3RD GENERATION PARTNERSHIP PROJECT 2 "3GPP2"

TSG CORRESPONDENCE

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Mr. Michael Truss
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**Re: Questions and comments regarding network resource models and measurements**

Dear Mr. Truss,

As you are aware, 3GPP2 TSG-S WG5 is currently developing 3GPP2 S.S0028-B that includes adoption of Interface IRP's and creating similar NRM IRP specifications, based on IRP methodology. During this process, 3GPP2 TSG-S WG5 came across a number of aspects of concerns, which are listed below.

1. *Definition of CLASS (as const string for class, const string for the DN) in IDL is needed for querying and/or filtering*

   3GPP2 TSG-S WG5 believes that the definition of a constant string corresponding to the attribute TS32622::Top::objectClass is needed to enable the specification of scope and filter expressions e.g., within CM IRPs and the establishment of measurement jobs and threshold monitors within the PM IRP. This will also be useful in the specification of distinguished names in terms of the specification of IOC/MOC instances.

2. *Inheritance of relationships*

   In a number of cases within 3GPP NRM IRPs, the way of extending class behavior is not following any known object oriented technique (e.g. inheritance, polymorphism). The general situation in which this occurs is as follows: A given NRM IRP imports an IOC from the Generic NRM IRP (as defined in TS32.622) and then adds additional relationships to that imported IOC. A specific example of this issue can be seen in the UTRAN NRM IRP. The UTRAN NRM IRP adds new containment to SubNetwork. See (TS 33.642) at clause 6.2.1.1 (e.g. ExternalGsmCell, ExternalUtranCell).

   Within Object Theory, there are two mechanisms for achieving the desired goal. They are subclass/subtype and extend or polymorphism. The subclass/subtype and extend approach would

impact many existing implementations and may not considered to be the most effective solution. The second mechanism, polymorphism is recommended and the following implementation is suggested:

- In Generic NRM IRP, create a new abstract IOC, called NameContainableElement that inherits from IOC TS32622::Top.
- In Generic NRM IRP, the ManagedElement, ManagedFunction, and SubNetwork (and possibly other IOCs) should inherit from this new IOC (NameContainableElement).
- Any IOC within the Generic NRM IRP, any IOC that may contain (via naming) another IOC (defined in other NRM IRPs) should contain (via naming) NameContainableElement.
- Within the various radio-access technology and core NRM IRP specifications, any IOCs that may be name contained by another IOC (defined in Generic NRM IRP) should inherit from either ManagedFunction, ManagedElement, SubNetwork (i.e., those that have inherited from NameContainableElement), or directly from NameContainableElement.

Note that the polymorphism solution (as a pattern) may be applied to relationships that are not name containment.

Regarding the specific implementation of either mechanism, 3GPP2 TSG-S WG5 would like to work together with 3GPP SA5 to agree on a common approach.

3. *Solid diamonds for containment need to be clarified*

   The 3GPP UML Repertoire (currently specified in Annex G of TS32.102) requires the use of a strong aggregation (filled diamond) and the «names» stereotype to indicate named containment. The UML diagrams within the various 3GPP IRP IS documents do not conform to this rule. This is problematic as it is not possible to differentiate named containment from simple aggregation from the specification. This will likely lead to differences in implementation between vendors and impact the interoperability of IRPManagers and IRPAgents.

4. *Simplify name containment diagram is suggested as it is sufficient to have containment between Managed Element and Managed Function*

   The diagrams for name containment within 3GPP SA5 NRM IRP specifications are very complex, and difficult to read, especially for name containment of ManagedFunction subclasses/subtypes by ManagedElement subclasses/subtypes. It is sufficient to establish a name containment relationship between ManagedElement and ManagedFunction within TS32.622. With said name containment relationship established in TS32.622, it is no longer necessary to draw the complicated and difficult to read diagrams within the RAN technology specific network resource model specifications. It is sufficient to document within the normative text for a specific ManagedElement subclass/subtype as to which specific ManagedFunction subclasses/subtypes that said ManagedElement subclass/subtype may contain via the «names» stereotype applied to a UML composition relationship.

5. *Missing Cardinality*

   Many of the UML structural diagrams within Interface IRP and NRM IRP IS documents that depict containment (named and otherwise) are missing cardinality. From an UML perspective, this is problematic as there is no concept of default cardinality within UML. Lack of the cardinality specification within the UML diagrams will lead to differences in implementation.

6. *MOreference name as a term is misleading as not an IOR*

   The MOReference type is used to define attributes that enable one IOC/MOC instance to refer to another IOC/MOC reference. The MOReference type is specified as a string that contains a distinguished name referent. 3GPP2 TSG-S WG5 feels that this is convoluted, and should be simplified to use the DistinguishedName type which is also a string that resolves to/contains a distinguished name. Additionally, when this type is applied in CORBA Solution Sets, it is also confusing, as CORBA uses a concept of IORs (Inter-ORB references) to identify remote interfaces,

and MOReference is a string, not an IOR. The use of the DistinguishedName type will allow for a more simple and cleaner Interface IRP or NRM IRP specification.

7. *3GPP2 TSG-S WG5 recommends to adopt 3GPP2 defined text for the legal value of managedElementType:*

   The set of legal values is composed of <network element name> (with initial letter lower case) from all Managed Object Classes contained directly or indirectly underneath this managed object class of the form: <Network element name>Function. As an example, if a particular ManagedElement has PdsnFunction and AaaFunction as contained classes, the managedElementType set would contain "pdsn" and "aaa". The managedElementType attribute may contain both 3GPP2/3GPP-defined and vendor-defined network element names. Managed Object Classes that are not of the form <>Function will not appear in the managedElementType attribute.

8. *3GPP2 TSG-S WG5 recommends investigate potential IS template changes for SA5.*

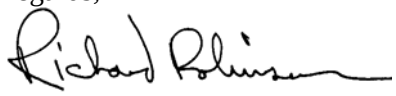
   In many cases the tables defining the notifications that may be emitted by a given IOC are repetitive. TSG-S WG5 feels that the specification of IOCs can be streamlined by the addition of tables specifying the set of common notifications for a set of IOCs and the identification of membership of a particular IOC within an IOC set for purposes of notification

9. *Measurement Name*

   3GPP2 TSG-S WG5 recommends removal of the measurement name length limit constraint in 3GPP TS 32.401 or make the limit longer (e.g. 64).

3GPP2 TSG-S would appreciate consideration of these aspects of concern and welcome further discussions. If you have additional questions, please contact: Jörg Schmidt, Chair 3GPP2 TSG-S WG5 (3GPP2 OAM&P).

Regards,



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