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Title	**Clean Up section 14.5.6**
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Re:	Contribution on comments to IEEE 802.16g-05/008r2
Abstract	Section clean up for 14.5.6.
Purpose	Adoption
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Clean Up Section 14.5.6

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1. Introduction

In response to the clause editing action item assigned in IEEE 802.16 session #40, this contribution includes text changes for section 14.5.6 after clean up work. This clean up also includes the naming convention modification based on contribution C80216g-05_052r4 which was accepted in session #40.

> As part of the modification for the primitives' names, the following are defined:
> SAP
> - o C – Control plane SAP
> - o M – Management plane SAP
>
> Function
> - o SMC – Secondary Management Connection
> - o SFM – Service Flow Management
>
> Operation
> - o REQ – Request
> - o RSP – Response to the REQ message
> - o ACK – Acknowledgement to the reception of RSP or NOTFY message
> - o NOTFY – Event Notification

2. Proposed Solution

The following changes are made in section 14.5.6:

1. Rename Primitives. The following table provides a mapping between the old and new names of the primitives:

Existing Primitives	New Primitives
DHCP_Transfer	C-SMC-NOTFY(Event_type==DHCP_TRANSFER)
MIP_Transfer	C-SMC-NOTFY(Event_type==MIP_TRANSFER)
IP_Allocation_Notification.indication	C-SMC-NOTFY(Event_type==IP_ALLOCATION)
Add_Service_Flow.request (ASF.request)	C-SFM-REQ(Operation_type==CREATE)
Add_Service_Flow.indication (ASF.indication)	C-SFM-REQ(Operation_type==CREATE)
Add_Service_Flow.confirm (ASF.confirm)	C-SFM-RSP(Operation_type==CREATE)

Add_Service_Flow.response (ASF.response)	C-SFM-RSP(Operation_type==CREATE)
Change_Service_Flow.request (CSF.request)	C-SFM-REQ(Operation_type==SET)
Change_Service_Flow.indication (CSF.indication)	C-SFM-REQ(Operation_type==SET)
Change_Service_Flow.confirm (CSF.confirm)	C-SFM-RSP(Operation_type==SET)
Change_Service_Flow.response (CSF.response)	C-SFM-RSP(Operation_type==SET)
Delete_Service_Flow.request (DSF.request)	C-SFM-REQ(Operation_type==DELETE)
Delete_Service_Flow.indication (DSF.indication)	C-SFM-REQ(Operation_type==DELETE)
Delete_Service_Flow.confirm (DSF.confirm)	C-SFM-RSP(Operation_type==DELETE)
Delete_Service_Flow.response (DSF.response)	C-SFM-RSP(Operation_type==DELETE)

2. Due to the renaming and merging of some primitives, the section is re-arranged. However, the content of the primitives are kept same except for some additional fields due of adopted changes in contribution C80216g-05_052r4.

3. Use of 802.16 Entity instead of BS. An 802.16Entity can be either a BS or MS. When a primitive is defined for both BS and MS unless specified otherwise.

4. Primitive diagrams are modified according to contribution C80216g-05_052r4 and also the introducing of 802.16 Entity

5. Most of the text modification shown is due to re-arranging of the section. Only minor text modification is introduced.

3. Detail Text Changes

[*Modify section 14.5.6 as the following*]

14.5.6 Service Flow Management

14.5.6.1 BS Service Provisioning

<Section Note: Provisioning of the services on the BS are described. Ex: Setting and retrieval of Operator IDs, BS IDs etc. and type of convergence layers supported and their configuration parameters are described.>

<Note to editor: Service flow provisioning should be part of configuration management which is covered in MIB, recommend removing this section>

14.5.6.2 SS/MS Provisioning

<Section Note: Provisioning. Configuration and management for BS initiated connections and service flow creations for static and dynamic QoS>
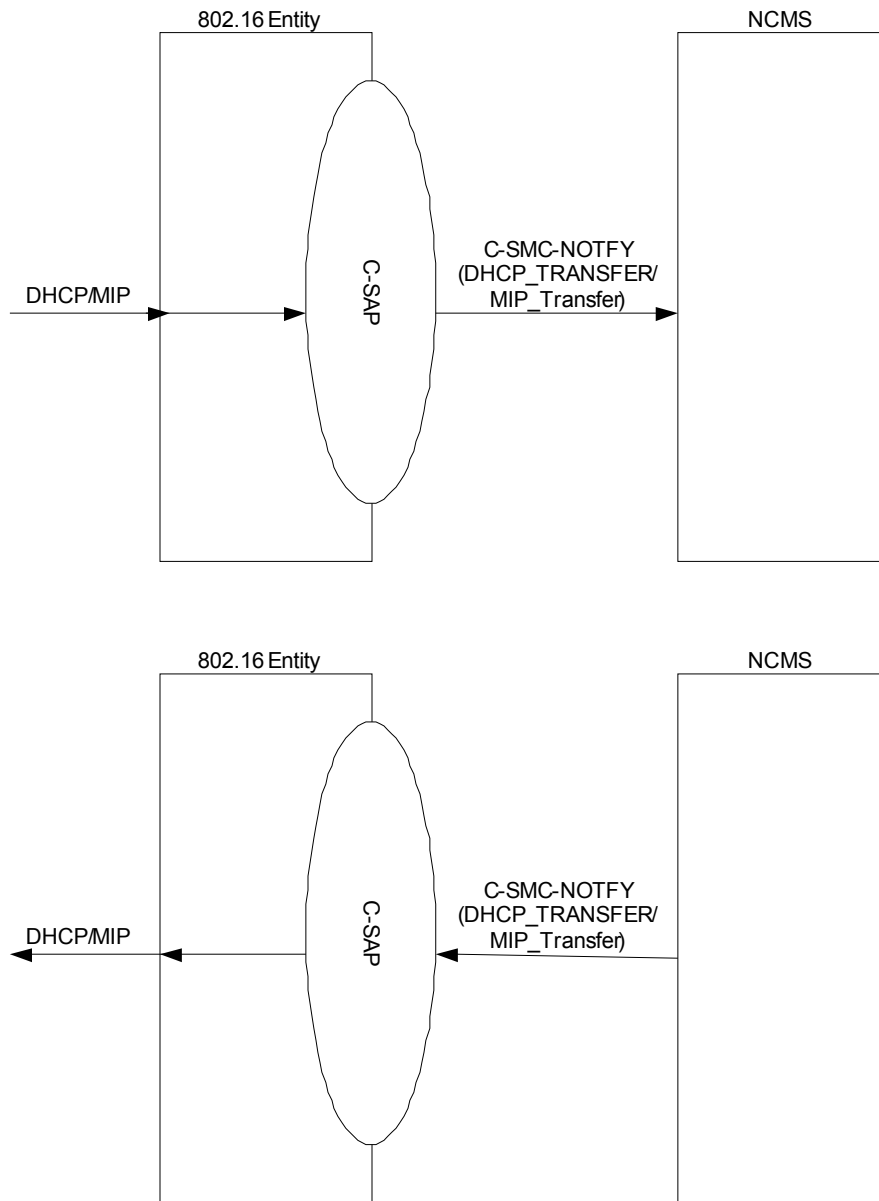
<Note to editor: Service flow provisioning should be part of configuration management which is covered in MIB, recommend removing this section>
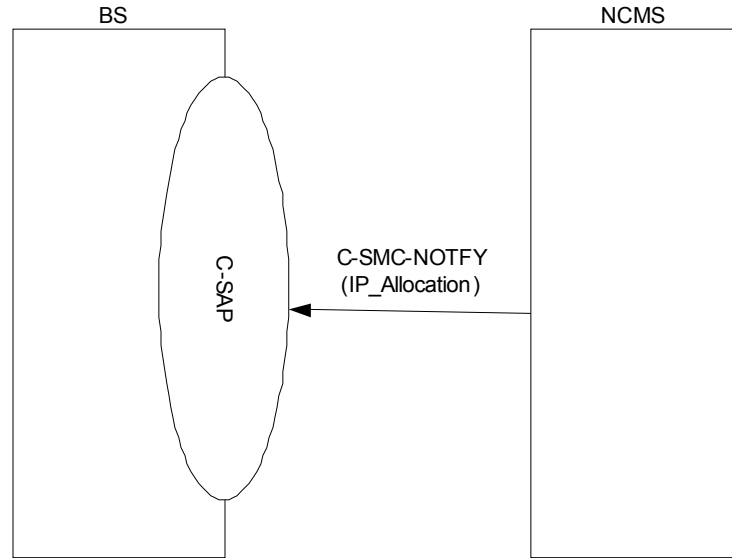
14.5.6.3 ~~SS/MS Connection Management~~ **IP Management with Secondary Management Connection**

