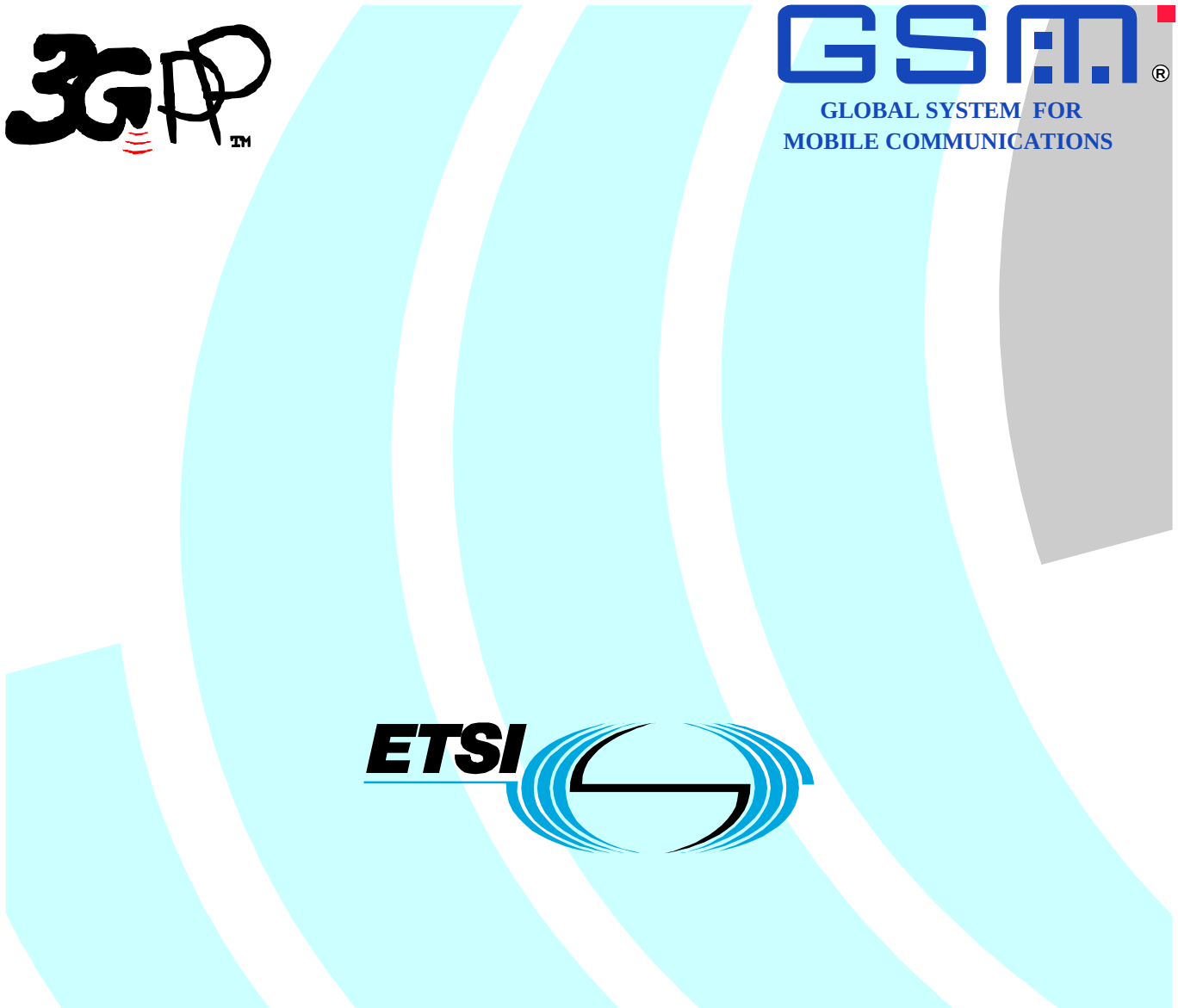
# ETSI TS 132 354 V6.0.0 (2004-12)

