TSGS#16(02)0329

Source:		**SA5 (Telecom Management)**
Title:		**2 new Rel-5 draft v100 TSs 32.671 & 32.672 (3G Configuration Management; State Management IRP: Requirements & Information service)**
Document for:		**Information**
Agenda Item:		**7.5.3**

TS	32.671	Telecommunication management; 3G Configuration Management; State Management IRP: Requirements	Rel-5	1.0.0	ZHOU, Di
TS	32.672	Telecommunication management; 3G Configuration Management; State Management IRP: Information service	Rel-5	1.0.0	ZHOU, Di

3GPP TS 32.671 V1.0.0 (2002-05)

Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
3G Configuration Management;
State Management IRP: Requirements;
(Release 5)**

Keywords

Configuration management

3GPP

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Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document is part 1 of the 32.600-series covering the 3rd Generation Partnership Project: Technical Specification Group Services and System Aspects, as identified below:

32.671: **"Generic State Management: Requirements";**

32.672: "Generic State Management: Information Service";

32.673: "Generic State Management: CORBA Solution Set Version";

32.674: "Generic State Management: CMIP Solution Set".

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:

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x the first digit:

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Introduction

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G network as it evolves. CM actions have the objective to control and monitor the actual configuration on the Network Elements (NEs) and Network Resources (NRs), and they may be initiated by the operator or by functions in the Operations Systems (OSs) or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QOS). The CM actions are initiated either as single actions on single NEs of the 3G network, or as part of a complex procedure involving actions on many resources/objects in one or several NEs.

1 Scope

The present document defines, in addition to the requirements defined in [1], [2] and [3], the requirements for the present IRP: State Management.

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: "3G Telecom Management principles and high level requirements".

[2]   3GPP TS 32.102: "3G Telecom Management architecture".

[3]   3GPP TS 32.600: "3G Configuration Management: Concept and High-level Requirements".

[4]   3GPP TS 32.622: "3G Configuration Management: Generic Network Resources IRP: NRM".

[5]   3GPP TS 32.632: "3G Configuration Management: Core Network Resources IRP: NRM".

[6]   3GPP TS 32.642: "3G Configuration Management: UTRAN Resources IRP: NRM".

[7]   3GPP TS 32.652: "3G Configuration Management: GERAN Resources IRP: NRM".

[8]   ITU-T X.731: "Information Technology, Open Systems Interconnection, System Management : State 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 32.600 [3] apply.

3.3 Abbreviations

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

CM	Configuration Management
FFS	For Further Study
GSM	Global System for Mobile communication
IRP	Integration Reference Point
IS	Information Service (see [1])
ITU-T	International Telecommunication Union, Telecommunication Standardisation Sector
NE	Network Element
NR	Network Resource
NRM	Network Resource Model

OS   Operations System

4   Requirements

4.1   Introduction

The management state of a managed object represents the instantaneous condition of availability and operability of the associated resource from the point of view of management. Different classes of managed object have a variety of state attributes that express and control aspects of the operation of their associated resource that are peculiar to each class. However, the management state is expected to be common to a large number of resources and for this reason is to be standardized; it expresses key aspects of their usability at any given time. Its purpose is to control the general availability of a resource and to make visible information about that general availability.

State Management IRP is defined to specify and to standardise the generic attributes for modelling and managing the resources of 3G networks at the Itf-N. There are a variety of managed objects and the related network resources. It is the task of designers of specific managed object classes to model the state conditions of the associated network resources using the generic attributes provided in the State Management IRP. Different managed objects and the network resources they model may require different subsets of the attributes defined in the State Management IRP. Examples of network resource models can be found in [4], [5], [6] and [7].

4.2   Requirements

The following requirements apply for the State Management IRP:

A. IRP-related requirements in 3GPP TS 32.101: "3G Telecom Management principles and high level requirements" [1].

B. IRP-related requirements in 3GPP TS 32.102: "3G Telecom Management architecture" [2].

C. IRP-related requirements in 3GPP TS 32.600: "3G Configuration Management: Concept and High-level Requirements" [3].

In addition to the above, the following more specific requirements apply:

1. The State Management IRP IS shall specify state attributes, modelling operability, usage and administration related to 3G network resources.

