20
6.3.3.3	Output parameters .....	21
6.3.3.4	Pre-condition.....	21
6.3.3.5	Post-condition .....	21
6.3.3.6	Exceptions .....	21
6.3.4	Operation listActivatedQMCJobs (M) .....	21
6.3.4.1	Definition .....	21
6.3.4.2	Input parameters.....	21
6.3.4.3	Output parameters .....	22
6.3.5	Notification notifyNetworkRequestSessionFailure (O) .....	23
6.3.5.1	Definition .....	23
6.3.5.2	Input parameters.....	23
6.3.5.3	Triggering event.....	23
6.3.5.3.1	From state .....	23
6.3.5.3.2	To state .....	23
<b>Annex A (informative):</b>	<b>Change history .....</b>	<b>24</b>
History .....		25

---

# 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

One main motivation of mobile network evolution is to improve the user experience why the evaluation at the UE side is vital to network operators, especially when the operators provide some real-time services which require for example high data rate and low latency like streaming services (typically video services).

Quality of Experience (QoE) information collection provides detailed information at session level on a number of UEs.

The operator can initiate logging of QoE information of an end user service. The collected information (specified in Reference 3GPP TS 26.247 [4]) cannot be deduced from performance measurements in the mobile network.

The QoE information is information collected by the end user application in the UE.

The collected QoE information 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 addresses the operations and notifications for the function Quality of Experience (QoE) measurement collection in UMTS and LTE. The measurements that are collected are DASH [4] and MTSI [9] measurements.

The function includes collecting QoE information from UEs frequenting a specified area.

---

# 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 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".
- [3] 3GPP TS 28.307: "Telecommunication management; Quality of Experience (QoE) measurement collection Integration Reference Point (IRP); Requirements".
- [4] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".
- [5] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- [6] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP); Information Service (IS)".
- [7] 3GPP TS 32.342: "Telecommunication management; File Transfer (FT) Integration Reference Point (IRP); Information Service (IS)".
- [8] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Information Service (IS)".
- [9] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".
- [10] 3GPP TS 28.404: "Telecommunication management; Quality of Experience (QoE) measurement collection; Concepts, use cases and requirements".
- [11] 3GPP TS 28.307: "Telecommunication management; Management of Quality of Experience (QoE) measurement collection Integration Reference Point (IRP); Requirements".
- [12] 3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS)".
- [13] 3GPP TS 32.156: "Integration Reference Point (IRP) Information Service (IS) template".



## 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] and TS 32.150 [2] and the following 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 TS 32.150 [2].

### 3.2 Symbols

Void.

### 3.3 Abbreviations

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

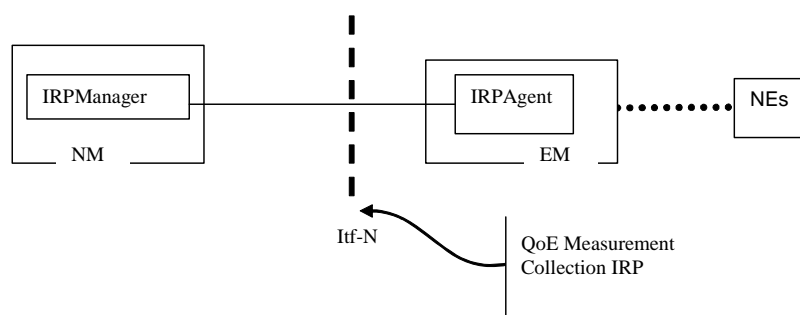
QoE	Quality of Experience
QMC	QoE Measurement Collection

## 4 System Overview

### 4.1 System context

The general definition of the System Context for the present IRP is found in TS 32.150 [2] clause 4.7.

In addition, the set of related IRP(s) relevant to the present IRP is shown in the two diagrams below.



