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Technical Specification

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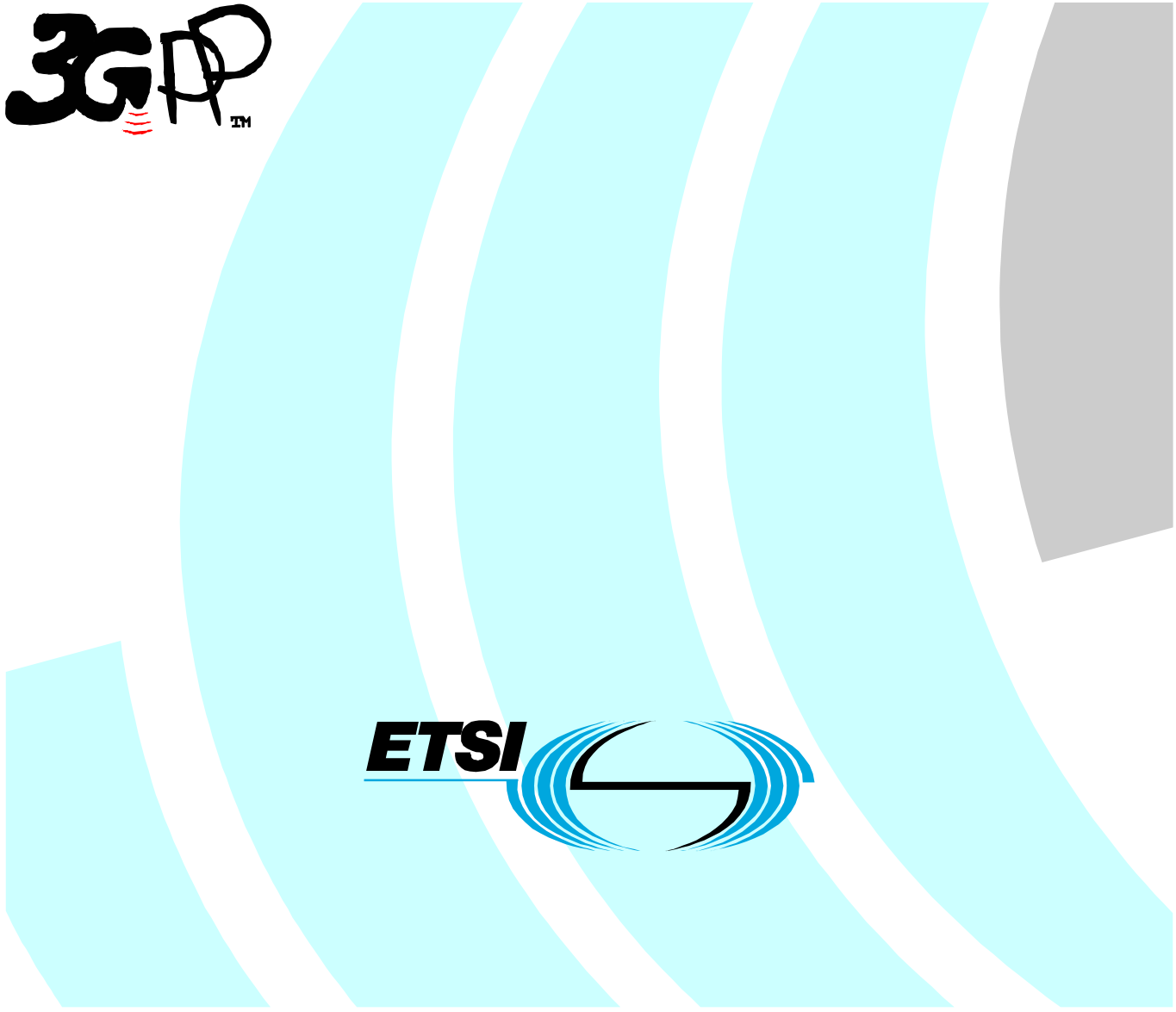
Configuration Management (CM);
Kernel CM CORBA solution set
(3GPP TS 32.663 version 5.1.0 Release 5)



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Foreword

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

The present document is 32.662 of the 32.66x-series covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Configuration Management (CM); Kernel CM, as identified below:

32.661: "Requirements";

32.662: "Information service";

32.663: "CORBA Solution set";

32.664: "CMIP Solution set".

