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Title	**Some Clarifications on CIDs and SFIDs and Suggested Modifications**
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Re:	**General Contribution**
Abstract	**Some Clarifications on CIDs and SFIDs and Suggested Modifications**
Purpose	**Some changes involving CID and SFID as brought out here,may be incorporated in the standard**
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Some Clarifications on CIDs and SFIDs and Suggested Modifications

Some ambiguities involving CIDs and SFIDs have come to light during our perusal of the standard. Clarifications regarding these are offered here. Based on the same changes and additions to the standard are suggested.

The following clarifications regarding CIDs and their role are in order:
1) At the SS each service category has one or more CIDs identified with it. These are the Transport CIDs. Every Transport CID has an identified service category at the CPS of MAC. So at the SS Uplink classification involves mapping a transport CID to user PDUs. The SDU so formed has an SFID (with which the transport CID is identified). In contrast at the BS classification has two dimensions – one at SS level (concerning Transport CID) and the other at Service flow level (concerning SFID). For example, a BS may receive two SDUs from an SS – say SSa; one of these may have an SFID and a Transport CID. The other can have a different SFID with a different Transport CID.

2) Every SS attached to a BS has a Basic CID, and a Primary Management CID. If IP management support is required for an SS, the SS is assigned a Secondary Management CID value also; else the Secondary Management CID value is not necessary and not assigned either. If the SS has no Secondary Management CID, these too can be used as additional Transport CIDs. The Transport CID is unique within the sector of a BS (The value is assigned by the BS). The set of Management CID values is also assigned by the BS. It can have a value i for Basic CID, i+m for Primary Management CID and i+2m for Secondary Management CID (only if called for). i represents a unique serial number assigned by BS to the SS and its Basic Management connection.

3) The Basic, Primary and Secondary Management CIDs and Transport CIDs are all assigned by the BS. Since all CID values are assigned by the BS, BS has to keep track of them by maintaining them in a structured manner; it may be done using a set of Look UP Tables.

4) Figure 93 (page 220) raises an ambiguity regarding the provisioned QoS ParamSet. It is stated that *"This type of service flow is known via provisioning by network management system. SFID serves as the principal identifier for the service flow in the network"*. Going by this, SFID need not be associated with the QoS parameter Set; further provisioned QoS need not be treated as service flow.
Once an admitted QoS parameter Set becomes non-null, an SFID is associated with it. When such an admitted QoS parameter Set becomes active, a Transport CID is also associated with it in addition to the SFID already assigned.
Figure 93 in page 220 illustrates that admitted QoS ParamSet has SFID and CID. This raises an ambiguity because it is stated in page 225 *"the service flow type may change to admitted or to active; in the later case the service flow is mapped on to a certain connection"*. It implies that admitted service flows are not mapped to transport connections and hence no transport CIDs are associated with admitted service flow.

In the light of the above clarifications, modifications as suggested below may be carried out.
Clarification 1 leads to the following modification.
Figure 7 and Figure 8 in the standard may be replaced by the respective figures below.