**Figure 4.1.1: System Context A**

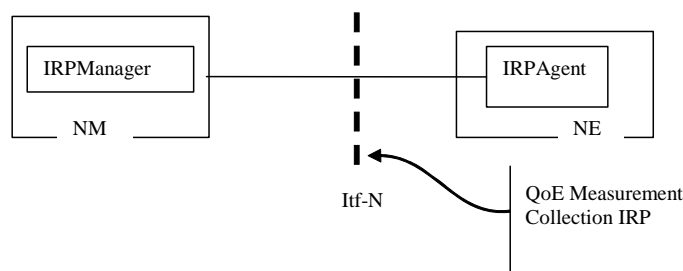


Figure 4.1.2: System Context B

## 4.2 Compliance rules

For general definitions of compliance rules related to qualifiers (Mandatory/Optional/Conditional) for *operations*, *notifications* and *parameters* (of operations and notifications) please refer to TS 32.150 [2].

---

# 5 Information Object Classes

## 5.1 Imported and associated information entities

### 5.1 Imported information entities and local labels

Label reference	Local label
TS 28.622 [5], information object class, Top	Top
TS 28.622 [5], information object class, IRPAgent	IRPAgent
TS 28.622 [5], information object class, GenericIRP	GenericIRP
TS 32.302 [6], information object class, NotificationIRP	NotificationIRP
TS 32.342 [7], information object class, FileTransferIRP	FileTransferIRP
TS 32.602 [8], information object class, ManagedEntity	ManagedEntity