~~**14.5.6.3.1 Service Primitives**~~

These primitives are ~~issued~~ provided when the IP connection is managed by the secondary management connection. It is available for both IPv4 and IPv6.

<note to editor: these set of primitives seem to be unnecessary even for secondary management connection. The BS should be able to forward DHCP/MIP payload to NCMS without the primitives. Suggest delete this section. However, modification is provided.>

802.16 Entity   NCMS

C-SAP

DHCP/MIP →   C-SMC-NOTFY
                                     (DHCP_TRANSFER/
                                      MIP_Transfer) →

802.16 Entity   NCMS

C-SAP

← DHCP/MIP   ← C-SMC-NOTFY
                                     (DHCP_TRANSFER/
                                      MIP_Transfer)

14.5.6.3.1 C-SMC-NOTFY

This primitive is used by an 802.16 entity or NCMS to transfer DHCP or MIP payload. It also can be used by NCMS to notify the BS of a SS/MS IP address status change . The Event Type included in this primitive defines the information included in this primitive. The possible Event Types for this primitive are listed in Table xxx.

Event Type	Description
DHCP_TRANSFER	Forward DHCP payload between DHCP client and DHCP server.
MIP_TRANSFER	Forward DHCP payload between MIP client and MIP agent.
IP_ALLOCATION	NCMS notify the BS of a SS/MS' IP address status change

14.5.6.3.1.1 ~~DHCP_Transfer~~C-SMC-NOTFY (Event_Type==DHCP_TRANSFER)

14.5.6.3.1.1.1 Function

DHCP payloads are exchanged between an ~~SS/MS~~DHCP client and a DHCP ~~Server~~Client entity. The DHCP payloads are encapsulated in the DHCP Transfer primitive because it is not interpreted in the ~~BS~~802.16 Entity.

14.5.6.3.1.1.2 Semantics of the service primitive

The parameters of the primitives are as follows:

        ~~DHCP_Transfer~~C-SMC-NOTFY
        (
                Message_id,

                                Event_Type(DHCP_TRANSFER),
                        Object_id(MS_ID or BS_ID or NCMS),

                        Attribute _list:
                            MS/SS ID
                            DHCP Payload
)

                MS/SS ID
                        48-bit unique identifier used for user identification between BS and NCMS
                DHCP Payload
                        Contains the DHCP payload

14.5.6.3.1.1.3 When generated

14.5.6.3.1.1.3.1 802.16 Entity to NCMS

This primitive is generated when the 802.16 Entity receives DHCP traffic over secondary management connection.

14.5.6.3.1.1.3.2 NCMS to 802.16 Entity

This primitive is used when the DHCP entity in NCMS sends DHCP traffic to an 802.16 Entity.

14.5.6.3.1.1.4 Effect of receipt

14.5.6.3.1.1.4.1 802.16 Entity to NCMS

The DHCP entity (server or relay) in NCMS processes the DHCP signaling. .

14.5.6.3.1.1.4.2 NCMS to 802.16 Entity

The 802.16 Entity transmits DHCP payload from the primitive over secondary management connection.

14.5.6.3.1.2 ~~MIP_Transfer~~C-SMC-NOTFY(Event_Type=MIP_TRANSFER)

14.5.6.3.1.2.1 Function

MIP payloads are exchanged between an MS and an entity with functionalities of mobility agent in NCMS. The MIP payloads are encapsulated in the MIP Transfer primitive because it is not interpreted in the 802.16 Entity~~BS~~.

14.5.6.3.1.2.2 Semantics of the service primitive

The parameters of the primitives are as follows:

                MIP_Transfer
                (
                        Message_id,
                         Event_Type(MIP_TRANSFER),
                        Object_id(MS_ID or BS_ID or NCMS),

                        Attribute _list:
                            MS ID
                            MIP Payload

)

MS ID

48-bit unique identifier used for user identification between BS and NCMS

MIP Payload

Contains the MIP payload

14.5.6.3.1.2.3 When generated

14.5.6.3.1.2.3.1 802.16 Entity to NCMS

This primitive is generated when the 802.16 Entity receives MIP traffic over secondary management connection.

14.5.6.3.1.2.3.2 NCMS to 802.16 Entity

This primitive is used when the MIP agent in NCMS sends MIP traffic to an 802.16 Entity.

14.5.6.3.1.2.4 Effect of receipt

14.5.6.3.1.2.4.1 802.16 Entity to NCMS

The MIP entity in NCMS processes the MIP signaling. .

14.5.6.3.1.2.4.2 NCMS to 802.16 Entity

The 802.16 Entity transmits MIP payload from the primitive over secondary management connection.

14.5.6.3.1.3 ~~IP_Allocation_Notification.indication~~C-SMC-NOTFY (Event_Type==IP_ALLOCATION)

14.5.6.3.1.3.1 Function

After MIP or DHCP exchanges are completed, the status of IP address for a SS/MS may be changed. For the BS, NCMS may notify BS of the status of the IP address of the SS/MS. If the status value is NEW, NCMS sends a new allocated IP address for the SS/MS in ~~IP_Allocation.indication~~ this primitive. This primitive is only from NCMS to BS.

14.5.6.3.1.3.2 Semantics of the service primitive

The parameters of the primitives are as follows:

~~IP_Allocation_Notification.indication~~C-SMC-NOTFY
{
          Message_id,
          Event_Type(IP_ALLOCATION),
          Object_id(BS_ID),

          Attribute _list:
            MS ID
            Status
            IP Address
}

MS ID

48-bit unique identifier used for user identification between BS and NCMS

Status

The status of the IP address of a SS/MS. The value may be NEW, REMAIN, RELEASE

IP Address

If the Status value is NEW, this parameters should be a new address allocated to the SS/MS using DHCP or MIP.

14.5.6.3.1.3.3 When generated

This primitive is issued by a NCMS (a DHCP client or a Mobility Agent) when the IP exchange procedure are successfully completed.

14.5.6.3.1.3.4 Effect of receipt

The BS knows the IP address and its status of the SS/MS

14.5.6.4 QoS Management

The QoS Management Primitives are a set of primitives for supporting QoS management between BS and NCMS (access network). They are defined to support QoS service flows. A service flow ID is created and managed by the NCMS (or a network entity). A unique identifier of all SAPs is service flow ID because the service flow ID can only be identified in a network operator. The CID is only managed in MAC layer in a BS. MS ID in ASF request and CSF request is used to authorize the MS whether the QoS information is permitted.

