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"3GPP2"

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## ***Route Control Plane for Ultra Mobile Broadband (UMB) Air Interface Specification***

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No text.

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**FOREWORD****(This foreword is not part of this Standard)**

This Standard was prepared by Technical Specification Group C of the Third Generation Partnership Project 2 (3GPP2). This Standard is the Route Control Plane part of the Ultra Mobile Broadband™ (UMB™)<sup>1</sup> air interface. Other parts of this Standard are:

- Overview for Ultra Mobile Broadband (UMB) Air Interface Specification
- Physical Layer for Ultra Mobile Broadband (UMB) Air Interface Specification
- MAC Layer for Ultra Mobile Broadband (UMB) Air Interface Specification
- Radio Link Layer for Ultra Mobile Broadband (UMB) Air Interface Specification
- Application Layer for Ultra Mobile Broadband (UMB) Air Interface Specification
- Security Functions for Ultra Mobile Broadband (UMB) Air Interface Specification
- Connection Control Plane for Ultra Mobile Broadband (UMB) Air Interface Specification
- Session Control Plane for Ultra Mobile Broadband (UMB) Air Interface Specification
- Broadcast-Multicast Upper Layers for Ultra Mobile Broadband (UMB) Air Interface Specification

Other Standards may be required to implement this system and are listed in the References section of each part.

This standard provides a specification for land mobile wireless systems based upon cellular principles. This Standard is one part of the IMT-2000 CDMA Multi-Carrier, IMT-2000 CDMA MC, also known as cdma2000®<sup>2</sup>.

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<sup>1</sup> Ultra Mobile Broadband™ and (UMB™) are trade and service marks owned by the CDMA Development Group (CDG).

<sup>2</sup> cdma2000® is the trademark for the technical nomenclature for certain specifications and standards of the Organizational Partners (OPs) of 3GPP2. Geographically (and as of the date of publication), cdma2000® is a registered trademark of the Telecommunications Industry Association (TIA-USA) in the United States.

**FOREWORD**

- 1 No text.

**REFERENCES**

1 The following documents contain provisions, which, through reference in this text,  
2 constitute provisions of this document. References are either specific (identified by date of  
3 publication, edition number, version number, etc.) or non-specific. For a specific reference,  
4 subsequent revisions do not apply. For a non-specific reference, the latest version applies.  
5 In the case of a reference to a 3GPP2 document, a non-specific reference implicitly refers to  
6 the latest version of that document in the same Release as the present document.

- 7
- 8 [1] C.S0084-000-0, Overview for Ultra Mobile Broadband (UMB) Air Interface  
9 Specification.
  - 10 [2] C.S0084-001-0, Physical Layer for Ultra Mobile Broadband (UMB) Air Interface  
11 Specification.
  - 12 [3] C.S0084-002-0, MAC Layer for Ultra Mobile Broadband (UMB) Air Interface  
13 Specification.
  - 14 [4] C.S0084-003-0, Radio Link Layer for Ultra Mobile Broadband (UMB) Air Interface  
15 Specification.
  - 16 [5] C.S0084-004-0, Application Layer for Ultra Mobile Broadband (UMB) Air Interface  
17 Specification.
  - 18 [6] C.S0084-005-0, Security Functions for Ultra Mobile Broadband (UMB) Air  
19 Interface Specification.
  - 20 [7] C.S0084-006-0, Connection Control Plane for Ultra Mobile Broadband (UMB) Air  
21 Interface Specification.
  - 22 [8] C.S0084-007-0, Session Control Plane for Ultra Mobile Broadband (UMB) Air  
23 Interface Specification.
  - 24 [9] Reserved.
  - 25 [10] C.S0084-009-0, Broadcast-Multicast Upper Layer for Ultra Mobile Broadband  
26 (UMB) Air Interface Specification.
  - 27 [11] C.R1001, Administration of Parameter Value Assignments for cdma2000 Spread  
28 Spectrum Standards. (Informative)

## **REFERENCES**

- 1 No text.

1 **1 INTRODUCTION**

2 Route Control Plane consists of following protocols:

- 3 • Route Control Protocol

- 1 No text.

## 2 BASIC ROUTE CONTROL PROTOCOL

### 2.1 Overview

The Route Control Protocol resides in the Control Plane. The Route Control Protocol performs the following functions:

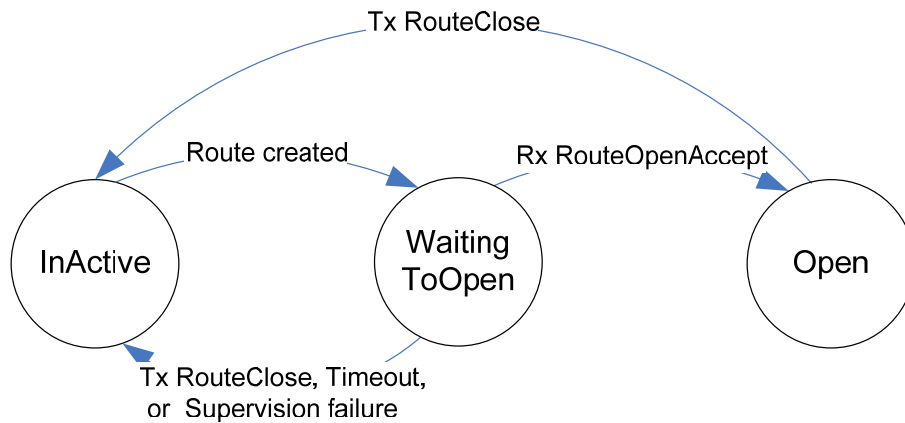
- Controls the creation and deletion of Routes.
- Maintains mapping between short Route identifier (RouteID) and long Route identifier (ANID).
- Maintains identity of the DataAttachmentPoint Route and SessionAnchor Route.
- Maintains the identity of the Forward Link Serving Route and Reverse Link Serving Route
- UATI and PagingID assignment.

A Route consists of an InUse protocol stack associated with an access network.

This protocol can be in one of four states:

- InActive State: In this state, a Route to the access network does not exist.
- WaitingToOpen State: In this state, a Route to the access network exists but is not open yet. In this state, the access terminal may send a RouteOpenRequest message to the access network and waits for the response. In this state, the access terminal has limited communication with the access network. A Route whose Route Control Protocol is in this state may carry packets bound for another Route.
- Open State: In this state, a Route to the access network exists (i.e. access network has access terminal's session) and the Route is open. In this state, the access terminal and the access network can send data and messages to each other.
- WaitingToClose State: This state applies only to the access network. In this state the access network waits for the Route close procedure to complete.

Figure 2-1 provides an overview of the access terminal states and state transitions.