## 5.2 Class diagram

### 5.2.1 Relationships

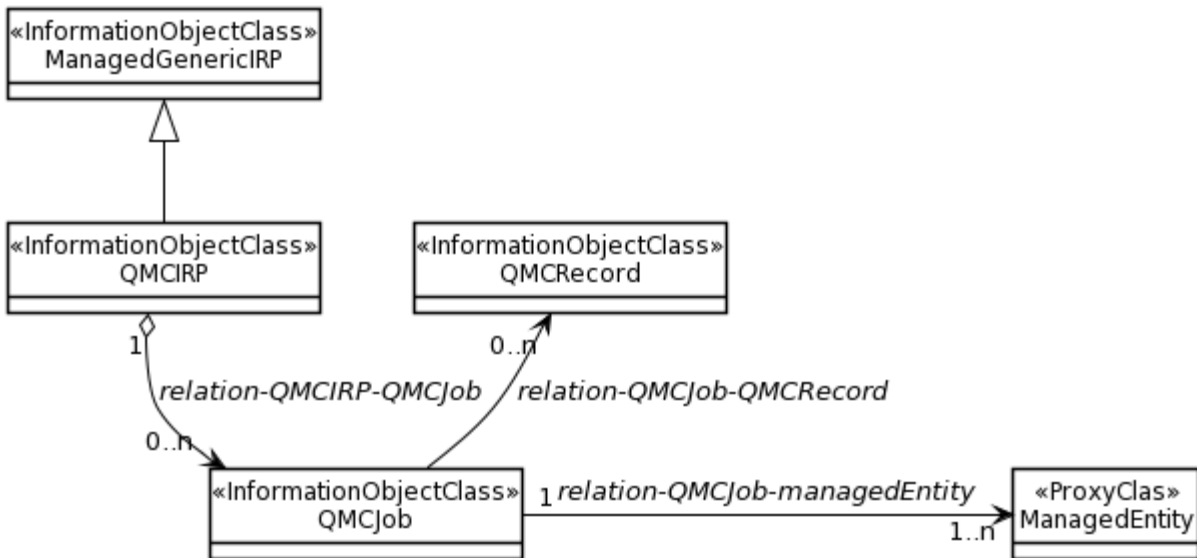


Figure 5.2.1.1

### 5.2.2 Inheritance

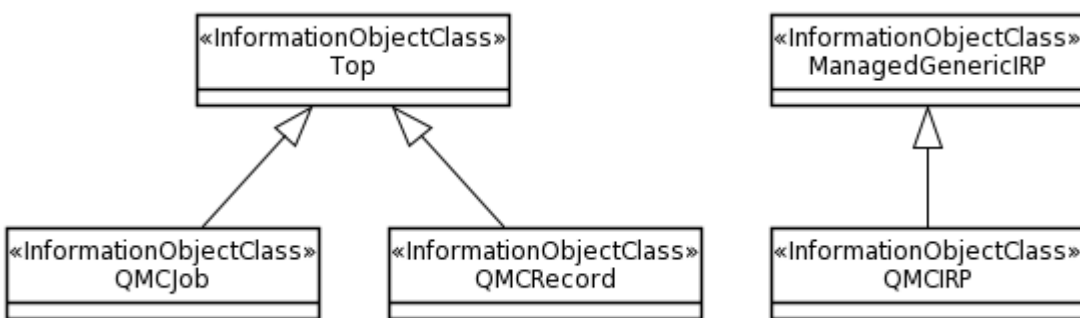


Figure 5.2.2.1

## 5.3 Class definitions

### 5.3.1 QMCJob

#### 5.3.1.1 Definition

It represents a task that controls the QMC and collects data from the applications in the UE (i.e. collects the QMCReportContainer of multiple ManagedEntity instances). The QoEReference is a unique ID, which identifies the network request session that has been created by the QMCJob and activated to one or multiple ManagedEntity instance(s).

When a QMCJob is created, none of attributes be modified via the Itf-N:

- If for any reason the QMCIRP determines that a QMC session has been activated in its ManagedEntity(ies) the QMCIRP shall emit the "noitfyQMCSessionLocalActivation" notification to the subscribed IRPManagers to inform the active QMC Sessions. The IRPManagers can decide whether they deactivate the

QMC session or keep the QMC session active. (E.g. if the `QoEReference` is colliding with an existing `QMCJob`'s `QoEReference`, the `IRPManager` may decide to immediately deactivate the QMC session in that `ManagedEntity`.)

The `QMCJob` shall use its information to activate and configure QMC session(s) in the requested `ManagedEntity` instance(s). When the `QMCIRP` determines that there are available `QMCReport` files, it shall emit a notification to all subscribed `IRPManagers` informing the availability of the files. The method and the notification of the available files is described in the File Transfer IRP (TS 32.342 [7]).

- If a `QMCJob` receives an indication from one of its `ManagedEntity` that starting a network request session is failed for any reason, the "`notifyNetworkRequestSessionFailure`" notification may be emitted to inform all subscribed `IRPManagers` that there was a network request session that was not started in the `ManagedEntity`.

Referenced TS	Requirement label	Comment
TS 28.404 [10]	REQ-EUSPC-CON-1	
TS 28.404 [10]	REQ-EUSPC-CON-4	
TS 28.404 [10]	REQ-EUSPC-CON-5	
TS 28.307 [11]	REQ-EUSPC-FUN-1	
TS 28.307 [11]	REQ-EUSPC-FUN-2	

### 5.3.1.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
<code>serviceType</code>	M	T	T	T	F
<code>areaScope</code>	M	T	T	T	F
<code>qoECollectionEntityAddress</code>	M	T	T	T	F
<code>pLMNTarget</code>	M	T	T	T	F
<code>qMCTarget</code>	M	T	T	T	F
<code>qoEReference</code>	M	T	T	T	F
<code>qMCConfigurationFile</code>	M	T	T	T	F

### 5.3.1.3 Attribute constraints

None.

### 5.3.1.4 Notifications

The common notifications defined in clause 5.5 are valid for this IOC, without exceptions or additions.

### 5.3.1.5 State diagram

None.

## 5.3.2 QMCRecord

### 5.3.2.1 Definition

`TQMCRecord` is the representation of the files containing the information from the network request session.

### 5.3.2.2 Attributes

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
<code>fileName</code>	+	M	M	-

### 5.3.3 QMCIRP

#### 5.3.3.1 Definition

QMCIRP is the representation of the QMC management capabilities specified by the present document. This IOC inherits from ManagedGenericIRP IOC specified in TS 32.312 [12].