Service flow application clients that interact with CS convergence layer should transform service flow information and CS parameter information to appropriate parameters of network protocol in network side and in reverse direction. How to convert specific QoS parameters between 802-16-Service-Flow and Network Flows is out of scope. Network side protocol modules such as RSVP, COPS (Common Open Policy Service) and SNMP (Simple Network Management Protocol) have better convert the specific QoS parameters between two sides. The service flow management primitives are designed as 2-way handshake style because resource reservation protocols in IETF and primitives at the 802.16 MAC SAP are designed as 2-way handshake style but service flow messages in IEEE 802.16-2004 is designed as 3-way handshake style to negotiate QoS requirements in a service flow.
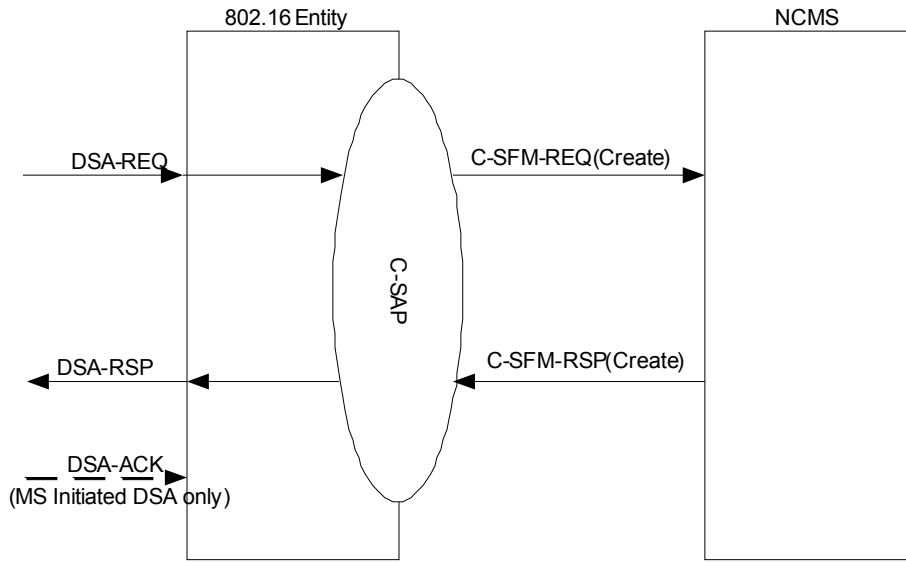
Figure 315 C-SFM-REQ(Create) and C-SFM-RSP(Create) primitives flow, 802.16 Entity initiated
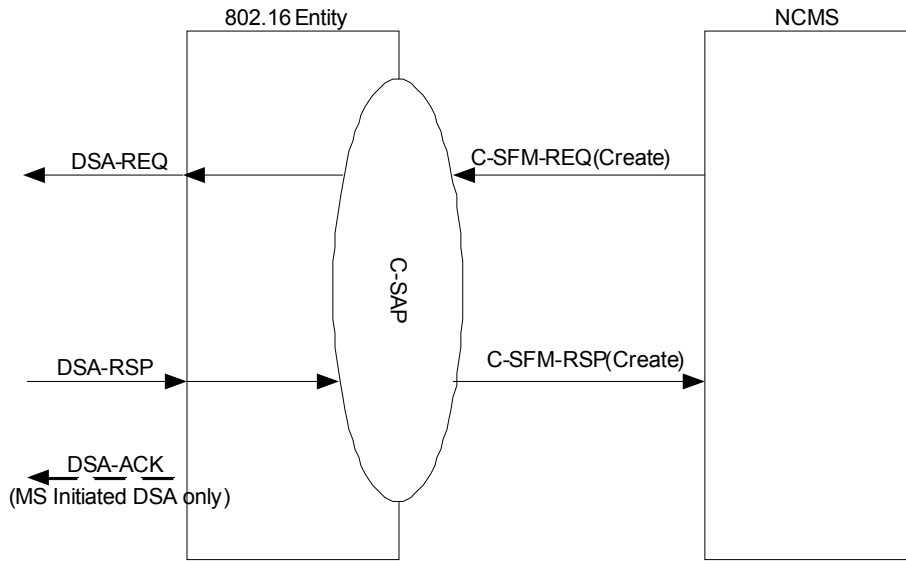
Figure 316 C-SFM-REQ(Create) and C-SFM-RSP(Create) primitives flow, NCMS initiated
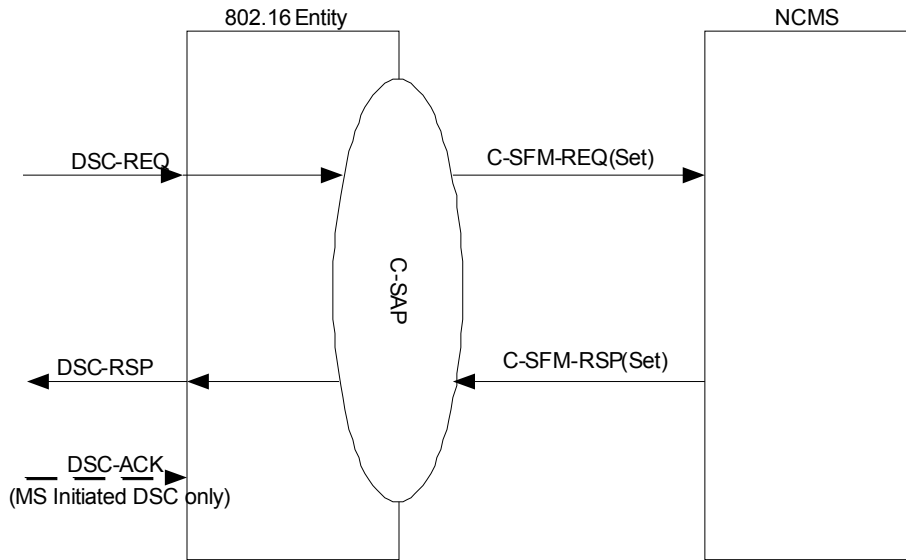
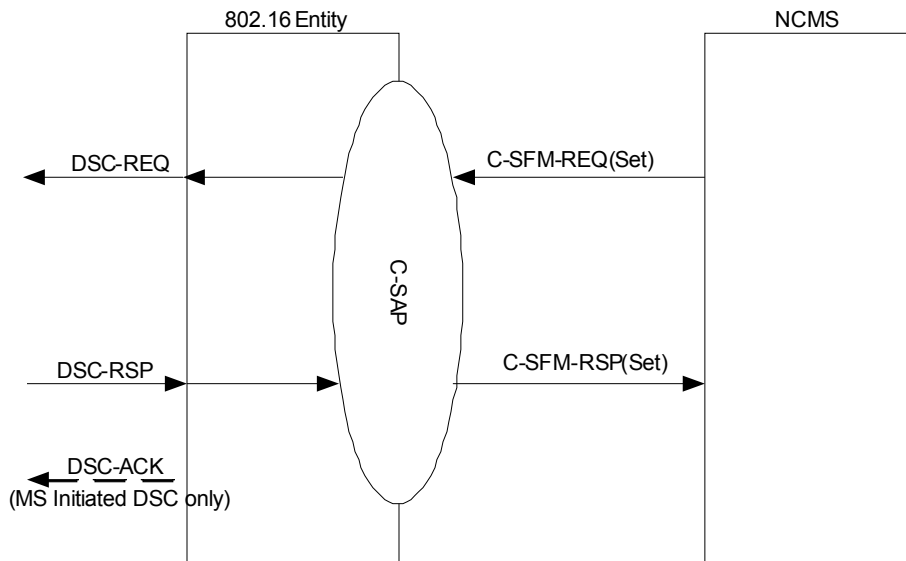**Figure 317 C-SFM-REQ(Set) and C-SFM-RSP(Set) primitives flow, 802.16 Entity initiated**