*Technical Specification*

**Digital cellular telecommunications system (Phase 2+);**
**Universal Mobile Telecommunications System (UMTS);**
**Telecommunication management;**
**Communication Surveillance (CS)**
**Integration Reference Point (IRP):**
**Common Management Information Protocol (CMIP)**
**Solution Set (SS)**
**(3GPP TS 32.354 version 6.0.0 Release 6)**



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# Foreword

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, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

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

# Contents

# 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.

# 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:

32.351: "Communication Surveillance Integration Reference Point (IRP); Requirements";

32.352: "Communication Surveillance Integration Reference Point (IRP): Information Service (IS)";

32.353: "Communication Surveillance Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)";

**32.354: "Communication Surveillance Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".**

A 3G telecommunication network is composed of a multitude of different Network Elements (NE). For a successful operation of the network the operator must be provided with mechanisms allowing him to manage the network. These management activities can be grouped into several areas: configuration management, fault management, performance management, accounting management and security management.

A management function assisting in different high level management areas such as fault management and performance management is the function to log notification. The purpose of notification logging is to keep the content of the notification stored and safe for later access.

The present document is part of a TS-family defining the Telecommunication Management (TM) of 3G systems. The TM principles are described in 3GPP TS 32.101 [1]. The TM architecture is described in 3GPP TS 32.102 [2]. The other specifications define the interface (Itf-N) between the managing system (manager), which is in general the Network Manager (NM) and the managed system (agent), which is either an Element Manager (EM) or the managed NE itself. The Itf-N is composed of a number of Integration Reference Points (IRPs) defining the information in the agent that is visible for the manager, the operations that the manager may perform on this information and the notifications that are sent from the agent to the manager. One of these IRPs is the Communication Surveillance IRP.

Each IRP is specified by the requirements part, the Information Service part, the CORBA SS and the CMIP SS.

# 1 Scope

The present document specifies the CMIP SS for the Communication Surveillance IRP IS defined in 3GPP TS 32.352 [8]. In detail:

- Clause 4 provides the basic architectural concept of the CMIP SS and the mapping between the IOCs, operations and notifications defined in 3GPP TS 32.352 [8] to the corresponding CMIP SS equivalents.
- Clause 5 contains the GDMO definitions for the Communication Surveillance IRP over the CMIP interfaces.
- Clause 6 contains the ASN.1 definitions supporting the GDMO definitions provided in clause 5.

This Solution Set specification is related to 3GPP TS 32.352 (V6.0.X).

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service".

[4] 3GPP TS 32.314: "Telecommunication management; Generic Integration Reference Point (IRP) management; Common Management Information Protocol (CMIP) Solution Set (SS)".

[5] 3GPP TS 32.304: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".

[6] 3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS)".

[7] 3GPP TS 32.351: "Telecommunication management; Communication Surveillance Integration Reference Point (IRP): Requirements".

[8] 3GPP TS 32.352: "Telecommunication management; Communication Surveillance Integration Reference Point (IRP): Information Service (IS)".

[9] ITU-T Recommendation X.735: "Information Technology - Open Systems Interconnection – Log Control Function".

[10] ITU-T Recommendation X.710: "Information Technology – Open Systems Interconnection – Common Management Information Service'

[11] ITU-T Recommendation X.721: "Information Technology - Open Systems Interconnection - Structure of Management Information: Definition of Management Information'

[12] ITU-T Recommendation X.734: "Information Technology - Open Systems Interconnection - Systems Management: Event Report Management Function".

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 32.101 [1], 3GPP TS 32.102 [2] and 3GPP TS 32.351 [7] apply.

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|---|---|
| ASN.1 | Abstract Syntax Notation One |
| CMISE | Common Management Information Service |
| CMIP | Common Management Information Protocol |
| CORBA | Common Object Request Broker Architecture |
| CS | Communication Surveillance |
| EM | Element Manager |
| GDMO | Guidelines for the Definition of Managed Objects |
| IOC | Information Object Class |
| IRP | Integration Reference Point |
| IS | Information Service |
| MOC | Managed Object Class |
| NE | Network Element |
| NM | Network Manager |
| SS | Solution Set |
| TM | Telecommunication Management |

# 4 Basic aspects

## 4.1 General

The present document provides all the GDMO definitions necessary to implement the Communication Surveillance IRP Information Service (3GPP TS 32.352 [8]) for the CMIP interface.

