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Clarification of Action Type and Event Type

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1. Motivation

According to the service primitive format defined in subclause 14.1, Operation_Type and Action_Type are valid only for M-SAP/C-SAP operation service primitives which include REQ and RSP primitives. M-SAP/C-SAP notification service primitives which include IND and ACK primitives include Event_Type parameter instead of them.

However, some of primitives defined in the current draft do not keep this rule.

2. Proposed Text Changes

[***Modify subclause 14.1.2 as follows***]

14.1.2 SAP service primitive object format

There are two types of services: M-SAP/C-SAP operation service primitive and M-SAP/C-SAP notification service primitive. The REQ and RSP operations shall use the operation service primitive and the IND operation shall use the notification service primitive. The ACK operation shall use the same primitive format as the primitive it acknowledges.

14.1.2.1 M-SAP/C-SAP operation service primitive:

This primitive is defined as Primitive_name() with a parameter list.

The format shall be:

```
Primitive_name
        (
        Operation_type,
        Confirmed_Flag,
        Action_type,
        Destination,
        Attribute_list,
                Filter,
                Scope,
                Action_info,
                Action_replay_info,
                Time,
                SAP_error_code
        )
```

The parameters shall be described briefly in the following table:

Parameter name	Mandatory/Optional	
Operation_Type	M	Create, Delete, Get, Set, Action, Cancel
Confirmed_Flag	O	For Request primitive, the default value of this flag is confirmed

Action_Type	O	When Operation_Type is Action, valid values for Action_Type are: ~~NBR_BS_Update,~~ Null, Certificate_Verification, Context_Transfer, Idle_Mode_Initiation, Network_Re-Entry_from_Idle_Mode, HO-Serving, HO-Target, HO-Scan, Spare Capacity Report, PHY Report, Ranging, Registration, Power On, Power Down, Reset, Deregistration, ~~Hold,~~ ~~Normal,~~ ~~Paging Group Action,~~ Location Update, Capability, Set, ~~MBS Portion Layout~~
Destination	M	This indicates the destination of the primitive. Allowed values are: SS or MS, BS, NCMS.
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 request about action replay
Time	O	Time info about an operation
SAP_error_code	O	Used in error service to give the reason for the error

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

This primitive shall be defined as Primitive_name() with a parameter list.

The format shall be:

```
Primitive_name
        (
        Event_type,
        Confirmed_Flag,
        Event_info,
        Destination,
        Attribute_list,
                Event_replay,
                Time,
                SAP_error_code
        )
```

Parameter name	Mandatory/Optional	
Event_Type	M	Specify the type of occurring event, valid values for Event_Type are: Accounting, EAP_Start, AK_Transfer, EAP ~~TRANSFER~~Transfer, Authenticated_EAP_Start, Authenticated_EAP_Transfer, Certificate_Information, DHCP_TRANSFER, MIP_TRANSFER, IP_ALLOCATION, Network Re-Entry from Idle Mode, Paging Announce, HO-Start, HO-Cancel, HO-Scan, HO-CMPLT, MIH-IND, Spare Capacity Report, Neighbor-BS Radio Resource Status Update, NBR_BS_Update, Network attached, Location_Update_COMPLT, Reset, Hold, Normal, MBS Portion Layout, LBS
Confirmed_Flag	O	For Event primitive, the default value of this flag is un-confirmed
Event_info	O	Used in event request. Pass reported event info
Destination	M	This indicates the destination of the primitive. Allowed values are: SS or MS, BS, NCMS
Attribute_list	M	Array of pair (Attribute_ID, Attribute_value)
Event_replay	M	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

[***Modify the format of M-ACM-IND defined in 14.2.1.2.3 as follows***]

M-ACM-IND
(
~~Operation_type: Action,~~
~~Action_type: null,~~
Event_Type: Accounting,
Destination: NCMS,
Attribute_List:
MS MAC Address,
Service Flow Identifier,
Accounting Record Type,
Accounting Record Number,
Accounting Input Octets,

