
Source: SA5 (Telecom Management)
Title: Rel-6 TS 32.743-100 Signalling Transport Network (STN) interface
Network Resource Model (NRM) Integration Reference Point (IRP):
CORBA Solution Set - for Approval
Document for: Approval
Agenda Item: 7.5.3

3GPP TSG-SA5 (Telecom Management)
Meeting #39, Montreal, Canada, 16-20 Aug 2004

S5-048744

Presentation of Technical Specification to TSG SA

Presentation to: TSG SA Meeting #25
Document for presentation: TS 32.743, Version 1.0.0
Presented for: Approval

Abstract of document:

This TS defines the CORBA SS for the Signalling Transport Network (STN) interface NRM IRP.

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

Purpose of These Specifications:

Signalling Transport Network is an important part of mobile network and the configuration, fault as well as performance should be managed through Itf-N. Signalling Transport Network Interface NRM IRP is defined as a capability to achieve this goal for Release 6.

This CORBA SS is intended for Release 6 and is part of the Signalling Transport Network Interface NRM IRP, which consists of:

3GPP TS 32.741: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Requirements".
3GPP TS 32.742: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".
3GPP TS 32.743: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".
3GPP TS 32.744: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".
3GPP TS 32.745: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) file format definition".

Changes since last presentation to TSG-SA: New.

Outstanding Issues: None.

Contentious Issues: None.

3GPP TS 32.743 V1.0.0 (2004-09)

Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication management;
Configuration Management (CM);
Signalling Transport Network (STN) interface Network
Resource Model (NRM) Integration Reference Point (IRP):
Common Object Request Broker Architecture (CORBA)
Solution Set (SS)
(Release 6)**



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Keywords

Signalling Transport Network, management,
CORBA

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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; Configuration Management (CM); as identified below:

- TS 32.741: "Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Requirements".
- TS 32.742: "Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- TS 32.743: "Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Common Object Request Broker Architecture (CORBA) Solution Set (SS)".**
- TS 32.744: "Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Common Management Information Protocol (CMIP) Solution Set (SS)".
- TS 32.745: "Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); 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 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 purpose of this STN Network Resources IRP: CORBA Solution Set is to define the mapping of the IRP information model (see 3GPP TS 32.742 [4]) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

This Solution Set specification is related to 3GPP TS 32.742 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 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [4] 3GPP TS 32.742: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- [5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".
- [6] 3GPP TS 32.303: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

3 Definitions and abbreviations

3.1 Definitions

For terms and definitions please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3] and 3GPP TS 32.742 [4].

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
IS	Information Service
IDL	Interface Definition Language

IRP	Integration Reference Point
MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set
STN	Signalling Transport Network

4 Architectural features

The overall architectural feature of STN Network Resources IRP is specified in 3GPP TS 32.742 [4]. This clause specifies features that are specific to the CORBA SS.

4.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [6]).

4.2 Syntax for Distinguished Names and Versions

The format of a Distinguished Name is defined in 3GPP TS 32.300 [5].

5 Mapping

5.1 General mappings

Attributes modelling associations as defined in the NRM (here also called "reference attributes") are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

5.2 STN NRM Information Object Class (IOC) mapping

This Solution Set supports reference attributes for relations other than containment relations between objects. Reference attributes are therefore introduced in each MOC where needed.

5.2.1 IOC MtpSignPoint

Mapping from NRM IOC MtpSignPoint attributes to SS equivalent MOC MtpSignPoint attributes

NRM Attributes of IOC MtpSignPoint in 3GPP TS 32.742 [4]	SS Attributes	SS Type	Qualifier
mtpSignPointId	mtpSignPointId	string	Read-Only, M
pointCode	pointCode	unsigned long	Read-Only, M
networkIndicator	networkIndicator	STNNetworkResourcesIRPSystem::AttributeTypes::NetworkIndicatorType	Read-Only, M
pointCodeLength	pointCodeLength	STNNetworkResourcesIRPSystem::AttributeTypes::PointCodeLengthType	Read-Only, M
spType	spType	STNNetworkResourcesIRPSystem::AttributeTypes::SPTYPEType	Read-Only, M
userLabel	userLabel	string	Read-Write, M
relatedObjects	relatedObjects	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M

5.2.2 IOC SignLinkSetTp

Mapping from NRM IOC SignLinkSetTp attributes to SS equivalent MOC SignLinkSetTp attributes