### 5.3.4 ManagedEntity

#### 5.3.4.1 Definition

For area based QMC the ManagedEntity represents the role that can be played by an instance of the following IOCs:

- UtranCell
- E-UtranCell

## 5.4 Information relationship definitions

### 5.4.1 relation-qMCIRP-qMCJob (M)

#### 5.4.1.1 Definition

This represents the relationship between QMCIRP and the QMCJob.

#### 5.4.1.2 Roles

Name	Definition
theQMCIRP	It represents the QMCIRP
theQMCJobList	It represents the QMCJobList

### 5.4.2 relation-qMCJob-managedEntity (M)

#### 5.4.2.1 Definition

This represents the relationship between QMCJob and the ManagedEntity.

#### 5.4.2.2 Roles

Name	Definition
theManagedEntity	The ManagedEntity, when playing this role, represents the actual network resource instance, where a network request session is activated.
theQMCJob	It represents the QMCJob

### 5.4.3 relation-qMCJob-qMCRecord (M)

#### 5.4.3.1 Definition

This represents the relationship between QMCJob and the QMCRecord.

### 5.4.3.2 Roles

Name	Definition
theQMCJob	It represents the QMCJob
theQMRecord	It represents the QMRecord.

## 5.5 Attribute definitions

### 5.5.1 Attribute properties

Attribute Name	Documentation and Allowed Values	Properties
serviceType	<p>It identifies an individual UE for a specified end user service/end user service type.</p> <p>allowedValues: DASH (0), MTSI (1)</p>	<p>type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>
areaScope	<p>The area scope parameter defines the area in terms of cells or Tracking Area/Routing Area/Location Area where the QMC shall take place.</p> <p>allowedValues: The area scope parameter in UMTS is either:</p> <ul style="list-style-type: none"> <li>- List of cells, identified by CGI. Maximum 32 CGI can be defined.</li> <li>- List of Routing Area, identified by RAI. Maximum of 8 RAIs can be defined.</li> <li>- List of Location Area, identified by LAI. Maximum of 8 LAIs can be defined.</li> </ul> <p>The area scope parameter in LTE is either:</p> <ul style="list-style-type: none"> <li>- list of cells, identified by E-UTRAN-CGI. Maximum 32 CGI can be defined.</li> <li>- List of Tracking Area, identified by TAC. Maximum of 8 TAC can be defined.</li> </ul>	<p>type: String multiplicity: 1..* isOrdered: N/A isUnique: True defaultValue: None isNullable: False</p>
qoECollectionEntityAddress	<p>It indicates the IP address to which the QMC records shall be transferred. Ipv4 or Ipv6 address(es) may be used.</p> <p>allowedValues: N/A</p>	<p>type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>
pLMNTarget	<p>This parameter defines the PLMN for which sessions shall be selected in the network request session in case of area based QMC when several PLMNs are supported in the RAN (this means that shared cells and not shared cells are allowed for the specified PLMN. Furthermore, several PLMNs can be used for not shared RAN cases as well as for shared RAN cases.). Only the sessions may be selected where the PLMN that the UE reports as selected PLMN is the same as the PLMN Target.</p> <p>Note that the PLMN Target might differ from the PLMN specified in the Network Request Session Id, as that specifies the PLMN that is containing the management system requesting the network request session from the NE.</p>	<p>type: PLMNid multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>



Attribute Name	Documentation and Allowed Values	Properties
qMCTarget	<p>The QMC target parameter specifies if the QMC is area based or individual UE based.</p> <p>- Area based QMC (0)</p> <p>NOTE: Individual UE based QMC is not supported in this release.</p> <p>allowedValues: ...</p>	<p>type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>
qoEReference	<p>The QoE reference parameter specify the network request session. The QoE reference shall be globally unique therefore it is composed as follows:</p> <p>MCC+MNC+QMC ID, where the MCC and MNC are coming with the QMC activation request from the management system to identify one PLMN containing the management system, and QMC ID is a 3 byte Octet String.</p> <p>The QMC ID is generated by the management system or the operator.</p> <p>It is used to identify the QoE measurement collection job in the traffic nodes and in the measurement collection centre.</p>	<p>type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>
qMCConfigurationFile	<p>The QMC configuration file is a container that is specified in TS 26.247 and TS 26.114</p> <p>allowedValues: N/A</p>	<p>type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False</p>

---

## 6 Interface Definition

### 6.1 Class diagram representing interfaces

Each interface is defined in one or more UML compliant class diagrams (see also TS 32.156 [13]).