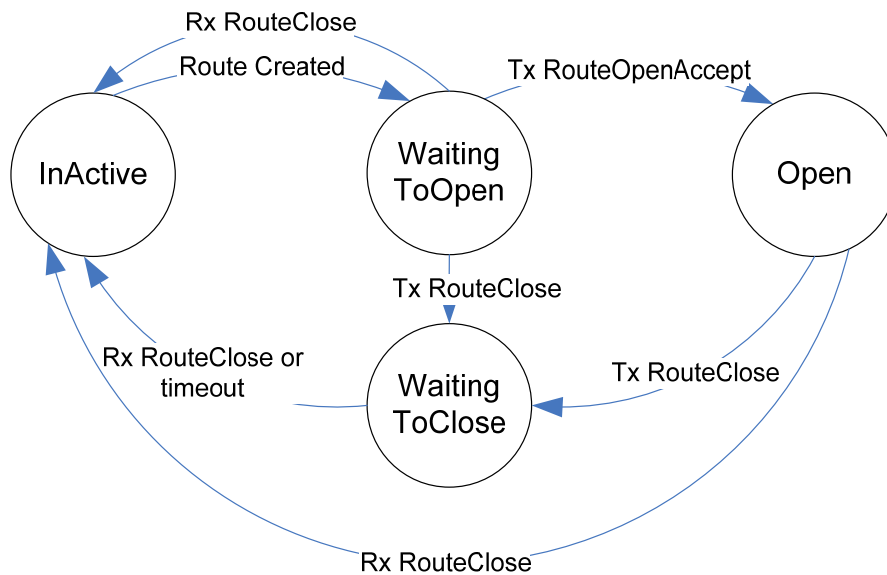
1

**Figure 2-1. Route Control Protocol State Diagram (Access Terminal)**

2

3

4 Figure 2-2 provides an overview of the access network states and state transitions.



5

**Figure 2-2. Route Control Protocol State Diagram (Access Network)**

6

7

**2.2 Primitives, Local Common Data, and Public Data**

8

2.2.1 Commands

9

This protocol defines the following commands:

10

- 1 • *CreateNewStack(PilotPN)*
- 2 • *CloseRoute*
- 3 • *IncrementBusyCount*
- 4 • *DecrementBusyCount*

### 5 2.2.2 Return Indications

6 This protocol returns the following indications:

- 7 • *RouteOpened*
- 8 • *RouteClosed*
- 9 • *RouteOpenRejected*
- 10 • *UATIAssigned*
- 11 • *RouteCreated(RouteCounter)*

### 12 2.2.3 Procedure Calls

- 13 • *SessionAnchorAuthenticationTag*
  - 14 – Inputs: *ATSequence*
  - 15 – Outputs: *SessionAnchorMIKeyID*, *AuthenticationTag*

### 16 2.2.4 Local Common Data

17 This protocol defines the following Local Common Data (i.e. AT only):

- 18 • *PagingIDList*
- 19 • *RouteCounter*

### 20 2.2.5 Public Data

21 This protocol shall make the following data public:

- 22 • Subtype for this protocol
- 23 • State of this protocol
- 24 • *RouteMap* (*RouteID* and *ANID* of all Routes in Open State)
- 25 • Whether this protocol belongs to the *DataAttachmentPoint* Route
- 26 • Whether this protocol belongs to the *SessionAnchor* Route
- 27 • Whether this protocol belongs to the *Forward Link Serving* Route
- 28 • Whether this protocol belongs to the *Reverse Link Serving* Route
- 29 • All data defined as *Static Attribute*, *Static Non-Attribute Data*, and *Local Common Data*

## 2.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Protocol to transmit and receive messages.

## 2.4 Protocol Initialization

### 2.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the procedures specified in [8].

### 2.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal and access network shall perform the following:

- The access terminal and access network shall perform the procedures specified in [8].
- The access terminal shall set BusyCount to 0.
- The access terminal shall initialize a receive pointer for the UATI assignment validation,  $V(R)$ , to 255.
- If TransmitATI public data of the Route Control Protocol is of type RATI, the access terminal shall perform the following:
  - Set OldUATI to NULL.
  - Set SessionSeed to a 128-bit pseudo-random or random number.
  - Clear the PagingIDList
  - Set TransmitATI to  $\langle \text{ATIType} = '11', \text{ATI} = \text{SessionSeed} \rangle$ .
  - Set UATI to NULL.
- The protocol at the access terminal and access network shall enter the WaitingToOpen State.

## 2.5 Procedures and Messages for the InConfiguration Instance of the Protocol

### 2.5.1 Procedures

This protocol uses the Session Configuration Protocol to define the processing of the configuration messages.

### 2.5.2 Message Formats

This protocol uses the following Session Configuration Protocol messages to perform attribute negotiation: ConfigurationRequest, ConfigurationResponse, FastConfigurationRequest, FastConfigurationResponse, ConfigurationCopyRequest, ConfigurationCopyAccept, ConfigurationCopyReject.

## 2.6 Procedures and Messages for the InUse Instance of the Protocol

### 2.6.1 Procedures

The access terminal shall support at least six Routes (including Routes in the Radio Active Set) that are not in the InActive state<sup>3</sup>.

#### 2.6.1.1 Hard Commit Procedures

The access terminal and the access network shall perform the procedures specified in [8] when directed by the InUse instance of the Session Configuration Protocol to execute the Hard Commit procedures.

#### 2.6.1.2 Soft Commit Procedures

The access terminal and the access network shall perform the procedures specified in [8], in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Soft Commit procedures.

#### 2.6.1.3 BusyCount Maintenance

Whenever the Route Control Protocol receives an *IncrementBusyCount* command, the access terminal shall increment BusyCount. Whenever the Route Control Protocol receives a *DecrementBusyCount* command, the access terminal shall decrement BusyCount.

#### 2.6.1.4 SessionAnchorAuthenticationTag Procedure Call

If the Route Control Protocol of the SessionAnchor Route receives the SessionAnchorAuthenticationTag procedure call, it shall return the following:

- SessionAnchorMIKeyID: it shall be set to EHMAC-SHA256(key=RACMIKey[KeyIndex], message= "SessionAnchorMIKeyID", MAC\_length=4), where RACMIKey[KeyIndex] and KeyIndex are public data of Key Exchange Protocol and EHMAC-SHA256 function is specified in [6].
- AuthenticationTag: it shall be set to EHMAC-SHA256(key=RACMIKey[KeyIndex], message= ATSequence, MAC\_length=8), where RACMIKey[KeyIndex] and KeyIndex are public data of Key Exchange Protocol and EHMAC-SHA256 function is specified in [6] and ATSequence equals the value received in the procedure call.

#### 2.6.1.5 UATI Assignment Processing

Whenever the access terminal receives a UATI assignment via a UATIAssignment message, RouteOpenAccept message, or DataAttachmentPointAssignment message, the access terminal shall perform the following:

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<sup>3</sup> Six routes are required due to the following: three Routes in Radio Active Set, one Route to perform session negotiation, one Route to the SessionAnchor access network, and one Route to add a pilot that may belong to a new access network.