NRM Attributes of IOC SignLinkSetTp in 3GPP TS 32.742 [4]	SS Attributes	SS Type	Qualifier
signLinkSetTpId	signLinkSetTpId	string	Read-Only, M
adjPc	adjPc	unsigned long	Read-Only, M
userLabel	userLabel	string	Read-Write, M
maxCapacityLS	maxCapacityLS	float	Read-Only, M

5.2.3 IOC SignLinkTp

Mapping from NRM IOC SignLinkTp attributes to SS equivalent MOC SignLinkTp attributes

NRM Attributes of IOC SignLinkTp in 3GPP TS 32.742 [4]	SS Attributes	SS Type	Qualifier
signLinkTpId	signLinkTpId	string	Read-Only, M
slCode	slCode	unsigned long	Read-Only, M
slsCodeNormalList	slsCodeNormalList	STNNetworkResourcesIRPSystem::AttributeTypes::SLSListType	Read-Only, M
slsCodeCurrentList	slsCodeCurrentList	STNNetworkResourcesIRPSystem::AttributeTypes::SLSListType	Read-Only, M
linkTpStatus	linkTpStatus	STNNetworkResourcesIRPSystem::AttributeTypes::LinkStatusType	Read-Only, M
maxCapacitySL	maxCapacitySL	float	Read-Only, M
userLabel	userLabel	string	Read-Write, M
signLinkType	signLinkType	STNNetworkResourcesIRPSystem::AttributeTypes::SignLinkTypeType	Read-Only, M

5.2.5 IOC SignRouteSetNePart

Mapping from NRM IOC SignRouteSetNePart attributes to SS equivalent MOC SignRouteSetNePart attributes

NRM Attributes of IOC SignRouteSetNePart in 3GPP TS 32.742 [4]	SS Attributes	SS Type	Qualifier
signRouteSetNePartId	signRouteSetNePartId	string	Read-Only, M
destinationPc	destinationPc	unsigned long	Read-Only, M
userLabel	userLabel	string	Read-Write, M
loadsharingInformationRouteSetNePart	loadsharingInformationRouteSetNePart	string	Read-Only, M

5.2.6 IOC SignRouteNePart

Mapping from NRM IOC SignRouteNePart attributes and association roles to SS equivalent MOC SignRouteNePart attributes

NRM Attributes/association roles of IOC SignRouteNePart in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
signRouteNePartId	signRouteNePartId	string	Read-Only, M
signLinkSetTpPointer	signLinkSetTpPointer	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M
fixedPriority	fixedPriority	unsigned long	Read-Only, M
userLabel	userLabel	string	Read-Write, M

6 Rules for NRM extensions

This clause discusses how the models and IDL definitions provided in the present document can be extended for a particular implementation and still remain compliant with 3GPP SA5's specifications.

6.1 Allowed extensions

Vendor-specific MOCs may be supported. The vendor-specific MOCs may support new types of attributes. The 3GPP SA5-specified notifications may be issued referring to the vendor-specific MOCs and vendor-specific attributes. New MOCs shall be distinguishable from 3GPP SA5 MOCs by name. 3GPP SA5-specified and vendor-specific attributes may be used in vendor-specific MOCs. Vendor-specific attribute names shall be distinguishable from existing attribute names.

NRM MOCs may be subclassed. Subclassed MOCs shall maintain the specified behaviour of the 3GPP SA5's superior classes. They may add vendor-specific behaviour with vendor-specific attributes. When subclassing, the naming attributes cannot be changed. The subclassed MOC shall support all attributes of its superior class. Vendor-specific attributes cannot be added to 3GPP SA5 NRM MOCs without subclassing.

When subclassing, the 3GPP SA5-specified containment rules and their specified cardinality shall still be followed. As an example, ManagementNode (or its subclasses) shall be contained under SubNetwork (or its subclasses).

Managed Object Instances may be instantiated as CORBA objects. This requires that the MOCs be represented in IDL. 3GPP SA5's NRM MOCs are not currently specified in IDL, but may be specified in IDL for instantiation or subclassing purposes. However, management information models should not require that IRPManagers access the instantiated managed objects other than through supported methods in the present document.

Extension rules related to notifications (Notification categories, Event Types, Extended Event Types etc.) are FFS.

6.2 Extensions not allowed

The IDL specifications in the present document cannot be edited or altered. Any additional IDL specifications shall be specified in separate IDL files.