Figure 318 C-SFM-REQ(Set) and C-SFM-RSP(Set) primitives flow, NCMS initiated
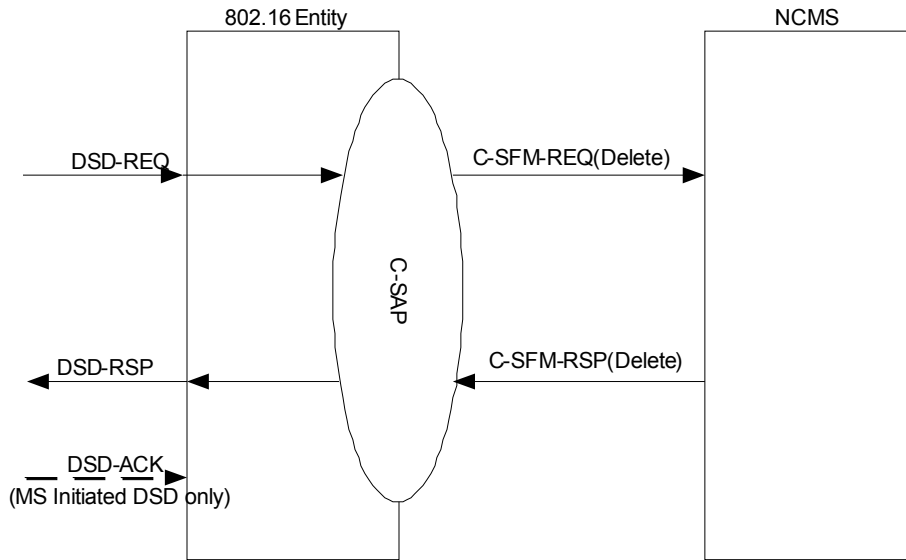
Figure 319 C-SFM-REQ(Delete) and C-SFM-RSP(Delete) primitives flow, 802.16 Entity initiated
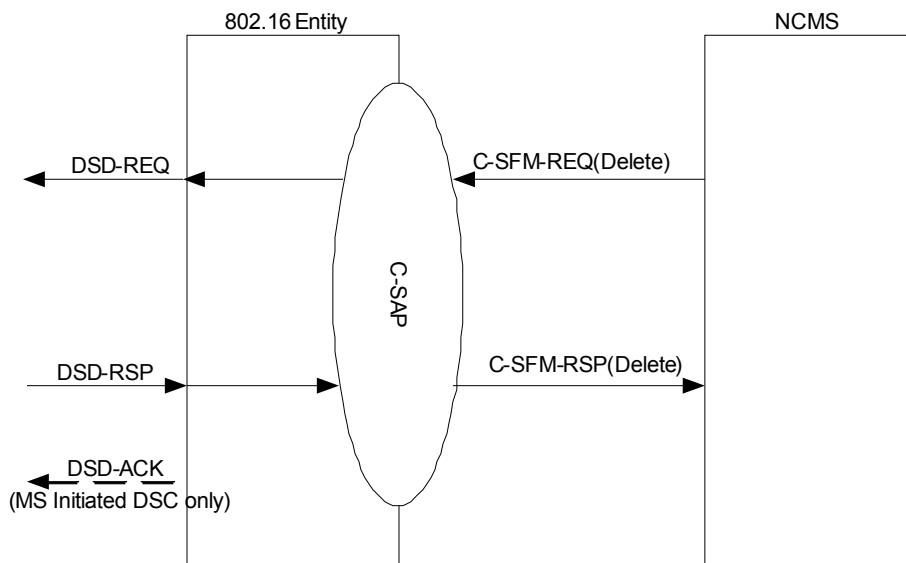
Figure 320 C-SFM-REQ(Delete) and C-SFM-RSP(Delete) primitives flow, NCMS initiated
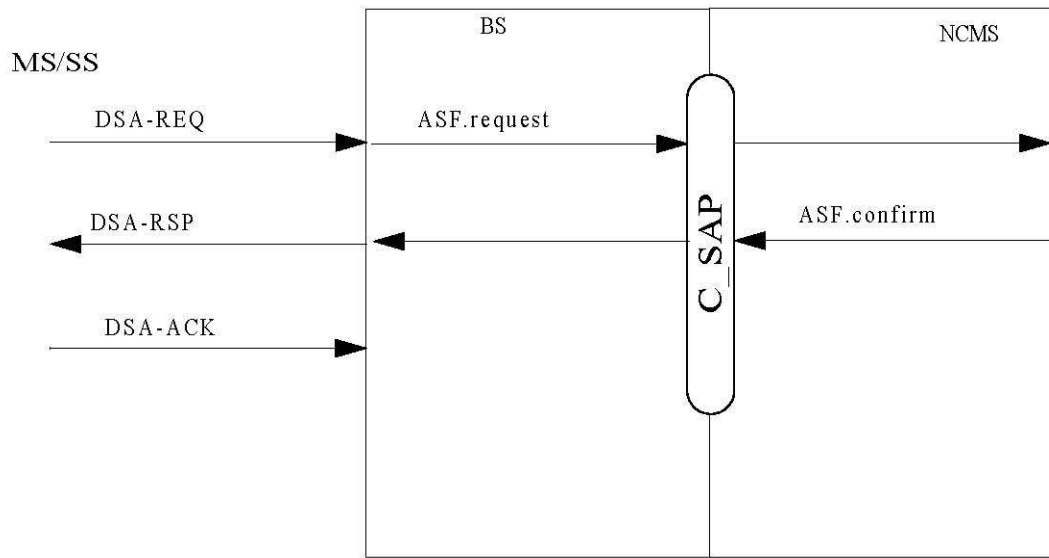
Figure 315—ASF request and ASF confirm primtives flow
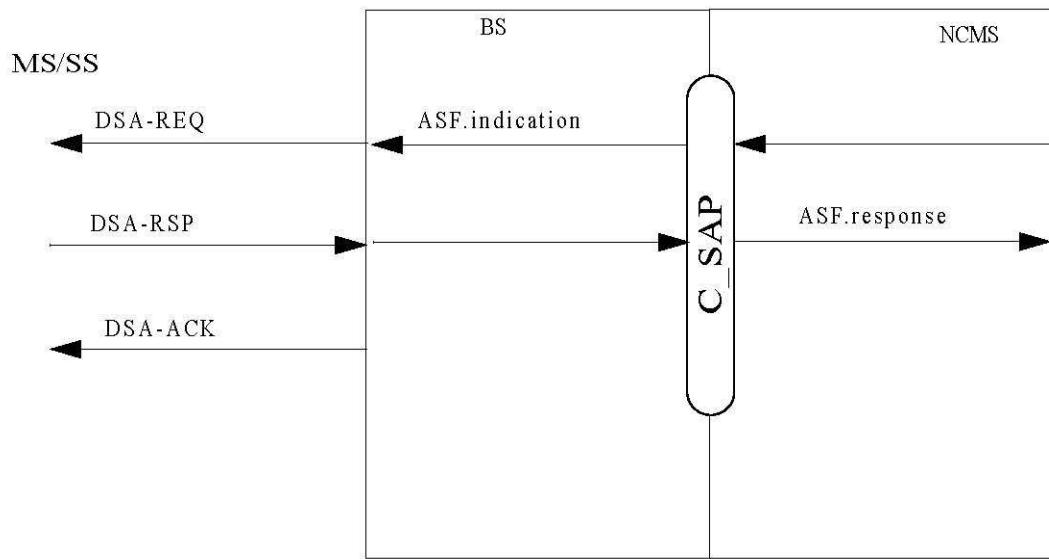