## 4.2 Mapping

The semantics of the Communication Surveillance IRP are defined in 3GPP TS 32.352 [8]. The definitions of the management information defined there are independent of any implementation technology and protocol. This clause maps these protocol independent definitions onto their equivalents of the CMIP SS of the Communication Surveillance IRP.

### 4.2.1 Mapping of Information Object Classes (IOCs)

The following table maps the IOCs defined in 3GPP TS 32.352 [8] to the corresponding Managed Object Classes (MOCs) defined in this CMIP SS. The MOCs are qualified either as Mandatory (M) or Optional (O).

**Mapping of IOCs**

| IS IOC | MOC of the CMIP SS | Qualifier |
|---|---|---|
| CSIRP | csIRP | M |

## 4.2.2 Mapping of Attributes

This clause depicts the mapping of the attributes defined in 3GPP TS 32.352 [8] and 3GPP TS 32.312 [6] on the corresponding attributes of the CMIP Solution Set.

### 4.2.2.1 Attribute Mapping of the IOC *CSIRP*

**Attribute mapping of the IOC *CSIRP***

| IS Attribute | CMIP SS Attribute | Support Qualifier | Read Qualifier | Write Qualifier |
|---|---|---|---|---|
| iRPId | irpId | M | M | - |
| heartBeatPeriod | heartBeatPeriod | M | M | - |
| countDownTimer | - (TS 32.352: invisible attribute) | M | - | - |

## 4.2.3 Mapping of operations

The following two tables map the operations defined in 3GPP TS 32.352 [8] and 3GPP TS 32.312 [6] to corresponding GDMO actions and CMISE services. The operations are qualified either as Mandatory (M) or Optional (O).

The CMISE services are defined in ITU-T Recommendation X.710 [10].

**Mapping of operations of the Communication Surveillance IRP: IS**

| Interface | Qualifier | IS Operation | GDMO Action or CMISE of CMIP SS | Qualifier |
|---|---|---|---|---|
| CSIRPOperations_1 | M | getHeartbeatPeriod | M-GET to MOC csIRP | M |
| | | triggerHeartbeat | triggerHeartbeat | M |
| CSIRPOperations_2 | O | setHeartbeatPeriod | M-SET to MOC csIRP | M |

**Mapping of operations inherited from the Generic IRP Management: IS**

| Interface | Operation | GDMO Action or CMISE of CMIP SS | Qualifier |
|---|---|---|---|
| GenericIRPVersionsOperations | getIRPVersion | getIRPVersion | M |
| GenericIRPProfileOperations | getOperationProfile | getOperationProfile | O |
| | getNotificationProfile | getNotificationProfile | O |

## 4.2.4 Mapping of Operation Parameters

The tables in the following subclauses list the parameters of each operation defined in 3GPP TS 32.322 [8] and their equivalents in the CMIP SS.

#### 4.2.4.1 Parameter Mapping of the Operation *getHeartbeatPeriod*

The operation *getHeartbeatPeriod* is mapped to a CMISE M-GET service of an the csIRP MOC.

**Parameter mapping of the operation "getHeartbeatPeriod"**

| IS Parameter Name | IN/OUT | Qualifier | CMIP SS Equivalent | Qualifier |
|---|---|---|---|---|
| - | IN | M | M-GET request parameters 'base object class' and 'base object instance', "scope" and "filter" shall identify the csIRP instance | M |
| heartBeatPeriod | OUT | M | M-GET request parameter 'Attribute list': attribute identifier and value for the 'heartBeatPeriod' attribute | M |
| status | OUT | M | status = OperationSucceeded<br>The semantics of this status are conveyed by the emission of an M-GET success confirmation.<br><br>status = OperationFailed<br>The semantics of this status are conveyed by the emission of an M-GET failure confirmation. | M |

#### 4.2.4.2 Parameter Mapping of the Operation *triggerHeartbeat*

The operation *triggerHeartbeat* is mapped to a CMISE M-ACTION of the csIRP MOC.