IDL interfaces (note: not MOCs) specified in the present document may not be subclassed or extended. New interfaces may be defined with vendor-specific methods.

Annex A (normative): IDL specifications

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

```
#ifndef STNNetworkResourcesIRPSystem_idl
#define STNNetworkResourcesIRPSystem_idl

#pragma prefix "3gppsa5.org"

module STNNetworkResourcesIRPSystem
{
    /**
     * This module adds datatype definitions for types
     * used in the NRM which are not basic datatypes defined
     * already in CORBA.
     */
    module AttributeTypes
    {
        enum NetworkIndicatorType
        {
            International,
            Spare,
            National,
            NationalSpare
        };

        enum PointCodeLengthType
        {
            BITS_24,
            BITS_14
        };

        enum SPTTypeType
        {
            SEP,
            STP,
            STEP
        };

        typedef unsigned long SLSType; // 0..15
        typedef sequence<SLSType,16> SLSListType;

        enum LinkStatusType
        {
            Deactivated,
            Failed,
            LocalBlocked,
            RemoteBlocked,
            LocalInhibited,
            RemoteInhibited
        };

        enum SignLinkTypeType
        {
            ST_64K,
            ST_2M
        };
    }
}
```

```
};  
};  
#endif
```

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

```
#ifndef STNNetworkResourcesIRPDefs_idl  
#define STNNetworkResourcesIRPDefs_idl  
  
#pragma prefix "3gppsa5.org"  
  
/**  
 * This module defines constants for each MO class name and  
 * the attribute names for each defined MO class.  
 */  
module STNNetworkResourcesIRPDefs  
{  
  
    /**  
     * Definitions for MO class MtpSignPoint  
     */  
    interface MtpSignPoint: GenericNetworkResourcesNRMDefs::Top  
    {  
        const string CLASS = "MtpSignPoint";  
  
        // Attribute Names  
        //  
        const string mtpSignPointId = "mtpSignPointId";  
        const string pointCode = "pointCode";  
        const string networkIndicator = "networkIndicator";  
        const string pointCodeLength = "pointCodeLength";  
        const string spType = "spType";  
        const string userLabel = "userLabel";  
        const string relatedObjects = "relatedObjects";  
    };  
  
    /**  
     * Definitions for MO class SignLinkSetTp  
     */  
    interface SignLinkSetTp: GenericNetworkResourcesNRMDefs::Top  
    {  
        const string CLASS = "SignLinkSetTp";  
  
        // Attribute Names  
        //  
        const string signLinkSetTpId = "signLinkSetTpId";  
        const string adjPc = "adjPc";  
        const string userLabel = "userLabel";  
        const string maxCapacityLS = "maxCapacityLS";  
    };  
  
    /**  
     * Definitions for MO class SignLinkTp  
     */  
    interface SignLinkTp: GenericNetworkResourcesNRMDefs::Top  
    {  
        const string CLASS = "SignLinkTp";
```

```
// Attribute Names
//
const string signLinkTpId = "signLinkTpId";
const string slCode = "slCode";
const string slsCodeNormalList = "slsCodeNormalList";
const string slsCodeCurrentList = "slsCodeCurrentList";
const string linkTpStatus = "linkTpStatus";
const string maxCapacitySL = "maxCapacitySL";
const string userLabel = "userLabel";
const string signLinkType = "signLinkType";
};

/**
 * Definitions for MO class SignRouteSetNePart
 */
interface SignRouteSetNePart: GenericNetworkResourcesNRMDefs::Top
{
    const string CLASS = "SignRouteSetNePart";

    // Attribute Names
    //
    const string signRouteSetNePartId = "signRouteSetNePartId";
    const string destinationPc = "destinationPc";
    const string userLabel = "userLabel";
    const string loadsharingInformationRouteSetNePart =
"loadsharingInformationRouteSetNePart";
};

/**
 * Definitions for abstract MO class SignRouteNePart
 */
interface SignRouteNePart: GenericNetworkResourcesNRMDefs::Top
{
    const string CLASS = "SignRouteNePart";

    // Attribute Names
    //
    const string signRouteNePartId = "signRouteNePartId";
    const string signLinkSetTpPointer = "signLinkSetTpPointer";
    const string fixedPriority = "fixedPriority";
    const string userLabel = "userLabel";
};

};

#endif
```

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Sep 2004	S_25	SP-040602	--	--	Submitted to TSG SA#25 for Approval	1.0.0	