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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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 purpose of the present document is to define the mapping of the Kernel CM IRP: IS (see 3GPP TS 32.662 [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 32.662 (V5.0.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 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM information service".

[5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[6] Object Management Group 98 (November 1998): "*Notification Service: Joint Revised Submission OMG TC Document telecom/98-11-01*".

[7] OMG CORBA Services (November 1996): "Common Object Services Specification" (clause 4 contains the Event Service specification).

[8] The Common Object Request Broker: Architecture and Specification (for specification of valid version, see [1]).

[9] 3GPP TS 32.303: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point; CORBA solution set".

[10] 3GPP TS 32.111-3: "Telecommunication management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set".

[11] 3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information service".

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], 3GPP TS 32.600 [3] and 3GPP TS 32.662 [4] apply.

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
IDL	Interface Definition Language (OMG)
IRP	Integration Reference Point
IS	Information Service
MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set
VSE	Vendor Specific Extensions

4 IRP document version number string

The IRP document version number (sometimes called "IRPVersion" or "SS version number") string is used to identify this specification. The string is derived using a rule described in 3GPP TS 32.312 [11]. The value of this string is defined by a constant in annex A.

This string (or sequence of strings, if more than one version is supported) is returned in `getKernelCmIRPVersion` method and is carried in the first field of the notification header of all notifications related to this IRP.

5 Architectural features

The overall architectural feature of Kernel Configuration Management IRP is specified in 3GPP TS 32.662 [4]. This clause specifies features that are specific to the CORBA SS.

5.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [9]).

The contents of the Kernel CM IRP notifications are defined in the present document.

5.2 Filter language

The filter language used in the SS is the Extended Trader Constraint Language (see OMG Notification Service [6]). IRPAgents may throw a FilterComplexityLimit exception when a given filter is too complex. However, for 3GPP Release 99 an "empty filter" shall be used i.e. a filter that satisfies all MOs of a scoped search (this does not affect the filter for notifications as defined in the Notification IRP - see 3GPP TS 32.303 [9]).

5.3 Syntax for Distinguished Names and Versions

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

The version of this IRP is represented as a string (see also clause 4).

6 Mapping

6.1 General mappings

The IS parameter name managedObjectInstance is mapped into DN.

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.

If a reference attribute is changed, an AttributeValueChange notification is emitted.

6.2 Operation and Notification mapping

The Kernel CM IRP: IS (see 3GPP TS 32.662 [4]) defines semantics of operation and notification visible across the Kernel Configuration Management IRP. The following table in this subclause indicates mapping of these operations and notifications to their equivalents defined in this SS.

Table 6.2.1: Mapping from IS Notification/Operation to SS equivalents

IS Operation/ notification (3GPP TS 32.662 [4])	SS Method	Qualifier
getNRMIRPVersion	get_NRM_IRP_version	M
notifyObjectCreation (to convey of a new Managed Object created)	See Notification IRP: CORBA SS [9]	O
notifyObjectDeletion (to convey of a Managed Object deleted)	See Notification IRP: CORBA SS [9]	O
notifyAttributeValueChange (to convey of a change of one or several attributes of a Managed Object)	See Notification IRP: CORBA SS [9]	O
getIRPVersion	get_kernel_CM_IRP_versions	M
getOperationProfile	get_kernal_CM_IRP operation_profile	O
getNotificationProfile	get_kernel_CM_IRP_notification_profile	O

6.3 Operation parameter mapping

The Kernel CM IRP: IS (see 3GPP TS 32.662 [4]) defines semantics of parameters carried in operations across the Kernel Configuration Management IRP. The following tables in this subclause indicate the mapping of these parameters, as per operation, to their equivalents defined in this SS.