    -   operability: whether or not the resource is physically installed and working, if applicable;

    -   usage: whether or not the resource is actively in use at a specific instant, and if so, whether or not it has spare capacity for additional users at that instant. A resource is said to be "in use" when it has received one or more requests for service that it has not yet completed or otherwise discharged, or when some part of its capacity has been allocated, and not yet reclaimed, as a result of a previous service request;

    -   administration: permission to use or prohibition against using the resource, imposed through the management services.

    The semantics and the value ranges of these state attributes shall be based on ITU-T X.731[8] while extensions and omissions may be made.

2. The State Management IRP IS shall specify status attributes, modelling more detailed information about other aspects of the state of the corresponding 3G network resources that may affect their operability and usage. The status attributes also contain more detailed information about the administrative constraints on its operation that are controlled by a manager. The semantics and the value ranges of these status attributes shall be based on ITU-T X.731[8] while extensions and omissions may be made.

Annex A (informative): Change history

<table>
<tr><th colspan="8">Change history</th></tr>
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3GPP TS 32.672 V1.0.0 (2002-05)

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32.671   "State Management IRP: Requirements";

32.672   **"State Management IRP: Information Service";**

32.673   "State Management IRP: CORBA Solution Set";

32.674   "State Management IRP: CMIP Solution Set".

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1 Scope

The present document defines the Information Service (IS) part of the State Management IRP. It specifies the semantics of the network resource state and status information visible across the Itf-N. It also specifies the interaction required for the management of the state and status information.

The state and status attributes specified in this document shall be used, where applicable, as attributes in Information Object Class (IOC) definitions of other 3GPP IRPs. When used by the IOC definition, the semantics of the state and status attributes can be qualified and enhanced if deemed necessary.

2 References

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

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[1] 3GPP TS 32.101: "3G Telecom Management principles and high level requirements".

[2] 3GPP TS 32.102: "3G Telecom Management architecture".

[3] 3GPP TS 32.300: "3G Configuration Management (CM); Name convention for Managed Objects".

[4] 3GPP TS 32.302: "3G Notification Management: Notification Integration Reference Point: Information Service".

[5] 3GPP TS 32.312: "Generic IRP Management; Information Service".

[6] 3GPP TS 32.600: "3G Configuration Management: Concept and High-level Requirements".

[7] ITU-T Recommendation X.731: "Information Technology – Open systems interconnection – Systems Management: State Management Function".

[8] ITU-T Recommendation X.733: "Information Technology – Open systems interconnection – Systems Management: Alarm Reporting 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 32.600 [6] apply.

3.2 Abbreviations

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

CM	Configuration Management
EM	Element Manager
IOC	Information Object Class

IRP   Integration Reference Point
IS   Information Service (see [1])
M   Mandatory
NE   Network Element
NM   Network Manager
NR   Network Resource
O   Optional
OMG   Object Management Group
OS   Operations System
UML   Unified Modelling Language (OMG)

4 System overview

4.1 System context for Notification

Figure 1 and Figure 2 identify System contexts of State Management IRP in terms of implementations called IRPAgent and IRPManager. For a definition of IRPManager and IRPAgent, see 3GPP TS 32.102 [2].

The IRPAgent implements and supports the State Management IRP attributes. The IRPAgent can be an Element Manager (EM) or a mediator that interfaces one or more NEs (see Figure 1), or it can be a Network Element (NE) (see Figure 2). In the former case, the interfaces (represented by a thick dotted line) between the EM and the NEs are not subject of this IS.

