

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Universal Naming Schema for SAP Primitives	
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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	
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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 14.4.4, 14.4.4.1. and 14.4.4.2 as follows]

14.4.4 M-SAP and C-SAP service primitive template

14.4.4.1 Universal Naming Schema for SAP service primitives

Figure 1 shows an example of SAP interface between BS and NCMS.

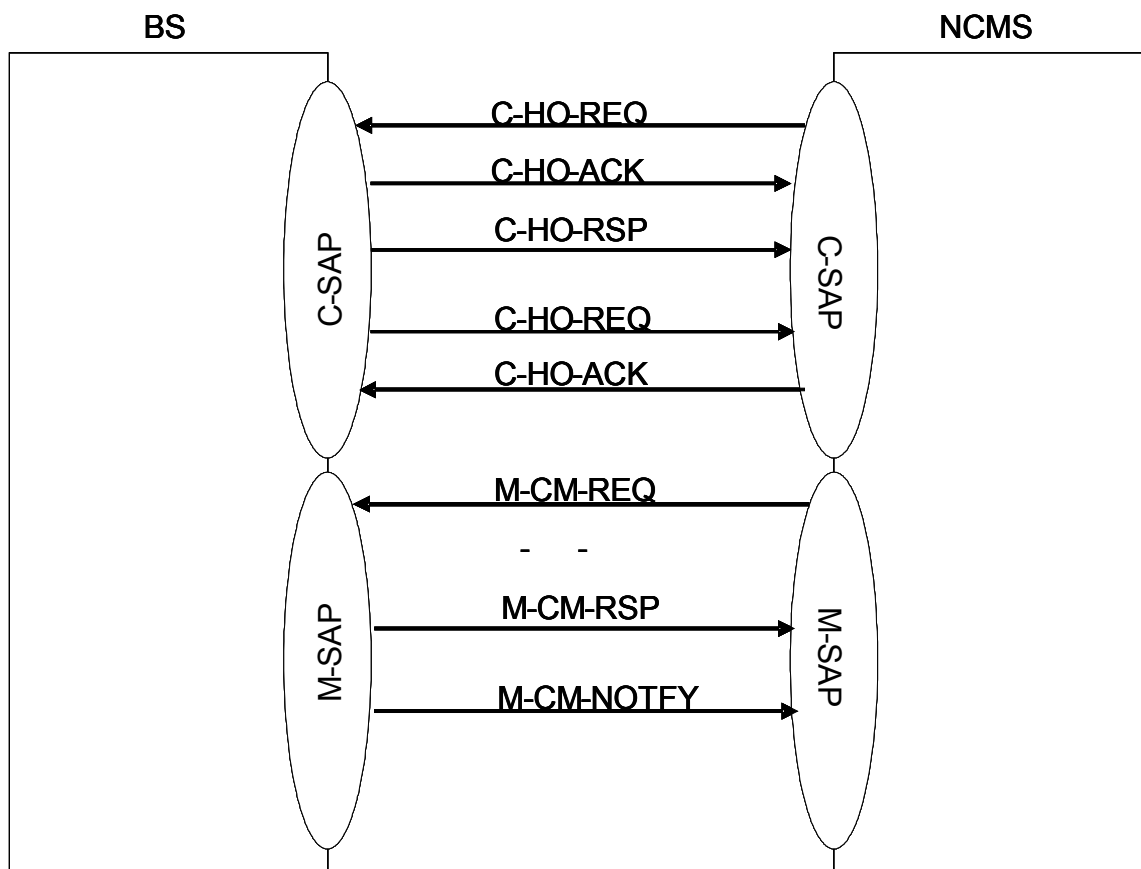


Figure 1 – Example of SAP Interface

The messages defined on the SAP consist of 3 fields – SAP, Function, and Operation.

SAP

- C – Control plane SAP
- M – Management plane SAP

Function

- CM – Configuration Management
- PM – Performance Management
- ALM – Alarm Management
- HO – Hand Off
- PG – Paging
- SFP – Service Flow Provisioning
- RRM – Radio Resource Management

Operation

- REQ – Request
- RSP – Response to the REQ message
- ACK – Acknowledgement to the reception of REQ or NOTIFY message
- NOTIFY – Event Notification

These messages are symmetrical between BS and NCMS. That is, both BS and NCMS can send these messages to the other depending on the functional behavior defined for M-SAP and C-SAP. **ACK is only supported in C-SAP.**

14.4.4.2 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

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 **example**:

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-REQ(  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-RSP(  Operation_type: Action,
           Action_type: SHO/FBSS,
           Object_ID: NCMS
           Attribute_List: serving-BS, MS-ID, Mode, target-BS-list)
```

```
C-HO-NOTFY( 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-REQ (  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-RSP(  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