Table 6.3.1: Mapping from IS `getNRMIRPVersion` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
versionNumberList	Return value of type ManagedGenericIRPConstDefs::VersionNumberSet	M
vSEVersionNumberList	Return value of type ManagedGenericIRPConstDefs::VersionNumberSet	M
status	Exceptions: GetNRMIRPVersion	M

Table 6.3.2: Mapping from IS `getKernelCmIRPVersion` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
versionNumberList	return of type ManagedGenericIRPConstDefs::VersionNumberSet	M
status	exception GetKernelCmIRPVersionsException	M

Table 6.3.3: Mapping from IS `getOperationProfile` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
IrpVersion	ManagedGenericIRPConstDefs::VersionNumber kernel_CM_IRP_version	M
operationNameProfile, operationParameterProfile	Return value of type ManagedGenericIRPConstDefs::MethodList	M
Status	Exceptions: GetKernelCMIRPOperationProfileException, ManagedGenericIRPSystem::OperationNotSupported, ManagedGenericIRPSystem::InvalidParameter	M

Table 6.3.4: Mapping from IS `getNotificationProfile` parameters to SS equivalents

IS Operation parameter	SS Method parameter	Qualifier
IrpVersion	ManagedGenericIRPConstDefs::VersionNumber kernel_CM_IRP_version	M
notificationNameProfile, notificationParameterProfile	Return value of type ManagedGenericIRPConstDefs::MethodList	M
Status	Exceptions: GetKernelCMIRPNotificationProfileException, ManagedGenericIRPSystem::OperationNotSupported, ManagedGenericIRPSystem::InvalidParameter	M

6.4 Notification attribute mapping

The Kernel CM IRP: IS (see 3GPP TS 32.662 [4]) identifies and defines the semantics of attributes for `notifyObjectCreation`, `notifyObjectDeletion` and `notifyAttributeValueChange` for use for its IRP. The following table in this subclause shows the mapping of the IS notifications to SS equivalents.

Table 6.4.1: Mapping from IS notifications to SS equivalents

IS notifications in 3GPP TS 32.662 [4]	SS notifications	Qualifier
NotifyObjectCreation	push_structured_event	O
NotifyObjectDeletion	push_structured_event	O
NotifyAttributeValue Change	push_structured_event	O

The Kernel CM IRP: IS (see 3GPP TS 32.662 [4]) also qualifies the attributes. The following tables in this subclause show the mapping of these IS attributes to SS equivalents.

Table 6.4.2: Mapping from IS `Notification Header` attributes to SS equivalent

IS Attribute of `Notification Header` in 3GPP TS 32.662 [4]	SS Attribute	Qualifier
managedObjectClass	KernelCmNotifDefs::NotificationCommon::MANAGED_OBJECTCLASS	M
managedObjectInstance	KernelCmNotifDefs::NotificationCommon::MANAGED_OBJECT_INSTANCE	M
notificationId	KernelCmNotifDefs::NotificationCommon::NOTIFICATION_ID	O
eventTime	KernelCmNotifDefs::NotificationCommon::EVENT_TIME	M
systemDN	KernelCmNotifDefs::NotificationCommon::SYSTEM_DN	O
eventType	header.fixed_header.event_type.type_name	M

Table 6.4.3: Mapping from IS `notifyObjectCreation` attributes to SS equivalent OBJECT_CREATION

IS Attribute of `notifyObjectCreation` in 3GPP TS 32.662 [4]	SS Attribute	Qualifier
notificationHeader	See table 6.4.2	M
correlatedNotifications	KernelCmNotifDefs::MOCreation::CORRELATED_NOTIFICATIONS	O
additionalText	KernelCmNotifDefs::MOCreation::ADDITIONAL_TEXT	O
sourceIndicator	KernelCmNotifDefs::MOCreation::SOURCE_INDICATOR	O
attributeList	KernelCMNotifDefs::MOCreation::MOAttributeSet (contained in remainder_of_body)	O

