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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™)¹ 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®².

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

² 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 Route identifier (RouteID) and Access Network identifier (ANID).
- Maintains identity of the DataAttachmentPoint (DAP) Route and SessionAnchor 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 three states:

- **WaitingToOpen State:** In this state, a Route to the access network is not configured yet. In this state, the access terminal sends a RouteOpenRequest message to the access network (unless the access terminal entered this state to perform registration) and waits for the response.
- **Open State:** In this state, a Route to the access network is configured (i.e., access network has access terminal's session).
- **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.

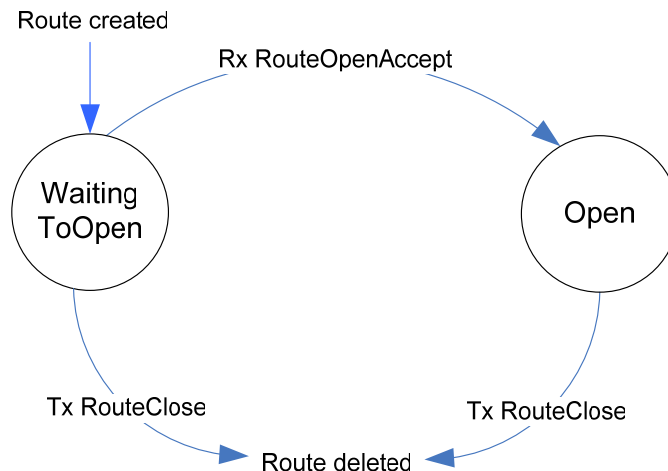
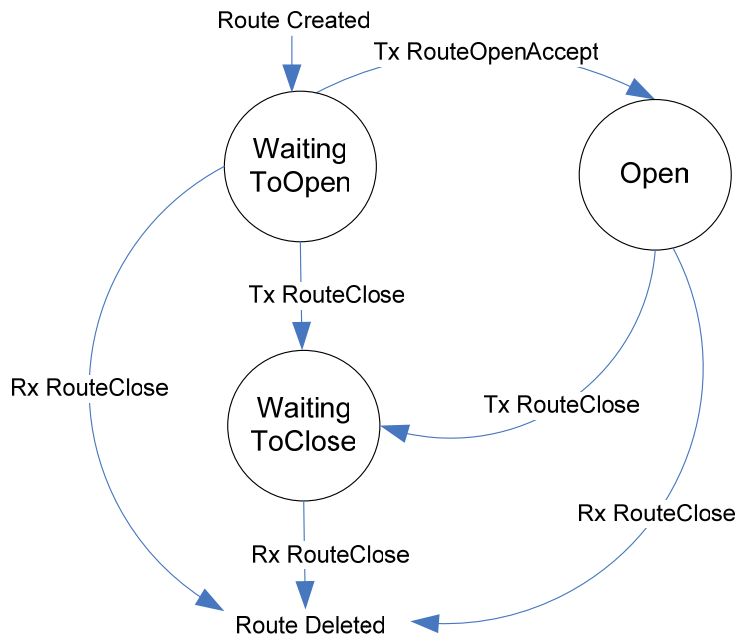


Figure 2-1. Route Control Protocol State Diagram (Access Terminal)

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



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

4 2.2 Primitives, Local Common Data, and Public Data

5 2.2.1 Commands

6 This protocol defines the following commands:

- 7 • CreateNewStack(PilotID)
- 8 • *CloseRoute*
- 9 • DeleteOldRoutes
- 10 • QueryRouteMap

11 2.2.2 Return Indications

12 This protocol returns the following indications:

- 13 • *RouteOpened*
- 14 • *RouteClosed*
- 15 • *UATIAssigned(RouteID)*
- 16 • *DAPAssigned(RouteID)*
- 17 • *RouteCreated(RouteCounter)*
- 18 • *LinkInitialized*

1 2.2.3 Procedure Calls

- 2 • CREATE_ID_TAG
- 3 – Inputs: SequenceNumber
- 4 – Outputs: IDTagSize, IDTag

5 2.2.4 Local Common Data

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

- 7 • PagingIDList
- 8 • RouteCounter
- 9 • RouteMap (RouteID and ANID of all Routes in Open State)
- 10 • DAPRefreshTime
- 11 • RetryDelay[ANID]
- 12 • CurrentATI (see [1])
- 13 • SessionSignature