- 1 • The access terminal shall validate the message, using the procedure defined in [1] (S is  
2 equal to 8). If the message is invalid, the access terminal shall discard the message;  
3 otherwise, the access terminal shall perform the following:
  - 4 – Add the following entry to the PagingIDList:  
5 <ATIType='10', PagingID = PagingID> where PagingID is determined as follows:
    - 6 + If the PagingIDInd field is set to '00', then PagingID shall be set to the value of  
7 PagingID received in the message.
    - 8 + If the PagingIDInd field is set to '01', then PagingID shall be set to 32 LSB of the  
9 new UATI assigned to the access terminal, as derived below.
    - 10 + If the PagingIDInd field is set to '10', then PagingID shall be set to the value of  
11 PagingID corresponding to the current UATI.
  - 12 – The access terminal shall set TransmitATI to  
13 <ATIType = '10', ATI = UATI> where ATI is set as follows:
    - 14 + If the UATIlsbSameAsPrev field in the received message equals '1', then ATI =  
15 [ANID|64 LSB of current UATI] where ANID is the identifier of the access  
16 network that sent the message.
    - 17 + If the UATIlsbSameAsPrev field in the received message equals '0', then ATI =  
18 [ANID|UATIlsb received in the message] where ANID is the identifier of the  
19 access network that sent the message.
  - 20 – return a *UATIAssigned* indication to all Routes with argument containing the  
21 RouteID of this Route
  - 22 – mark this Route as the SessionAnchor Route, and shall mark all other Routes as  
23 not being the SessionAnchor Route.
  - 24 – Reset and start an Address timer with a timeout value of  $T_{RCPAddress}$  for the added  
25 entry to the PagingIDList

#### 26 2.6.1.6 InActive State

27 In this state, a Route to the access network and a corresponding protocol stack does not  
28 exist. Packets can not be exchanged over this Route. Whenever the Route Control Protocol  
29 enters the InActive State, the corresponding protocol stack shall be purged. If the  
30 SessionAnchor Route enters this state, the access terminal shall transition to the  
31 WaitingToOpen State in order to open the SessionAnchor Route.

#### 32 2.6.1.7 WaitingToOpen State

33 In this state, a Route to the access network exists but is not opened. In this state, the  
34 access terminal waits for the Route to be opened. While in this state, the access terminal is  
35 allowed to send only a limited set of messages. While in this state, the access terminal may  
36 send packets on behalf of other Routes.

## 2.6.1.7.1 Access Terminal Requirements

The access terminal may send a RouteOpenRequest message to the access network. If this is the SessionAnchor Route, then the access terminal shall send a RouteOpenRequest message upon entering this state.

If the access terminal sends a RouteOpenRequest message, it shall perform the following:

- If this Route was previously open and was closed less than  $T_{RCPPrevClose}$  seconds ago, the access terminal shall perform the following:
  - The access terminal shall set the RouteID field of the message to the Route identifier previously assigned to this Route.
  - If there is a pending personality switch request from this access network, the access terminal shall set the personality of this Route to the value of PendingPersonalityIndex public data of the Session Configuration Protocol.
- Otherwise, the access terminal shall set the RouteID field of the message to the Route identifier being assigned to this Route.
- The access terminal shall start the ATWaitingToOpen timer with a value of  $T_{RCPATWaitOpen}$ .

The access terminal shall perform the following:

- Access terminal may transmit and receive data.
- If Air Link Management Protocol is in Connected State, Access terminal shall send a RouteKeepAlive message once every RouteKeepAlivePeriod seconds.
- If the access terminal receives a RouteOpenAccept message, the access terminal shall perform the following:
  - The access terminal shall add the RouteID and ANID corresponding to this Route to RouteMap.
  - The access terminal shall return a *RouteOpened* indication.
  - If RouteOpenAccept message includes a UATI assignment, the access terminal shall process the UATI assignment as specified in 2.6.1.5.
  - The access terminal shall transition to the Open State.
- If the access terminal receives a RouteClose message in this state, the access terminal shall perform the following:
  - If the RejectReason field of the RouteClose message is set to 0x01, the access terminal shall start a Retry Delay timer for time specified by RetryDelay field in the RouteClose message.
  - While the Retry Delay timer is running, the access terminal should not send a RouteOpenRequest message to a pilot if the access terminal determines that the pilot belongs to the same access network.
  - The access terminal shall send a RouteClose message to the access network and shall transition to the InActive State.

- 1 • If the *ATWaitingToOpen* timer expires, *AirLinkManagement.AirLinkInitialized* indication  
2 is received, *AirLinkManagement.IdleInitiated* indication is received, or  
3 *AirLinkManagement.ConnectionClosed* indication is received, the access terminal shall  
4 transition to the InActive State.
- 5 • If the Route Control Protocol receives a *CreateNewStack(PilotPN)* command, the Route  
6 Control Protocol shall perform the following:
  - 7 – The Route Control Protocol shall select a *InitialProtocolSetIdentifier* or  
8 *PersonalityIndex* to describe the personality of the new protocol stack. The  
9 *InitialProtocolSetIdentifier* corresponding to the selected personality shall be equal  
10 to one of the *InitialProtocolSetIdentifier* values advertised by the access network  
11 corresponding to this pilot.
  - 12 – The Route Control Protocol shall create a new Route (protocol stack) with the  
13 selected *InitialProtocolSetIdentifier* or *PersonalityIndex*.

14 The access terminal shall perform the following SessionAnchor Route related procedures:

- 15 • If the access terminal receives a *RouteCreate* message, the access terminal shall  
16 perform the following:
  - 17 – The Route Control Protocol shall select a *ProtocolSetIdentifier* from the list included  
18 in the message to describe the personality of the Route.
  - 19 – The Route Control Protocol shall create a new Route (protocol stack) with the  
20 selected personality.
- 21 • If the access terminal receives a *UATIAssignment* message, the access terminal shall  
22 process the UATI assignment as specified in 2.6.1.5.
- 23 • If the access terminal receives a *RouteControl.UATIAssigned* indication, the access  
24 terminal shall send a *UATISuccess* message to the access network, with the *RouteID*  
25 field of the message set to the *RouteID* of the new SessionAnchor Route.
- 26 • The access terminal shall perform the following when an *Address* timer corresponding  
27 to an entry in the *PagingIDList* expires:
  - 28 – Disable the *Address* timer for that entry.
  - 29 – Delete all the entries in the *PagingIDList* that are older than the entry whose  
30 *Address* timer has expired. An entry X in the list is considered older than another  
31 entry Y, if the entry X has been added to the list prior to the entry Y.

#### 32 2.6.1.7.2 Access Network Requirements

33 The access network shall perform the following:

- 34 • Access network may transmit and receive data.
- 35 • If the access network receives a *RouteOpenRequest* message and the access network  
36 accepts the request, the access network shall send a *RouteOpenAccept* message and  
37 shall transition to the Open State.

- 1 • If the access network receives a *RouteOpenRequest* message and the access network  
2 does not accept the request, the access network shall send a *RouteClose* message and  
3 shall transition to the *WaitingToClose* State.
- 4 • If the access network sends a *RouteClose* message to the access terminal, the access  
5 network shall transition to the *WaitingToClose* State.
- 6 • If the access network receives a *RouteClose* message in this state, the access network  
7 shall transition to the *InActive* State.

#### 8 2.6.1.8 Open State

9 In this state, a Route to the access network exists (i.e. access network has access  
10 terminal's session) and the Route is open. Packets can be exchanged over this Route.

##### 11 2.6.1.8.1 Access Terminal Requirements

12 Upon entering this state, the access terminal shall perform the following:

- 13 • If this is not the only Route in *RouteMap*, the access terminal shall send a *RouteMap*  
14 message to the access network conveying the information in *RouteMap*.
- 15 • The Route Control Protocol shall return a *RouteCreated(RouteCounter)* indication, with  
16 *RouteCounter* set to the value transmitted in the corresponding *RouteOpenRequest*  
17 message.

18 If the Route Control Protocol receives a *CreateNewStack(PilotPN)* command, the Route  
19 Control Protocol shall perform the following:

- 20 • The Route Control Protocol shall select a *InitialProtocolSetIdentifier* or *PersonalityIndex*  
21 to describe the personality of the new protocol stack. The *InitialProtocolSetIdentifier*  
22 corresponding to the selected personality shall be equal to one of the  
23 *InitialProtocolSetIdentifier* values advertised by the access network corresponding to  
24 this pilot.
- 25 • The Route Control Protocol shall create a new Route (protocol stack) with the selected  
26 *InitialProtocolSetIdentifier* or *PersonalityIndex*.

