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Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication management;
Communication Surveillance (CS)
Integration Reference Point (IRP);
SOAP Solution Set (SS)
(Release 9)**



Keywords

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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.

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; Communication Surveillance management Integration Reference Point (IRP), as identified below:

- 32.351: "Communication Surveillance (CS) Integration Reference Point (IRP); Requirements"
- 32.352: "Communication Surveillance (CS) Integration Reference Point (IRP): Information Service (IS)"
- 32.353: "Communication Surveillance (CS) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)"
- 32.355: "Communication Surveillance (CS) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions"
- 32.357: "Communication Surveillance (CS) Integration Reference Point (IRP): SOAP Solution Set (SS)"**

The present document is part of a set of technical specifications defining the telecommunication management (TM) of 3G systems. The TM principles are described in 3GPP TS 32.101 [2]. The TM architecture is described in 3GPP TS 32.102 [3]. 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. CS (Communication Surveillance) IRP is one of these IRPs with special function.

To ensure the availability and reliability of the management, an automatic surveillance of the communication between NM and the managed system are required. CSIRP is defined as a capability to achieve this goal.

1 Scope

The present document specifies the SOAP SS for the IRP whose semantics is specified in Communication Surveillance (CS) IRP IS (3GPP TS 32.352 [5]).

This Solution Set specification is related to 3GPP TS 32.352 V9.0.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 TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".
- [3] 3GPP TS 32.102: "Telecommunication management; Architecture".
- [4] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".
- [5] 3GPP TS 32.352: "Telecommunication management; Communication Surveillance (CS) Integration Reference Point (IRP): Information Service (IS)".
- [6] 3GPP TS 32.355: "Telecommunication management; Communication Surveillance (CS) Integration Reference Point (IRP); eXtensible Markup Language (XML) definitions".
- [7] W3C SOAP 1.1 specification (<http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>)
- [8] W3C XPath 1.0 specification (<http://www.w3.org/TR/1999/REC-xpath-19991116>)
- [9] W3C WSDL 1.1 specification (<http://www.w3.org/TR/2001/NOTE-wsdl-20010315>)
- [10] W3C SOAP 1.2 specification (<http://www.w3.org/TR/soap12-part1/>)
- [11]

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], 3GPP TS 32.101 [2], 3GPP TS 32.102 [3], 3GPP TS 32.150 [4] apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], in 3GPP TS 32.101 [2], 3GPP TS 32.102 [3], 3GPP TS 32.150 [4], and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

CS	Communication Surveillance
CSIRP	Communication Surveillance IRP
IRP	Integration Reference Point
IS	Information Service
NE	Network Element
NM	Network Management

4 Architectural features

4.1 General

The overall architectural feature of the CSIRP is specified in 3GPP TS 32.352 [5]. This clause specifies features that are specific to the SOAP solution set.

The SOAP 1.1 specification [7] and WSDL 1.1 specification [9] are supported.

The SOAP 1.2 specification [10] is supported optionally.

This specification uses "document" style in WSDL file.

This specification uses "literal" encoding style in WSDL file.

The filter language used in the SS is the XPath Language (see W3C XPath 1.0 specification [8]). IRPAgents may throw a FilterComplexityLimit fault when a given filter is too complex.

Relevant definitions are imported from the CSIRP XML definitions of 3GPP TS 32.355 [6].

This specification uses a number of namespace prefixes throughout that are listed in Table 4.1. 1.

Table 4.1.1: Prefixes and Namespaces used in this specification

PREFIX	NAMESPACE
(no prefix)	http://schemas.xmlsoap.org/wsdl/
soap	http://schemas.xmlsoap.org/wsdl/soap/
csIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPSystem
csIRPData	http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPData
genericIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-810/GenericIRPSystem
ntfIRPNtfSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307-810/notification/NotificationIRPNtfSystem

The WSDL structure is depicted in Figure 4.1.1 below, depicting port type, binding and service. The port type contains port type operations, which again contains input, output and fault messages. The binding contains binding operations, which have the same name as the port type operations. The binding connects to a port inside the service.