An IRPManager using this IRP shall choose one of the two System Contexts defined here, for each NE. For instance, if an EM is responsible for managing a number of NEs, the NM shall access this IRP through the EM and not directly to those NEs. For another IRP though, the System Context may be different.
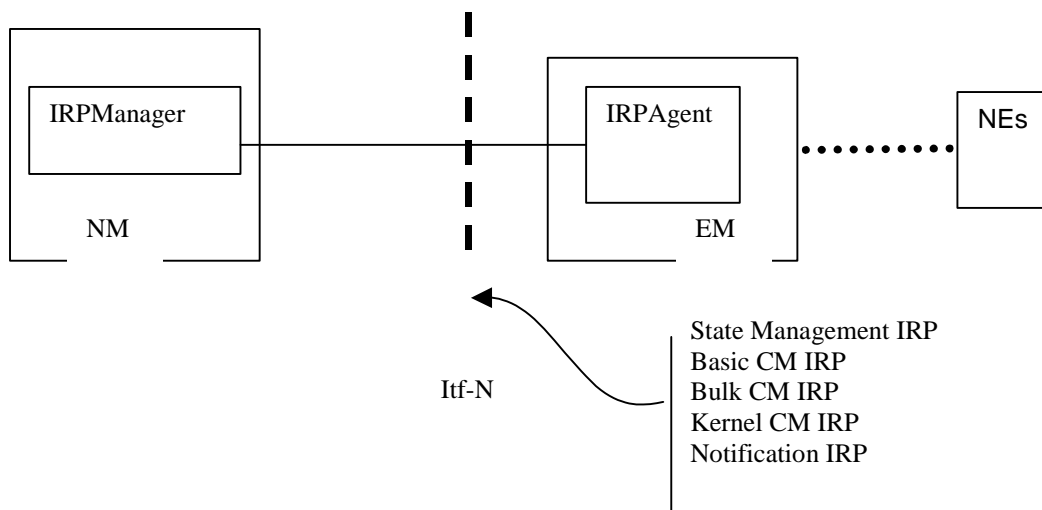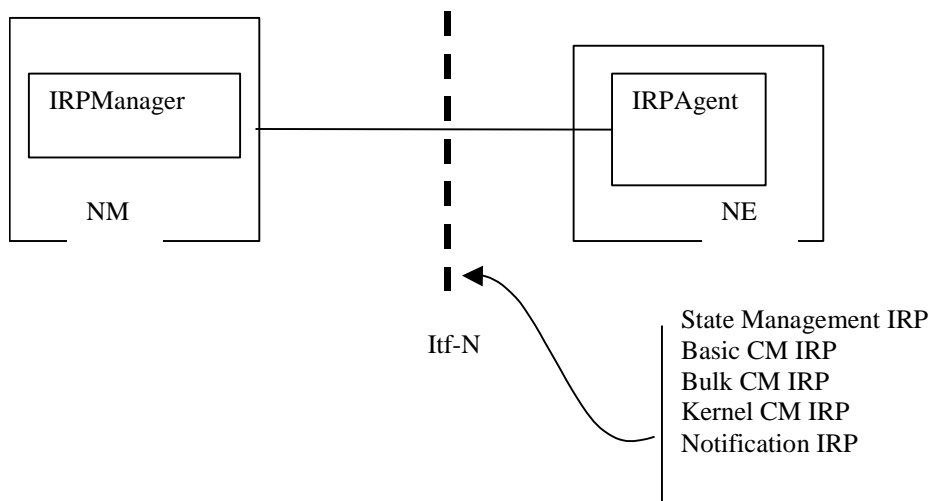

Figure 1: System Context A

Figure 2: System Context B

5 Information Object Classes

5.1 Information entities imported and local labels

Label reference	Local label

There are no information entities imported.