27 If the Route Control Protocol receives a *RouteControl.RouteOpened* indication or a  
28 *RouteControl.RouteClosed* indication from another Route, the Route Control Protocol shall  
29 send *RouteMap* message to the access network conveying the information in *RouteMap*.

30 If the access terminal receives a *RouteMapRequest* message, the access terminal shall send  
31 a *RouteMap* message to the access network conveying the information in *RouteMap*.

32 If a *AirLinkManagement.AirLinkInitialized* indication is received or a  
33 *AirLinkManagement.IdleInitiated* indication is received, and this is not the *SessionAnchor*  
34 Route, the access terminal shall transition to the *InActive* State.

35 Access terminal may transmit and receive data.

36 If Air Link Management Protocol is in *Connected* State, the access terminal shall send a  
37 *RouteKeepAlive* message once every *RouteKeepAlivePeriod* seconds.

1 The access terminal shall perform the following DataAttachmentPoint Route related  
2 procedures:

- 3 • The access terminal shall comply with the following requirements in determining when  
4 to send DataAttachmentPointMoveRequest message to request the access network to  
5 assign this Route as the DataAttachmentPoint Route:
  - 6 – If the value of DataAttachmentPointMoveReqTimer attribute is equal to 0x0000, the  
7 access terminal shall not send a DataAttachmentPointMoveRequest message to the  
8 access network.
  - 9 – If the value of DataAttachmentPointMoveReqTimer attribute is equal to 0xffff the  
10 access terminal shall send a DataAttachmentPointMoveRequest message if all of the  
11 following conditions are satisfied:
    - 12 + DFLSS and FLSS public data of the Reverse Control Channel MAC Protocol  
13 correspond to different Routes, and
    - 14 + This Route at the access terminal corresponds to the DFLSS public data of the  
15 Reverse Control Channel MAC Protocol.
  - 16 – Otherwise, the access terminal should not send more than one  
17 DataAttachmentPointMoveRequest message within a period equal to the value of the  
18 DataAttachmentPointMoveReqTimer attribute.
- 19 • If the access terminal receives an DataAttachmentPointAssignment message from the  
20 access network with the AcceptInd field set to '1', the access terminal shall perform the  
21 following:
  - 22 – The access terminal shall mark that Route as the DataAttachmentPoint Route, and  
23 shall mark all other Routes as not being the DataAttachmentPoint Route.
  - 24 – If the CompletionAckReq field of the message is set to '1', the access terminal shall  
25 send a DataAttachmentPointAssignmentProcessed message to the access network  
26 upon completion of air link and any required upper layer processing<sup>4</sup> associated  
27 with the DataAttachmentPoint assignment.
  - 28 – If this message includes a UATI assignment, the access terminal shall process the  
29 UATI assignment as specified in 2.6.1.5.

30 The access terminal shall perform the following SessionAnchor Route related procedures:

- 31 • If the access terminal receives a RouteCreate message, the access terminal shall  
32 perform the following:
  - 33 – The Route Control Protocol shall select a ProtocolSetIdentifier from the list included  
34 in the message to describe the personality of the Route.
  - 35 – The Route Control Protocol shall create a new Route (protocol stack) with the  
36 selected personality.

---

<sup>4</sup> This is for Mobile IP binding update and acknowledgement

- 1 • If the access terminal receives a *UATIAssignment* message, the access terminal shall  
2 process the UATI assignment as specified in 2.6.1.5.
- 3 • If the access terminal receives a *RouteControl.UATIAssigned* indication, the access  
4 terminal shall send a *UATIDelete* message to the access network, with the *RouteID*  
5 field of the message set to the *RouteID* of the new *SessionAnchor* Route.
- 6 • The access terminal shall perform the following when an *Address* timer corresponding  
7 to an entry in the *PagingIDList* expires:
- 8 – Disable the *Address* timer for that entry.
- 9 – Delete all the entries in the *PagingIDList* that are older than the entry whose  
10 *Address* timer has expired. An entry X in the list is considered older than another  
11 entry Y, if the entry X has been added to the list prior to the entry Y.

12 If the access terminal receives a *RouteClose* message in this state, the access terminal shall  
13 perform the following:

- 14 • The access terminal shall send a *RouteClose* message to the access network.
- 15 • The access terminal shall remove the *RouteID* and *ANID* corresponding to this *Route*  
16 from the *RouteMap*.
- 17 • The access terminal shall return a *RouteClosed* indication and shall transition to the  
18 *InActive* State.

19 If the access terminal receives a *CloseRoute* command in this state, the access terminal  
20 shall perform the following:

- 21 • The access terminal shall send a *RouteClose* message to the access network.
- 22 • The access terminal shall remove the *RouteID* and *ANID* corresponding to this *Route*  
23 from the *RouteMap*.
- 24 • The access terminal shall return a *RouteClosed* indication and shall transition to the  
25 *InActive* State.

26 If all of the following conditions are true, the access terminal shall start the *ATRouteClose*  
27 timer with a value of *ATRouteCloseTimer*:

- 28 • *ConnectedState* public data of the *Air Link Management Protocol* is not set to  
29 “*Connected*”
- 30 • This is not the *SessionAnchor* Route

31 The *ATRouteClose* timer shall be disabled if any of the above conditions is no longer true.

32 Unless the access terminal receives a *RouteClose* message or a *CloseRoute* command, the  
33 access terminal shall comply with the following requirements in determining when to send  
34 a *RouteClose* message:

- 35 • The access terminal shall not send a *RouteClose* message if this is the *SessionAnchor*  
36 *Route*.
- 37 • The access terminal shall not send a *RouteClose* message if the *ATRouteClose* timer is  
38 active.

- 1 • The access terminal should not send a RouteClose message if BusyCount is greater  
2 than zero.

3 If the access terminal sends a RouteClose message, the access terminal shall perform the  
4 following:

- 5 • The access terminal shall remove the RouteID and ANID corresponding to this Route  
6 from the RouteMap.
- 7 • The access terminal shall return a *RouteClosed* indication and shall transition to the  
8 InActive State.

#### 10 2.6.1.8.2 Access Network Requirements

11 Upon entering this state, the access network shall perform the following:

- 12 • The Route Control Protocol shall return a *RouteCreated(RouteCounter)* indication, with  
13 RouteCounter set to the value received in the corresponding RouteOpenRequest  
14 message.

15 If the access network receives a *CloseRoute* command in this state, the access network  
16 shall perform the following:

- 17 • The access network shall send a RouteClose message to the access terminal.
- 18 • The access network shall transition to the WaitingToClose State.

19 The access network may query the current Route list by sending a RouteMapRequest  
20 message.

21 If the access network receives a RouteMap message in this state, the access network shall  
22 send a RouteMapAck message to the access terminal.

23 If the access network receives a RouteClose message in this state, the access network shall  
24 transition to the InActive State.

