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Title	Service Primitives for Accounting	
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Re:	Call for Comment on P802.16g Baseline Document	
Abstract	This contribution proposes service primitives for accounting.	
Purpose	The document should be considered during the resolution of comments on the baseline document.	
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Service Primitives for Accounting

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ETRI

1. Problem Statement

Accounting for Internet service has been defined by IETF AAA Working Group, and Remote Authentication Dial In User Service (RADIUS) and Diameter protocols define accounting protocol between Access Network Node and Authentication, Authorization, and Accounting (AAA) Server. In order to provide accounting for Wireless Access Network based on IEEE 802.16 WMAN standard, either RADIUS or Diameter can be used, where a BS detects Accounting event and this event should be delivered to an AAA server through either RADIUS or Diameter protocol. Contrary to the conventional wired network or WLAN, however, a mobile user in IEEE 802.16 WMAN can generate various service flows with different quality of service (QoS) requirements simultaneously, and new accounting primitives accommodating multiple service flows should be supported. In this contribution, we propose service primitives for accounting which are exchanged through Management Service Access Point (M-SAP) of Management Plane specified in IEEE 802.16g baseline document.

2. Summary of the Proposed Remedy

In this contribution, we define two primitives for supporting accounting between a BS and an NCMS, which are summarized briefly in the following table.

Primitive	Direction	Primitive Contents
Accounting request	BS <-> NCMS	MSS MAC Address, Service Flow Identifier, Accounting Record Type, Accounting Record Number, Accounting Input Octets, Accounting Output Octets, Accounting Input Packets, Accounting Output Packets, Service Flow Information
Accounting response	BS <-> NCMS	MSS MAC Address, Service Flow Identifier, Result Code, Accounting Record Type, Accounting Record Number, Accounting Input Octets, Accounting Output Octets, Accounting Input Packets, Accounting Output Packets, Service Flow Information

Figure 1 shows an example procedure for accounting message transfer. Accounting for an MSS is initiated after Network Entry procedure and Accounting request message is delivered to an NCMS in order to inform the start of accounting information gathering for an MSS registration. Accounting for connections is initiated after Dynamic Service Addition (DSA) and Accounting request message is delivered to an NCMS in order to inform the start of accounting information gathering for the connection. If Dynamic Service Deletion (DSD) is performed, accounting information gathering for the connection is terminated and the gathered accounting information is transferred to the NCMS. If an MSS deregisters, accounting information gathering for an MSS registration is terminated and the gathered accounting information is transferred to an NCMS, too.