**Parameter mapping of the operation "*triggerHeartbeat"***

| IS Parameter Name | IN/OUT | Qualifier | CMIP SS Equivalent | Qualifier |
|---|---|---|---|---|
| - | IN | M | M-ACTION request parameters 'base object class' and 'base object instance', "scope" and "filter" shall identify the csIRP instance | |
| managerIdentifier | IN | M | M-ACTION parameter 'Action information': TriggerHeartBeatInfo): managerIdentifier | M |
| status | OUT | M | M-ACTION parameter 'Action reply: (TriggerHeartBeatReply): status | M |

#### 4.2.4.3 Parameter Mapping of the Operation *setHeartbeatPeriod*

The operation *setHeartbeatPeriod* is mapped to a CMISE M-SET service of an the csIRP MOC.

**Parameter mapping of the operation "setHeartbeatPeriod"**

| IS Parameter Name | IN/OUT | Qualifier | CMIP SS Equivalent | Qualifier |
|---|---|---|---|---|
| - | IN | M | M-SET request parameters 'base object class' and 'base object instance', "scope" and "filter" shall identify the csIRP instance | M |
| heartBeatPeriod | IN | M | M-SET request parameter Modification list' contains attribute identifier and value and modifyOperator for the attribute heartBeatPeriod | M |
| status | OUT | M | status = OperationSucceeded<br>The semantics of this status are conveyed by the emission of an M- SET success confirmation.<br><br>status = OperationFailed<br>The semantics of this status are conveyed by the emission of an M-SET failure confirmation. | M |

#### 4.2.4.4 Parameter mapping of the Operation getIRPVersion

See TS 32.314 [4].

#### 4.2.4.5 Parameter mapping of the Operation getOperationProfile

See TS 32.314 [4].

#### 4.2.4.6 Parameter mapping of the Operation getNotificationProfile

See TS 32.314 [4].

### 4.2.5 Mapping of Notifications

**Mapping of notifications of the Communication Surveillance IRP: IS**

| Interface | Qualifier | IS Notification | GDMO Action or CMISE of CMIP SS | Qualifier |
|---|---|---|---|---|
| CsIRPNotifications | M | notifyHeartbeat | notifyHeartbeat | M |

### 4.2.6 Mapping of Notification Parameters

The table in the following subclause shows the parameters of each notification defined in 3GPP TS 32.352 [8] and their equivalents in the CMIP Solution Set.

#### 4.2.6.1 Parameter Mapping of the Notification *notifyHeartbeat*

**Parameter mapping of the notification "notifyHeartbeat"**

| IS Parameter | CMIP SS Equivalent | Qualifier |
|---|---|---|
| objectClass | M-EVENT REPORT parameter 'Managed object class' | M |
| objectInstance | M-EVENT REPORT parameter 'Managed object instance' | M |
| eventTime | M-EVENT-REPORT parameter "Event time" | M |
| notificationId | M-EVENT-REPORT parameter "Event information" (NotifyHeartBeatInfo): notificationIdentifier | O |
| systemDN | This parameter is conditional and not used in the CMIP SS. | -- |
| notificationType | M-EVENT REPORT parameter 'Event type' | M |
| heartBeatPeriod | M-EVENT-REPORT parameter "Event information" (NotifyHeartBeatInfo): heartBeatPeriod | M |
| locator | Not applicable for CMIP SS | M |
| triggerFlag | M-EVENT-REPORT parameter "Event information" (NotifyHeartBeatInfo): triggerFlag | M |
| managerIdentifier | M-EVENT-REPORT parameter "Event information" (NotifyHeartBeatInfo): managerIdentifier | M |

NOTE: 3GPP TS 32.352 [8] allows to chose to send this notification - in case it has been triggered by operation triggerHeartBeat – to:

a) one notification to the invoking IRPManager; or

b) one notification to each of the subscribed IRPManagers,

depending on system performance considerations.

An appropriate EventForwardingDiscriminator has to be chosen in the framework of the CMIP SS.

# --5 GDMO Definitions

--Please do not remove the '—' in front of the headline numbering, as it is the CMIP code

--for a comment. This way the whole chapter can be put directly into a compiler.

