ETSI TS 132 673 V8.0.0 (2009-01)

Technical Specification

Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Telecommunication management;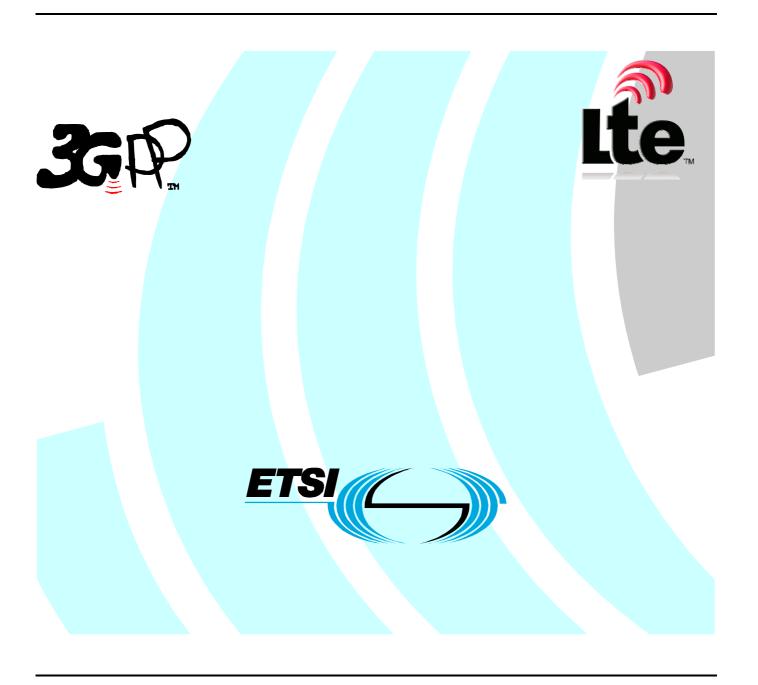 Configuration Management (CM); State Management Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS) (3GPP TS 32.673 version 8.0.0 Release 8)

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Foreword

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Contents

Foreword

This Technical Specification (TS) 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:

32.671: Configuration Management (CM); State Management Integration Reference Point (IRP); Requirements

32.672: Configuration Management (CM); State Management Integration Reference Point (IRP); Information Service (IS)

32.673: Configuration Management (CM); State Management Integration Reference Point (IRP); Common Object Request Broker Architecture (CORBA) Solution Set (SS)

32.675: Configuration Management (CM); State Management Integration Reference Point (IRP); Bulk CM eXtensible Markup Language (XML) file format definition

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 a deployment program (e.g. additions and deletions), as part of an optimisation program (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 specifies the CORBA Solution Set (SS) for the IRP whose semantics is specified in State Management IRP: Information Service (IS) (3GPP TS 32.672 [2]).

Clause 1 to 3 provides background information. Clause 4 provides key architectural features supporting the SS. Clause 5 defines the mapping of operations, notification, parameters and attributes defined in IS to their SS equivalents. Annex A contains the IDL specification.

This Solution Set specification is related to 3GPP TS 32.672 V8.0.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 32.311: "Telecommunication management; Generic Integration Reference Point (IRP) management; Requirements".

[2] 3GPP TS 32.672: "Telecommunication management; Configuration Management (CM); State Management Integration Reference Point (IRP): Information Service (IS)".

[3] ITU-T Recommendation X.721: "Information technology - Open Systems Interconnection - Structure of management information: Definition of management information".

[4] ITU-T Recommendation M.3100: "Generic network information model".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions defined in 3GPP TS 32.672 [2] apply. There are no additional definitions applicable to the present document.

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
IDL	Interface Definition Language
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service
NE	Network Element
OMG	Object Management Group
SS	Solution Set

3.3   IRP document version number string

The IRP document version number (sometimes called "IRP version" or "version number") string is used to identify this specification. The definition of "IRP document version number string" in 3GPP TS 32.311 [1] provides the rule to derive such a string.

As the State Management IRP IS as defined in 3GPP TS 32.672 [2] does not specify operations & notification (only State Management related data definitions), this string definition is stated here for potential future use only.

4   Architectural Features

The overall architectural feature of State Management IRP is specified in 3GPP TS 32.672 [2].

For this release there are no features identified that are specific to the CORBA SS.