Figure 316—ASF indication and ASF response primtives flow
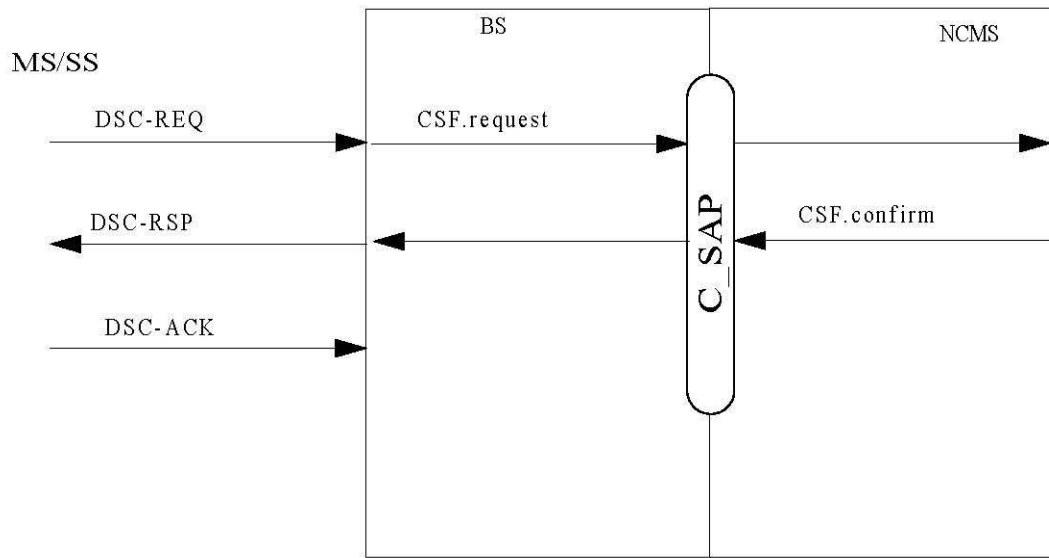
Figure 317—CSF request and CSF confirm primtives flow

Figure 318—CSF indication and ASF response primtives flow

Figure 319—DSF request and DSF confirm primtives flow

Figure 320—DSF indication and DSF response primtives flow

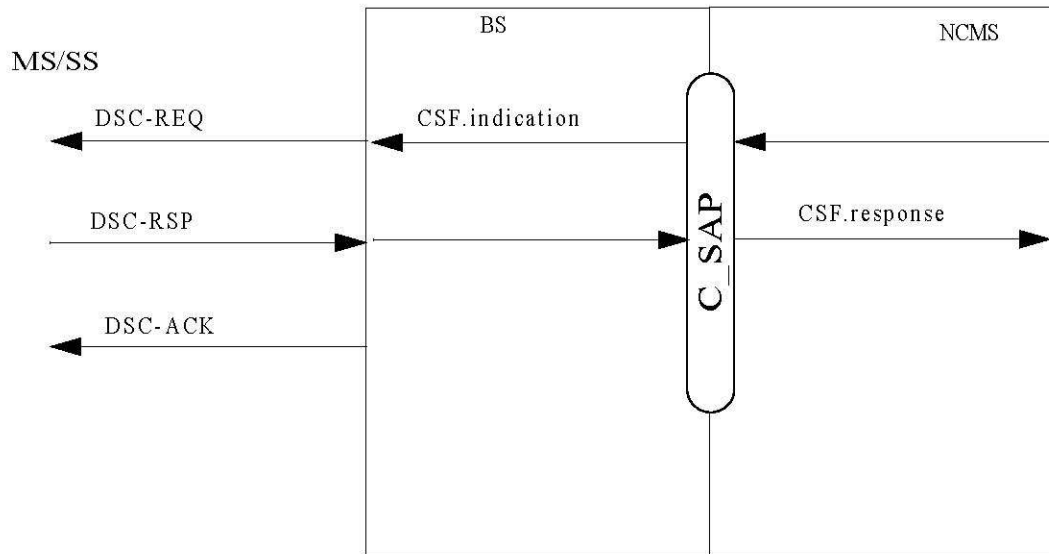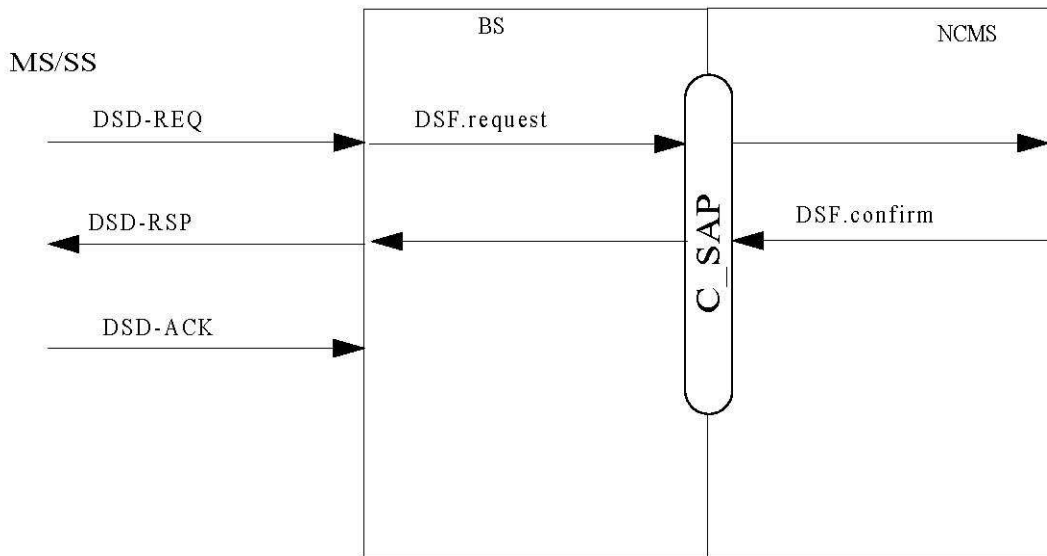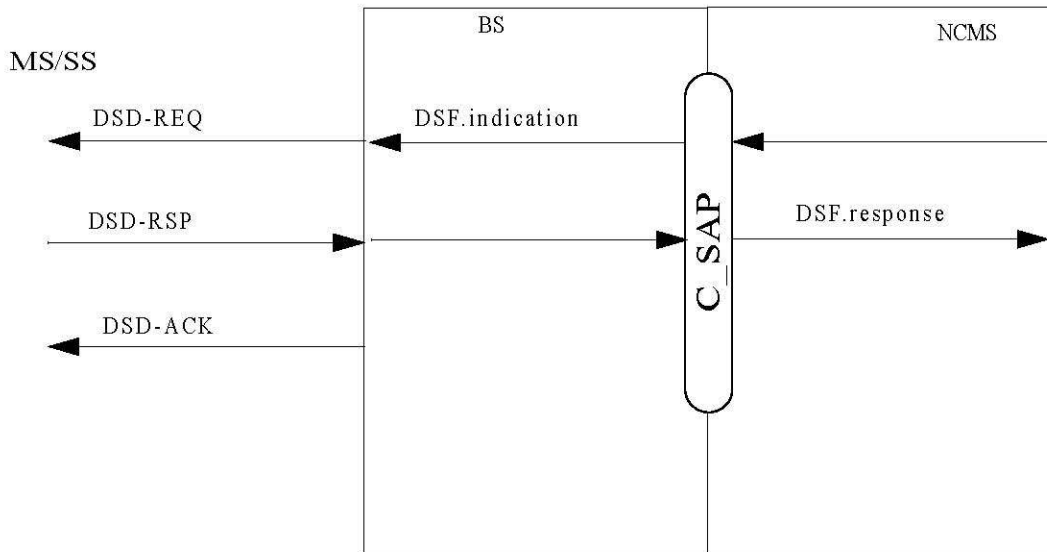### 14.5.6.4.1 C-SFM-REQ

This primitive is used by an 802.16 Entity or NCMS to trigger a service flow management procedure. The Operation Type included in this primitive defines the type of service flow management procedure to be

performed. The possible Operation Types for this primitive are listed in Table xxx.