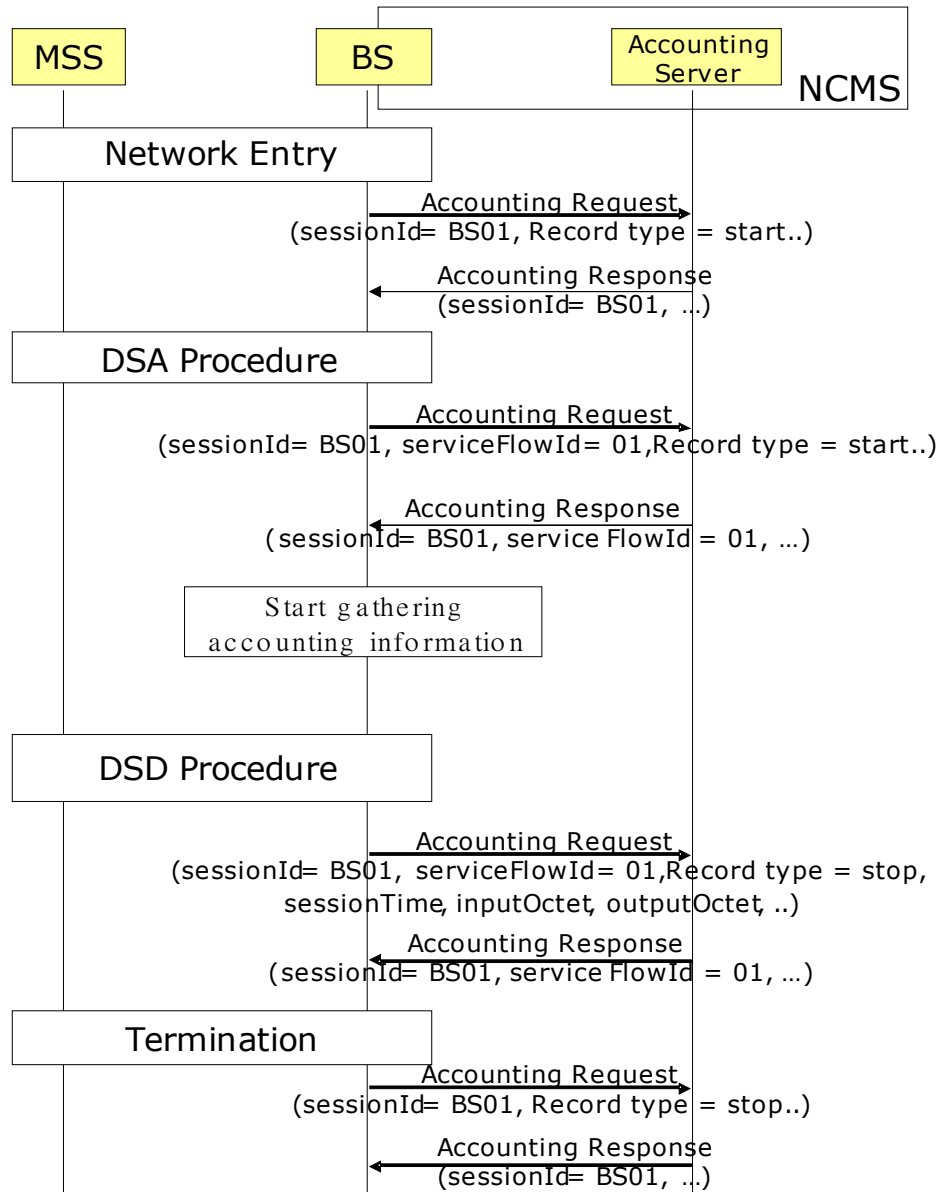


Fig. 1 - An Example Procedure for Accounting Message Transfer

In this contribution, we define Accounting request and Accounting response primitives, as shown in Figs. 2 and 3, where Accounting request is initiated by either a BS or an NCMS depending on the policy of service provider. Figure 2 represents accounting primitives initiated by a BS when it receives REG-REQ/RSP, DREG-REQ/RSP, DREG-CMD, DSA-REQ/RSP, or DSD-REQ/RSP. Figure 3 represents accounting primitives initiated by an NCMS.