25 Access network may transmit and receive data.

26 The access network shall perform the following DataAttachmentPoint Route related  
27 procedures:

- 28 • If the value of DataAttachmentPointMoveReqTimer attribute is not equal to 0x0000,  
29 then the access network shall not send a DataAttachmentPointAssignment message  
30 unless in response to receiving a DataAttachmentPointMoveRequest message from the  
31 access terminal.
- 32 • If this Route becomes the DataAttachmentPoint Route, then the access network shall  
33 send an DataAttachmentPointAssignment message to the access terminal. One and  
34 only one Route shall be the DataAttachmentPoint Route at any time. The conditions  
35 under which a Route becomes the DataAttachmentPoint Route are outside the scope of  
36 this specification.

37 The access network shall perform the following SessionAnchor Route related procedures:

- 1 • The access network may send a UATI assignment at any time.
- 2 • When the access network sends a UATIAssignment message,  
3 RouteOpenAccept message, or DataAttachmentPointAssignment message, it shall  
4 perform the following:
- 5 – Access network shall assign a Unicast Access Terminal Identifier (UATI) and Paging  
6 Identifier (PagingID) to the access terminal for the session.
- 7 – It shall increment the value of the MessageSequence field in the message.
- 8 • When the access network receives a UATIDelete message, the access network shall  
9 perform the following:
- 10 – If the RouteID field is set to the RouteID corresponding to this access network, then  
11 the access network shall return a *UATIAssigned* indication if the MessageSequence  
12 field is equal to the MessageSequence field of the UATIAssignment message that it  
13 has sent.
- 14 – If the RouteID field is not set to the RouteID corresponding to this access network,  
15 then the access network shall return a *UATIAssigned* indication.
- 16 • If the access network does not receive the UATIDelete message in response to the  
17 corresponding UATI assignment within a certain time interval that is specified by the  
18 access network<sup>5</sup>, it should re-transmit the UATI assignment. If the access network does  
19 not receive the UATIDelete message after an implementation specific number of re-  
20 transmissions of the UATI assignment, it shall return a *Failed* indication

21 If the access network receives a packet or message addressed to a Route that is  
22 unreachable, the Route Control Protocol shall transmit a RouteUnreachable message  
23 conveying the RouteID or ANID that was unreachable.

24 If the access network sends a RouteClose message, it shall enter the WaitingToClose state.

#### 25 2.6.1.9 WaitingToClose State

26 This state applies only to the access network. In this state the access network waits for the  
27 Route close procedures to complete.

28 Upon entering this state, the access network shall start the ANRouteClose timer with a  
29 value of  $T_{RCPANRouteClose}$ .

30 If the access network receives a RouteClose message from the access terminal or the  
31 ANRouteClose timer expires, the access network shall return a *RouteClosed* indication and  
32 shall transition to the InActive State.

---

<sup>5</sup> The value of this timeout is determined by the access network and specification of the timeout value is outside the scope of this document.

## 1 2.6.2 Message Formats

## 2 2.6.2.1 RouteOpenRequest

3 The access terminal sends the RouteOpenRequest message to request opening a Route.

4

Field	Length (bits)
MessageID	8
RouteCounter	8
RouteID	4
EmergencyIndication	1
AuthenticationTagIncl	1
Reserved1	0 or 2
ATSequence	0 or 32
SessionAnchorMIKeyID	0 or 32
AuthenticationTag	0 or 64
Reserved2	0-7 (as needed)

5 **MessageID** The access terminal shall set this field to 0x00.6 **RouteCounter** The access terminal shall increment this field each time a new  
7 RouteOpenRequest message is sent.8 **RouteID** The access terminal shall set this field to the unique RouteID  
9 assigned to this new Route. The access terminal shall not set this  
10 field to values between 8 through 15 inclusive.11 **EmergencyIndication** The access terminal shall set this field to '1' if this is an emergency  
12 RouteOpenRequest; Otherwise, the access terminal shall set this field  
13 to '0'.14 **AuthenticationTagIncl** The access terminal shall set this field to '0' if the TransmitATI  
15 public data is set to RATI or this is the SessionAnchor Route;  
16 otherwise, the access terminal shall set this field to '1'.17 **Reserved1** The access terminal shall omit this field if the AuthenticationTagIncl  
18 field is set to '0'; otherwise, the access terminal shall set this field to  
19 '00'. The access network shall ignore this field.20 **ATSequence** The access terminal shall omit this field if the AuthenticationTagIncl  
21 field is set to '0'; otherwise, the access terminal shall include this  
22 field and set it as follows:

1 The access terminal shall increment this field for each new  
2 RouteOpenRequest message transmitted.

3 **SessionAnchorMIKeyID** The access terminal shall omit this field if the  
4 **AuthenticationTagIncl** field is set to '0'; otherwise, the access  
5 terminal shall include this field and set it as follows:

6 The access terminal shall set this field to the SessionAnchorMIKeyID  
7 value returned in the SessionAnchorAuthenticationTag procedure  
8 call to the Route Control Protocol of the Session Anchor Route, where  
9 the ATSequence parameter is set to the value of the ATSequence field  
10 of this message.

11 **AuthenticationTag** The access terminal shall omit this field if the **AuthenticationTagIncl**  
12 field is set to '0'; otherwise, the access terminal shall include this  
13 field and set it as follows:

14 The access terminal shall set this field to the AuthenticationTag value  
15 returned in the SessionAnchorAuthenticationTag procedure call to  
16 the Route Control Protocol of the Session Anchor Route, where the  
17 ATSequence parameter is set to the value of the ATSequence field of  
18 this message.

19 **Reserved2** The access terminal shall add reserved bits to make the length of the  
20 entire message equal to an integer number of octets. The access  
21 terminal shall set these bits to '0'. The access network shall ignore  
22 this field.

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

24 2.6.2.2 RouteOpenAccept

25 The access network sends the RouteOpenAccept message to accept the access terminal  
26 request for opening a new Route.  
27

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
ANID	64
InterfaceID	64
RouteID	4
UATIAssignIncl	1
MessageSequence	0 or 8
UATIlsbSameAsPrev	0 or 1
UATIlsb	0 or 64
PagingIDInd	0 or 2
PagingID	0 or 32
Reserved	0-7 (as needed)

- 1 MessageID The access network shall set this field to 0x01.
- 2 ANID The access network shall set this field to it's access network  
3 identifier.
- 4 InterfaceID The access network shall set this field to its interface identifier.
- 5 RouteID The access network shall set this field to the RouteID assigned to this  
6 new Route via the RouteOpenRequest message.
- 7 UATIAssignIncl The access network shall set this field to '1' if UATI and PagingID  
8 assignment is included in this message; otherwise, the access  
9 network shall set this field to '0'.
- 10 MessageSequence The access network shall omit this field if UATIAssignIncl field is set  
11 to '0'; otherwise, the access network shall include this field and set it  
12 as follows:
- 13 The access network shall set this to 1 higher than the  
14 MessageSequence field (modulo 256) of the last UATIAssignment  
15 message, RouteOpenAccept message, or  
16 DataAttachmentPointAssignment message sent by this access  
17 network to the access terminal.
- 18 UATIlsbSameAsPrev
- 19 The access network shall omit this field if UATIAssignIncl field is set  
20 to '0', otherwise, the access network shall include this field and set it  
21 as follows:

1 The access network shall set this field to '1' if the 64 LSB of the UATI  
 2 being assigned is the same as the 64 LSB of the UATI currently  
 3 assigned to the access terminal; otherwise, the access network shall  
 4 set this field to '0'.

5 **UATIlsb** If the UATIlsbSameAsPrev field is not included or is set to '1', the  
 6 access network shall omit this field; otherwise, the access network  
 7 shall include this field and set it to the 64 LSB of the UATI being  
 8 assigned to the access terminal.

