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| 3GPP TS 28.308 V16.0.0 (2020-07) | | |  |
| Technical Specification | | |  |
| 3rd Generation Partnership Project;  Technical Specification Group Services and System Aspects;  Telecommunication management;  Quality of Experience (QoE) measurement collection  Integration Reference Point (IRP);  Information Service (IS)  (Release 16) | | |  |
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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

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 date 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

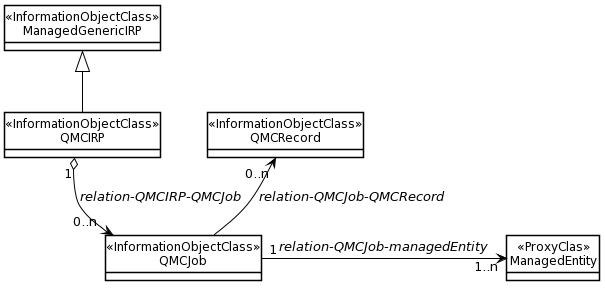


Figure 5.2.1.1

### 5.2.2 Inheritance

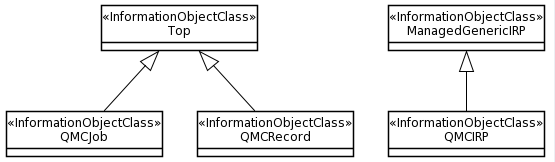


Figure 5.2.2.1

## 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 |
| serviceType | M | T | T | T | F |
| areaScope | M | T | T | T | F |
| qoECollectionEntityAddress | M | T | T | T | F |
| pLMNTarget | M | T | T | T | F |
| qMCTarget | M | T | T | T | F |
| qoEReference | M | T | T | T | F |
| qMCConfigurationFile | 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 |
| fileName | + | 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 |
| theQMCRecord | It represents the QMCRecord. |

## 5.5 Attribute definitions

### 5.5.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| serviceType | It identifies an individual UE for a specified end user service/end user service type.  allowedValues: DASH (0), MTSI (1) | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| areaScope | The area scope parameter defines the area in terms of cells or Tracking Area/Routing Area/Location Area where the QMC shall take place.    allowedValues:  The area scope parameter in UMTS is either:  - List of cells, identified by CGI. Maximum 32 CGI can be defined.  - List of Routing Area, identified by RAI. Maximum of 8 RAIs can be defined.  - List of Location Area, identified by LAI. Maximum of 8 LAIs can be defined.  The area scope parameter in LTE is either:  - list of cells, identified by E-UTRAN-CGI. Maximum 32 CGI can be defined.  - List of Tracking Area, identified by TAC. Maximum of 8 TAC can be defined. | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| qoECollectionEntityAddress | It indicates the IP address to which the QMC records shall be transferred. Ipv4 or Ipv6 address(es) may be used.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| pLMNTarget | 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.  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. | type: PLMNId  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qMCTarget | The QMC target parameter specifies it the QMC is area based or individual UE based.  - Area based QMC (0)  NOTE: Individual UE based QMC is not supported in this release.  allowedValues: … | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qoEReference | The QoE reference parameter specify the network request session. The QoE reference shall be globally unique therefore it is composed as follows:  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.  The QMC ID is generated by the management system or the operator.  It is used to identify the QoE measurement collection job in the traffic nodes and in the measurement collection centre. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qMCConfigurationFile | The QMC configuration file is a container that is specified in TS 26.247 and TS 26.114  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |

# 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 |
| --- | --- | --- | --- |
| iOCInstance | M | ManagedEntity.objectInstance | It specifies the DN of ManagedEntity instance where QMC session is to be activated. |
| qoEReference | M | QMCJob.qoeReference | It identifies the QMC Session. |
| qMCTarget | M | QMCJob.qMCTarget | It specifies if the QMC is areabased 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) where the QoE measurements shall be collected. |
| pLMNTarget | CM | QMCJob.pLMNTarget | It specifies which PLMN that the subscriber of the session to be recorded uses as selected PLMN. |
| qMCConfigurationFile | M | QMCJob.qMCConfiguration.File | 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 | **Condition:** (validqoEReference) is false.  **Returned Information:** output parameter status is set to "Failure".  **Exit state:** 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 |
| --- | --- | --- | --- |
| iOCInstance | 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 | **Condition:** (validQoECReference) is false.  **Returned Information:** output parameter status is set to "Failure".  **Exit state:** 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.qMCConfiguration.File | 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 | **Condition:** (validQoEReference) is false.  **Returned Information:** output parameter status is set to "Failure".  **Exit state:** 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 |