### 6.2 Generic rules

Rule 1: each operation with at least one input parameter supports a pre-condition `valid_input_parameter` which indicates that all input parameters shall be valid with regards to their information type. Additionally, each such operation supports an exception operation `failed_invalid_input_parameter` which is raised when pre-condition `valid_input_parameter` is false. The exception has the same entry and exit state.

Rule 2: Each operation with at least one optional input parameter supports a set of pre-conditions `supported_optional_input_parameter_yyy` where "yyy" is the name of the optional input parameter and the pre-condition indicates that the operation supports the named optional input parameter. Additionally, each such operation supports an exception operation `failed_unsupported_optional_input_parameter_yyy` which is raised when (a) the pre-condition `supported_optional_input_parameter_yyy` is false and (b) the named optional input parameter is carrying information. The exception has the same entry and exit state.

Rule 3: each operation shall support a generic exception `operation_failed_internal_problem` which is raised when an internal problem occurs and that the operation cannot be completed. The exception has the same entry and exit state.

NOTE: These rules are mapped at the solution set level. Pre-conditions and exceptions, generated by these rules, need not appear explicitly in the present document.

## 6.3 QoEIRPManagement Interface (M)

### 6.3.1 Operation `activateAreaQMCJob` (M)

#### 6.3.1.1 Definition

This operation support IRPManager 's request to create an AreaQMCJob through Itf-N.

Once the AreaQMCJob has been created, the attributes of the QMCJob will not be modified during the lifetime of the QMCJob.

One QMCJob can manage network request sessions in one or more ManagedEntity.

Referenced TS	Requirement label	Comment
TS 28.307 [3]	REQ-EUSPC-FUN-1	

#### 6.3.1.2 Input parameters

Parameter Name	Qualifier	Information type	Comment
<code>iOCInstance</code>	M	<code>ManagedEntity.objectInstance</code>	It specifies the DN of ManagedEntity instance where QMC session is to be activated.
<code>qoEReference</code>	M	<code>QMCJob.qoEReference</code>	It identifies the QMC Session.
<code>qMCTarget</code>	M	<code>QMCJob.qMCTarget</code>	It specifies if the QMC is areabased or individual UE based. In the present release only area based is supported.
<code>qoECollectionEntityAddress</code>	M	<code>QMCJob.qoECollectionEntityAddress</code>	It specifies the address of the QoE Collection Entity that is associated to the QMCJob. See TS 32.422 [9].
<code>serviceType</code>	M	<code>QMCJob.serviceType</code>	It specifies which service is to record information.
<code>areaScope</code>	M	<code>QMCJob.areaScope</code>	It specifies the area (Cells/TA/RA/LA) where the QoE measurements shall be collected.
<code>pLMNTarget</code>	CM	<code>QMCJob.pLMNTarget</code>	It specifies which PLMN that the subscriber of the session to be recorded uses as selected PLMN.
<code>qMCConfigurationFile</code>	M	<code>QMCJob.qMCConfiguration.File</code>	It specifies the configuration of the QoE measurement to be recorded. See TS 26.247 [4] for DASH and TS 26.114 [9] for MTSI.

### 6.3.1.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
status	M	ENUM (Success, Failure, PartialSuccess)	
unsupportedList	M	List of <ManagedEntity, qMCTarget, areaScope, serviceType, pLMNTarget)	It specifies what attributes are not supported when a QMC session is activated. The list can contain one or all of the elements and relevant only for error cases.

### 6.3.1.4 Pre-condition

validQoEReference

Assertion Name	Definition
validQoEReference	The qoEReference input parameter is valid, which means that the QMCIRP is aware of such QMCJob, which has this qoEReference value and is aware of the ManagedEntity holding such network request session.