Operation Type	Description
Create	Create a new service flow.
Set	Change parameters of existing service flow
Delete	Deletion of an existing service flow.

The following sub-sections define the primitive when its operation type is set to a specific operation.

14.5.6.4.1.1 C-SFM-REQ (Operation_Type==Create)Add_Service_Flow.request (ASF.request)

14.5.6.4.1.1.1 Function

When Operation Type is set to Create, tThis primitive shall beis used to initiate a new service flow creation by either an 802.16 Entity BS or NCMS. This primitive shall contain to inform an QoS information for the new service flow.from an MS of the QoS management entity in NCMS.

14.5.6.4.1.1.2 Semantics of the service primitive

The parameters of the primitives are as follows:

                    Add_Service_Flow.requestC-SFM-REQ
            (
                    Message_id,
                     Operation_Type(Create),
                    Action_Type(Null),
                    Object_id(MS_ID or BS_ID or NCMS),

                    Attribute _list:
                        Transaction ID
                        MS ID
                        Service flow ID
                        Service flow descriptor
                        Service flow information
                        CS parameter information
)

        Transaction ID
                A unique sequential identifier of the transaction set by the senderBS
        MS ID
                48-bit unique identifier used by MS. MS ID is used for user authorization
        Service flow ID
                Unique identifier to identify a service flow, included in the primitive for NCMS initiated service flow creation.
        Service flow descriptor
                Information regarding the attribute an uplink or downlink service flow
        Service flow information
                Required QoS information of a service flow include traffic characteristics and a scheduling type such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, service flow scheduling type, tolerate jitter and maximum latency
        CS parameter information
                Required IP filter rules of a service flow such as packet classification rule and IPv6 flow label

14.5.6.4.1.1.3 When generated

14.5.6.4.1.1.3.1 802.16 Entity to NCMS

This primitive is generated when the 802.16 Entity creates a service flow (i.e. a BS receives a DSA-REQ message.).

14.5.6.4.1.1.3.2 NCMS to 802.16 Entity

This primitive is used when the QoS management entity in NCMS triggers the creation of a new service flow.

14.5.6.4.1.1.4 Effect of receipt

14.5.6.4.1.1.4.1 802.16 Entity to NCMS

The QoS management entity in NCMS shall respond to this primitive by sending Add_Service_Flow.confirm using C-SFM-RSP(Create). The management entity for service flows checks the validity of the request from the point of view of its own resources. If the request is accepted, the QoS management entity in NCMS creates unique service flow ID for the request.

14.5.6.4.1.1.4.2 NCMS to 802.16 Entity

The 802.16 Entity receiving the primitive shall trigger transmitting the DSA-REQ message following the information provided by this primitive.

14.5.6.4.1.2 C-SFM-REQ (Operation_Type==Set)

14.5.6.4.1.2.1 Function

When Operation Type is set to Set, this primitive shall be used to initiate the modification of an existing service flow parameters by either an 802.16 Entity or NCMS. This primitive shall contain the new information for the modifying service flow.

14.5.6.4.1.2.2 Semantics of the service primitive

The parameters of the primitive are as follows:

```
        C-SFM-REQ
        (
                Message_id,
                Operation_Type(Set),
                Action_Type(Null),
                Object_id(MS_ID or BS_ID or NCMS),
                Attribute _list:
                    Transaction ID,
                    Service flow ID,
                    MSID,
                    Service flow descriptor,
                    Service flow information,
                    CS parameter information
        )

        Transaction ID
                A unique sequential identifier of the transaction set by the sender
        Service flow ID
```

Unique identifier to identify a service flow.

MS ID

48-bit unique identifier used by MS. MS ID is used for user authorization

Service flow descriptor

Information regarding the attribute of an uplink or downlink service flow

Service flow information

Required QoS information of a service flow include traffic characteristics and a scheduling type such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, service flow scheduling type, tolerate jitter and maximum latency

CS parameter information

Required IP filter rules of a service flow such as packet classification rule and IPv6 flow label

14.5.6.4.1.2.3 When generated

14.5.6.4.1.2.3.1 802.16 Entity to NCMS

This primitive is generated when the 802.16 Entity change the parameters of an existing service flow(BS receives a DSC-REQ message).

14.5.6.4.1.2.3.2 NCMS to 802.16 Entity

This primitive is generated when the QoS management entity in NCMS informs the 802.16 Entity of the QoS information modification.

14.5.6.4.1.2.4 Effect of receipt

14.5.6.4.1.2.4.1 802.16 Entity to NCMS

The QoS management entity in NCMS shall respond to this primitive by sending C-SFM-RSP(Set). The management entity for service flows checks the validity of the request from the point of view of its own resources.

14.5.6.4.1.2.4.2 NCMS to 802.16 Entity

The 802.16 Entity receiving the primitive shall trigger transmitting the DSC-REQ message following the information provided by this primitive.

14.5.6.4.1.3 C-SFM-REQ (Operation_Type==Delete)

14.5.6.4.1.3.1 Function

When Operation Type is set to Delete, this primitive shall be used to initiate an existing service flow deletion by either an 802.16 Entity or NCMS.

14.5.6.4.1.3.2 Semantics of the service primitive

The parameters of the primitive are as follows:

C-SFM-REQ
(

                  Message_id,
                  Operation_Type(Delete),
                  Action_Type(Null),
                  Object_id(MS_ID or BS_ID or NCMS),
                  Attribute _list:
                      Transaction ID,
                      Service flow ID
)

Transaction ID
    A unique sequential identifier of the transaction set by the sender
Service flow ID
    Unique identifier to identify a service flow.

14.5.6.4.1.3.3 When generated

14.5.6.4.1.3.3.1 802.16 Entity to NCMS

This primitive is generated when the 802.16 Entity delete an existing service flow(BS receives a DSD-REQ message).

14.5.6.4.1.3.3.2 NCMS to 802.16 Entity

This primitive is generated when the QoS management entity in NCMS informs the 802.16 Entity of the deletion of an existing service flow.

14.5.6.4.1.3.4 Effect of receipt

14.5.6.4.1.3.4.1 802.16 Entity to NCMS

The QoS management entity in NCMS shall respond to this primitive by sending C-SFM-RSP(Delete). The management entity for service flows release assigned resources for the service flow ID.

14.5.6.4.1.3.4.2 NCMS to 802.16 Entity

The 802.16 Entity receiving the primitive shall transmit the DSD-REQ message including the information provided by this primitive.

14.5.6.4.2 ~~Add_Service_Flow.confirm (ASF.confirm)~~C-SFM-RSP

This primitive is used by an 802.16 Entity or NCMS to respond to the request to begin a service flow management procedure. The Operation Type included in this primitive defines the type of service flow management procedure to be performed. The possible Operation Types for this primitive are listed in Table xxx.