## --5.1 Managed Object Classes

### --5.1.1 csIRP

csIRP **MANAGED OBJECT CLASS**

**DERIVED FROM**

"3GPP TS 32.314":managedGenericIRP;

**CHARACTERIZED BY**

csIRPBasicPackage;

**REGISTERED AS** {ts32-354ComSurvObjectClass 10600};

## --5.2 Packages

### --5.2.1 csIRPBasicPackage

csIRPBasicPackage **PACKAGE**

**BEHAVIOUR**

csIRPBasicPackageBehaviour;

**ATTRIBUTES**

heartBeatPeriod;

**NOTIFICATIONS**

notifyHeartbeat;

**ACTIONS**

triggerHeartbeat;

**REGISTERED AS** {ts32-354ComSurvPackage 10600};

csIRPBasicPackageBehaviour **BEHAVIOUR**

**DEFINED AS**

"This package provides all mandatory items of MOC csIRP.";

## --5.3 Parameters

--None.

## --5.4 Name Bindings

--None.

## --5.5 Attributes

### --5.5.1 heartBeatPeriod

heartBeatPeriod **ATTRIBUTE**

**WITH ATTRIBUTE SYNTAX**

TS32-354ComSurvTypeModule.HeartBeatPeriod;

**BEHAVIOUR**

heartBeatPeriodBehaviour;

**REGISTERED AS** {ts32-354ComSurvAttribute 10600};

heartBeatPeriodBehaviour **BEHAVIOUR**

**DEFINED AS**

"This attribute specifies the time between two emissions of heartbeat notifications. A value of zero implies there is no heartbeat emission. The unit is minute.";

## --5.6 Actions

### --5.6.1 triggerHeartbeat

triggerHeartbeat **ACTION**

**BEHAVIOUR**

triggerHeartbeatBehaviour;

**MODE**

CONFIRMED;

**WITH INFORMATION SYNTAX**

TS32-354ComSurvTypeModule.TriggerHeartbeatInfo;

**WITH REPLY SYNTAX**

TS32-354ComSurvTypeModule.TriggerHeartbeatReply;

**REGISTERED AS** {ts32-354comSurvAction 10600};

triggerHeartbeatBehaviour **BEHAVIOUR**

**DEFINED AS**

"The IRPManager invokes this operation to solicit a notifyHeartbeat notification. After the successful completion of the operation, the IRPAgent shall emit the notifyHeartbeat notification immediately. One notification shall be emitted as follows:

a) one notification to the invoking IRPManager; or

b) one notification to each of the subscribed IRPManagers.

If the operation fails the notification shall not be emitted.

One of the two options above shall be chosen depending on system performance considerations.

Before invoking this operation, the invoking IRPManger should make sure it has subscribed the notifyHeartbeat notification.

The behaviour of this functionality is defined within 32.322 – below provides an overview and CMIP specific semantics.

The M-ACTION request parameter 'Action information' contains the managerIdentifier of the invoking IRPManager.

The M-ACTION response parameter 'Action reply' is composed of the following data:

+ status

The parameter *status* contains the results of the Manager action.

Possible values:

noError (0),

error (the value indicates the reason of the error).

";

# --5.7 Notifications

## --5.7.1 notifyHeartbeat

notifyHeartbeat **NOTIFICATION**

**BEHAVIOUR**

notifyHeartbeatBehaviour;

**WITH INFORMATION SYNTAX**

TS32-354ComSurvTypeModule.NotifyHeartbeatInfo;

**REGISTERED AS** {ts32-354comSurvNotification 10600};

notifyHeartbeatBehaviour **BEHAVIOUR**

**DEFINED AS**

"This notification is used to notify the subscribed IRPManager instances that the resources supporting the communication path between the Notification IRPAgent and the notification receiving IRPManager are working.";