9 **PagingIDInd** The access network shall omit this field if UATIAssignIncl field is set  
 10 to '0'; otherwise, the access network shall include this field and set it  
 11 as follows:

12 The access network shall set this field to '00' if the PagingID field is  
 13 included in this message. The access network shall set this field to  
 14 '01' if PagingID corresponds to the 32 LSB of the UATI assigned to  
 15 the access terminal. The access network shall set this field to '10' if  
 16 the PagingID is the same as the current value of PagingID.

17 **PagingID** The access network shall omit this field if the PagingIDInd field is not  
 18 set to '00'; otherwise, the access network shall include this field and  
 19 set it to the unicast paging identifier being assigned to the access  
 20 terminal.

21 **Reserved** The access network shall add reserved bits to make the length of the  
 22 entire message equal to an integer number of octets. The access  
 23 network shall set these bits to '0'. The access terminal shall ignore  
 24 this field.

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

26 2.6.2.3 RouteClose

27 The sender sends the RouteClose message to close the current Route.

28

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
RejectReason	0 or 8
RetryDelay	0 or 8

29 **MessageID** The sender shall set this field to 0x02.

1 RejectReason The access terminal shall omit this field. The access network shall  
 2 include this field and set it to the reason for rejection as specified in  
 3 Table 2-1.

4 **Table 2-1. RejectReason encoding**

RejectReason	Meaning
0x00	Normal Route close
0x01	RouteOpenRequest queued
All other values	Reserved

5 RetryDelay The access terminal shall omit this field. The access network shall  
 6 omit this field if the RejectReason field is not set to 0x01; otherwise,  
 7 the access network shall include this field and set it to the retry delay  
 8 in units of seconds.

<b>Channels</b>	RTC FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

10 2.6.2.4 DataAttachmentPointMoveRequest

11 The access terminal sends the DataAttachmentPointMoveRequest message to request  
 12 changing the data anchor access network to the access network corresponding to the Route  
 13 that generated this message.

Field	Length (bits)
MessageID	8
TransactionID	8

15 MessageID The access terminal shall set this field to 0x03.

16 TransactionID The access terminal shall increment this value for each new  
 17 DataAttachmentPointMoveRequest message sent. This value is  
 18 common across all Routes.

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

20 2.6.2.5 DataAttachmentPointAssignment

21 The access network sends the DataAttachmentPointAssignment message to assign a new  
 22 data anchor access network to the access terminal.

23

Field	Length (bits)
MessageID	8
TransactionID	8
AcceptInd	1
RouteID	0 or 4
CompletionAckReq	0 or 1
UATIAssignIncl	0 or 1
MessageSequence	0 or 8
UATIlsbSameAsPrev	0 or 1
UATIlsb	0 or 64
PagingIDInd	0 or 2
PagingID	0 or 32
Reserved	0-7 (as needed)

- 1 MessageID The access network shall set this field to 0x04.
- 2 TransactionID The access network shall increment this field for each new  
3 DataAttachmentPointAssignment message sent. A different  
4 transaction identifier space is maintained for when the value of  
5 DataAttachmentPointMoveReqTimer attribute is equal to 0x0000 and  
6 when it is not equal to 0x0000.
- 7 AcceptInd If this message is being sent in response to a  
8 DataAttachmentPointMoveRequest message from the access terminal  
9 and the access network does not accept the DataAttachmentPoint  
10 move request, the access network shall set this field to '0'; Otherwise,  
11 the access network shall set this field to '1'.
- 12 RouteID The access network shall omit this field if the AcceptInd field is set to  
13 '0'; otherwise, the access network shall include this field and set it to  
14 the RouteID corresponding to the new DataAttachmentPoint Route.
- 15 CompletionAckReq The access network shall omit this field if the AcceptInd field is set to  
16 '0'; otherwise, the access network shall include this field and set it as  
17 follows:  
  
18 The access network shall set this field to '1' if the access terminal is  
19 required to acknowledge this message upon completion of upper  
20 layer processing; otherwise, the access network shall set this field to  
21 '0'.

1		The access network shall not set this field to '1' if the value of
2		DataAttachmentPointMoveReqTimer attribute is not equal to 0x0000.
3	UATIAssignIncl	The access network shall omit this field if the AcceptInd field is set to
4		'0'; otherwise, the access network shall include this field and set it to
5		'1' if UATI and PagingID assignment is included in this message;
6		otherwise, the access network shall set this field to '0'.
7	MessageSequence	The access network shall omit this field if UATIAssignIncl field is set
8		to '0'; otherwise, the access network shall include this field and set it
9		as follows:
10		The access network shall set this to 1 higher than the
11		MessageSequence field (modulo 256) of the last UATIAssignment
12		message, RouteOpenAccept message, or
13		DataAttachmentPointAssignment message sent by this access
14		network to the access terminal.
15	UATIlsbSameAsPrev	
16		The access network shall omit this field if UATIAssignIncl field is set
17		to '0', otherwise, the access network shall include this field and set it
18		as follows:
19		The access network shall set this field to '1' if the 64 LSB of the UATI
20		being assigned is the same as the 64 LSB of the UATI currently
21		assigned to the access terminal; otherwise, the access network shall
22		set this field to '0'.
23	UATIlsb	If the UATIlsbSameAsPrev field is not included or is set to '1', the
24		access network shall omit this field; otherwise, the access network
25		shall include this field and set it to the 64 LSB of the UATI being
26		assigned to the access terminal.
27	PagingIDInd	The access network shall omit this field if UATIAssignIncl field is set
28		to '0'; otherwise, the access network shall include this field and set it
29		as follows:
30		The access network shall set this field to '00' if the PagingID field is
31		included in this message. The access network shall set this field to
32		'01' if PagingID corresponds to the 32 LSB of the UATI assigned to
33		the access terminal. The access network shall set this field to '10' if
34		the PagingID is the same as the current value of PagingID.
35	PagingID	The access network shall omit this field if the PagingIDInd field is not
36		set to '00'; otherwise, the access network shall include this field and

1 set it to the unicast paging identifier being assigned to the access  
 2 terminal.

3 **Reserved** The access network shall add reserved bits to make the length of the  
 4 entire message equal to an integer number of octets. The access  
 5 network shall set these bits to '0'. The access terminal shall ignore  
 6 this field.  
 7

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

8 2.6.2.6 DataAttachmentPointAssignmentProcessed

9 The access terminal sends the DataAttachmentPointAssignmentProcessed message to  
 10 acknowledge receipt of an DataAttachmentPointAssignment message, upon completion of  
 11 associated higher layer procedures.

12

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
TransactionID	8

13 **MessageID** The access terminal shall set this field to 0x05.

14 **TransactionID** The access terminal shall set this field to the value received in the  
 15 DataAttachmentPointAssignment message to which this message is  
 16 the response.  
 17

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

18 2.6.2.7 RouteMap

19 The access terminal sends the RouteMap message to provide the mapping of short Route  
 20 identifier (RouteID) to long Route identifier (ANID) of all existing Routes in RouteMap.  
 21

Field	Length (bits)
MessageID	8
TransactionID	8
Reserved1	4
NumRoutes	4

*NumRoutes occurrences of the following record:*

Reserved2	4
RouteID	4
ANID	64

- 1 MessageID            The access terminal shall set this field to 0x06.
- 2 TransactionID        The access terminal shall increment this value for each new
- 3                            RouteMap message sent.
- 4 Reserved1            The access terminal shall set this field to '0000'. The access network
- 5                            shall ignore this field.
- 6 NumRoutes            The access terminal shall set this field to the number of Routes in
- 7                            RouteMap.
- 8 Reserved2            The access terminal shall set this field to '0000'. The access network
- 9                            shall ignore this field.
- 10 RouteID                The access terminal shall set this field to the RouteID assigned to the
- 11                            Route. The access terminal shall not change the RouteID assigned to
- 12                            this Route.
- 13 ANID                    The access terminal shall set this field to the access network
- 14                            identifier corresponding to this Route.