5   Mapping

5.1   IOC Mapping

Table 1 provides the mapping of the information object classes defined in the IS of the State Management IRP [2] to the equivalent of this CORBA Solution Set.

Table 1: Mapping of IOCs

IOCs defined in State Management IRP IS [2]	CORBA SS Method
StateManagementEntity	No mapping applicable for this <<Archetyp>> class.

5.2   Mapping of Attributes

Table 2 provides the mapping of the IOC attributes defined in the IS of the State Management IRP [2] to their equivalents in this CORBA Solution Set. As [2] specified the Support Qualifier for these attributes as not applicable, mappings towards Mandatory and Optional are provided.

Table 2: Mapping of Attributes

Attributes defined in State Management IRP IS [2]	CORBA SS Method attributes	Qualifier
operationalState	OperationalState (ITU-T Recommendation X.721 [3])	M
operationalState	OperationalStateTypeOpt (ITU-T Recommendation X.721 [3])	O
usageState	UsageState (ITU-T Recommandation X.721 [3])	M
usageState	UsageStateTypeOpt (ITU-T Recommandation X.721 [3])	O
administrativeState	AdministrativeState (ITU-T Recommendation X.721 [3])	M
administrativeState	AdministrativeStateTypeOpt (ITU-T Recommandation X.721 [3])	O
alarmStatus	AlarmStatus (ITU-T Recommandation M.3100 [4])	M
alarmStatus	AlarmStatusTypeOpt (ITU-T Recommandation M.3100 [4])	O
proceduralStatus	ProceduralStatus (ITU-T Recommendation X.721 [3])	M
proceduralStatus	ProceduralStatusTypeOpt (ITU-T Recommandation X.721 [3])	O
availabilityStatus	AvailabilityStatus (ITU-T Recommendation X.721 [3])	M
availabilityStatus	AvailabilityStatusTypeOpt (ITU-T Recommandation X.721 [3])	O
controlStatus	ControlStatus (ITU-T Recommandation X.721 [3])	M
controlStatus	ControlStatusTypeOpt (ITU-T Recommandation X.721 [3])	O
standbyStatus	StandbyStatus (ITU-T Recommandation X.721 [3])	M
standbyStatus	StandbyStatusTypeOpt (ITU-T Recommandation X.721 [3])	O
unknownStatus	UnknownStatus (ITU-T Recommendation X.721 [3])	M
unknownStatus	UnknownStatusTypeOpt (ITU-T Recommendation X.721 [3])	O

Annex A (normative): IDL specifications

A.1 IDL specification (file name "StateManagementIRPConstDefs.idl")

```
//File:- StateManagementIRPConstDefs.idl
#ifndef _STATE_MANAGEMENT_IRP_CONST_DEFS_IDL_
#define _STATE_MANAGEMENT_IRP_CONST_DEFS_IDL_

#include "CosNotification.idl"
#include "ManagedGenericIRPConstDefs.idl"
#include <StateManagementIRPCommonConstDefs.idl>
#include <StateManagementIRPOptConstDefs.idl>

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: StateManagementIRPConstDefs
This module contains commonly used definitions for State Management IRP
========================================================================
*/
module StateManagementIRPConstDefs
{
/*
  Constant definitions for state management notifications uses when populating the
  Cos::Structured event.
  The "name" party of the structured event carries the following constant definitions
  appropriate to the state being notified.
  Refer to TS 32.663 regarding how to populate the structured event
*/
    interface AttributeNameValue {
        const string OPERATIONAL_STATE    = "operationalState";
        const string USAGE_STATE          = "usageState";
        const string ADMINISTRATIVE_STATE = "administrativeState";
        const string ALARM_STATUS         = "alarmStatus";
        const string PROCEDURAL_STATUS    = "proceduralStatus";
        const string AVAILABILITY_STATUS  = "availabilityStatus";
        const string CONTROL_STATUS       = "controlStatus";
        const string STANDBY_STATUS       = "standbyStatus";
        const string UNKNOWN_STATUS       = "unknownStatus";
    };


/*
   The following structures provide the new state value,
   and the optional old state value
   The structures are passed in the value part of the cos structured event
*/
    struct OperationalStateOldNewValue{
        StateManagementIRPCommonConstDefs::OperationalState new;
        StateManagementIRPOptConstDefs::OperationalStateTypeOpt old;
    };


    struct UsageStateOldNewValue{
        StateManagementIRPCommonConstDefs::UsageState new;
        StateManagementIRPOptConstDefs::UsageStateTypeOpt old;
    };


    struct AdministrativeStateOldNewValue{
        StateManagementIRPCommonConstDefs::AdministrativeState new;
        StateManagementIRPOptConstDefs::AdministrativeStateTypeOpt old;
    };


    struct AlarmStatusOldNewValue{
        StateManagementIRPCommonConstDefs::AlarmStatus new;
        StateManagementIRPOptConstDefs::AlarmStatusTypeOpt old;
```