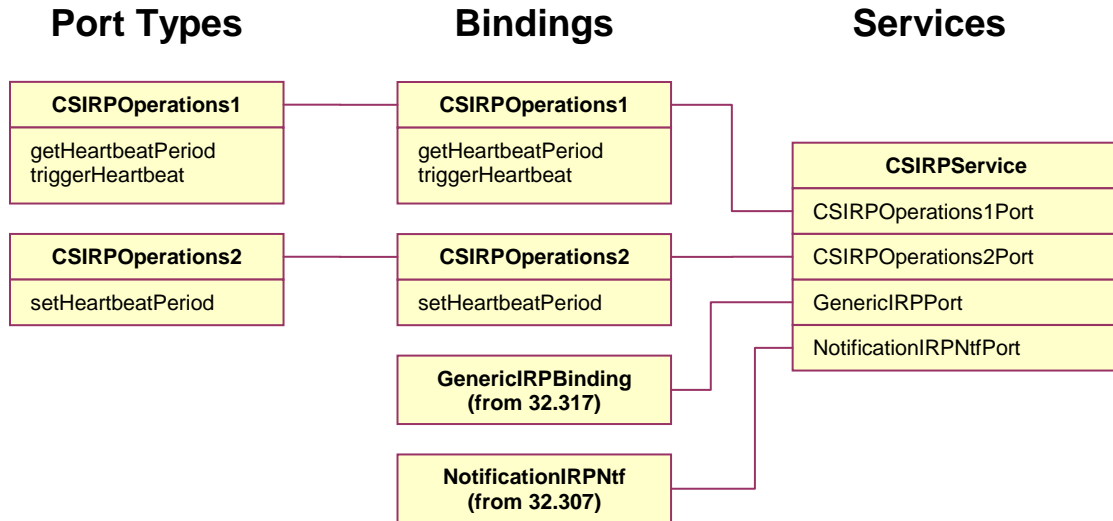


Figure 4.1.1: CSIRP SOAP Solution Set WSDL structure

5 Mapping

5.1 Operation and notification mapping

The CS IRP IS (3GPP TS 32.352 [5]) defines semantics of operation and notification visible across the Itf-N. Table 5.1.1 indicates mapping of these operations and notifications to their equivalents defined in this SS.

Table 5.1.1: Mapping from IS Operation to SS Equivalents

IS Operations in 3GPP TS 32.352 [5]	SS Operations	SS Port	Qualifier
getHeartbeatPeriod	getHeartbeatPeriod	NLIRPOperations1Port	M
setHeartbeatPeriod	setHeartbeatPeriod	NLIRPOperations2Port	O
triggerHeartbeat	triggerHeartbeat	NLIRPOperations1Port	M
notifyHeartbeat	notify (note 1)	NotificationIRPNtfPort	M
NOTE 1: The IS equivalent maps to an XML definition specified in 3GPP TS 32.355 [6], and this being an input parameter to the operation notify under the port type ntfIRPNtfSystem:NotificationIRPNtf and under the binding ntfIRPNtfSystem:NotificationIRPNtf of 3GPP TS 32.307 [11].			

5.2 Operation parameter mapping

The CS IRP IS (3GPP TS 32.352 [5]) defines semantics of parameters carried in the operations. The tables below show the mapping of these parameters, as per operation, to their equivalents defined in this SS.

Table 5.2.1: Mapping from IS getHeartbeatPeriod parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
heartbeatPeriod	heartbeatPeriod	M
status	status	M

Table 5.2.2: Mapping from IS `setHeartbeatPeriod` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
heartbeatPeriod	heartbeatPeriod	M
status	status	M

Table 5.2.3: Mapping from IS `triggerHeartbeat` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
managerIdentifier	managerIdentifier	M
status	status	M

5.3 Notification parameter mapping

The CS IRP Notifications are defined in 32.355 [6].

