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Title	**Universal Naming Schema for SAP Primitives**
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Source(s)	Guo-Qiang, Wang guoqiang@nortel.com Nortel 3500 Carling Ave Ottawa, Ontario, Canada K2H 8E9 Voice: 613-765-4195 Fax: 613-768-1140
Re:	Contribution on comments to IEEE S802.16g-05/008r1
Abstract	In this contribution, we describe the universal naming schema for both M-SAP and C-SAP service primitives.
Purpose	Adoption
Notice	
Release	
Patent Policy and Procedures	

Universal Naming Schema for M-SAP and C-SAP Services Primitives

G.Q, Wang

Nortel

1. Problem Statement

The purpose of this contribution is to describe a universal naming schema for M-SAP and C-SAP service primitives defined in 802.16g baseline documentation. This naming schema provides a unified and generic format for syntax and semantics of M-SAP and C-SAP primitives. This naming approach is not only aligned with IRP (Integration Reference Point) model adopted in 802.16g baseline document; but also provides an implementation-agnostic specification for M-SAP and C-SAP primitives. With this generic specification, it will be easier to map specified primitives to all possible implementation solutions of M-SAP and C-SAP.

2. Proposed Text

[Insert section 14.4.1.1.3 and 14.4.1.1.4 as follows]

14.4.1.1.3 Universal Naming Schema for SAP service primitives

There are four types of messages defined for SAP interface: Request, Response, Notification, and Acknowledgement. These messages are defined to support M-SAP/C-SAP operation services and notification services. Within these four messages, Response is a mandatory message to confirm the associated Request message; Notification is used to notify an event; Acknowledgement is an optional message used either to answer a request message (for three-way messaging) or to confirm the associated Notification message (i.e., Notification is either confirmed or un-confirmed operation).

These messages are symmetrical between communication peers. That is, both managers and agents can send these messages to the other depending on the functional behavior defined for M-SAP and C-SAP.

The universal naming schema consists of three parts: SAP-type, Function-type and Message-type.

- SAP-type: M (stands for Management) and C (stands for Control).
- Function-type: this type represents all management and control functions. For example, CM (Configuration Mgmt), PM (Performance Mgmt), ALM (Alarm Mgmt), HO (Hand Off), PG (Paging), SFP (Service Flow Provisioning), RRM (Radio Resource Mgmt), etc.
- Message-type: Request, Response, Notification, Acknowledgement

Primitive name Examples :
M-CM-Request()/M-CM-Response,
C-HO-Request()/C-HO-Response()/C-HO-Notification()

14.4.1.1.4 SAP Service Primitive Object Format

To be aligned with IRP model, this section defines an objected-oriented format for the syntaxes and semantics of SAP service primitives. There are two types of services: M-SAP/C-SAP operation service primitive and M-SAP/C-SAP notification service primitive.

- M-SAP/C-SAP operation service primitive:
  This primitive is defined as Primitive_name () with a parameter list. The format is like
  primitive_name (Message_id,
  Operation_type,
  Action_type,
  Object_id,
  Attribute_list,
  Filter,
  Scope,
  Action_info,
  Action_replay_info,
  Time,
  SAP_error_code)

The parameters are described briefly in the following table.

Parameter name	Mandatory /Optional	Definition
Msg_id	M	Integer uniquely identifies the primitive message
Operation_Type	M	Create, Delete, Get, Set, Action, Cancel-Get
Action_type	O	When operation type is Action, it Specifies a particular action such as Start, End, Download, Reset, etc
Object_id	M	DN / RDN of managed objects which perform the operation
Attribute_list	M	Array of pair (Attribute_ID, Attribute_value). In Get request operation, Attribute_value is Null
Filter	O	Boolean expression involving attribute value to be evaluated for all selected objects.
Scope	O	Specify the sub-tree level of the naming tree for potentially objects to be selected.
Action_info	O	used in Action request about the action to perform
Action_replay_info	O	used in Action response about action replay
Time	O	Time info about an operation
SAP_error_code	O	used in error service to give the reason of the error

- M-SAP/C-SAP notification service primitive:

This primitive is defined as Primitive_name () with a parameter list. The format is like
primitive_name (Message_id,
Event_type,
Event_info,
Object_ID,
Attribute_List,
Time,
SAP_Error_code)

The parameters are described briefly in the following table.

Parameter name	Mandatory /Optional	Definition
Msg_id	M	Integer uniquely identifies the primitive message
Event_Type	M	Specify the type of occurring event
Event_info	O	used in event request. Pass reported event info
Object_id	M	DN / RDN of managed objects which perform the operation
Attribute_list	M	Array of pair (Attribute_ID, Attribute_value).
Event_replay	O	used in event confirmation to pass event info
Time	O	Time info about an event
SAP_error_code	O	used in error service to give the reason of the error

1. HO service primitive examples (Serving BS → ASN GW)

C-HO-Request(Operation_type: Action,
Action_type: SHO/FBSS,
Object_ID: NCMS
Attribute_List: serving-BS, MS-ID, Mode, target-BS-list, SF-info,
CS-para-info)

C-HO-Response(Operation_type: Action,
Action_type: SHO/FBSS,
Object_ID: NCMS
Attribute_List: serving-BS, MS-ID, Mode, target-BS-list)

C-HO-Notification(Event_type: SHO/FBSS,
Object_ID: Serving-BS
Attribute_List: serving-BS, MS-ID, Mode, SF-info, CS-para-info)

2. HO service primitive examples (ASN GW → Target BS)

C-HO-Request (Operation_type: Action,
Action_type: SHO/FBSS
Object_ID: Target-BS
Attribute_List: serving-BS, MS-ID, Mode, HO-Quality, SF-info, CS-para-info)

C-HO-Response(Operation_type: Action,
Action_type: SHO/FBSS
Object_ID: Target-BS
Attribute_List: serving-BS, MS-ID, Mode, MS-Access, New-access, HO-quality)

References

[1] IEEE-Std 802.16-2004
[2] IEEE 802.16e/D11