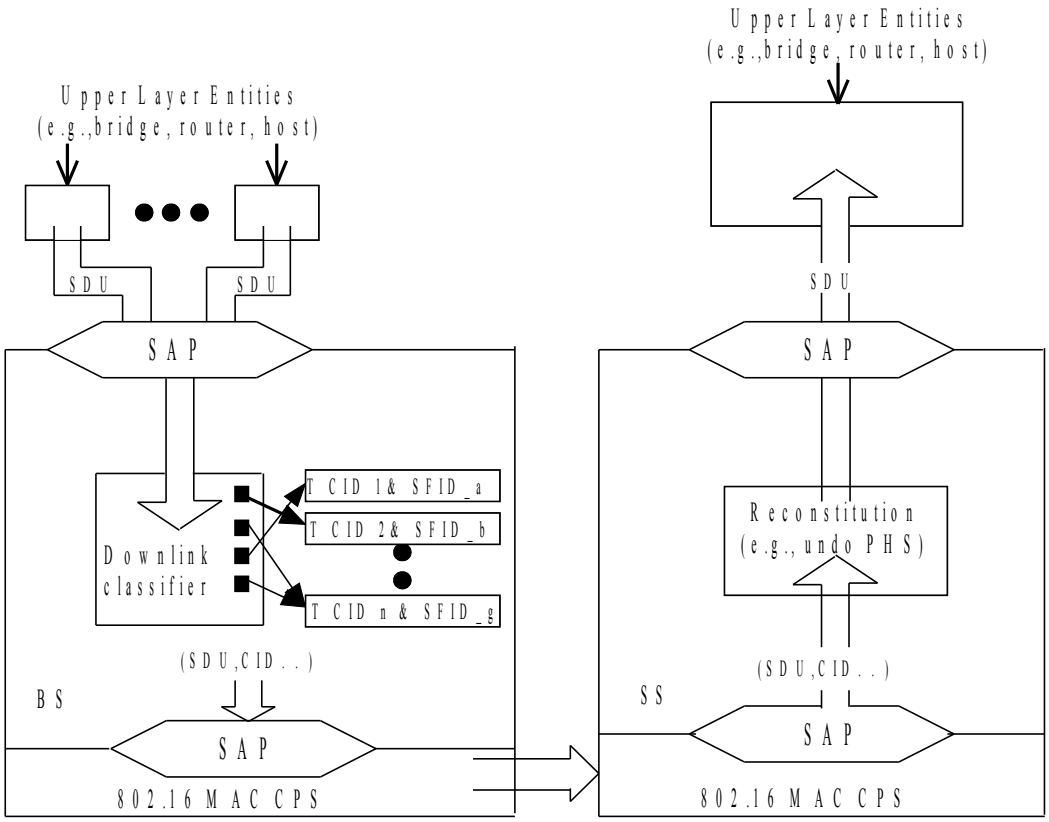

Figure 7 -- Classification and CID mapping (BS to SS): TCID stands for transport CID

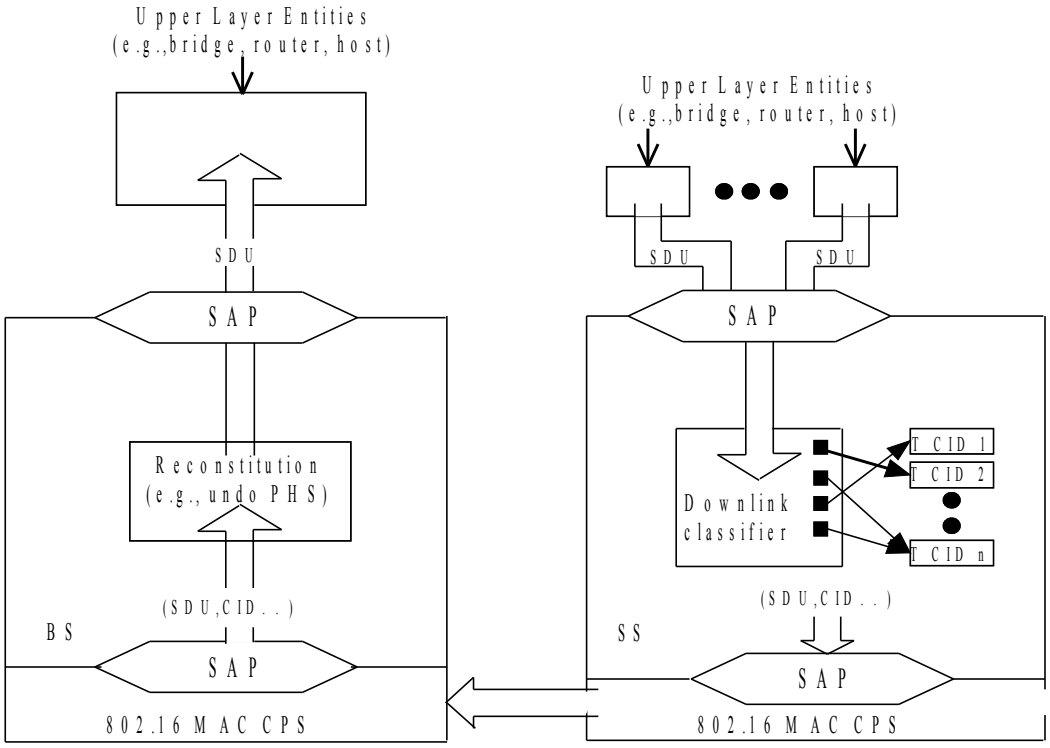

Figure8 -- Classification and CID mapping (SS to BS): TCID stands for a transport CID