Annex A (normative): WSDL specifications

```

<?xml version="1.0" encoding="UTF-8"?>
<!--
  3GPP TS 32.357 Communication Surveillance IRP SOAP Solution Set
-->
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:csIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPSystem"
  xmlns:csIRPData="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPData"
  xmlns:genericIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-810/GenericIRPSystem"
  xmlns:ntfIRPNtfSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307-810/notification/NotificationIRPNtfSystem"
  targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPSystem">
  <import namespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-810/GenericIRPSystem"/>
  <import namespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307-810/notification/NotificationIRPNtfSystem"/>
  <types>
    <schema targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRPData"
      xmlns="http://www.w3.org/2001/XMLSchema">
      <!-- getHeartbeatPeriod Request -->
      <element name="getHeartbeatPeriodRequest">
      </element>
      <!-- getHeartbeatPeriod Response -->
      <element name="getHeartbeatPeriodResponse">
      <complexType>
      <sequence>
      <element name="heartbeatPeriod" type="nonNegativeInteger"/>
      <element name="status">
      <simpleType>
      <restriction base="string">
      <enumeration value="OperationSucceeded"/>
      <enumeration value="OperationFailed"/>
      </restriction>
      </simpleType>
      </element>
      </sequence>
      </complexType>
      </element>
      <!-- getHeartbeatPeriod Fault -->
      <element name="getHeartbeatPeriodFault">
      <simpleType>
      <restriction base="string">
      <enumeration value="OperationFailed"/>
      </restriction>
      </simpleType>
      </element>
      <!-- triggerHeartbeat Request -->
      <element name="triggerHeartbeatRequest">
      <complexType>
      <sequence>
      <element name="managerIdentifier" type="string"/>
      </sequence>
      </complexType>
      </element>
      <!-- xx Response -->
      <element name="triggerHeartbeatResponse">
      <complexType>
      <sequence>
      <element name="status">
      <simpleType>
      <restriction base="string">
      <enumeration value="OperationSucceeded"/>
      <enumeration value="OperationFailed"/>
      </restriction>
      </simpleType>
      </element>
      <element name="failureReason" minOccurs="0">
      <simpleType>
      <restriction base="string">
      <enumeration value="invalidManagerIdentifier"/>

```

```

        <enumeration value="operation_failed_invalid_input_parameter"/>
        <enumeration value="operation_failed_internal_problem"/>
    </restriction>
</simpleType>
</element>
</sequence>
</complexType>
</element>
<!-- triggerHeartbeat Fault -->
<element name="triggerHeartbeatFault">
    <simpleType>
        <restriction base="string">
            <enumeration value="OperationFailed"/>
        </restriction>
    </simpleType>
</element>
<!-- setHeartbeatPeriod Request -->
<element name="setHeartbeatPeriodRequest">
    <complexType>
        <sequence>
            <element name="heartbeatPeriod" type="nonNegativeInteger"/>
        </sequence>
    </complexType>
</element>
<!-- setHeartbeatPeriod Response -->
<element name="setHeartbeatPeriodResponse">
    <complexType>
        <sequence>
            <element name="status">
                <simpleType>
                    <restriction base="string">
                        <enumeration value="OperationSucceeded"/>
                        <enumeration value="OperationFailed"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="failureReason" minOccurs="0">
                <simpleType>
                    <restriction base="string">
                        <enumeration value="invalidHeartbeatPeriod"/>
                        <enumeration value="conflictingHeartbeatPeriod"/>
                        <enumeration value="operation_failed_invalid_input_parameter"/>
                        <enumeration value="operation_failed_internal_problem"/>
                    </restriction>
                </simpleType>
            </element>
        </sequence>
    </complexType>
</element>
<!-- setHeartbeatPeriod Fault -->
<element name="setHeartbeatPeriodFault">
    <simpleType>
        <restriction base="string">
            <enumeration value="OperationFailed"/>
        </restriction>
    </simpleType>
</element>
</schema>
</types>
<message name="getHeartbeatPeriodRequest">
    <part name="parameter" element="cs:IRPData:getHeartbeatPeriodRequest"/>
</message>
<message name="getHeartbeatPeriodResponse">
    <part name="parameter" element="cs:IRPData:getHeartbeatPeriodResponse"/>
</message>
<message name="getHeartbeatPeriodFault">
    <part name="parameter" element="cs:IRPData:getHeartbeatPeriodFault"/>
</message>
<message name="triggerHeartbeatRequest">
    <part name="parameter" element="cs:IRPData:triggerHeartbeatRequest"/>
</message>
<message name="triggerHeartbeatResponse">
    <part name="parameter" element="cs:IRPData:triggerHeartbeatResponse"/>
</message>
<message name="triggerHeartbeatFault">
    <part name="parameter" element="cs:IRPData:triggerHeartbeatFault"/>
</message>
<message name="setHeartbeatPeriodRequest">