### 6.3.1.5 Post-condition

networkRequestSessionisactivated

Assertion Name	Definition
networkRequestSessionisactivated	The network request session identified by the qoEReference is activated in the requested ManagedEntity instance and the QMCJob is started.

### 6.3.1.6 Exceptions

#### 6.3.1.6.1 notuniqueQoEReference

Exception Name	Definition
notuniqueQoEReference	<b>Condition:</b> (validqoEReference) is false. <b>Returned Information:</b> output parameter status is set to "Failure". <b>Exit state:</b> Entry State.

## 6.3.2 Operation deactivateQMCJob (M)

### 6.3.2.1 Definition

This operation supports IPRManager 's request to stop a QMCJob through Itf-N. When this operation is received in the requested ManagedEntity instances the network request session shall be deactivated.

Referenced TS	Requirement label	Comment
TS 28.307 [3]	REQ-EUSPC-FUN-3	

### 6.3.2.2 Input parameters

Parameter Name	Qualifier	Information type	Comment
iOInstance	M	ManagedEntity.objectInstance	It specifies the DN of ManagedEntity instance where QMC session is to be deactivated.
qoEReference	M	QMCJob.qoEReference	It identifies the QMC Session.
qMCTarget	M	QMCJob.qMCTarget	It specifies if the QMC is area based or individual UE based. In the present release only area based is supported.

### 6.3.2.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
status	M	ENUM (Success, Failure, PartialSuccess)	The operation may fail because of a specified or an unspecified reason.
unsupportedList	M	List of <ManagedEntity, qoEReference, qMCTarget)	It specifies what attributes are not supported when a QMC session is activated. The list can contain one or all of the elements and relevant only for error cases.

### 6.3.2.4 Pre-condition

validQoEReference

Assertion Name	Definition
validQoEReference	The qoEReference input parameter is valid, which means that the QMCIRP is aware of such QMCJob, which has this qoEReference value and is aware of the ManagedEntity holding such network request session.

### 6.3.2.5 Post-condition

networkRequestSessionisdeactivated

Assertion Name	Definition
networkRequestSessionisdeactivate	The network request session identified by the qoEReference is deactivated in the requested ManagedEntity instance and the QMCJob is stopped.

### 6.3.2.6 Exceptions

Exception Name	Definition
notuniqueQoEReference	<b>Condition:</b> (validQoEReference) is false. <b>Returned Information:</b> output parameter status is set to "Failure". <b>Exit state:</b> Entry State.

## 6.3.3 Operation listQMCJob (M)

### 6.3.3.1 Definition

This operation support IPRManager 's request to list the parameters of a specific QMCJob through Itf-N.

### 6.3.3.2 Input parameters

Parameter Name	Qualifier	Information type	Comment
qoEReference	M	QMCJob.qoEReference	It specifies the network request session that is requested for interrogation.

### 6.3.3.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
iOCInstance	M	ManagedElement.objectInstance	It specifies the DN of ManagedElement instance where a network request session is requested to be listed.
Status	M	ENUM (Success, Failure)	The operation may fail because of a specified or an unspecified reason.
qoEReference	M	QMCJob.qoEReference	It identifies the network request session.
qMCTarget	M	QMCJob.qMCTarget	It specifies if the QMC is area based or individual UE based. In the present release only area based is supported.
qoECollectionEntityAddress	M	QMCJob.qoECollectionEntityAddress	It specifies the address to the QoE Collection Entity that is associated to the QMCJob. See TS 32.422 [9].
serviceType	M	QMCJob.serviceType	It specifies which service is to record information.
areaScope	M	QMCJob.areaScope	It specifies the area (Cells/TA/RA/LA) in which the QMC is to be performed.
pLMNTarget	CM	QMCJob.pLMNTarget	It specifies which PLMN that the subscriber of the session to be recorded uses as selected PLMN.
qMCConfigurationFile	M	QMCJob.qMCConfigurationFile	It specifies the configuration of the QoE measurement to be recorded. See TS 26.247 [4] for DASH and TS 26.114 [9] for MTSI.