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```
    };


    struct ProceduralStatusOldNewValue{
        StateManagementIRPCommonConstDefs::ProceduralStatusValues new;
        StateManagementIRPOptConstDefs::ProceduralStatusTypeOpt old;
    };


    struct AvailabilityStatusOldNewValue{
        StateManagementIRPCommonConstDefs::AvailabilityStatusValues new;
        StateManagementIRPOptConstDefs:: AvailabilityStatusTypeOpt old;
    };


    struct ControlStatusOldNewValue{
        StateManagementIRPCommonConstDefs::ControlStatusValues new;
        StateManagementIRPOptConstDefs::ControlStatusTypeOpt old;
    };


    struct StandbyStatusOldNewValue{
        StateManagementIRPCommonConstDefs::StandbyStatus new;
        StateManagementIRPOptConstDefs::StandbyStatusTypeOpt old;
    };


    struct UnknownStatusOldNewValue{
        StateManagementIRPCommonConstDefs::UnknownStatus new;
        StateManagementIRPOptConstDefs::UnknownStatusTypeOpt old;
    };


};
#endif // _STATE_MANAGEMENT_IRP_CONST_DEFS_IDL_
```

A.2 IDL specification (file name "StateManagementIRPOptConstDefs.idl")

```
//File:-StateManagementIRPOptConstDefs.idl
#ifndef _STATE_MANAGEMENT_IRP_OPT_CONST_DEFS_IDL_
#define _STATE_MANAGEMENT_IRP_OPT_CONST_DEFS_IDL_

#include "CosNotification.idl"
#include "ManagedGenericIRPConstDefs.idl"
#include "StateManagementIRPCommonConstDefs.idl"
// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: StateManagementIRPOptConstDefs
This module contains commonly used optional definitions for State Management IRP
================================================================================
*/
module StateManagementIRPOptConstDefs
{

   /*
   Definition of Operational State based on X.721 [3], if optional.
   */
   union OperationalStateTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::OperationalState operational_state;
   };

   /*
   Definition of Usage State based on X.721 [3], if optional.
   */
   union UsageStateTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::UsageState usage_state;
   };

   /*
   Definition of Administrative State based on X.721 [3], if optional.
   */
   union AdministrativeStateTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::AdministrativeState administrative_state;
   };

   /*
   Definition of Alarm Status based on M.3100 [4], if optional.
   */
   union AlarmStatusTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::AlarmStatus alarm_status;
   };

   /*
   Definition of Procedural Status based on X.721 [3], if optional.
   */
   union ProceduralStatusTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::ProceduralStatus procedural_status;
   };

   /*
   Definition of Availability Status based on X.721 [3], if optional.
   */
   union AvailabilityStatusTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::AvailabilityStatus availability_status;
   };

   /*
   Definition of Control Status based on X.721 [3], if optional.
   */
   union ControlStatusTypeOpt switch(boolean)
   {
      case TRUE: StateManagementIRPCommonConstDefs::ControlStatus control_status;
```

```
    };

    /*
    Definition of Standby Status based on X.721 [3], if optional.
    */
    union StandbyStatusTypeOpt switch(boolean)
    {
        case TRUE: StateManagementIRPCommonConstDefs::StandbyStatus standby_status;
    };

    /*
    Definition of Unknown Status based on X.721 [3], if optional.
    */
    union UnknownStatusTypeOpt switch(boolean)
    {
        case TRUE: StateManagementIRPCommonConstDefs::UnknownStatus unknown_status;
    };

};
#endif // _STATE_MANAGEMENT_IRP_OPT_CONST_DEFS_IDL_
```

A.3 IDL specification (file name "StateManagementIRPCommonConstDefs.idl")