Accounting Output Octets,
Accounting Input Packets,
Accounting Output Packets,
Accounting Lost Octets,
Accounting Lost Packets,
Service Flow Information,
Accounting Correlation Index
)

[***Modify the format of M-ACM-ACK defined in 14.2.1.2.4 as follows***]

M-ACM-ACK
(
~~Operation_type: Action,~~
~~Action_type: null,~~
Event_type: Accounting,
Destination: BS,
Attribute_List:
MS MAC Address,
Service Flow Identifier,
Result Code,
Accounting Record Type,
Accounting Record Number,
Accounting Correlation Index
)

[***Change the title of Table 450 from 'C-SM-IND Operation Types' to 'C-SM-IND Event Types'***]

[***Modify the table in subclause 14.2.4.3.2 as follows***]

~~Operation~~ Action Type	Description
~~Action~~Location Update	Location Update response

[***Modify subclause 14.2.4.2.3 as follows***]

14.2.4.2.3 C-PG-ACK

This primitive is used by the BS to acknowledge the NCMS of network re-entry from idle mode. The Operation Type included in this primitive defines the type of idle mode service procedure to be performed. The possible Operation Types for this primitive are listed in Table below.

~~Operation Type~~	~~Action Type~~	~~Description~~
~~Action~~	~~Network Re-Entry from Idle Mode~~	~~Network Re-Entry from Idle Mode~~

Event Type	Description
Network Re-Entry from Idle Mode	Network re-entry form Idle mode

Function:
This primitive is issued by a BS to inform a management entity of Paging Services that an MS has re-entered network successfully.

Semantics of the service primitive:
The parameters of the primitives are as follows:

C-PG-ACK
(
Event_type: Network_Re-Entry from Idle Mode,
Destination: NCMS,
Attribute_List:
MS MAC Address
Paging Controller ID
BSID
)

MS MAC Address
48-bit MAC Address which will identify MS during Idle Mode
Paging Controller ID
A logical network identifier for the serving BS or other network entity retaining MS service and operational information and/or administrating paging activity for the MS while in Idle Mode. Paging Controller ID shall be set to BSID when a BS is acting as Paging Controller.
BSID
A network identifier of the BS at which the MS is attempting to re-enter network

When generated:
This primitive is generated by a BS when Network Re-entry process specified in 6.3.22.10 has been completed.

Effect of receipt:
The buffered DL traffic is delivered to the serving BS and finally to MS.

[***Modify the table in subclause 14.2.5.2.3 as follows***]

~~Action~~ Event type	Description
HO-Start	Indicating the MS is ready to handover from the current serving BS to the target BS
HO-Cancel	Indicating the current HO procedure is cancelled
HO-Scan	Providing scanning result to NCMS
HO-CMPLT	Indicating MS network re-entry completion at the target BS

[***In Figure 500, change '802.16 Entity(SS)' and 'NCMS(SS)' to '802.16 Entity(MS)' and 'NCMS(MS)', respectively***]

[***Modify subclause 14.2.7.4 as follows***]

14.2.7.4 C-NEM-IND (Event_Type = network attached)

Function
This primitive is used by MS to inform NCMS(MS) of the completion of initialization procedure which includes synchronization with the BS and acquirement of downlink/uplink transmission parameters.

Semantics of the service primitive:

C-NEM-IND
(

Event_Type (network attached),
Destination (NCMS),
Attribute_list:
BSID
)

BSID
Unique identifier of BS

When generated:
This primitive is generated when the MS completes initialization steps and is ready to perform initial ranging.

Effect of receipt:
NCMS can issue C-NEM-REQ (ranging) to request the MS to perform initial ranging after it receives this primitive.

[***Modify subclause 14.2.8.3 as follows***]

14.2.8.3 M-MTM-IND

This primitive is used by the 802.16 entity at MS to notify NCMS of some events. The possible event types for this primitive are listed in Table below.

~~Action~~ Event type	Description
Reset	Reset procedure initiated by the BS
Hold	Request from the BS to change the current status to the hold status
Normal	Request from the BS to return back to the normal status

14.2.8.3.1 M-MTM-IND (Event Type == Reset)

Function:
This primitive is generated by the 802.16 MS entity or NCMS to notify other entity of a reset event.