### 6.3.3.4 Pre-condition

validQoEReference

Assertion Name	Definition
validQoEReference	The qoEReference input parameter is valid, which means that the QMCIRP is aware of such QMCJob, which has this qoEReference value and is aware of the ManagedEntity holding such network request session.

### 6.3.3.5 Post-condition

qoEReferenceFound

Assertion Name	Definition
qoEReferenceFound	The QMCIRP has found the requested QMCJob with the qoEReference and can read the configured parameters.

### 6.3.3.6 Exceptions

Exception Name	Definition
notuniqueQoEReference	<b>Condition:</b> (validQoEReference) is false. <b>Returned Information:</b> output parameter status is set to "Failure". <b>Exit state:</b> Entry State.

## 6.3.4 Operation listActivatedQMCJobs (M)

### 6.3.4.1 Definition

This operation support IRPManager 's request to list all the activated QMCJobs through Itf-N.

### 6.3.4.2 Input parameters

No input parameters for this operation.

### 6.3.4.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
qoEReferenceList	M	List of < QMCJob.qoeReference.objectinstance >	The qoEReferenceList provides the identification of each activated network request session. If no qoEReference can be found, then this list is empty and status is "Success"
status	M	ENUM (Success, Failure)	The operation may fail because of a specified or an unspecified reason.

## 6.3.5 Notification notifyNetworkRequestSessionFailure (O)

### 6.3.5.1 Definition

The QMCIRP notifies all subscribed IRPManagers and the QoE Collection Entity if a network request session in a ManagedEntity has not been started due to any problem.

### 6.3.5.2 Input parameters

Parameter Name	Qualifiers	Matching Information	Comment
objectClass	M,Y	QMCIRP.objectClass	Notification header
objectInstance	M,Y	QMCIRP.objectInstance	Notification header
eventTime	M,Y	--	Notification header
notificationType	M,Y	"notifyNetworkRequestSessionFailure"	Notification header
systemDN	M,Y	--	Notification header
notificationID	O,Y	--	Notification header
qoEReference	M,Y	QMCJob.qoEReference	
reason	O,N	--	

### 6.3.5.3 Triggering event

#### 6.3.5.3.1 From state

problemInManagedEntity

Assertion Name	Definition
problemInManagedEntity	Because of a problem the ManagedEntity cannot start a network request session.

#### 6.3.5.3.2 To state

NetworkRequestSessionFailureReported

Assertion Name	Definition
NetworkRequestSessionFailureReported	The "notifyNetworkRequestSessionFailure" notification is emitted to the subscribed IRPManager(s).



## Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-10	SA5#115	S5-175400				R15 pCR 28.308-000 Introduction and Scope for QoE IRP Information Service	0.1.0
2017-10	SA5#115	S5-175160				Rel-15 pCR 28.308 References and System Overview for QoE IRP Information Service	0.1.0
2017-10	SA5#115	S5-175402				pCR 28.308 Information Object Classes and Interface Definition for QoE IRP Information Service	0.1.0
2019-08	SA5#126	S5-195504				Scope	0.2.0
2019-08	SA5#126	S5-195506				Add QMCJob	0.2.0
2020-03	SA5#129e	S5-2013889				Rapporteur's clean up (using new TS template)	0.3.0
2020-03	SA5#129e	S5-201396				Remove SBA	0.3.0
2020-04	SA5#130e	S5-202302				pCR R16 28308-030 QMC operations	0.4.0
2020-06	SA5#131e	S5-203328				Addition of QMC operations and notifications	0.5.0
2020-06	SA5#131e					EditHelp review (editorial and introduction of explanation of modal verbs).	0.5.1
2020-06	SA#88-e	SP-200475				Presented for information and approval	1.0.0
2020-07	SA#88e					Upgrade to change control version	16.0.0
2022-03	-	-	-	-	-	Update to Rel-17 version (MCC)	<b>17.0.0</b>

---

# History

<b>Document history</b>		
V17.0.0	April 2022	Publication