14 2.2.5 Public Data

15 This protocol shall make the following data public:

- 16 • Subtype for this protocol
- 17 • State of this protocol
- 18 • LinkID
- 19 • Whether this protocol belongs to the DataAttachmentPoint Route
- 20 • Whether this protocol belongs to the SessionAnchor Route
- 21 • All data defined as Static Attribute, Static Non-Attribute Data, and Local Common Data

22 **2.3 Protocol Data Unit**

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

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

26 **2.4 Procedures and Messages for the InConfiguration Instance of the Protocol**

27 2.4.1 Protocol Initialization for the InConfiguration Protocol Instance

28 Upon creation, the InConfiguration instance of this protocol in the access terminal and the
29 access network shall perform the procedures specified in [1].

1 2.4.2 Procedures

2 This protocol uses the services of the Session Control Protocol to perform negotiation of
3 attribute values.

4 2.4.3 Message Formats

5 This protocol does not define any messages.

6 **2.5 Procedures and Messages for the InUse Instance of the Protocol**

7 2.5.1 Procedures

8 The access terminal shall support at least six Routes ³.

9 2.5.1.1 Protocol Initialization for the InUse Protocol Instance

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

- 12 • The access terminal and access network shall perform the procedures specified in [1].
- 13 • The access terminal shall set LinkID to NULL.
- 14 • If this Route is being opened with the access network that served as the SessionAnchor
15 Route, the access terminal shall mark this Route as the SessionAnchor Route.
- 16 • If no other Route currently exists and this is not the SessionAnchor Route, the access
17 terminal shall perform the following:
 - 18 – Set OldUATI to NULL.
 - 19 – Set SessionSeed to a 128-bit pseudo-random (see [1]) or random number.
 - 20 – Clear the PagingIDList
 - 21 – Set CurrentATI to
 - 22 <ATIType = '11', ATI = SessionSeed >.
 - 23 – Set UATI to NULL.
 - 24 – Set SessionSignature to 0x0000
 - 25 – Set RouteCounter to 0
- 26 • The protocol at the access terminal and access network shall enter the WaitingToOpen
27 State.

³ Six routes are required due to the following: three Routes in Airlink Management Protocol Connected State, 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 2.5.1.2 Hard Commit Procedures

2 The access terminal and the access network shall perform the procedures specified in [1]
3 when directed by the InUse instance of the Session Control Protocol to execute the Hard
4 Commit procedures.

5 2.5.1.3 Soft Commit Procedures

6 The access terminal and the access network shall perform the procedures specified in [1],
7 in the order specified, when directed by the InUse instance of the Session Control Protocol
8 to execute the Soft Commit procedures.

9 2.5.1.4 UATI Assignment Processing

10 Whenever the access terminal receives a UATI assignment via a UATIAssignment message,
11 RouteOpenAccept message, or DAPAssignment message, the access terminal shall perform
12 the following:

- 13 • Add the following entry to the PagingIDList:
14 <ATIType='10', PagingID > where PagingID is determined as follows:
 - 15 – If the PagingIDInd field is set to '00', then PagingID shall be set to the value of
16 PagingID received in the message.
 - 17 – If the PagingIDInd field is set to '01', then PagingID shall be set to 32 LSB of the
18 UATI being assigned to the access terminal, as derived below.
 - 19 – If the PagingIDInd field is set to '10', then PagingID shall be set to the value of
20 PagingID corresponding to the CurrentATI public data.
- 21 • The access terminal shall set CurrentATI to
22 <ATIType = '10', ATI > where ATI is set as follows:
 - 23 – If the UATIlsbSameAsPrev field in the received message equals '1', then ATI =
24 [ANIDmsb | 64 LSB of CurrentATI] where ANIDmsb is the 64 MSB of the identifier of
25 the access network that transmitted the message.
 - 26 – If the UATIlsbSameAsPrev field in the received message equals '0', then ATI =
27 [ANIDmsb | UATIlsb received in the message] where ANIDmsb is the 64 MSB of the
28 identifier of the access network that transmitted the message.
- 29 • Return a *UATIAssigned(RouteID)* indication, with RouteID set to the RouteID of this
30 Route
- 31 • Mark this Route as the SessionAnchor Route.
- 32 • The access terminal shall send a UATIComplete message to the access network.
- 33 • The access terminal shall delete the PagingID corresponding to the previous UATI from
34 the PagingIDList if any of the following conditions are true:
 - 35 – The UATIComplete message containing the new UATI was acknowledged
 - 36 – The access terminal has received a RouteOpenAccept on a route on which access
37 was made with the new UATI.