Clarification 2 leads to the following modification
The table below may replace the table 345 in the standard

CID	Value	Description
Initial ranging	0x000	Used by SS and BS during initial ranging process.
Basic CID	0x000 - m	The same value is assigned to both the DL and UL connection
Primary management	m+1 -2m	The same value is assigned to both the DL and UL connection
Transport CIDs and secondary Mgt CIDs	2m+1 - 0xFEFE	The range is shared between Transport CID and secondary Mgt CIDs. For the secondary

		management connection, the same value is assigned to both the DL and UL connection.
AAS initial ranging CID	0xFEFF	A BS supporting AAS shall use this CID when allocating an Initial Ranging Period for AAS devices.
Multicast polling CIDs	0xFF00 – 0xFFFD	An SS may be included in one or more multicast polling groups for the purpose of obtaining bandwidth via polling .These connections have no associated service flow.
Padding CID	0xFFFE	Used for transmission of padding information by SS and BS.
Broadcast CID	0xFFFF	Used for broadcast information that is transmitted on a downlink to all SS.

Clarification 3 leads to the following modification
In the definition of CID it is to be added that 'Basic, Primary, Secondary Management and Transport CIDs are all assigned by the BS'.

Clarification 4 leads to the following modification.
Figure 93 and Figure 94 may be replaced by the respective figures below.

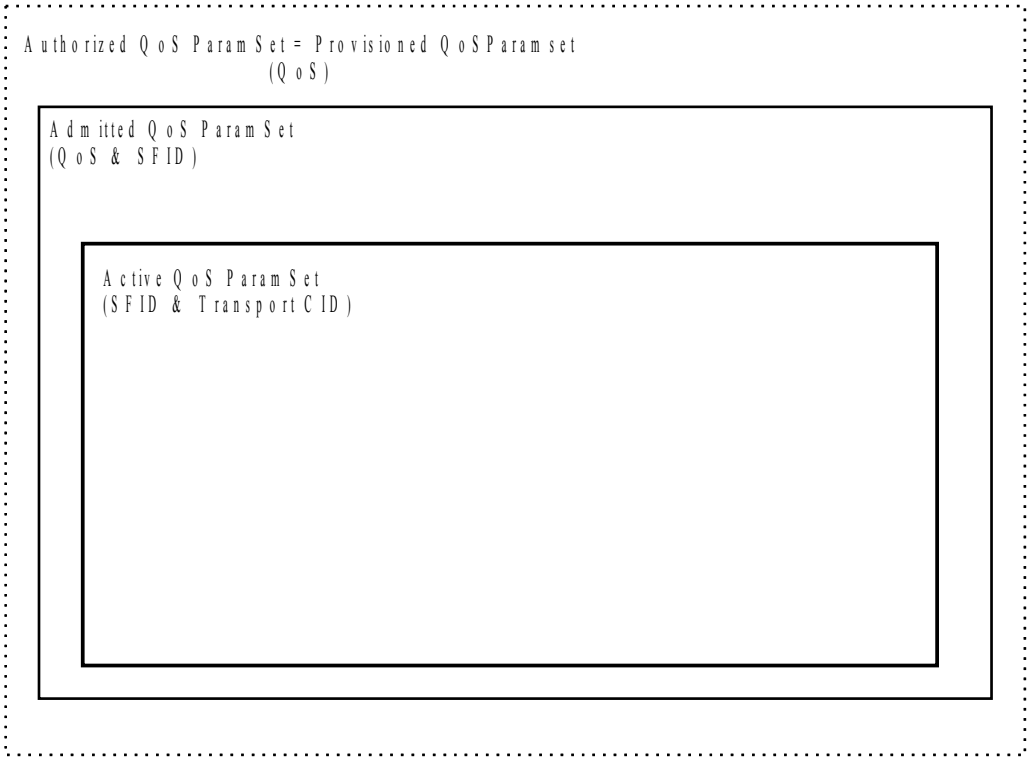

Figure 93 -- Provisioned authorization model "envelopes"