Operation Type	Description
Create	Create a new service flow.
Set	Change parameters of existing service flow
Delete	Deletion of an existing service flow.

The following sub-sections define the primitive when its operation type is set to a specific operation.

14.5.6.4.2.1 C-SFM-RSP (Operation_Type==Create)

14.5.6.4.2.1.1 Function

This primitive is used by the 802.16 Entity or the QoS management entity in NCMS to respond tose the ASF.requestC-SFM-REQ from a BSfor a service flow creation. Service flow information in ASF responsethis primitive containshas approved QoS information if the ASF.request is accepted.

14.5.6.4.2.1.2 Semantics of the service primitive

The parameters of the primitives are as follows:

<pre>
                    Add_Service_Flow.confirmC-SFM-RSP
                    (
                            Message_id,
                             Operation_Type(Create),
                            Action_Type(Null),
                            Object_id(MS_ID or BS_ID or NCMS),

                            Attribute _list:
                                Transaction ID
                                MS ID
                                Service flow ID
                                Service flow descriptor
                                Service flow information
                                CS parameter information
                                Service flow error parameter information
)

                    Transaction ID
                            A unique sequential identifier of the transaction set by the senderBS
                    MS ID
                            48-bit unique identifier used by MS. MS ID is used for user identification
                    Service flow ID
                            Unique identifier to identify a service flow
                    Service flow descriptor
                            Information regarding the attribute an uplink or downlink service flow
                    Service flow information
</pre>

            Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, service flow scheduling type, tolerate jitter and maximum latency

    CS parameter information
          Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label

    Service flow error parameter information
          Failed reason and every specific failed QoS parameter if a ASF request is rejected

14.5.6.4.2.1.3 When generated

14.5.6.4.2.1.3.1 802.16 Entity to NCMS

This primitive is generated when an 802.16 entity receives a DSA-RSP message.

14.5.6.4.2.1.3.2 NCMS to 802.16 Entity

This primitive is generated when the QoS management entity in NCMS responds to Add_Service_Flow.requestC-SFM-REQ(Create) primitive.

14.5.6.4.2.1.4 Effect of receipt

14.5.6.4.2.1.4.1 802.16 Entity to NCMS

This primitive informs the result of the service flow creation to the QoS management entity in NCMS.

14.5.6.4.2.1.4.2 NCMS to 802.16 Entity

This primitive informs the result of the service flow creation of to an 802.16 Entity BS. An BS 802.16 Entity receiving the primitive shall transmit DSA-RSP message following based on the information provided by this messageprimitive.

14.5.6.4.3 Add_Service_Flow.indication (ASF.indication)

14.5.6.4.3.1 Function

This primitive is used by the QoS management entity in NCMS to inform QoS information. Service flow information and service flow ID are included in ASF.indication of a BS.

14.5.6.4.3.2 Semantics of the service primitive

The parameters of the primitives are as follows:

> Add_Service_Flow.indication
> (
> > Transaction ID
> > MS ID,
> > Service flow descriptor
> > Service flow ID
> > Service flow information
> > CS parameter information
>)
>
> **Transaction ID**
> > A unique sequential identifier of the transaction set by the BS
> **MS ID**
> > 48-bit unique identifier used by MS.
> **Service flow descriptor**
> > Information regarding the attribute an uplink or downlink service flow
> **Service flow ID**
> > Unique identifier to identify a service flow.
> **Service flow information**
> > Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, service flow scheduling type, tolerate jitter and maximum latency.
> **CS parameter information**
> > Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label

14.5.6.4.3.3 When generated

This primitive is generated when the QoS management entity in NCMS informs QoS information of a BS.

14.5.6.4.3.4 Effect of receipt

A BS receiving the primitive shall transmit DSA-REQ message following the information provided by this

message.

14.5.6.4.4 Add_Service_Flow.response (ASF.response)

14.5.6.4.4.1 Function

This primitive is used by a BS to respond the ASF.indication to the QoS management entity in NCMS.

14.5.6.4.4.2 Semantics of the service primitive

The parameters of the primitives are as follows:

```
Add_Service_Flow.response
(
        Transaction ID
        Service flow ID
        Service flow descriptor
        Service flow information
        CS parameter information
        Service flow error parameter information
)
```

Transaction ID
A unique sequential identifier of the transaction set by the BS
Service flow ID
Unique identifier to identify a service flow
Service flow descriptor
Information regarding the attribute an uplink or downlink service flow
Service flow information
Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, service flow scheduling type, tolerate jitter and maximum latency
CS parameter information
Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label
Service flow error parameter information
Failed reason and every specific failed QoS parameter if a ASF request is rejected

14.5.6.4.4.3 When generated

This primitive is generated when a BS receives a DSA-RSP message.

14.5.6.4.4.4 Effect of receipt

This primitive informs the result of the service flow creation of the QoS management entity in NCMS.

14.5.6.4.5 Change_Service_Flow.request (CSF.request)

14.5.6.4.5.1 Function

This primitive is used by a BS to inform an QoS information from an MS of the QoS management entity in NCMS.

14.5.6.4.5.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Change_Service_Flow.request
(
            Transaction ID
            MS ID
            Service flow ID
            Service flow information
            CS parameter information
)

Transaction ID
            A unique sequential identifier of the transaction set by the BS
MS ID
            48-bit unique identifier used by MS. MS ID is used for user authorization
Service flow ID
            Unique identifier to identify a service flow
Service flow information
            Required QoS information of a service flow include traffic characteristics and a
scheduling type such as service class name, QoS parameter set type, maximum sustained
traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic
rate, tolerate jitter and maximum latency
CS parameter information
            Required IP filter rules of a service flow such as packet classification rule and
IPv6 flow label

14.5.6.4.5.3 When generated

This primitive is generated when a BS receives a DSC-REQ message.

14.5.6.4.5.4 Effect of receipt

The QoS management entity in NCMS shall respond to this primitive by sending
Change_Service_Flow.confirm. The management entity for service flows checks the validity of the request
from the point of view of its own resources.

14.5.6.4.2.26 C-SFM-RSP (Operation_Type==Set) Change_Service_Flow.confirm (CSF.confirm)

14.5.6.4.26.2.11 Function

This primitive is used by the 802.16 Entity or the QoS management entity in NCMS to respond tose the C-
SFM-REQ(Set) for a change in an existing service flow. CSF.request from a MS. Service flow information
in CSF response havethis primitive contains approved QoS information if the CSF request is accepted.

14.5.6.4.26.2.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Change_Service_Flow.confirmC-SFM-RSP
(
            Message_id,
            Operation_Type(Set),
            Action_Type(Null),
            Object_id(MS_ID or BS_ID or NCMS),

            Attribute _list:

Transaction ID
Service flow ID
Service flow information
CS parameter information
Service flow error parameter information

)

Transaction ID
A unique sequential identifier of the transaction set by the BS
Service flow ID
Unique identifier to identify a service flow
Service flow information
Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, tolerate jitter and maximum latency
CS parameter information
Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label
Service flow error parameter information
Failed reason and every specific failed QoS parameter if the request is rejected

14.5.6.4.26.2.3 When generated

14.5.6.4.2.2.3.1 802.16 Entity to NCMS

This primitive is generated when an 802.16 Entity receives a DSC-RSP message.

14.5.6.4.2.2.3.2 NCMS to 802.16 Entity

This primitive is generated when the QoS management entity in NCMS responds to C-SFM-RSP(Set) Change_Service_Flow.request primitive.