Table 6.4.4: Mapping from IS `notifyObjectDeletion` attributes to SS equivalent OBJECT_DELETION

IS Attribute of `notifyObjectDeletion` in 3GPP TS 32.662 [4]	SS Attribute	Qualifier
notificationHeader	See table 6.4.2	M
correlatedNotifications	KernelCmNotifDefs::MODeletion::CORRELATED_NOTIFICATIONS	O
additionalText	KernelCmNotifDefs::MODeletion::ADDITIONAL_TEXT	O
sourceIndicator	KernelCmNotifDefs::MODeletion::SOURCE_INDICATOR	O
attributeList	KernelCMNotifDefs::MODeletion::MOAttributeSet (contained in remainder_of_body)	O

Table 6.4.5: Mapping from IS `notifyAttributeValueChange` attributes to SS equivalent ATTRIBUTE_VALUE_CHANGE

IS Attribute of `notifyAttributeValueChange` in 3GPP TS 32.662 [4]	SS Attribute	Qualifier
notificationHeader	See table 6.4.2	M
correlatedNotifications	KernelCmNotifDefs::AttributeValueChange::CORRELATED_NOTIFICATIONS	O
additionalText	KernelCmNotifDefs::AttributeValueChange::ADDITIONAL_TEXT	M
sourceIndicator	KernelCmNotifDefs::AttributeValueChange::SOURCE_INDICATOR	O
attributeValueChangeDefinition	KernelCMNotifDefs:: AttributeValueChange::MOAttributeSet (contained in remainder_of_body)	M

7 Use of OMG Structured Event

In CORBA SS, OMG defined `StructuredEvent` (see OMG Notification Service [6]) is used to carry notifications. This clause identifies the OMG defined `StructuredEvent` attributes that carry the attributes of notifications defined in 3GPP TS 32.662 [4].

The composition of OMG Structured Event, as defined in OMG Notification Service [6], is:

```
Header
      Fixed Header
           domain_name
           type_name
           event_name
      Variable Header
Body
      filterable_body_fields
      remainder_of_body
```

The following table in this clause lists all OMG Structured Event attributes in its leftmost column. The second column identifies the SS attributes, if any, that shall be carried there.

Attributes that are denoted as "optional" may be absent from the OMG Structured Event. As an example, if the optional `additionalText` attribute is not used for a particular notification, then the IRPAgent may exclude `additionalText` from the filterable body fields for that particular notification. Individual notifications from the same IRPAgent may include or exclude the same optional attribute.

Table 7.1: Use of OMG Structured Event

SS Attribute	OMG CORBA Structured Event attribute	Comment
There is no corresponding SS attribute	domain_name	It contains the supported SS document version (see clause 4). This version is defined by the string constant KernelCmIRPSystem::VERSION defined in this specification.
Event Type	type_name	It is an attribute of notificationHeader. It shall indicate one of the following ITU-T defined semantics: Object Creation, Object Deletion and Attribute Value Change. It is a string. Its value is either defined by KernelCmNotifDefs::MOCreation::EVENT_TYPE, KernelCmNotifDefs::MODeletion::EVENT_TYPE or KernelCmNotifDefs::AttributeValueChange::EVENT_TYPE
-	event_name	Shall be set to an empty string
There is no corresponding SS attribute	variable Header	
Managed Object Class, Managed Object Instance	One NV pair of filterable_ body_fields	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. They are attributes of notificationHeader. Name of NV pair is a string, KernelCmNotifDefs::<interface>::MANAGED_OBJECT_INSTANCE where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a string. This string conveys the semantics of both the Managed Object Class and the Managed Object Instance. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [9]).
Notification Id	One NV pair of filterable_ body_fields	It is an attribute of notificationHeader. Name of NV pair is a string, KernelCmNotifDefs::<interface>::NOTIFICATION_ID where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a long. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [9]).
Event Time	One NV pair of filterable_ body_fields	It is an attribute of notificationHeader. Name of NV pair is a string, KernelCmNotifDefs::<interface>::EVENT_TIME where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a ManagedGenericIRPConstDefs::IRPTime defined in 3GPP TS 32.303 [9]. See corresponding table in Notification IRP: CORBA SS (3GPP TS 32.303 [9]).