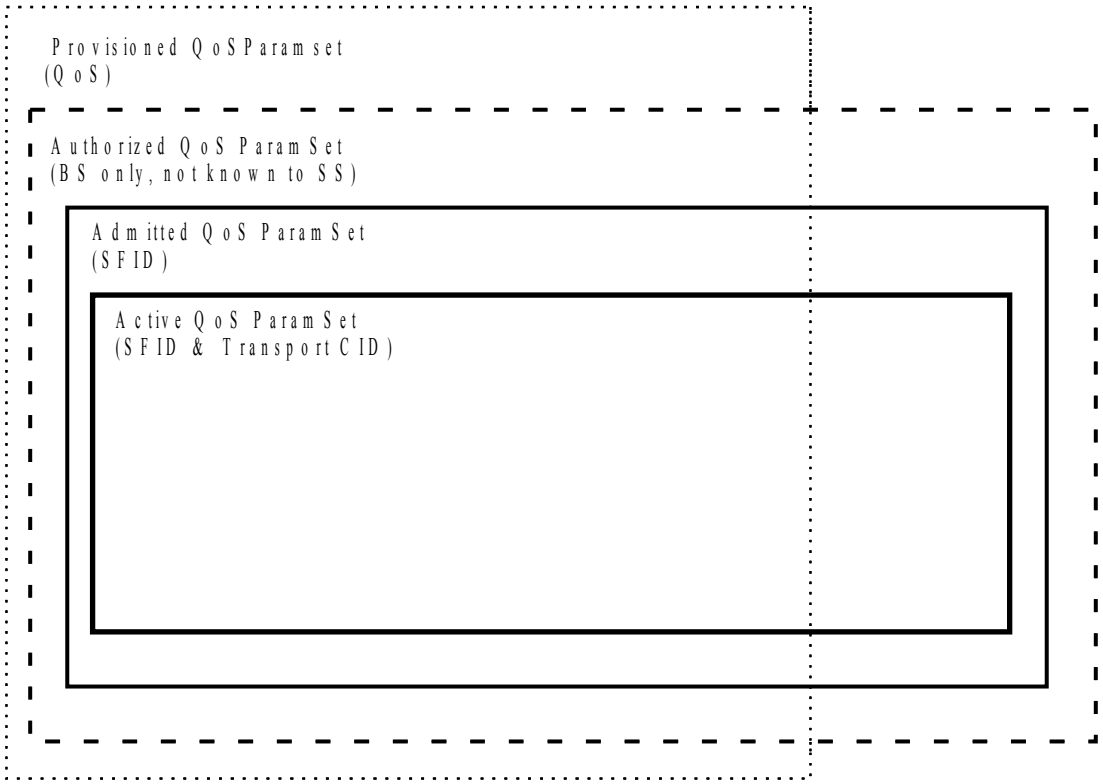

Figure 94 -- Dynamic authorization model "envelopes"

In line with the modifications suggested above the following changes at different places of the standard are to be incorporated.

1.4 Page 3

"This includes classifying external network service data units (SDUs) and associating them to the proper MAC service flow identifier(SFID) and connection identifier(CID)"

to be changed to

"This includes classifying external network service data units (SDUs) and associating them to the proper MAC Service Flow Identifier (SFID) and Transport Connection Identifier (CID)".

3.12 and 3.13 Page 7

Connection

The following is to be inserted at the beginning of the paragraph representing the definition.

A connection may be of two different types namely

1. Management connection
2. Transport connection

A management connection identifies an SS and the type of need (Basic, Primary and Secondary) to

the SS.
A transport connection is a virtual one way path from source in the Common Part Sub-layer (CPS) of one MAC to a destination in the CPS of another MAC. One of these MACs has to be in the BS and the other in one of the SSs for PMP.

Connection Identifier

A 16 bit CID value that could be used for two different types of connections.
Management connections are identified by Management CIDs (Basic, Primary and secondary management CID) and the values are assigned by the BS.
Each Transport connection has a unique 16 bit CID associated with it called a Transport CID which is mapped to a service flow identifier (SFID). See also Connection.

5.1.2.2.1 Page 18

"A classifier is a set of matching criteria applied to each ATM cell entering the ATM CS. It consists of some ATM cell matching criteria, such as VPI and VCI, and a reference to a CID. If an ATM cell matches the specified matching criteria, it is delivered to the MAC SAP for delivery on the connection identified by the CID"

to be changed to

"A classifier is a set of matching criteria applied to each ATM cell entering the ATM CS. It consists of some ATM cell matching criteria, such as VPI and VCI, and a reference to a transport CID. If an ATM cell matches the specified matching criteria, it is delivered to the MAC SAP for delivery on the connection identified by the transport CID".