```

```

    <part name="parameter" element="csIRPData:setHeartbeatPeriodRequest"/>
</message>
<message name="setHeartbeatPeriodResponse">
  <part name="parameter" element="csIRPData:setHeartbeatPeriodResponse"/>
</message>
<message name="setHeartbeatPeriodFault">
  <part name="parameter" element="csIRPData:setHeartbeatPeriodFault"/>
</message>
<portType name="CSIRPOperations1">
  <operation name="getHeartbeatPeriod">
    <input message="csIRPSystem:getHeartbeatPeriodRequest"/>
    <output message="csIRPSystem:getHeartbeatPeriodResponse"/>
    <fault name="getHeartbeatPeriodFault" message="csIRPSystem:getHeartbeatPeriodFault"/>
  </operation>
  <operation name="triggerHeartbeat">
    <input message="csIRPSystem:triggerHeartbeatRequest"/>
    <output message="csIRPSystem:triggerHeartbeatResponse"/>
    <fault name="triggerHeartbeatFault" message="csIRPSystem:triggerHeartbeatFault"/>
  </operation>
</portType>
<portType name="CSIRPOperations2">
  <operation name="setHeartbeatPeriod">
    <input message="csIRPSystem:setHeartbeatPeriodRequest"/>
    <output message="csIRPSystem:setHeartbeatPeriodResponse"/>
    <fault name="setHeartbeatPeriodFault" message="csIRPSystem:setHeartbeatPeriodFault"/>
  </operation>
</portType>
<binding name="CSIRPOperations1" type="csIRPSystem:CSIRPOperations1">
  <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
  <operation name="getHeartbeatPeriod">
    <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#getHeartbeatPeriod"
style="document"/>
    <input>
      <soap:body use="literal"/>
    </input>
    <output>
      <soap:body use="literal"/>
    </output>
    <fault name="getHeartbeatPeriodFault">
      <soap:fault name="getHeartbeatPeriodFault" use="literal"/>
    </fault>
  </operation>
  <operation name="triggerHeartbeat">
    <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#triggerHeartbeat"
style="document"/>
    <input>
      <soap:body use="literal"/>
    </input>
    <output>
      <soap:body use="literal"/>
    </output>
    <fault name="triggerHeartbeatFault">
      <soap:fault name="triggerHeartbeatFault" use="literal"/>
    </fault>
  </operation>
</binding>
<binding name="CSIRPOperations2" type="csIRPSystem:CSIRPOperations2">
  <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
  <operation name="setHeartbeatPeriod">
    <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#setHeartbeatPeriod"
style="document"/>
    <input>
      <soap:body use="literal"/>
    </input>
    <output>
      <soap:body use="literal"/>
    </output>
    <fault name="setHeartbeatPeriodFault">
      <soap:fault name="setHeartbeatPeriodFault" use="literal"/>
    </fault>
  </operation>
</binding>
<service name="CSIRPService">
  <port name="CSIRPOperations1Port" binding="csIRPSystem:CSIRPOperations1">
    <soap:address location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRP"/>
  </port>
</service>

```

```
</port>
<port name="CSIRPOperations2Port" binding="csIRPSystem:CSIRPOperations2">
  <soap:address location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.357#CSIRP"/>
</port>
<port name="GenericIRPPort" binding="genericIRPSystem:GenericIRPBinding">
  <soap:address location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317#GenericIRP"/>
</port>
<port name="NotificationIRPNtfPort" binding="ntfIRPNtfSystem:NotificationIRPNtf">
  <soap:address
location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.307#NotificationIRPNtf"/>
</port>
</service>
</definitions>
```

Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	R	Subject/Comment	Cat	Old	New
2009-12	SA#46	SP-090728	--	--	Presentation to SA for Information	--	--	1.0.0
2010-03	SA#47	SP-100047	--	--	Presentation to SA for Approval	--	1.0.0	2.0.0
2010-03	--	--	--	--	Publication of SA approved version	--	2.0.0	9.0.0