5.2 Class diagram

5.2.1 Attributes and relationships

This sub-clause depicts the set of information object classes (IOCs) that encapsulate information within the Generic State Management IRP. The intent is to identify the information required for the State Management IRP implementation of its operations and notification emission. This sub-clause provides the overview of all information object classes in UML. Subsequent sub-clauses provide more detailed specification of various aspects of these information object classes.
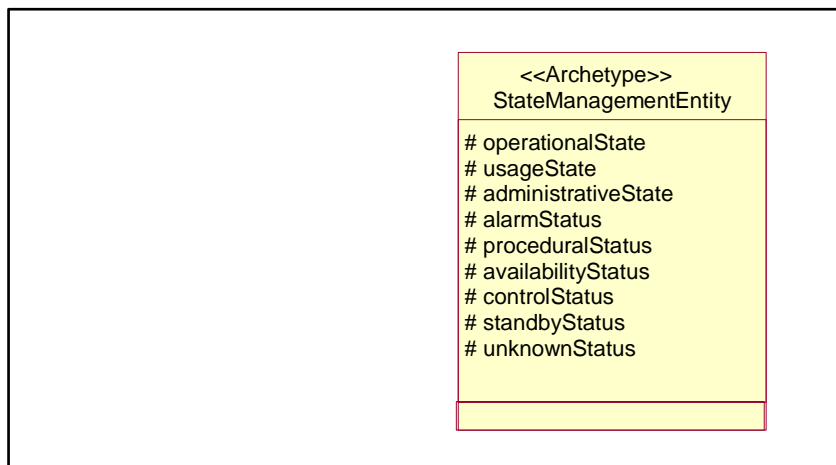
5.2.2 Inheritance

There are no inheritance relationships.

5.3 Information object classes definition

5.3.1 StateManagementEntity

5.3.1.1 Definition

StateManagementEntity is a Archetype, that may represent any IOC defined in the Network Resource Models, e.g. Generic Network Resource Model, Core Network Resource Model, UTRAN Network Resource Model or GERAN Network Resource Model.

The attributes defined for this Archetype can be imported and used in any IOC of the Network Resource Models, where such attributes are needed. These attributes shall be used in the same way as defined in the ITU-T Recommendation X.731 [7] and ITU-T Recommendation X.733 [8], unless otherwise stated. That document gives also examples of state diagrams, defining possible state transitions when one or more of the state attributes defined here are used in a class.

5.3.1.2 Attributes

The following attributes are defined for this information object class:

Attribute name	Support Qualifier
operationalState	N/A
usageState	N/A
administrativeState	N/A
alarmStatus	N/A
proceduralStatus	N/A
availabilityStatus	N/A
controlStatus	N/A
standbyStatus	N/A
unknownStatus	N/A

5.4 Information attributes definition

5.4.1 Definition and legal values

The following table gives the definition and legal values for each attribute:

Attribute Name	Definition	Legal Values
operationalState	It indicates the operational state of the object instance. "It describes whether or not the resource is physically installed and working." [7] This attribute is READ-ONLY.	"Enabled", "Disabled" The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
usageState	It indicates the usage state of the object instance. "It describes whether or not the resource is actively in use at a specific instant, and if so, whether or not it has spare capacity for additional users at that instant." [7] This attribute is READ-ONLY.	"Idle", "Active", "Busy" The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
administrativeState	It indicates the administrative state of the object instance. "It describes the permission to use or prohibition against using the resource, imposed through the management services." [7]	"Locked", "Shutting down", "Unlocked" The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
alarmStatus	It indicates the alarm status of the object instance. This is mapped to the perceived severity of the most severe active alarm associated to the object instance.	"Cleared", "Indeterminate", "Warning", "Minor", "Major", "Critical", The meaning of these values is as defined for the attribute perceived severity in ITU-T Recommendation X.733 [8].
proceduralStatus	It indicates the procedural status of the object instance.	A set consisting of zero or more of the following values: "Initialisation required", "Not initialised", "Initialising", "Reporting", "Terminating". The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
availabilityStatus	It indicates the availability status of the object instance.	A set consisting of zero or more of the following values: "In test", "Failed", "Power off", "Off line", "Off duty", "Dependency", "Degraded", "Not installed", "Log full" The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
controlStatus	It indicates the control status of the object instance.	A set consisting of zero or more of the following values: "Subject to test", "Part of services locked", "Reserved for test", "Suspended", . The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
standbyStatus	It indicates the standby status of the object instance.	"Hot standby", "Cold standby", "Providing service", . The meaning of these values is as defined in ITU-T Recommendation X.731 [7].
UnknownStatus	It indicates whether the state of the resource represented by the managed object is unknown.	"True" (state is unknown, the values of the state attributes may not reflect the actual state of the resource); "False" (state is known, the values of the state attributes reflect the actual state of the resource).

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2002	S_16	SP-020329	--	--	Submitted to TSG SA #16 for Information	1.0.0	