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	Manycast		

16 2.6.2.8 RouteMapAck

17 The access network sends the RouteMapAck message to acknowledge the reception of a

18 RouteMap message from the access terminal.

19

Field	Length (bits)
MessageID	8
TransactionID	8

1 MessageID The access network shall set this field to 0x07.

2 TransactionID The access network shall set this field to the value of the  
3 TransactionID field in the RouteMap message to which this message  
4 is the acknowledgement.

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

6 2.6.2.9 RouteMapRequest

7 The access network sends the RouteMapRequest message to query the access terminal for  
8 the current RouteMap.

Field	Length (bits)
MessageID	8

10 MessageID The access network shall set this field to 0x08.

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

12 2.6.2.10 RouteKeepAlive

13 The access terminal sends the RouteKeepAlive message periodically to indicate the Route is  
14 open.

Field	Length (bits)
MessageID	8
RLActivity	1
Reserved	0-7 (as needed)

16 MessageID The access terminal shall set this field to 0x09.

- 1 **RLActivity** The access terminal shall set this field to 1 if it has transmitted any  
 2 reverse link data (excluding air interface signaling messages) on any  
 3 Route since the previous keep alive message was sent.
- 4 **Reserved** The access terminal shall add reserved bits to make the length of the  
 5 entire message equal to an integer number of octets. The access  
 6 terminal shall set these bits to '0'. The access network shall ignore  
 7 this field.

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	Manycast		

### 9 2.6.2.11 UATIAssignment

10 The access network sends the UATIAssignment message to assign a UATI to the access  
 11 terminal.

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
MessageSequence	8
UATIlsbSameAsPrev	1
UATIlsb	0 or 64
PagingIDInd	2
PagingID	0 or 32
Reserved	0-7 (as needed)

- 13 **MessageID** The access network shall set this field to 0x0a.
- 14 **MessageSequence** The access network shall set this to 1 higher than the  
 15 MessageSequence field (modulo 256) of the last UATIAssignment  
 16 message, RouteOpenAccept message, or  
 17 DataAttachmentPointAssignment message sent by this access  
 18 network to the access terminal.
- 19 **UATIlsbSameAsPrev**
- 20 The access network shall set this field to '1' if the 64 LSB of the UATI  
 21 being assigned is the same as the 64 LSB of the UATI currently  
 22 assigned to the access terminal; otherwise, the access network shall  
 23 set this field to '0'.
- 24 **UATIlsb** If the UATIlsbSameAsPrev field is set to '1', the access network shall  
 25 omit this field; otherwise, the access network shall include this field

1 and set it to the 64 LSB of the UATI being assigned to the access  
 2 terminal.

3 **PagingIDInd** The access network shall set this field to '00' if the PagingID field is  
 4 included in this message. The access network shall set this field to  
 5 '01' if PagingID corresponds to the 32 LSB of the UATI assigned to  
 6 the access terminal. The access network shall set this field to '10' if  
 7 the PagingID is the same as the current value of PagingID.

8 **PagingID** The access network shall omit this field if the PagingIDInd field is not  
 9 set to '00'; otherwise, the access network shall include this field and  
 10 set it to the unicast paging identifier being assigned to the access  
 11 terminal.

12 **Reserved** This field shall be set to reserved bits to make the length of the entire  
 13 message equal to an integer number of octets. These bits shall be set  
 14 to '0'.  
 15

<b>Channels</b>	FTC	<b>RLP</b>	Best Effort
<b>Addressing</b>	unicast		

16 2.6.2.12 UATIComplete

17 The access terminal sends this message to notify the access network that it has received  
 18 the UATIAssignment message.  
 19

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
MessageSequence	8
RouteID	4
UATIlsbSameAsPrev	1
UATIlsb	0 or 64
PagingIDInd	2
PagingID	0 or 32
Reserved	0-7 (as needed)

20 **MessageID** The access terminal shall set this field to 0x0b.

21 **MessageSequence** The access terminal shall set this field to the MessageSequence field  
 22 of the UATIAssignment message, RouteOpenAccept message with  
 23 UATI assignment, or DataAttachmentPointAssignment message with  
 24 UATI assignment, whose receipt this message is acknowledging.

- 1   RouteID                    The access terminal shall set this field to the RouteID of the Route
- 2                               that performed the UATI assignment.
  
- 3   UATIlsbSameAsPrev
  
- 4                               The access terminal shall set this field to '1' if the 64 LSB of the UATI
- 5                               that was assigned is the same as the 64 LSB of the UATI previously
- 6                               assigned to the access terminal; otherwise, the access terminal shall
- 7                               set this field to '0'.
  
- 8   UATIlsb                    If the UATIlsbSameAsPrev field is set to '1', the access terminal shall
- 9                               omit this field; otherwise, the access terminal shall include this field
- 10                              and set it to the 64 LSB of the UATI that was assigned to the access
- 11                              terminal.
  
- 12   PagingIDInd               The access terminal shall set this field to '00' if the PagingID field is
- 13                              included in this message. The access terminal shall set this field to
- 14                              '01' if PagingID corresponds to the 32 LSB of the UATI conveyed in
- 15                              this message. The access terminal shall set this field to '10' if the
- 16                              PagingID is the same as the previous value of PagingID.
  
- 17   PagingID                   The access terminal shall omit this field if the PagingIDInd field is not
- 18                              set to '00'; otherwise, the access terminal shall include this field and
- 19                              set it to the unicast paging identifier assigned to the access terminal.
  
- 20   Reserved                   This field shall be set to reserved bits to make the length of the entire
- 21                              message equal to an integer number of octets. These bits shall be set
- 22                              to '0'.
- 23

<b>Channels</b>	RTC	<b>RLP</b>	Reliable
<b>Addressing</b>	Manycast		

24   2.6.2.13 RouteCreate

25   The access network sends the RouteCreate message to request the access terminal to open

26   a Route to the access network<sup>6</sup>.

27

---

<sup>6</sup> This can be used by an access network that intends to become the SessionAnchor.

Field	Length (bits)
MessageID	8
ANID	64
Reserved1	5
NumProtocolSetIdentifier	3

*NumProtocolSetIdentifier occurrences of the following field:*

ProtocolSetIdentifier	16
Reserved2	0-7 (as needed)

- 1 MessageID            The access network shall set this field to 0x0c.
  
- 2 ANID                    The access network shall set this field to the access network  
3 identifier corresponding to the access network to which a Route is to  
4 be created.
  
- 5 Reserved1            The access network shall set this field to '00000'. The access terminal  
6 shall ignore this field.
  
- 7 NumProtocolSetIdentifier    The access network shall set this field to the number of  
8 ProtocolSetIdentifier fields included in this message.
  