14.5.6.4.2.26.4 Effect of receipt

14.5.6.4.2.2.4.1 802.16 Entity to NCMS

This primitive informs the result of the service flow modification to the QoS management entity in NCMS.

14.5.6.4.2.2.4.2 NCMS to 802.16 Entity

This primitive informs the result of the service flow modification of a BSto an 802.16 Entity. A BSn 802.16 Entity receiving the primitive shall transmit DSC-RSP message following based on the information provided by this primitivemessage.

14.5.6.4.7 Change_Service_Flow.indication (ASF.indication)

14.5.6.4.7.1 Function

This primitive is used by the QoS management entity in NCMS to inform QoS information. Service flow information is included in CSF.indication of a BS.

14.5.6.4.7.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Change_Service_Flow.indication

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> (
>   Transaction ID
>   MS ID,
>   Service flow ID
>   Service flow information
>   CS parameter information
>)
>
> **Transaction ID**
>   A unique sequential identifier of the transaction set by the BS
> **MS ID**
>   48-bit unique identifier used by MS.
> **Service flow ID**
>   Unique identifier to identify a service flow
> **Service flow information**
>   Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, tolerate jitter and maximum latency
> **CS parameter information**
>   Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label

14.5.6.4.7.3 When generated

This primitive is generated when the QoS management entity in NCMS informs QoS information of a BS.

14.5.6.4.7.4 Effect of receipt

A BS receiving the primitive shall transmit DSC-REQ message following the information provided by this message.

14.5.6.4.8 Change_Service_Flow.response (CSF.response)

14.5.6.4.8.1 Function

This primitive is used by a BS to respond the CSF.indication to the QoS management entity in NCMS.

14.5.6.4.8.2 Semantics of the service primitive

The parameters of the primitives are as follows:

> **Change_Service_Flow.response**
> (
>   Transaction ID
>   Service flow ID
>   Service flow information
>   CS parameter information
>   Service flow error parameter information
>)
>
> **Transaction ID**
>   A unique sequential identifier of the transaction set by the BS
> **Service flow ID**
>   Unique identifier to identify a service flow
> **Service flow information**

Approved complete QoS information of a service flow such as service class name, QoS parameter set type, maximum sustained traffic rate, maximum traffic burst, minimum reserved traffic rate, minimum tolerable traffic rate, tolerate jitter and maximum latency

CS parameter information

Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label

Service flow error parameter information

Failed reason and every specific failed QoS parameter if a CSF request is rejected

14.5.6.4.8.3 When generated

This primitive is generated when a BS receives a DSC-RSP message.

14.5.6.4.8.4 Effect of receipt

This primitive informs the result of the service flow creation of the QoS management entity in NCMS.

14.5.6.4.9 Delete_Service_Flow.request (DSF.request)

14.5.6.4.9.1 Function

This primitive is used by a BS to inform QoS information from an MS of the QoS management entity in NCMS.

14.5.6.4.9.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Delete_Service_Flow.request
(
        Transaction ID
        Service flow ID
)

Transaction ID
        A unique sequential identifier of the transaction set by the BS
Service flow ID
        Unique identifier to identify a service flow

14.5.6.4.9.3 When generated

This primitive is generated when a BS receives a DSD-REQ message.

14.5.6.4.9.4 Effect of receipt

The QoS management entity in NCMS shall respond to this primitive by sending Delete_Service_Flow.confirm. The management entity for service flows delete assigned resources for service flow ID.

14.5.6.4.~~10~~ 2.3 ~~Delete_Service_Flow.confirm (DSF.confirm)~~C-SFM-RSP(Operation_Type==Delete)

14.5.6.4.2.3~~10~~.1 Function

This primitive is used by the 802.16 entity or the QoS management entity in NCMS to respond~~se~~ to the service flow deletion request~~DSF.request from a MS~~.

14.5.6.4.2.3~~10~~.2 Semantics of the service primitive

The parameters of the primitives are as follows:

~~Delete_Service_Flow.confirm~~C-SFM-RSP
(
     Message_id,
     Operation_Type(Delete),
     Action_Type(Null),
     Object_id(MS_ID or BS_ID or NCMS),

     Attribute_list:
       Transaction ID
       Service flow ID
       Service flow error parameter information
)

Transaction ID
     A unique sequential identifier of the transaction set by the BS
Service flow ID
     Unique identifier to identify a service flow
Service flow error parameter information
     Failed reason and every specific failed QoS parameter if a DSF request is rejected

14.5.6.4.2.3~~10~~.3 When generated

14.5.6.4.2.3.3.1 802.16 Entity to NCMS

This primitive is generated when an 802.16 Entity receives a DSD-RSP message.

14.5.6.4.2.3.3.2 NCMS to 802.16 Entity

This primitive is generated when the QoS management entity in NCMS responds to ~~Delete_Service_Flow.request~~ C-SFM-REQ(Delete) primitive.

14.5.6.4.2.3~~10~~.4 Effect of receipt

14.5.6.4.2.3.4.1 802.16 Entity to NCMS

This primitive informs the result of the service flow deletion of the QoS management entity in NCMS. The QoS management entity in NCMS deletes assigned resources for service flow ID.

14.5.6.4.2.3.4.2 NCMS to 802.16 Entity

This primitive informs the result of the service flow deletion to a~~n~~ 802.16 Entity ~~BS~~. A~~n~~ 802.16 Entity ~~BS~~ receiving the primitive shall transmit DSD-RSP message ~~following~~ based on the information provided by this ~~message~~primitive.

~~14.5.6.4.11 Delete_Service_Flow.indication (DSF.indication)~~

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14.5.6.4.11.1 Function

This primitive is used by the QoS management entity in NCMS to inform QoS information. Service flow ID is included in DSF.indication of a BS.

14.5.6.4.11.2 Semantics of the service primitive

The parameters of the primitives are as follows:

> **Delete_Service_Flow.indication**
> (
> > Transaction ID
> > Service flow ID
>)
>
> **Transaction ID**
> > A unique sequential identifier of the transaction set by the BS
> **Service flow ID**
> > Unique identifier to identify a service flow

14.5.6.4.11.3 When generated

This primitive is generated when the QoS management entity in NCMS informs QoS information of a BS.

14.5.6.4.11.4 Effect of receipt

A BS receiving the primitive shall transmit DSD-REQ message following the information provided by this message.

14.5.6.4.12 Delete_Service_Flow.response (DSF.response)

14.5.6.4.12.1 Function

This primitive is used by a BS to respond the DSF.indication to the QoS management entity in NCMS.

14.5.6.4.12.2 Semantics of the service primitive

The parameters of the primitives are as follows:

> **Delete_Service_Flow.response**
> (
> > Transaction ID
> > Service flow ID
> > Service flow error parameter information
>)
>
> **Transaction ID**
> > A unique sequential identifier of the transaction set by the BS
> **Service flow ID**
> > Unique identifier to identify a service flow
> **Service flow error parameter information**
> > Failed reason and every specific failed QoS parameter if a DSF request is
> rejected

14.5.6.4.12.3 When generated

This primitive is generated when a BS receives a DSD-RSP message.

14.5.6.4.12.4 Effect of receipt

This primitive informs the result of the service flow deletion of the QoS management entity in NCMS. The QoS management entity in NCMS deletes assigned resources for service flow ID.

14.5.6.5 Managing Connection Resources

<Section Note: Managing constraints on the CID and SFID related resources. Recommendations on when CIDs could be recycled etc.>

14.5.6.6 Managing Multicast Broadcast Services

<Section Note: >