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Technical Specification

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

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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:

32.121: Advanced Alarm Management (AAM) Integration Reference Point (IRP): Requirements.

32.122: Advanced Alarm Management (AAM) Integration Reference Point (IRP): Information Service (IS).

32.123: Advanced Alarm Management (AAM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set.

32.125: Advanced Alarm Management (AAM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions.

32.127: Advanced Alarm Management (AAM) Integration Reference Point (IRP): SOAP Solution Set (SS).

The Itf-N interface is built up by a number of IRPs and a related Name Convention, which realise the functional capabilities over this interface. The basic structure of the IRPs is defined in 3GPP TS 32.150 [1].

A single network fault may generate a large number of alarms over space and time. In a large and complex network, simultaneous network faults may occur, causing the network operator to be flooded with high volume of alarms. The high volume of alarms, typically the one received by an IRPManager via the getAlarmList or alarm notifications of Alarm IRP specification, greatly inhibits the operator ability to quickly identify and locate the responsible network faults. Advanced Alarm Management IRP is intended to provide methods to improve this situation.

1 Scope

The present specifies the SOAP Solution Set for the IRP whose semantics are specified in the Advanced Alarm Management (AAM) IRP Information Service (3GPP TS 32.122 [3]).

This Solution Set specification is related to TS 32.122 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 32.122: "Telecommunication management; Advanced Alarm Management (AAM) Integrations Reference Point (IRP); Information Service (IS)".

[6]   3GPP TS 32.125: "Telecommunication management; Advanced Alarm Management (AAM) Integrations Reference Point (IRP); eXtensible Markup Language (XML) file format definition".

[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]   3GPP TS 32.307: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): SOAP solution set".

[12]   3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS)"

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].

Alike Alarm: Two alarms are considered alike, if the corresponding alarm notifications are issued by the same object instance with the same alarmType, same perceivedSeverity, same probableCause and same specificProblem (if present).

Lower Edge of Time Window: The point in time which determines the begin of a time span.

Upper Edge of Time Window: The point in time which determines the end of a time span.

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].

AAM   Advanced Alarm Management
AAMRule   Advanced Alarm Management Rule

4 Architectural features

4.1 General

The overall architectural feature of the Advanced Alarm Management IRP is specified in 3GPP TS 32.122 [4]. 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 Advanced Alarm Management IRP XML definitions of 3GPP TS 32.125 [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/
aamRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMRPSystem
aamIRPData	http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRPData
aam	http://www.3gpp.org/ftp/specs/archive/32_series/32.125#aamIRP
xn	http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm
genericIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317/GenericIRPSystem
ntfIRPNtfSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307/ notification/NotificationIRPNtfSystem

5 Mapping

5.1 Operation and notification mapping

The Advanced Alarm Management IRP IS (3GPP TS 32.122 [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 32.122 [5]	SS Operations	Qualifier
activateAAMRule	activateAAMRule	M
getAAMRules	getAAMRules	M
deactivateAAMRule	deactivateAAMRule	M
getIRPVersion (note 1)	getIRPVersion	M
getOperationProfile (note 1)	getOperationProfile	O
getNotificationProfile (note 1)	getNotificationProfile	O
NOTE 1: These 3 operations are operations of ManagedGenericIRP IOC specified in 3GPP TS 32.312 [12]. The AdvancedAlarmManagementIRP IOC of 3GPP TS 32.122 [5] inherits from it.		

5.2 Operation parameter mapping

The Advanced Alarm Management IRP IS (3GPP TS 32.122 [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 `activateAAMRule` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
aAMRuleType	aAMRuleType	M
aAMRuleParameterList	aAMRuleParameterList	M
filter	filter	M
aAMRuleIdentifier	aAMRuleIdentifier	M
status	status	M

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

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

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

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

5.3 Notification parameter mapping

The Advance Alarm Management IRP IS (3GPP TS 32.122 [5]) does not currently define any notifications.