- 1 – The access terminal has performed a successful explicit registration with the new
2 UATI.

3 2.5.1.5 LinkID Procedures

- 4 • If the access terminal receives a LinkID (via the RouteOpenAccept message or the
5 LinkIDAssignment message), the access terminal shall perform the following:
- 6 – If the current LinkID of this Route is NULL, then the Route Control Protocol shall
7 return a *LinkInitialized* indication.
- 8 – If this LinkID is different than all of the LinkIDs of the other Routes, the access
9 terminal shall open a new interface to the layers above the air interface.

10 2.5.1.6 DataAttachmentPoint Procedures

11 2.5.1.6.1 Access Terminal Procedures

12 The access terminal shall perform the following DataAttachmentPoint Route related
13 procedures:

- 14 • If the access terminal receives a DAPMoveRequestRequest message from the access
15 network, the access terminal shall send a DAPMoveRequest message to the access
16 network.
- 17 • The access terminal shall not send an unsolicited DAPMoveRequest message if
18 ATassistedDAPMove field of the ATassistedDAPMoveMode attribute is set to 0.
- 19 • If ATassistedDAPMove field of the ATassistedDAPMoveMode attribute is set to 1⁴, the
20 access terminal shall comply with the following requirements in determining when to
21 send a DAPMoveRequest message to request the access network to assign this Route as
22 the DataAttachmentPoint Route:
- 23 – The access terminal should send a DAPMoveRequest message if all of the following
24 conditions are satisfied, subject to other constraints of DAPMoveRequestTimer:
- 25 + A period of L2HOTOtoDAPMoveRequestTimer has elapsed since the Route Control
26 Protocol has received the last ReverseControlChannelMAC.FLSSchanged
27 indication and the FLSS public data of the Reverse Control Channel MAC
28 Protocol correspond to this Route,
- 29 + DFLSS and FLSS public data of the Reverse Control Channel MAC Protocol are
30 the same, and
- 31 + This Route is not the DataAttachmentPoint Route.
- 32 – The access terminal shall not send an unsolicited DAPMoveRequest message prior
33 to receiving the LinkID associated with this Route.
- 34 – Upon exiting the Idle State of the AirLink Management Protocol, the access terminal
35 shall send a DAPMoveRequest message if all of the following conditions are true:

⁴ ATassistedDAPMoveMode is supported since the access terminal knows channel conditions.

- 1 + The access terminal has received the LinkID associated with this Route,
- 2 + This Route is not marked as the DataAttachmentPoint Route, and
- 3 + The FLSS public data of the Reverse Control Channel MAC Protocol correspond
- 4 to this Route
- 5 – The access terminal shall send a DAPMoveRequest message prior to the expiration
- 6 of the DataAttachmentPoint refresh timer.
- 7 – Unless specified otherwise, the access terminal shall not send an unsolicited
- 8 DAPMoveRequest message if a DAPMoveRequest message was sent within the
- 9 period equal to the value of the DAPMoveRequestTimer attribute.
- 10 • If the access terminal receives a DAPAssignment message from the access network with
- 11 the RequestStatus field set to '1', the access terminal shall perform the following: if the
- 12 Timestamp field of the message is set to a value lower than the Timestamp field of the
- 13 previous DAPAssignment message (if any) processed by the access terminal, the access
- 14 terminal shall discard this message; otherwise, the access terminal shall perform the
- 15 following:
 - 16 – The access terminal shall mark this Route as the DataAttachmentPoint Route.
 - 17 – The Route Control Protocol shall return a *DAPAssigned(RouteID)* indication with
 - 18 argument set to the RouteID of this Route
 - 19 – The access terminal shall set DAPRefreshTime local common data to the
 - 20 corresponding value received in the message and shall start the
 - 21 DataAttachmentPoint refresh timer with a value set to DAPRefreshTime.
 - 22 – If this message includes a UATI assignment, the access terminal shall process the
 - 23 UATI assignment as specified in 2.5.1.4.
 - 24 – In the RestartNetworkInterface field is set to '1', the access terminal shall restart the
 - 25 interface between the Radio Link Protocol and the higher layer. The access terminal
 - 26 may also restart higher layer protocols.
- 27 • If the Route Control Protocol receives a *RouteControl.DAPAssigned(RouteID)* indication
- 28 from any Route, the Route Control Protocol shall perform the following: if the RouteID
- 29 received with this indication is not equal to the RouteID of this Route, the Route
- 30 Control Protocol shall mark this Route as not being the DataAttachmentPoint Route.