5.1.2.2.1 Page 18

"For VP-switched mode, the VPI field, 12 bits for a network-to-network interface (NNI) and 8 bits for a user-to-network interface (UNI is mapped to the 16-bit CID for the MAC connection on which it is transported. Since the QoS and category of service parameters for the connection are set at connection establishment, this mapping of VPI and VCI to CID guarantees the correct handling of the traffic by the MAC"

to be changed to

"For VP-switched mode, the VPI field, 12 bits for a network-to-network interface (NNI) and 8 bits for a user-to-network interface (UNI), is mapped to the 16-bit Transport CID for the MAC connection on which it is transported. Since the QoS and category of service parameters for the connection are set at connection establishment, this mapping of VPI and VCI to Transport CID guarantees the correct handling of the traffic by the MAC".

5.1.2.3 Page 18

"To further save bandwidth, multiple ATM cells (with or without PHS) that share the same CID may be packed and carried by a single MAC CPS PDU"

to be changed to

"To further save bandwidth, multiple ATM cells (with or without PHS) that share the same Transport CID may be packed and carried by a single MAC CPS PDU".

5.1.2.3.1 Page 19

"In VP-switched mode, the VPI is mapped to a CID"

to be changed to

"In VP-switched mode, the VPI is mapped to a Transport CID".

5.1.2.3.2 Page 19

"In VC-switched mode, the VPI/VCI combination is mapped to a CID"

to be changed to

"In VC-switched mode, the VPI/VCI combination is mapped to a Transport CID".

5.2.2 Page 21

"Classification is the process by which MAC SDU is mapped onto a particular connection for transmission between MAC peers. The mapping process associates a MAC SDU with a connection, which also creates an association with the service flow characteristics of that connection"

to be changed to

"Classification is the process by which MAC SDU is mapped onto a particular transport connection for transmission between MAC peers. The mapping process associates a MAC SDU with a transport connection, which also creates an association with the service flow characteristics of that transport connection".

5.2.3 Page 23

"The classifier uniquely maps packets to its associated PHS Rule. The receiving entity uses the CID and the PHSI to restore the PHSF"

to be changed to

"The classifier uniquely maps packets to its associated PHS Rule. The receiving entity uses the Transport CID and the PHSI to restore the PHSF".

5.2.3.1 Page 23

"The SS applies its list of classifier rules. A match of the rule shall result in an Uplink Service Flow, CID and a PHS rule"

to be changed to

"The SS applies its list of classifier rules. A match of the rule shall result in an Uplink Service Flow, a Transport CID and a PHS rule".

6.1 Page 31

"The SSs check the CIDs in the received PDUs and retain only those PDUs addressed to them"

to be changed to

"The SSs check the Basic or Primary management CIDs in the received PDUs and retain only those PDUs addressed to them".

6.3.1.1 Page 33

"Requests for transmission are based on these CIDs, since allowable bandwidth may differ for different connections, even within the same service type"
to be changed to
"Requests for transmission are based on these Transport CIDs, since allowable bandwidth may differ for different connections, even within the same service type".
"The type of service and other current parameters of a service are implicit in the CID;they may be accessed by a look up indexed by the CID"
to be changed to
"The type of service and other current parameters of a service are implicit in the Transport CID; they may be accessed by a look up indexed by the CID".

6.3.2.1.2 Page 38

"The Bandwidth Request shall have the following Properties.
a) The length of the header shall always be 6 bytes.
b) The EC field shall be set to 0, indicating no encryption.
c) The CID shall indicate the connection for which uplink bandwidth is requested.
d) The Bandwidth Request (BR) field shall indicate the number of bytes requested.
e) Te allowed types for bandwidth requests are "000"for incremental and "001" for aggregate"
to be changed to
"The Bandwidth Request shall have the following Properties.
a) The length of the header shall always be 6 bytes.
b) The EC field shall be set to 0, indicating no encryption.
c) The CID shall indicate the Transport connection for which uplink bandwidth is requested.
d) The Bandwidth Request (BR) field shall indicate the number of bytes requested.
e) The allowed types for bandwidth requests are "000" for incremental and "001" for aggregate".