Semantics of the service primitive:
The following parameters are included in this primitive.

M-MTM-IND
(
Event_Type (Reset),
Destination(BS or NCMS),
Attribute_list:
MS MAC Address
)

When generated:
• NCMS to 802.16 BS entity:
This primitive is generated when NCMS at BS side wants to reset the mobile terminal.
• 802.16 MS entity to NCMS:
This primitive is generated when the 802.16 entity at MS receives RES-CMD message from the BS. The 802.16 entity issues this primitive after internal reset procedure.

Effect of receipt:
• NCMS to 802.16 BS entity:
If 802.16 BS entity receives this primitive, BS sends RES-CMD message to the MS.
• 802.16 MS entity to NCMS:
NCMS performs internal reset procedure.

14.2.8.3.2 M-MTM-IND (Event Type == Hold)

Function:
This primitive is generated by the 802.16 MS entity or NCMS to notify other entity of a hold event.

Semantics of the service primitive:
The following parameters are included in this primitive.

M-MTM-IND
(
Event_Type (Hold),
Destination(BS, NCMS),
Attribute_list:
MS MAC Address
)

When generated:
• NCMS to 802.16 BS entity:
This primitive is generated when NCMS at BS side wants to change the status of the MS from Normal to Hold status.
• 802.16 MS entity to NCMS:
This primitive is generated when the 802.16 entity at MS receives DREG-CMD message with action code = 0x01 from the BS.

Effect of receipt:
• NCMS to 802.16 BS entity:
The BS sends DREG-CMD message with action code = 0x01 to the MS.
• 802.16 MS entity to NCMS:
NCMS waits for the next M-MTM-IND primitive with Action Type = Normal or Reset.

14.2.8.3.3 M-MTM-IND (Event Type == Normal)

Function:
This primitive is generated by the 802.16 BS entity or NCMS to notify other entity of a normal event.

Semantics of the service primitive:
The following parameters are included in this primitive.

M-MTM-IND
(
Event_Type (Normal),
Destination(BS or NCMS),
Attribute_list:
MS MAC Address
)

When generated:
• NCMS to 802.16 BS entity:
This primitive is generated when NCMS at BS side wants to change the status of the MS from Hold to Normal status.
• 802.16 MS entity to NCMS:
This primitive is generated when the 802.16 entity at MS receives DREG-CMD message with action code = 0x03 from the BS.

Effect of receipt:
• NCMS to 802.16 BS entity:

BS sends DREG-CMD message with action code = 0x03 to the MS.

• 802.16 MS entity to NCMS:

NCMS returns back to the normal status.

[***Modify the title of subclause 14.2.10.3.1 from '14.2.10.3.1 C-MBS-IND (Layout)' to '14.2.10.3.1 C-MBS-IND (MBS Portion Layout)'***]

[***Modify the format of C-MBS-IND primitive defined in subclause 14.2.10.3.1 as follows***]

The parameters of this primitive are as follows:

C-MBS-IND (MBS Portion Layout)
(
Event_Type(MBS Portion Layout),
Destination(BS),
Layout Attribute List:
MBS Portion Symbol Offset
MBS Portion Subchannel Offset
MBS Portion Number of Symbols
MBS Portion Number of Subchannels
Time Reference
List of Burst Attributes
(
Burst Symbol Offset
Burst Subchannel Offset
Burst No of symbols
Burst No of subchannels
Coding Scheme
List of MAC PDU Attributes
(
CID
Logical Flow ID
MAC PDU Size
)
)
)

[***Modify the format of C-LBS-ACK primitive defined in subclause 14.2.11.2 as follows***]

Semantics of the service primitive:

This parameters of the primitive are as follow:

C-LBS-ACK
(
Event_Type: LBS,
Destination: NCMS,
Attribute_List:
MS MAC Address,
)

MS MAC Address

48-bit MAC address that identifies the MS.