31 2.5.1.6.2 Access Network Procedures

32 The access network shall perform the following DataAttachmentPoint Route related
33 procedures:

- 34 • If ATAssistedDAPMove field of the ATAssistedDAPMoveMode attribute is set to 1, the
- 35 access network shall not send a DAPAssignment message unless in response to
- 36 receiving a DAPMoveRequest message from the access terminal.
- 37 • The access network may send a DAPMoveRequestRequest message to request the
- 38 access terminal to send a DAPMoveRequest message.

2.5.1.7 SessionAnchor Procedures

2.5.1.7.1 Access Terminal Procedures

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

- If the access terminal receives a *UATIAssignment* message, the access terminal shall process the UATI assignment as specified in 2.5.1.4.
- If the Route Control Protocol receives a *RouteControl.UATIAssigned(RouteID)* indication, the Route Control Protocol shall perform the following:
 - If the RouteID received with this indication is not equal to the RouteID of this Route, the Route Control Protocol shall mark this Route as not being the SessionAnchor Route.

2.5.1.7.2 Access Network Procedures

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

- When the access network sends a UATI assignment via *UATIAssignment* message, *RouteOpenAccept* message, or *DAPAssignment* message, it shall perform the following:
 - Access network shall assign a Unicast Access Terminal Identifier (UATI) and Paging Identifier (PagingID) to the access terminal for the session.
- When the access network receives a *UATIComplete* message, the access network shall return a *UATIAssigned* indication

2.5.1.8 WaitingToOpen State

2.5.1.8.1 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.

The access terminal shall send a *RouteOpenRequest* message, if at least one of the following conditions is false:

- The access terminal entered this state for performing explicit registration
- *RegistrationFailed* public data of AirLink Management Protocol is set to '0'

While in this state, the access terminal shall perform the following:

- If the access terminal receives a *RouteOpenRequestRequest* message, the access terminal shall send a *RouteOpenRequest* message to this access network.
- If the access terminal sends a *RouteOpenRequest* message, it shall perform the following:
 - The Route Control Protocol shall return a *RouteCreated(RouteCounter)* indication, with *RouteCounter* set to the value transmitted in the corresponding *RouteOpenRequest* message.

- 1 – The access terminal shall start the *ATWaitingToOpen* timer with a value of
2 $T_{RCPATWaitOpen}$.
- 3 • If the access terminal receives a *RouteOpenAccept* message, the access terminal shall
4 perform the following:
- 5 – The access terminal shall add the *RouteID* and *ANID* corresponding to this *Route* to
6 *RouteMap*.
- 7 – The access terminal shall return a *RouteOpened* indication.
- 8 – If *RouteOpenAccept* message includes a *UATI* assignment, the access terminal shall
9 process the *UATI* assignment as specified in 2.5.1.4.
- 10 – The access terminal shall transition to the *Open State*.
- 11 • If the access terminal receives a *RouteOpenReject* message, the access terminal shall
12 perform the following:
- 13 – If the *RejectReason* field is set to 0x00, the access terminal shall start a *Retry Delay*
14 timer for this access network for time specified by *RetryDelay* field in the message.
- 15 – The access terminal shall delete this *Route*.
- 16 • While the *Retry Delay* timer is running for an access network, the access terminal
17 should not send a *RouteOpenRequest* message to a pilot if the access terminal
18 determines that the pilot belongs to that access network.
- 19 • If the access terminal receives a *RouteClose* message, the access terminal shall send a
20 *RouteClose* message to the access network and shall delete this *Route*.
- 21 • If the *ATWaitingToOpen* timer expires, *AirLinkManagement.AirLinkInitialized* indication
22 is received, *AirLinkManagement.IdleInitiated* indication is received,
23 *AirLinkManagement.ConnectionClosed* indication is received, *Route.PersonalityFailure*
24 indication is received, *Route.UATIFailed* indication is received, or *Route.RouteExists*
25 indication is received, the access terminal shall delete this *Route*.
- 26 • If the *Route Control Protocol* receives a *CreateNewStack(PilotID)* command, the *Route*
27 *Control Protocol* shall perform the following: if the *CurrentATI* public data is set to
28 *RATI*, the *Route Control Protocol* shall ignore this command; otherwise, the *Route*
29 *Control Protocol* shall perform the following:
- 30 – The *Route Control Protocol* shall select an *InitialProtocolSetIdentifier* or
31 *PersonalityIndex* to describe the personality of the new protocol stack. If the
32 overhead information corresponding to this pilot is available, the
33 *InitialProtocolSetIdentifier* corresponding to the selected personality shall be equal
34 to one of the *InitialProtocolSetIdentifier* values advertised by the access network
35 corresponding to this pilot; otherwise, the access terminal may choose a
36 *InitialProtocolSetIdentifier* or *PersonalityIndex* based on an implementation-defined
37 decision.
- 38 – The *Route Control Protocol* shall create a new *Route* (protocol stack) with the
39 selected *InitialProtocolSetIdentifier* or *PersonalityIndex*.