Figure 20 (Page 38) The Bandwidth Request Header Format may be replaced by the following

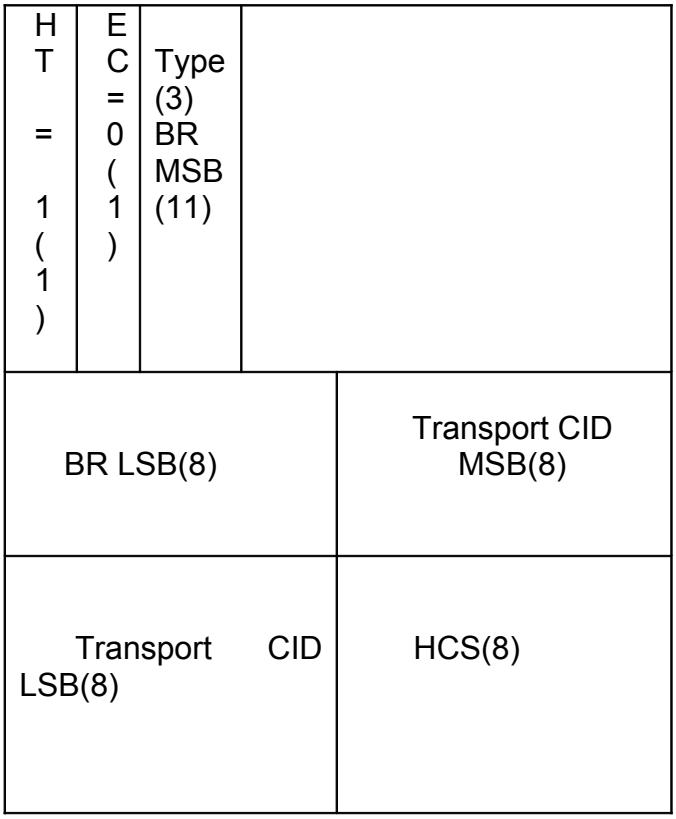

Figure 20 – Bandwidth request header format

6.3.2.2.2 Page 40

"The Grant Management sub-header is two bytes in length and is used by the SS to convey bandwidth management needs to the BS. This subheader is encoded differently based upon the type of uplink scheduling service for the connection (as given by the CID)"

to be changed to

"The Grant Management sub-header is two bytes in length and is used by the SS to convey bandwidth management needs to the BS. This sub-header is encoded differently based upon the type of uplink scheduling service for the transport connection (as given by the Transport CID)".

The first row in Table 10 (Page 40)
to be replaced by the following

Name	Length (Bits)	Description
PBR	16	Piggy Back Request The number of bytes of uplink bandwidth requested by the SS. The bandwidth request is for the Transport CID. The request shall not

		include any PHY overhead. The request shall be incremental

6.3.2.3.10.2 Page 62

"BS-initiated DSA-REQ may also include a CID. CIDs are unique within the MAC domain"

to be changed to

"BS-initiated DSA-REQ may also include a Transport CID. Transport CIDs are unique within the MAC domain".

6.3.2.3.11.1 Page 64

"The BS's DSA-RSP for service flows that are successfully added shall contain an SFID. The DSA-RSP for successfully Admitted or Active uplink QoS Parameter Sets shall also contain a CID"

to be changed to

"The BS's DSA-RSP for service flows that are successfully added shall contain an SFID. The DSA-RSP for successfully Active uplink QoS Parameter Sets shall also contain a Transport CID".

6.3.2.3.14 Page 66

"If a Service Flow Parameter Set contained an uplink Admitted QoS Parameter Set and this service flow does not have an associated CID, the DSC-RSP shall include a CID"

to be changed to

"If a Service Flow Parameter Set contained an uplink Admitted QoS Parameter Set and the Active QoS service flow does not have an associated Transport CID, the DSC-RSP shall include a Transport CID".

6.3.3.2 Page 123

"*Multiple MAC PDUs may be concatenated into a single transmission in either the uplink or downlink directions. Since each MAC PDU is identified by a unique CID, the receiving MAC entity is able to present the MAC SDU(after reassembling the MAC SDU form one or more received MAC PDUs) to the correct instance of the MAC ASP,MAC management messages, user data, and bandwidth request MAC PDUs may be concatenated into the same transmission"*

to be changed to

"Multiple MAC PDUs may be concatenated into a single transmission in either the uplink or downlink directions. Since each MAC PDU is identified by a unique Transport CID, the receiving MAC entity is able to present the MAC SDU(after reassembling the MAC SDU form one or more received MAC PDUs) to the correct instance of the MAC SAP,MAC management messages, user data,and bandwidth request MAC PDUs may be concatenated into the same transmission".