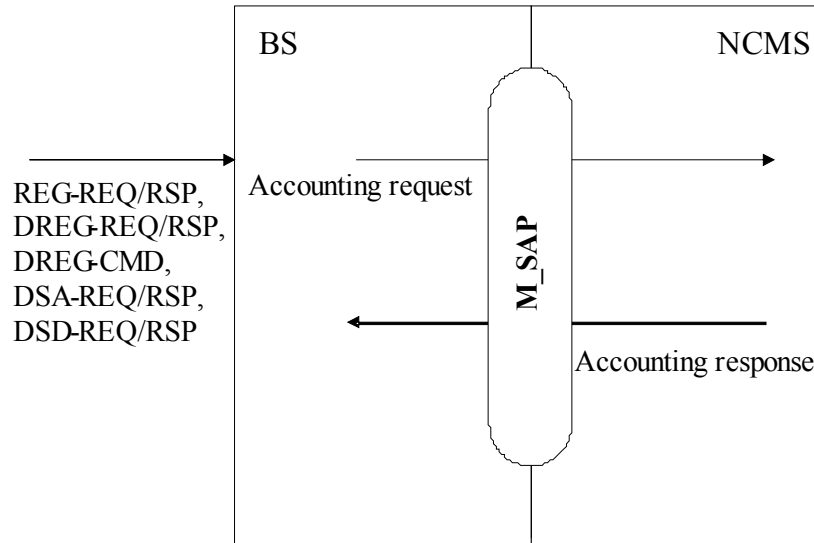


Fig. 2 - Accounting Primitive Initiated by a BS

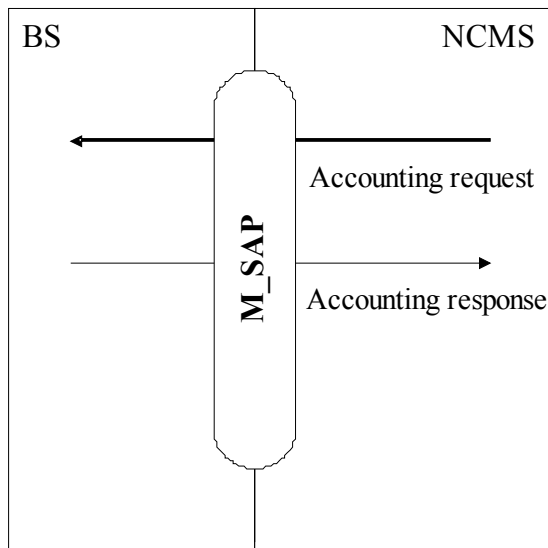


Fig. 3 - Accounting Primitive Initiated by an NCMS

Accounting attributes in the above Accounting request and Accounting response primitives are basically based on the attributes defined in RADIUS or Diameter, and new accounting attributes such as Service Flow Identifier and Service Flow Information are additionally defined for IEEE802.16 WMAN specific application.

Proposed Text Changes

[Modify section 14.5.3 as follow]

14.5.3 Accounting Management

Accounting event can be detected for an MSS Network Entry. Since each MSS can have multiple connections at the same time, accounting event for each connection should be detected. Accounting for an MSS Network Entry is initiated when the MSS registers at the network and terminated when the MSS deregisters from the network. Similarly, accounting for a connection is initiated at the dynamic service addition (DSA) instant of the connection and terminated at the dynamic service deletion (DSD) instant of the connection.

14.5.3.1 Accounting Procedure

Accounting primitives consist of Accounting request and Accounting response, as shown in Figs. 4 and 5. Figure 4 represents accounting primitives initiated by a BS when it receives REG-REQ/RSP, DREG-REQ/RSP, DREG-CMD, DSA-REQ/RSP, or DSD-REQ/RSP. Figure 5 represents accounting primitives initiated by an NCMS.

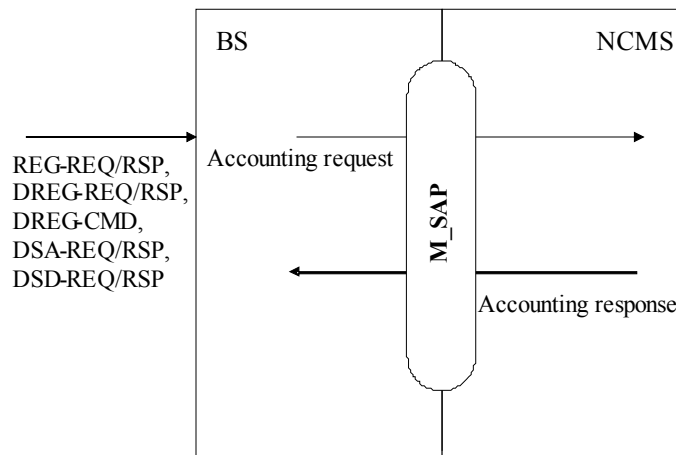


Fig.4 - Accounting Primitive Initiated by a BS

Fig.5 - Accounting Primitive Initiated by an NCMS

14.5.3.2 Service Primitives for Accounting Management

14.5.3.2.1 Accounting request

14.5.3.2.1.1 Function

This primitive is issued by a BS to inform an NCMS of accounting event for MSS Network Entry after Registration request/response (REG-REQ/RSP) or Deregistration command (DREG-CMD) of an MSS. Also, it is issued by a BS to inform an NCMS of accounting event for connection after DSA or DSD procedure. On the other hand, this primitive can be issued by an NCMS depending on the policy of service provider.