SS Attribute	OMG CORBA Structured Event attribute	Comment
System DN	One NV pair of filterable_ body_fields	It is an attribute of notificationHeader. Name of NV pair is a string, KernelCmNotifDefs::<interface>::SYSTEM_DN where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a string. See corresponding table in Notification IRP: CORBA SS [9].
Correlated Notifications	One NV pair of filterable_ body_fields	It is an attribute of the Object Creation, Object Deletion and Attribute Value Change notifications. Name of NV pair is a string, KernelCmNotifDefs::<interface>::CORRELATED_NOTIFICATIONS where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a NotificationIRPConstDefs::CorrelatedNotificationSetType defined in 3GPP TS 32.303 [9].
Additional Text	One NV pair of filterable_ body_fields	It is an attribute of the Object Creation, Object Deletion and Attribute Value Change notifications. Name of NV pair is a string, KernelCmNotifDefs::<interface>::ADDITIONAL_TEXT where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a string.
Source Indicator	One NV pair of filterable_ body_fields	It is an attribute of the Object Creation, Object Deletion and Attribute Value Change notifications. Name of NV pair is a string, KernelCmNotifDefs::<interface>::SOURCE_INDICATOR where <interface> is either MOCreation, MODeletion or AttributeValueChange. Value of NV pair is a string with values of either KernelCmNotifDefs::<interface>::RESOURCE_OPERATION, KernelCmNotifDefs::<interface>::MANAGEMENT_OPERATION or KernelCmNotifDefs::<interface>::UNKNOWN_OPERATION where <interface> is either MODeletion, MOCreation or AttributeValueChange.
There is no corresponding SS attribute		Is used to transport attribute information. For Object Creation notification, this is defined by KernelCmNotifDefs::MOCreation::InitialAttributeValues. For Object Deletion notification, this is defined by KernelCmNotifDefs::MODeletion::AttributeValues. For Attribute Value Change notification, this is defined by KernelCmNotifDefs::AttributeValueChange::ModifiedAttributeSet. The name component of InitialAttributeValues, AttributeValues and ModifiedAttributeSet will be set to attribute names defined in KernelCmNRMDefs.

8 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.

8.1 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, 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). Also, in Rel-4, there may only be 0 or 1 `ManagementNode` (or its subclasses) 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 for further study.