1 The access terminal shall perform the SessionAnchor Route related procedures specified in
2 2.5.1.7.1.

3 2.5.1.8.2 Access Network Requirements

4 The access network shall perform the following:

- 5 • If the access network receives a RouteOpenRequest message, the access network shall
6 send a RouteOpenAccept message or a RouteOpenReject message to the access
7 terminal:
 - 8 – If the access network sends a RouteOpenAccept message, the Route Control
9 Protocol shall transition to the Open State.
 - 10 – If the access network sends a RouteOpenReject message, the access network shall
11 delete this Route.
 - 12 – The Route Control Protocol shall return a *RouteCreated(RouteCounter)* indication,
13 with RouteCounter set to the value received in the corresponding
14 RouteOpenRequest message.
- 15 • If the access network sends a RouteClose message to the access terminal, the access
16 network shall transition to the WaitingToClose State.
- 17 • If the access network receives a RouteClose message in this state, the access network
18 shall delete this Route.
- 19 • If the Route Control Protocol receives *DeleteOldRoutes* command from a Route other
20 than this Route, the access network shall delete this Route.

21 2.5.1.9 Open State

22 2.5.1.9.1 Access Terminal Requirements

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

- 24 • If this is not the only Route in RouteMap, the access terminal shall send a RouteMap
25 message to the access network conveying the information in RouteMap.

26 If the Route Control Protocol receives a *CreateNewStack(PilotID)* command, the Route
27 Control Protocol shall perform the following: if the CurrentATI public data is set to RATI,
28 the Route Control Protocol shall ignore this command; otherwise, the Route Control
29 Protocol shall perform the following:

- 30 • The Route Control Protocol shall select a InitialProtocolSetIdentifier or PersonalityIndex
31 to describe the personality of the new protocol stack. If the overhead information
32 corresponding to this pilot is available, the InitialProtocolSetIdentifier corresponding to
33 the selected personality shall be equal to one of the InitialProtocolSetIdentifier values
34 advertised by the access network corresponding to this pilot; otherwise, the access
35 terminal may choose a InitialProtocolSetIdentifier or PersonalityIndex based on an
36 implementation-defined decision.
- 37 • The Route Control Protocol shall create a new Route (protocol stack) with the selected
38 InitialProtocolSetIdentifier or PersonalityIndex.

1 If the access terminal receives a RouteCreate message, the access terminal shall perform
2 the following:

- 3 • The Route Control Protocol shall select a ProtocolSetIdentifier or PersonalityIndex from
4 the list included in the message to describe the personality of the Route.
- 5 • The Route Control Protocol shall create a new Route (protocol stack) with the selected
6 personality.

7 If the Route Control Protocol receives a *RouteControl.RouteOpened* indication or a
8 *RouteControl.RouteClosed* indication from another route, the access terminal shall send
9 RouteMap message to the access network conveying the information in RouteMap unless
10 the State public data of the Airlink Management Protocol is set to Idle.

11 If the Route Control Protocol receives a *Signaling.ReliableSignalingStreamReset* indication
12 and this is the SessionAnchor Route, the access terminal shall delete this Route.