14.5.3.2.1.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Accounting request

(
 MSS MAC Address
 Service Flow Identifier
 Accounting Record Type
 Accounting Record Number
 Accounting Input Octets
 Accounting Output Octets
 Accounting Input Packets
 Accounting Output Packets
 Service Flow Information
)

MSS MAC Address

48-bit MAC address which will identify MSS

Service Flow identifier

32-bit service flow identifier which will identify service flows of an MSS

Accounting Record Type

The type of accounting record being sent and EVENT_RECORD, START_RECORD, INTERIM_RECORD, and STOP_RECORD are currently defined. An Event Record is used to indicate that a one-time event has occurred (meaning that the start and end of the event are simultaneous). A Start Record is used to initiate an accounting session and contains accounting information that is relevant to the initiation of the session. An Interim Record contains cumulative accounting information for an existing accounting session. A Stop Record is sent to terminate an accounting session and contains cumulative accounting information relevant to the existing session.

Accounting Record Number

Identifies accounting record within one session

Accounting Input Octets

The number of octets received from the MSS during the session

Accounting Output Octets

The number of octets sent to the MSS during the session

Accounting Input Packets

The number of packets received from the MSS during the session

Accounting Output Packets

The number of packets sent to the MSS during the session

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

14.5.3.2.1.3 When generated

This primitive is generated at a BS when an MSS enters a network or terminates to access a network, or when an MSS starts or stops dynamic services. Also, this primitive can be generated at an NCMS to request accounting event from a BS.

14.5.3.2.1.4 Effect of receipt

If this primitive is generated by a BS, accounting event is sent to an NCMS. On the other hand, if this primitive is generated by an NCMS, the BS transfers gathered accounting event to the NCMS using Accounting response primitive.

14.5.3.2.1 Accounting response

14.5.3.2.1.1 Function

This primitive is issued by either an NCMS or a BS to respond to Accounting request.

14.5.3.2.1.2 Semantics of the service primitive

The parameters of the primitives are as follows:

Accounting response

(
 MSS MAC Address
 Service Flow Identifier
 Result Code
 Accounting Record Type
 Accounting Record Number
 Accounting Input Octets
 Accounting Output Octets
 Accounting Input Packets
 Accounting Output Packets
 Service Flow Information
)

MSS MAC Address

48-bit MAC address which will identify MSS

Service Flow identifier

32-bit service flow identifier which will identify service flows of an MSS

Result Code

The result of Accounting request

Accounting Record Type

The type of accounting record being sent and EVENT_RECORD, START_RECORD, INTERIM_RECORD, and STOP_RECORD are currently defined. An Event Record is used to indicate that a one-time event has occurred (meaning that the start and end of the event are simultaneous). A Start Record is used to initiate an accounting session and contains accounting information that is relevant to the initiation of the session. An Interim Record contains cumulative accounting information for an existing accounting session. A Stop Record is sent to terminate an accounting session and contains cumulative accounting information relevant to the existing session.

Accounting Record Number

Identifies accounting record within one session

Accounting Input Octets

The number of octets received from the MSS during the session

Accounting Output Octets

The number of octets sent to the MSS during the session

Accounting Input Packets

The number of packets received from the MSS during the session

Accounting Output Packets

The number of packets sent to the MSS during the session

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

14.5.3.2.1.3 When generated

This primitive is generated at either an NCMS or a BS to respond to Accounting request.

14.5.3.2.1.4 Effect of receipt

If an NCMS or a BS receives the Accounting response, it completes accounting procedure.

References

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