```
//File: StateManagementIRPCommonConstDefs.idl
#ifndef _STATE_MANAGEMENT_IRP_COMMON_CONST_DEFS_IDL_
#define _STATE_MANAGEMENT_IRP_COMMON_CONST_DEFS_IDL_

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* Module: StateManagementIRPCommonConstDefs
This module contains commonly used definitions for State Management IRP
=========================================================================
*/
module StateManagementIRPCommonConstDefs
{
    /*
    Definition of Operational State based on X.721 [3], if mandatory.
    */
    enum OperationalState
    {
        Disabled, Enabled
    };

    /*
    Definition of Usage State based on X.721 [3], if mandatory.
    */
    enum UsageState
    {
        Idle, Active, Busy
    };

    /*
    Definition of Administrative State based on X.721 [3], if mandatory.
    */
    enum AdministrativeState
    {
        Locked, Unlocked, ShuttingDown
    };

    /*
    Definition of Alarm Status based on M.3100 [4], if mandatory.
    */
    enum AlarmStatus
    {
        CLEARED, INDETERMINATE, WARNING, MINOR, MAJOR, CRITICAL
    };

    /*
    Definition of Procedural Status based on X.721 [3], if mandatory.
    */
    enum ProceduralStatusValues
    {
        InitializationRequired, NotInitialized, Initializing, Reporting,
        Terminating
    };
    typedef sequence <ProceduralStatusValues,5> ProceduralStatus;

    /*
    Definition of Availability Status based on X.721 [3], if mandatory.
    */
    enum AvailabilityStatusValues
    {
        InTest, Failed, PowerOff, OffLine, OffDuty, Dependency, Degraded,
        NotInstalled, LogFull
    };
    typedef sequence <AvailabilityStatusValues,9> AvailabilityStatus;

    /*
    Definition of Control Status based on X.721 [3], if mandatory.
    */
    enum ControlStatusValues
    {
```

```
        SubjectToTest, PartOfServicesLocked, ReservedForTest, Suspended
    };
    typedef sequence <ControlStatusValues,4> ControlStatus;

    /*
    Definition of Standby Status based on X.721 [3], if mandatory.
    */
    enum StandbyStatus
    {
        HotStandby, ColdStandby, ProvidingService
    };

    /*
    Definition of Unknown Status based on X.721 [3], if mandatory
    (if switch is TRUE then value equal to TRUE implies "unknown status").
    */
    union UnknownStatus switch(boolean)
    {
        case TRUE: boolean value;
    };

};
#endif //_STATE_MANAGEMENT_IRP_COMMON_CONST_DEFS_IDL_
```

Annex B (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Sep 2002	SA_17	SP-020470	--	--	Submitted to TSG SA #17 for Approval	--	1.0.0	5.0.0
Mar 2003	SA_19	SP-030143	0001	--	CORBA IDL Compiler Errors, Invalid CORBA IDL Include Reference	F	5.0.0	5.1.0
Mar 2004	SA_23	SP-040105	--	--	Automatic upgrade to Rel-6 (no CR)	--	5.1.0	6.0.0
Sep 2004	SA_25	SP-040588	0003	--	Correction of the alarmStatus mapping – Align with 32.672 CM; State Management IRP Information Service	A	6.0.0	6.1.0
Sep 2004	SA_25	SP-040569	0004	--	Provide constant definitions to support state change events	B	6.0.0	6.1.0
Mar 2005	SA_27	SP-050051	0005	--	Apply the Generic System Context, update of reference to IS specification – Align with TS 32.672	F	6.1.0	6.2.0
Jun 2005	SA_28	SP-050300	0007	--	Align AlarmStatus with the IS in TS 32.672	A	6.2.0	6.3.0
Dec 2005	SA_30	SP-050722	0008	--	Correct IDL errors prevent compilation	F	6.3.0	6.4.0
Jun 2007	SA_36	--	--	--	Automatic upgrade to Rel-7 (no CR) at freeze of Rel-7. Deleted reference to CMIP SS, discontinued from R7 onwards.	--	6.4.0	7.0.0
Dec 2008	SA_42	--	--	--	Upgrade to Release 8	--	7.0.0	8.0.0

History

Document history		
V8.0.0	January 2009	Publication