13 If the access terminal receives a RouteMapRequest message, the access terminal shall send
14 a RouteMap message to the access network conveying the information in RouteMap.

15 If a *AirLinkManagement.AirLinkInitialized* indication is received or a
16 *AirLinkManagement.IdleInitiated* indication is received, and this is not the SessionAnchor
17 Route, the access terminal shall perform the following:

- 18 • The access terminal shall remove the RouteID and ANID corresponding to this Route
19 from RouteMap.
- 20 • The access terminal shall delete this Route.

21 The access terminal shall perform the DataAttachmentPoint Route related procedures
22 specified in 2.5.1.6.1.

23 The access terminal shall perform the LinkID related procedures specified in 2.5.1.5. The
24 access terminal shall perform the SessionAnchor Route related procedures specified in
25 2.5.1.7.1.

26 If the access terminal receives a RouteClose message or a *CloseRoute* command, the access
27 terminal shall perform the following:

- 28 • The access terminal shall send a RouteClose message to the access network.

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

- 31 • State public data of the AirLink Management Protocol is not set to Connected
- 32 • This is not the SessionAnchor Route

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

34 Unless the access terminal receives a RouteClose message or a *CloseRoute* command, the
35 access terminal shall comply with the following requirements for sending a RouteClose
36 message:

- 37 • The access terminal shall not send a RouteClose message if any of the following
38 conditions are true:

- 1 – This is the SessionAnchor Route.
- 2 – This is the DataAttachmentPoint Route and the value of the ATAssistedDAPMove
- 3 field of the ATAssistedDAPMoveMode attribute is equal to 1.
- 4 – State public data of the AirLink Management Protocol is set to “Connected”
- 5 – The ATRouteClose timer is active.
- 6 • The access terminal should not send a RouteClose message if the Busy public data of
- 7 any protocol of this Route is not zero.

8 If the access terminal sends a RouteClose message, the access terminal shall perform the
9 following:

- 10 • The access terminal shall remove the RouteID and ANID corresponding to this Route
- 11 from the RouteMap.
- 12 • The access terminal shall return a *RouteClosed* indication and shall delete this Route.

13 2.5.1.9.2 Access Network Requirements

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

- 16 • The access network shall send a RouteClose message to the access terminal and
- 17 transition to the Waiting To Close state.

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

20 If the access network receives a RouteClose message in this state, the access network shall
21 delete this Route.

22 If the access network receives a RouteOpenRequest message, the access network shall
23 send a RouteOpenAccept message.

24 The access network shall perform the DataAttachmentPoint Route related procedures
25 specified in 2.5.1.6.2.

26 The access network shall perform the SessionAnchor Route related procedures specified in
27 2.5.1.7.2.

28 The access network should send a RouteClose message if all of the following conditions are
29 true:

- 30 • The State public data of the AirLink Management Protocol is not set to “Connected”,
- 31 • If the Busy public data of all protocols of this Route is zero.
- 32 • This is not the SessionAnchor Route

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

34 If the Route Control Protocol receives *DeleteOldRoutes* command from a Route other than
35 this Route, the access network shall delete this Route.

1 If the Route Control Protocol receives *QueryRouteMap* command, the access network shall
2 send a *RouteMapRequest* message to the access terminal.

3 2.5.1.10 WaitingToClose State

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

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

8 If the access network receives a *RouteClose* message from the access terminal or the
9 *ANRouteClose* timer expires, the access network shall return a *RouteClosed* indication and
10 shall delete this Route.

11 If the access network receives a *Route.RouteReopen* indication, the Route Control Protocol
12 shall terminate this Route and open a new one.

13 If the Route Control Protocol receives *DeleteOldRoutes* command from a Route other than
14 this Route, the access network shall delete this Route.