8.2 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): CORBA IDL, Access Protocol

```
#ifndef KernelCmIRPSystem_idl
#define KernelCmIRPSystem_idl

#include "ManagedGenericIRPConstDefs.idl"
#include "ManagedGenericIRPSystem.idl"

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

module KernelCmIRPSystem
{

    exception GetKernelCMIRPNotificationProfileException { string reason; };
    exception GetKernelCMIRPOperationProfileException { string reason; };
    exception GetNRMIRPVersion { string reason; };

    /**
     * The KernelCmIrpOperations interface.
     * Supports a number of Resource Model versions.
     */
    interface KernelCmIrpOperations
    {

     /**
      * Get the version(s) of the interface
      *
      * @raises GetNRMIRPVersion when the system for some reason
      *   can not return the supported versions.
      * @returns all supported versions.
      */
      void get_NRM_IRP_version
      (
         out ManagedGenericIRPConstDefs::VersionNumberSet versionNumberList,
         out ManagedGenericIRPConstDefs::VersionNumberSet vSEVersionNumberList
      )
         raises (GetNRMIRPVersion);


      /*
      Return the list of all supported operations and their supported
      parameters for a specific KernelCM IRP version.
      */
      ManagedGenericIRPConstDefs::MethodList get_kernel_CM_IRP_operation_profile (
         in ManagedGenericIRPConstDefs::VersionNumber kernel_CM_IRP_version
      )
      raises (GetKernelCMIRPOperationProfileException,
              ManagedGenericIRPSystem::OperationNotSupported,
              ManagedGenericIRPSystem::InvalidParameter);

      /*
      Return the list of all supported notifications and their supported
      parameters for a specific KernelCM IRP version.
      */
      ManagedGenericIRPConstDefs::MethodList
         get_kernel_CM_IRP_notification_profile
      (
         in ManagedGenericIRPConstDefs::VersionNumber kernel_CM_IRP_version
      )
      raises (GetKernelCMIRPNotificationProfileException,
              ManagedGenericIRPSystem::OperationNotSupported,
              ManagedGenericIRPSystem::InvalidParameter);

    };
};
#endif
```

