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Presentation of Technical Specification to TSG SA

Presentation to:	**TSG SA Meeting #26**
Document for presentation:	**TS 32.354, Version 1.0.0**
	Communication Surveillance IRP: CMIP Solution Set
Presented for:	**Approval**

Abstract of document:

This is a Technical Specification implementing in CMIP the requirements and information service defined in TS 32.351 and TS 32.352 for the Communication Surveillance IRP.

Work done against the WID contained in SP-020754 (Work Item ID: OAM-NIM).

Changes since last presentation to TSG SA :
New

Outstanding Issues:
None

Contentious Issues:
None

3GPP TS 32.354 V1.0.0 (2004-12)

Technical Specification

3rd Generation Partnership Project;
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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 The semantics of this status are conveyed by the emission of an M-GET success confirmation. status = OperationFailed 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 The semantics of this status are conveyed by the emission of an M- SET success confirmation. status = OperationFailed 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;
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
        heartBeatBehaviour;
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 OID: ts32-354comSurvObjectClass 10600	--
--		
Packages		
csIRPBasicPackage	Name: csIRPBasicPackage OID: ts32-354comSurvPackage 10600	--
--		
Parameters		
--		
Name Bindings		
--		
Attributes		
heartBeatPeriod	Name: heartBeatPeriod OID: ts32-354comSurvAttribute 10600	
--		
Actions		
triggerHeartbeat	Name: triggerHeartbeat OID : ts32-354comSurvAction 10600	
--		
Notifications		
notifyHeartbeat	Name: notifyHeartbeat OID : ts32-354comSurvNotification 10600	
--		
Type Module		

TS32-354comSurvTypeModule	Name: TS32-354comSurvTypeModule
	OID:
	
	{
	
	itu-t(0)
	
	identified-organization(4)
	
	etsi(0)
	
	mobileDomain(0)
	
	umts-Operation-Maintenance(3)
	
	ts32-354(354)
	
	informationModel(0)
	
	asn1Module(2)
	
	Version10600(106000)
	
	}	

--		

Annex B (informative): Change history

<table>
<tr><td colspan="8" align="center">**Change history**</td></tr>
<tr><td>**Date**</td><td>**TSG #**</td><td>**TSG Doc.**</td><td>**CR**</td><td>**Rev**</td><td>**Subject/Comment**</td><td>**Old**</td><td>**New**</td></tr>
<tr><td>Dec 2004</td><td>S_26</td><td>SP-040803</td><td>--</td><td>--</td><td>Submitted to SA#26 for Approval</td><td>1.0.0</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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