6.3.5.2.3 Page140

"The nrtPS offers unicast polls on a regular basis, which assures that the service flow receives request opportunities even during network congestion. The BS typically polls nrtPS CIDs on an interval on the order of one second or less"

to be changed to

"The nrtPS offers unicast polls on a regular basis, which assures that the service flow receives request opportunities even during network congestion. The BS typically polls nrtPS Transport CIDs on an interval on the order of one second or less".

6.3.6.3 Page 142

Grants

"For an SS, bandwidth requests reference individual connections while each bandwidth grant is addressed to the SS's Basic CID, not to individual CIDs"

to be changed to

"For an SS, bandwidth requests reference individual Transport connections while each bandwidth grant is addressed to the SS's Basic CID, not to individual Transport CIDs".

Polling

"Note that polling is done on a SS basis. Bandwidth is always requested on a CID basis and bandwidth is allocated on an SS basis"

to be changed to

"Note that polling is done on a SS basis. Bandwidth is always requested on a Transport CID basis and bandwidth is allocated on an SS basis".

Figure 37 Page 143

"Incremental BW request for CIDx"

to be changed to

"Incremental BW request for Transport CIDx".

6.3.8 Page 166

"Since an SS can have multiple uplink service flows (each with its own CID), it makes these decisions on a per CID or per service QoS basis"

to be changed to

"Since an SS can have multiple uplink service flows (each with its own Service flow ID), it makes these decisions on a per Transport CID or per service QoS basis".

6.3.13 Page 218

"The data transmitted on the connection with the given CID shall be received and processed by the MAC of each involved SS"

to be changed to

"The data transmitted on the connection with the given Transport CID shall be received and processed by the MAC of each involved SS".

6.3.14.1 Page 218

"The principal mechanism for providing QoS is to associate packets traversing the MAC interface into a service flow as identified by the CID"

to be changed to

"The principal mechanism for providing QoS is to associate packets traversing the MAC interface into

a service flow as identified by the Service flow ID".

6.3.14.1Page 219

"All service flows have a 32-bit SFID; admitted and active service flows also have a 16-bit CID"

to be changed to

"Admitted and active service flows have a 32-bit SFID; active service flows also have a 16-bit CID".

6.3.14.2 Page 219

"CID:Mapping to an SFID that exists only when the connection has an admitted or active service flow"

to be changed to

"Transport CID:Mapping to an SFID that exists only when the connection has an active service flow".

6.3.14.3 Page 221

"Admitted and active service flows are mapped to a 16 bit CID"

to be changed to

"Active service flows are mapped to respective 16 bit transport CIDs"

"Outgoing user data is submitted to the MAC SAP by a CS process for transmission on the MAC interface. The information delivered to the MAC SAP includes the CID identifying the connection across which the information is delivered. The service flow for the connection is mapped to MAC connection identified by the CID"

to be changed to

"Outgoing user data is submitted to the MAC SAP by a CS process for transmission on the MAC interface. The information delivered to the MAC SAP includes the Transport CID identifying the transport connection across which the information is deliverd. The service flow for the transport connection is mapped to MAC connection identified by the Transport CID".

6.3.14.6.1 Page 223

"As a result of external action beyond the scope of this specification, the SS may choose to activate a provisioned service flow by passing the SFID and the associated QoS Parameter Sets to the BS in the DSC-REQ message. If authorized and resources are available, the BS shall respond by mapping the service flow to a CID"

to be changed to

"As a result of external action beyond the scope of this specification, the SS may choose to activate a provisioned service flow by passing the SFID and the associated QoS Parameter sets to the BS in the DSC-REQ message. If authorized and resources are available, the BS shall respond by mapping the service flow to a Transport CID".

"As a result of external action beyond the scope of this specification, the BS may choose to activate a service flow by passing the SFID as well as the CID and the associated QoS Parameter Sets to the SS in the DSC-REQ message"

to be changed to

"As a result of external action beyond the scope of this specification, the BS may choose to activate a service flow by passing the SFID as well as the Transport CID and the associated QoS Parameter

Sets to the SS in the DSC-REQ message".