Annex A (normative): WSDL specifications

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
    3GPP TS 32.127 Advanced Alarm Management (AAM) IRP SOAP Solution Set
-->
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:aamIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRPSystem"
xmlns:aamIRPData="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRPData"
xmlns:xaa="http://www.3gpp.org/ftp/specs/archive/32_series/32.125#aamIRPIOCs"
xmlns:genericIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
910/GenericIRPSystem"
targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRPSystem">
location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307-910-wsdl.zip"/>
    <import namespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
910/GenericIRPSystem" location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
910-wsdl.zip"/>
    <types>
        <schema targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRPData"
xmlns="http://www.w3.org/2001/XMLSchema">
            <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.125#aamIRPIOCs"/>
            <!-- The following types are defined for the AAM IRP operations -->
            <complexType name="AdvancedAlarmRule">
                <sequence>
                    <element name="AdvancedAlarmRuleIdentifier"
type="xaa:AdvancedAlarmManagementRuleIdentifier"/>
                    <element name="AdvancedAlarmRuleType" type="xaa:AdvancedAlarmManagementRuleType"/>
                    <element name="AdvancedAlarmRuleParameterList"
type="xaa:AdvancedAlarmManagementRuleParameterList"/>
                    <element name="Filter" type="xaa:Filter"/>
                </sequence >
            </complexType>
            <complexType name="AdvancedAlarmRuleList">
                <sequence>
                    <element name="AdvancedAlarmRule" type="aamIRPData:AdvancedAlarmRule"
maxOccurs="unbounded"/>
                </sequence >
            </complexType>
            <simpleType name="Status">
                <restriction base="string">
                    <enumeration value="Success"/>
                    <enumeration value="AAMRuleAlreadyActive"/>
                    <enumeration value="SpecifiedRuleNotExisting"/>
                    <enumeration value="Failure"/>
                </restriction>
            </simpleType>
            <!-- activateAAMRule Request-->
            <element name="activateAAMRule">
                <complexType>
                    <sequence>
                        <element name="advancedAlarmManagementRuleType"
type="xaa:AdvancedAlarmManagementRuleType"/>
                        <element name="advancedAlarmManagementRuleParameterList"
type="xaa:AdvancedAlarmManagementRuleParameterList"/>
                        <element name="filter" type="xaa:Filter"/>
                    </sequence>
                </complexType>
            </element>
            <!-- activateAAMRule Response -->
            <element name="activateAAMRuleResponse">
                <complexType>
                    <sequence>
                        <element name="advancedAlarmManagementRuleIdentifier"
type="xaa:AdvancedAlarmManagementRuleIdentifier"/>
                        <element name="status" type="aamIRPData:Status"/>
                    </sequence>
                </complexType>
            </element>
            <!-- activateAAMRule Fault -->
            <element name="activateAAMRuleFault">
                <simpleType>
                    <restriction base="string">
```

```
                         <enumeration value="OPERATION_FAILED"/>
                     </restriction>
                 </simpleType>
             </element>
             <!-- getAAMRules Request-->
             <element name="getAAMRules">
                 <!-- no input parameter -->
                 <complexType>
                     <sequence>
                         <element name="dummy" type="string" minOccurs="0"/>
                     </sequence>
                 </complexType>
             </element>
             <!-- getAAMRules Response -->
             <element name="getAAMRulesResponse">
                 <complexType>
                     <sequence>
                         <element name="advancedAlarmRuleList" type="aamIRPData:AdvancedAlarmRuleList"/>
                         <element name="status" type="aamIRPData:Status"/>
                     </sequence>
                 </complexType>
             </element>
             <!-- getAAMRules Fault -->
             <element name="getAAMRulesFault">
                 <simpleType>
                     <restriction base="string">
                         <enumeration value="OPERATION_FAILED"/>
                     </restriction>
                 </simpleType>
             </element>
             <!-- deactivateAAMRule Request-->
             <element name="deactivateAAMRule">
                 <complexType>
                     <sequence>
                         <element name="advancedAlarmManagementRuleIdentifier"
type="xaa:AdvancedAlarmManagementRuleIdentifier"/>
                     </sequence>
                 </complexType>
             </element>
             <!-- deactivateAAMRule Response -->
             <element name="deactivateAAMRuleResponse">
                 <complexType>
                     <sequence>
                         <element name="status" type="aamIRPData:Status"/>
                     </sequence>
                 </complexType>
             </element>
             <!-- deactivateAAMRule Fault -->
             <element name="deactivateAAMRuleFault">
                 <simpleType>
                     <restriction base="string">
                         <enumeration value="OPERATION_FAILED"/>
                     </restriction>
                 </simpleType>
             </element>
         </schema>
     </types>
     <message name="activateAAMRule">
         <part name="parameter" element="aamIRPData:activateAAMRule"/>
     </message>
     <message name="activateAAMRuleResponse">
         <part name="parameter" element="aamIRPData:activateAAMRuleResponse"/>
     </message>
     <message name="activateAAMRuleFault">
         <part name="parameter" element="aamIRPData:activateAAMRuleFault"/>
     </message>
     <message name="getAAMRules">
         <part name="parameter" element="aamIRPData:getAAMRules"/>
     </message>
     <message name="getAAMRulesResponse">
         <part name="parameter" element="aamIRPData:getAAMRulesResponse"/>
     </message>
     <message name="getAAMRulesFault">
         <part name="parameter" element="aamIRPData:getAAMRulesFault"/>
     </message>
     <message name="deactivateAAMRule">
         <part name="parameter" element="aamIRPData:deactivateAAMRule"/>
     </message>
```