Annex B (normative): CORBA IDL, Notification Definitions

```
#ifndef KernelCmNotifDefs_idl
#define KernelCmNotifDefs_idl

#include <TimeBase.idl>          // CORBA Time Service
#include <NotificationIRPConstDefs.idl>

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

module KernelCmNotifDefs
{


      /**
       * Definition of ITU-T defined semantics.
       * These constants are used in the type_name
       * (header.fixed_header.event_type.type_name)
       * field to denote the notification type
       * Note all values are unique among themselves.  Other IRP documents
       * cannot use the same values.
       */
      const string ET_OBJECT_CREATION = "x6";

      const string ET_OBJECT_DELETION = "x7";

      const string ET_ATTRIBUTE_VALUE_CHANGE = "x8";



      /**
       * Information about one attribute
       * - name defines the name of the attribute
       * - value defines the value of the attribute
       *
       */
      struct MOAttribute
      {
         string name;
         any value;
      };


      /**
       * A set of attribute names and values
       */
      typedef sequence<MOAttribute> MOAttributeSet;


      /**
       *  This interface defines fields that are common for all
       *  notification types.
       *  All constants in the scope of this interface will be
       *  visible in the interfaces that inherits this.
       *  For instance constant
       *  NotificationCommon::MANAGED_OBJECT_CLASS
       *  can be addressed by MODeletion::MANAGED_OBJECT_CLASS
       */
      /*
      This block identifies attributes which are included as part of the Kernel
      CM IRP. These attribute values should not clash with those defined for the
      attributes of notification header (see IDL of Notification IRP).
      */
      interface AttributeNameValue
      {
         const string SOURCE_INDICATOR = "SOURCE";
         const string ADDITIONAL_TEXT = "ADD_TEXT";
         const string CORRELATED_NOTIFICATIONS = "CORREL_NOTIFS";
      };

      interface NotificationCommon
```

```
  {

     /**
      * This constant defines a field in the filterable
      * information in a StructuredEvent.
      * This string is mapped to the name part of a
      * Property in the event and the value part will
      * carry the MO class name represented
      * as a string.
      */
     const string MANAGED_OBJECT_CLASS =
       NotificationIRPConstDefs::AttributeNameValue::MANAGED_OBJECT_CLASS;



     /**
      * This constant defines a field in the filterable
      * information in a StructuredEvent.
      * This string is mapped to the name part of a
      * Property in the event and the value part will
      * carry the MO distinguished name represented
      * as a string.
      */
     const string MANAGED_OBJECT_INSTANCE =
NotificationIRPConstDefs::AttributeNameValue::MANAGED_OBJECT_INSTANCE;



     /**
      *  This constant defines the name of the notification
      *  ID property, which is transported in the
      *  filterable_body_fields
      */
     const string NOTIFICATION_ID =
       NotificationIRPConstDefs::AttributeNameValue::NOTIFICATION_ID;



     /**
      *  This constant defines the name of the
      *  event time property, which is transported in the
      *  filterable_body_fields.
      *  The data type for the value of this property
      *  is defined by datatype CommonIRPConstDefs::IRPTime
      */
     const string EVENT_TIME =
       NotificationIRPConstDefs::AttributeNameValue::EVENT_TIME;




     /**
      *  This constant defines the name of the
      *  system name property, which is transported in the
      *  filterable_body_fields
      */
     const string SYSTEM_DN =
       NotificationIRPConstDefs::AttributeNameValue::SYSTEM_DN;



     /**
      *  This constant defines the name of the
      *  source indicator  property, which is transported in the
      *  filterable_body_fields
      */
     const string SOURCE_INDICATOR =
       KernelCmNotifDefs::AttributeNameValue::SOURCE_INDICATOR;

     /**
      * Valid values for the SOURCE_INDICATOR
      * property
      */
     const string RESOURCE_OPERATION =  "RESOURCE OPERATION";
     const string MANAGEMENT_OPERATION = "MANAGEMENT OPERATION";
     const string UNKNOWN_OPERATION = "UNKNOWN";
```

```
   /**
    *  This constant defines the name of the
    *  additional text property,
    *  which is transported in the filterable_body
    *  fields.
    *  The data type for the value of this property
    *  is a string.
    */
   const string ADDITIONAL_TEXT =
     KernelCmNotifDefs::AttributeNameValue::ADDITIONAL_TEXT;



   /**
    *  This constant defines the name of the
    *  correlated notifications property,
    *  which is transported in the
    *  filterable_body_fields
    *  The value part of the property is defined
    *  in the NotificationIRP;
    *    NotificationIRPConstDefs::CorrelatedNotificationSetType
    */
   const string CORRELATED_NOTIFICATIONS =
     KernelCmNotifDefs::AttributeNameValue::CORRELATED_NOTIFICATIONS;


};


/**
 *  Constant definitions for the MO deleted notification
 */
interface MODeletion : NotificationCommon
{

   const string EVENT_TYPE = ET_OBJECT_DELETION;


   /**
    * This information mapped into the remainder_of_body
    * in the StructuredEvent
    */
   typedef MOAttributeSet AttributeValues;

};



/**
 *  Constant definitions for the MO created notification
 */
interface MOCreation : NotificationCommon
{
   const string EVENT_TYPE = ET_OBJECT_CREATION;


   /**
    * This information mapped into the remainder_of_body
    * in the StructuredEvent
    */
   typedef MOAttributeSet InitialAttributeValues;

};



/**
 *  Constant definitions for the Attribute Value Change
 *  notification
 */
interface AttributeValueChange : NotificationCommon
{

   const string EVENT_TYPE = ET_ATTRIBUTE_VALUE_CHANGE;

   /**
    * Information about modidified attributes for
```

```
           * one MO instance.
           * - name defines the name of the attribute
           * - newValue defines the new value of the attribute
           * - oldValue defines the previous value of the attribute
           *    The value is optional, which means that it may contain
           *    an empty any (null inserted in the any).
           *
           */
          struct ModifiedAttribute
          {
             string name;
             any newValue;
             any oldValue;
          };


          /**
           * This information mapped into the remainder_of_body
           * in the StructuredEvent.
           */
          typedef sequence<ModifiedAttribute> ModifiedAttributeSet;


        };

};

#endif
```

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2002	S_17	SP-020466	--	--	Submitted to TSG SA #17 for Approval	1.0.0	5.0.0
Mar 2003	S_19	SP-030143	001	--	CORBA IDL Compiler Errors	5.0.0	5.1.0

History

Document history		
V5.0.0	September 2002	Publication
V5.1.0	March 2003	Publication