- 9 ProtocolSetIdentifier    The access network shall set this field to the ProtocolSetIdentifier  
10 corresponding to the personality of the this Route.
  
- 11 Reserved2            The access network shall add reserved bits to make the length of the  
12 entire message equal to an integer number of octets. The access  
13 network shall set these bits to '0'. The access terminal shall ignore  
14 this field.

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

16 2.6.2.14 RouteUnreachable

17 The access network sends the RouteUnreachable message to the access terminal indicate  
18 the requested Route was not found.

19

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
HeaderType	2
Reserved1	0 or 6
RouteID	0 or 4
ANID	0 or 64
Reserved2	0-7 (as needed)

1 MessageID The access network shall set this field to 0x0d.

2 HeaderType The access network shall set this field to the HeaderType as specified  
3 in Table 2-2 corresponding to the Route that was unreachable.

4 **Table 2-2. HeaderType Values**

<b>HeaderType (binary)</b>	<b>Type of Inter-Route Tunneling Protocol Header</b>
00	Short Header (RouteID)
01	Reserved
10	Long Header (ANID)
Other values	Reserved

5 Reserved1 If the HeaderType field is set to '00', the access network shall omit  
6 this field. If the HeaderType field is set to '10', the access network  
7 shall set this field to '000000'. The access terminal shall ignore this  
8 field.

9 RouteID The access network shall omit this field if the HeaderType field is not  
10 set to '00'; otherwise, the access network shall include this field and  
11 set it to the RouteID corresponding to the Route that was  
12 unreachable.

13 ANID The access network shall omit this field if the HeaderType field is not  
14 set to '10'; otherwise, the access network shall include this field and  
15 set it to the ANID corresponding to the access network that was  
16 unreachable.

17 Reserved2 The access network shall add reserved bits to make the length of the  
18 entire message equal to an integer number of octets. The access  
19 network shall set these bits to '0'. The access terminal shall ignore  
20 this field.  
21

<b>Channels</b>	FTC	<b>RLP</b>	Reliable
<b>Addressing</b>	unicast		

1 2.6.3 Interface to Other Protocols

2 2.6.3.1 Commands Sent

3 This protocol does not issue any commands.

4 2.6.3.2 Indications

5 This protocol registers to receive the following indications:

- 6 • *AirLinkManagement.AirLinkInitialized*
- 7 • *AirLinkManagement.IdleInitiated*
- 8 • *AirLinkManagement.ConnectionClosed*
- 9 • *RouteControl.DataAttachmentPointAssigned* (from other Routes)
- 10 • *RouteControl.UATIAssigned* (from other Routes)
- 11 • *RouteControl.RouteOpened* (from other Routes)
- 12 • *RouteControl.RouteClosed* (from other Routes)

13 **2.7 Configuration Attributes**

14 2.7.1 Simple Attributes

15 The negotiable simple attributes for this protocol are listed in Table 2-3. The access  
16 terminal shall use as defaults the values in Table 2-3 typed in ***bold italics***.

1

**Table 2-3. Configuration Attributes**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Commit/ Scope</b>	<b>Values</b>	<b>Meaning</b>
0x00	RouteKeepAlivePeriod	Soft/ Static	<b>0x000a</b>	RouteKeepAlive message period in seconds
			0x0005-0x003c	RouteKeepAlive message period in seconds
			All other values	Reserved
0x01	DataAttachmentPointMoveReqTimer	Soft/ Static	<b>0x0000</b>	Access terminal is not allowed to send DataAttachmentPointMoveRequest message
			0xffff	Access terminal is required to send a DataAttachmentPointMoveRequest message each time DFLSS and FLSS public data of the Reverse Control Channel MAC Protocol correspond to different Routes
			0x0001-0x1fff	Recommended minimum period, in units of 10ms, for the access terminal to send DataAttachmentPointMoveRequest messages
			All other values	Reserved
0x02	ATRouteCloseTimer	Soft/ Static	<b>0x0000</b>	Route close timer disabled
			0x0001-0x000f	Route close timer period in seconds
			All other values	Reserved

2 2.7.2 Complex Attributes

3 This protocol does not define any static or dynamic complex attributes.

1 **2.8 Non-Attribute Data**

2 2.8.1 TransmitATI

Field	Length (bits)
NonAttributeDataID	8
Length	8
TransmitATIType	2
TransmitATI	128
Reserved	0-7 (as needed)

3 NonAttributeDataID This field shall be set to 0x00 for this Non-Attribute data record.

4 Length This field shall be set to the length of this Non-Attribute data record  
5 in units of octets excluding the Length field.

6 TransmitATIType This field shall be set to the type of TransmitATI of the access  
7 terminal.

8 TransmitATI This field shall be set to the TransmitATI of the access terminal.

9 Reserved This field shall be set to reserved bits to make the length of the entire  
10 record equal to an integer number of octets. These bits shall be set to  
11 '0'.

12 2.8.2 PagingID

Field	Length (bits)
NonAttributeDataID	8
Length	8
NumPagingID	3
NumPagingID occurrences of the following record	
PagingIDType	2
PagingID	32
Reserved	0-7 (as needed)

13 NonAttributeDataID This field shall be set to 0x01 for this Non-Attribute data record.

14 Length This field shall be set to the length of this Non-Attribute data record  
15 in units of octets excluding the Length field.

16 NumPagingID This field shall be set to the number of PagingID records included.

- 1 PagingIDType This field shall be set to the type of the included PagingID as follows:  
 2 This field shall be set to '01' for Multicast PagingID and '10' for  
 3 Unicast PagingID. No more than one occurrence of PagingID of each  
 4 PagingIDType shall be included.
- 5 PagingID This field shall be set to the current paging identifier assigned to the  
 6 access terminal.
- 7 Reserved This field shall be set to reserved bits to make the length of the entire  
 8 record equal to an integer number of octets. These bits shall be set to  
 9 '0'.

## 10 2.8.3 SessionSeed

<b>Field</b>	<b>Length (bits)</b>
NonAttributeDataID	8
Length	8
SessionSeed	128

- 11 NonAttributeDataID This field shall be set to 0x02 for this Non-Attribute data record.
- 12 Length This field shall be set to the length of this Non-Attribute data record  
 13 in units of octets excluding the Length field.
- 14 SessionSeed This field shall be set to the value of the SessionSeed associated with  
 15 the access terminal's session.  
 16

1 **2.9 Protocol Numeric Constants**

<b>Constant</b>	<b>Meaning</b>	<b>Value</b>
N <sub>RCPType</sub>	Type field for this protocol	[11]
N <sub>RCPBasic</sub>	Subtype field for this protocol	0x0000
T <sub>RCPATWaitOpen</sub>	Duration is seconds for access terminal to wait in the WaitingToOpen state for a RouteOpenAccept message from the access network	1
T <sub>RCPANRouteClose</sub>	Duration is seconds for access network to wait, after sending a RouteClose message, for a RouteClose message from the access terminal	1
T <sub>RCPPrevClose</sub>	Duration of seconds since the Route was previously closed for the Route to be re-opened with same RouteID and requested personality	0.1
T <sub>RCPAddress</sub>	The duration of time, in seconds, that the access terminal declares an address match if it receives a message that is addressed using either the old or the new PagingID	180

2 **2.10 Session State Information**

3 The Session State Information record (see [8]) consists of parameter records.

4 All configuration attributes are Session State Information records. This protocol does not  
5 define additional parameter records.

- 1 No text.