```xml
    <message name="deactivateAAMRuleResponse">
        <part name="parameter" element="aamIRPData:deactivateAAMRuleResponse"/>
    </message>
    <message name="deactivateAAMRuleFault">
        <part name="parameter" element="aamIRPData:deactivateAAMRule"/>
    </message>
    <portType name="AAMIRPPortType">
        <operation name="activateAAMRule">
            <input message="aamIRPSystem:activateAAMRule"/>
            <output message="aamIRPSystem:activateAAMRuleResponse"/>
            <fault name="activateAAMRuleFault" message="aamIRPSystem:activateAAMRuleFault"/>
        </operation>
        <operation name="getAAMRules">
            <input message="aamIRPSystem:getAAMRules"/>
            <output message="aamIRPSystem:getAAMRulesResponse"/>
            <fault name="getAAMRulesFault" message="aamIRPSystem:getAAMRulesFault"/>
        </operation>
        <operation name="deactivateAAMRule">
            <input message="aamIRPSystem:deactivateAAMRule"/>
            <output message="aamIRPSystem:deactivateAAMRuleResponse"/>
            <fault name="deactivateAAMRuleFault" message="aamIRPSystem:deactivateAAMRuleFault"/>
        </operation>
    </portType>
    <binding name="AAMIRPBinding" type="aamIRPSystem:AAMIRPPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="activateAAMRule">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#activateAAMRule"
style="document"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="activateAAMRuleFault">
                <soap:fault name="activateAAMRuleFault" use="literal"/>
            </fault>
        </operation>
        <operation name="getAAMRules">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#getAAMRules" style="document"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="getAAMRulesFault">
                <soap:fault name="getAAMRulesFault" use="literal"/>
            </fault>
        </operation>
        <operation name="deactivateAAMRule">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#deactivateAAMRule"
style="document"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="deactivateAAMRuleFault">
                <soap:fault name="deactivateAAMRuleFault" use="literal"/>
            </fault>
        </operation>
    </binding>
    <service name="AAMIRPService">
        <port name="AAMIRPPort" binding="aamIRPSystem:AAMIRPBinding">
            <soap:address location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.127#AAMIRP"/>
        </port>
        <port name="GenericIRPPort" binding="genericIRPSystem:GenericIRPBinding">
            <soap:address
location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317#GenericIRP"/>
        </port>
    </service>
</definitions>
```

Annex B (informative):
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**R**	**Subject/Comment**	**Old**	**New**
2009-09	SA#45	SP-090543	--	--	Presentation to SA for Information	--	1.0.0
2009-12	SA#46	SP-090734	--	--	Presentation to SA for approval	1.0.0	2.0.0
2009-12	--	--	--	--	Publication of SA-approved version	2.0.0	9.0.0
2011-06	SA#52	SP-110288	001	--	Correct syntax errors in AAMIRP IOC XML Schema	9.0.0	9.1.0