6.3.14.7 Page 224

"The provisioning of service flows is done via means outside the scope of this standard, such as the network management system. During provisioning, a service flow is instantiated, gets a service flow ID and a 'provisioned type'"

to be changed to

"The provisioning of service flows is done via means outside the scope of this standard, such as the network management system. During provisioning, a service flow is instantiated, gets 'provisioned type' ".

6.3.14.7.1.2Page 225

"*A DSA-REQ from a BS contains an SFID for either one uplink or one downlink service flow, possibly its associated CID, and a set of active or admitted QoS Parameters"*

to be changed to

"A DSA-REQ from a BS contains an SFID for either one uplink or one downlink service flow, admitted QoS parameters, and a set of active QoS Parameters(with its respective Transport CID)".

6.3.14.9.3.1 Page 236 and

In line with the clarification 4 and suggested modification the Table 125 and Table 126 -DSA initiated from SS and DSA initiated from BS to be changed as follows

SS		BS
New service flow needed Check if resources are available		
Send DSA-REQ	-----DSA –REQ-->	Receive DSA-REQ
Set Timers T7 and T14		New service flow required for SS
Timer T14 stops	<------DSX –RVD--	DSA-REQ integrity valid Check whether SS is authorized for service[a] Check whether service flow QoS can be supported. Create SFID Admitted QoS ParamSet, is mapped to SFID If uplink ActiveQoSParamSet is non-null, map the Service flow to Transport CID and Enable reception of data on new uplink service flow. Send DSA-RSP
Receive DSA-RSP Timer T7 stops	<-------DSA-RSP---	
Receive DSA-REQ If ActiveQoSParamSet is non-null, Enable transmission and/or reception of data on new service flow	<------DSA-REQ--	Send DSA-REQ Set Timer T7
Confirm that SS can support Service flow		
Send DSA-ACK Add Downlink SFID (if present) Enable reception on any new downlink service flow.	--------DSA-ACK-->	Receive DSA-ACK If downlink ActiveQoSParamSet is non-null, Enable transmission of data on new downlink service flow
Send DSA-RSP	---DSA-RSP----->	Receive DSA-RSP Timer T7 stops Enable transmission (downlink)or Reception(uplink) of data on new

SS BS
Check whether SS is authorized for Service.
Check whether service flow(s) can be supported.
ParamSet is mapped to SFID.

		service flow
Receive DSA-ACK	<--- DSA-ACK----	Send DSA-ACK
Enable transmission on new uplink service flow		

7.14 Page 273

"The actual mapping is achieved by including the SAID of an existing SA in the DSAxxx messages together with the CID" to be changed to "The actual mapping is achieved by including the SAID of an existing SA in the DSAxxx messages together with the Transport CID".

11.13.1 Page 697

CID

"The value of this field specifies the CID assigned by the BS to a service flow with a non-null AdmittedQoS ParamSet or Active QoSParamSet. The 16-bit value of this field is used in bandwidth requests and in MAC PDU headers. This field shall be present in a BS –initiated DSA-REQ or DSC-REQ message related to establishing an admitted or active service flow. This field shall also be present in DSA-RSP and DSC-RSP messages related to the successful establishment of an admitted or active service flow. Even though a service flow has been successfully admitted or activated (i.e., has an assigned CID) the SFID shall be used for subsequent DSx message signaling as it is the primary handle for a service flow. If a service flow is no longer admitted or active (via DSC-REQ, its CID may be reassigned by the BS"

to be changed to

"The value of this field specifies the CID assigned by the BS to a service flow with a non-null ActiveQoSParamSet. The 16-bit value of this field is used in bandwidth requests and in MAC PDU headers. This field shall be present in a BS-initiated DSA-REQ or DSC-REQ message related to establishing an active service flow. This field shall also be present in DSA-RSP and DSC-RSP messages related to the successful establishment of an active service flow. Even though a service flow has been successfully activated (*i.e.*, has an assigned CID) the SFID shall be used for subsequent DSx message signaling as it is the primary handle for a service flow. If a service flow is no longer active (via DSC-REQ), its Transport CID may be reassigned by the BS".