# 6 ASN.1 Definitions

```
TS32-354comSurvTypeModule {
  itu-t(0)
  identified-organization(4)
  etsi(0)
  mobileDomain(0)
  umts-Operation-Maintenance(3)
  ts32-354(354)
  informationModel(0)
  asn1Module(2)
  version10600(10600)
  }

DEFINITIONS IMPLICIT TAGS ::=
BEGIN
--EXPORTS everything

IMPORTS
NotificationIdentifier
  FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}; –-X.721



-- 3GPP TS 32.354 related Object Identifiers

baseNodeUMTS              OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4)
                            etsi(0) mobileDomain(0)
                            umts-Operation-Maintenance(3)}
ts32-354comSurvPrefix     OBJECT IDENTIFIER ::= {baseNodeUMTS
                          ts32-354          (354)}
ts32-354comSurvInfoModel  OBJECT IDENTIFIER ::= {ts32-354comSurvPrefix
                          informationModel   (  0)}
```

```
ts32-354comSurvObjectClass  OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            managedObjectClass (  3)}
ts32-354comSurvPackage      OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            package           (  4)}
ts32-354comSurvParameter    OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            parameter         (  5)}
ts32-354comSurvNameBinding  OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            nameBinding       (  6)}
ts32-354comSurvAttribute    OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            attribute         (  7)}
ts32-354comSurvAction       OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            action            (  9)}
ts32-354comSurvNotification OBJECT IDENTIFIER ::= {ts32-354comSurvInfoModel
                            notification      ( 10)}


-- Start of 3GPP SA5 own definitions

ErrorCauses ::= ENUMERATED
  {
  noError                 (0),    -- operation / notification successfully performed
  unspecifiedErrorReason (255)    -- operation failed, specific error unknown
  }

HeartBeatPeriod ::= INTEGER (0..60)

ManagerIdentifier ::= GraphicString

NotifyHeartbeatInfo ::= SEQUENCE
  {
  notificationIdentifier   NotificationIdentifier,
  heartBeatPeriod          HeartBeatPeriod,
  managerIdentifier        ManagerIdentifier,
  triggerFlag              TriggerFlag
  }
```

```
TriggerFlag ::= ENUMERATED {
  irpManager  (0),
  irpAgent    (1)
  }

TriggerHeartbeatInfo ::= SEQUENCE
  {
  managerIdentifier    ManagerIdentifier,
  status               ErrorCauses
  }

TriggerHeartbeatReply ::= ErrorCauses


END –- of module TS32-354ComSurvTypeModule
```

# Annex A (informative): List of assigned Object Identifiers

This annex provides a list with all object identifiers that have been assigned in TS 32.354. These object identifiers shall not be assigned to new objects (also not in new versions of this document).

| Basic Name | Name and OID of the current TS Version | Name and OIDs of previous TS Versions |
|---|---|---|
| **Managed Object Classes** | | |
| csIRP | Name: csIRP<br>OID: ts32-354comSurvObjectClass 10600 | -- |
| -- | | |
| **Packages** | | |
| csIRPBasicPackage | Name: csIRPBasicPackage<br>OID: ts32-354comSurvPackage 10600 | -- |
| -- | | |
| **Parameters** | | |
| -- | | |
| **Name Bindings** | | |
| -- | | |
| **Attributes** | | |
| heartBeatPeriod | Name: heartBeatPeriod<br>OID: ts32-354comSurvAttribute 10600 | |
| -- | | |
| **Actions** | | |
| triggerHeartbeat | Name: triggerHeartbeat<br>OID : ts32-354comSurvAction 10600 | |
| -- | | |
| **Notifications** | | |
| notifyHeartbeat | Name: notifyHeartbeat<br>OID : ts32-354comSurvNotification 10600 | |
| -- | | |
| **Type Module** | | |
| TS32-354comSurvTypeModule | Name: TS32-354comSurvTypeModule<br>OID:<br>{<br>itu-t(0)<br>identified-organization(4)<br>etsi(0)<br>mobileDomain(0)<br>umts-Operation-Maintenance(3)<br>ts32-354(354)<br>informationModel(0)<br>asn1Module(2)<br>Version10600(106000)<br>} | |
| -- | | |

# Annex B (informative): Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| Dec 2004 | S_26 | SP-040803 | -- | -- | Submitted to SA#26 for Approval | 1.0.0 | 6.0.0 |
| | | | | | | | |

# History

| Document history | | |
|---|---|---|
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