15 2.5.2 Message Formats

16 2.5.2.1 RouteOpenRequest

17 The access terminal sends the *RouteOpenRequest* message to request opening a Route.
18

| Field | Length (bits) |
|-----------------------------|---|
| MessageID | 8 |
| RouteCounter | 15 |
| Reserved1 | 1 |
| SessionSignature | 16 |
| RouteOpenRequestReason | 4 |
| EmergencyIndication | 1 |
| AuthenticationTagIncluded | 1 |
| Reserved2 | 0 or 2 |
| AuthenticationTagBlobLength | 0 or 8 |
| AuthenticationTagBlob | 0 or 8 x AuthenticationT agBlobLength |
| SessionAnchorRouteID | 0 or 7 |
| Reserved3 | 0-7 (as needed) |

19 MessageID The access terminal shall set this field to 0x00.

- 1 RouteCounter The access terminal shall increment this field to the next available
 2 value each time a RouteOpenRequest message is sent, where the
 3 next available value is the value whose 7 least significant bits are not
 4 equal to the RouteID of an existing Route. The seven least significant
 5 bits of this field shall be used as the RouteID for this Route.
- 6 Reserved1 The access terminal shall set this field to '0'. The access network
 7 shall ignore this field.
- 8 SessionSignature The access terminal shall set this field to the signature of the current
 9 session.
- 10 RouteOpenRequestReason
 11 The access terminal shall set this field to the reason for Route open
 12 request as specified in Table 2-1.

13 **Table 2-1. RouteOpenRequestReason encoding**

| RejectReason | Meaning |
|------------------|---|
| 0x0 | AT-initiated |
| 0x1 | Page Response |
| 0x2 | Registration Failed |
| 0x3 | Response to RouteCreate message |
| 0x4 | Response to RouteOpenRequestRequest message |
| All other values | Reserved |

- 14 EmergencyIndication The access terminal shall set this field to '1' if this is an emergency
 15 RouteOpenRequest; Otherwise, the access terminal shall set this field
 16 to '0'.
- 17 AuthenticationTagIncluded
 18 The access terminal shall set this field to '0' if the CurrentATI public
 19 data is set to RATI or this is the SessionAnchor Route; otherwise, the
 20 access terminal shall set this field to '1'.
- 21 Reserved2 The access terminal shall omit this field if the
 22 AuthenticationTagIncluded field is set to '0'; otherwise, the access
 23 terminal shall set this field to '00'. The access network shall ignore
 24 this field.
- 25 AuthenticationTagBlobLength
 26 The access terminal shall omit this field if the
 27 AuthenticationTagIncluded field is set to '0'; otherwise, the access
 28 terminal shall include this field and set it as follows:

1 The access terminal shall set this field to the length of the
 2 AuthenticationTagBlob field in units of octets which is equal to value
 3 of IDTagSize returned by the CREATE_ID_TAG(SequenceNumber)
 4 procedure call to the Message Integrity Protocol of the SessionAnchor
 5 Route, where SequenceNumber is set to the 32-bit value (17-bit of
 6 '0's | RouteCounter).

7 AuthenticationTagBlob

8 The access terminal shall omit this field if the
 9 AuthenticationTagIncluded field is set to '0'; otherwise, the access
 10 terminal shall include this field and set it as follows:

11 The access terminal shall set this field to the value of IDTag returned
 12 by the CREATE_ID_TAG(SequenceNumber) procedure call to the
 13 Message Integrity Protocol of the SessionAnchor Route, where
 14 SequenceNumber is set to the 32-bit value (17-bit of '0's |
 15 RouteCounter).

16 SessionAnchorRouteID

17 The access terminal shall omit this field if the
 18 AuthenticationTagIncluded field is set to '0'; otherwise, the access
 19 terminal shall include this field and set it to the Route Identifier of
 20 the SessionAnchor Route.

21 Reserved3

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

| | | | |
|-------------------|---------|----------------|-----------------------------|
| Channels | RTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key available |

26 2.5.2.2 RouteOpenAccept

27 The access network sends the RouteOpenAccept message to accept the access terminal
 28 request for opening a new Route.
 29

| Field | Length (bits) |
|--------------------|----------------------|
| MessageID | 8 |
| ANIDmsb | 64 |
| LinkIDIncluded | 1 |
| LinkID | 0 or 64 |
| MTU | 0 or 8 |
| UATIAssignIncluded | 1 |
| 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 | ANIDmsb | The access network shall set this field to the 64 MSB of its access |
| 3 | | network identifier. |
| 4 | LinkIDIncluded | The access network shall set this field to '1' if the LinkID field is |
| 5 | | included in this message. |
| 6 | LinkID | The access network shall omit this field if the LinkIDIncluded field is |
| 7 | | set to '0'; otherwise, the access network shall include this field and |
| 8 | | set it to its link identifier. |
| 9 | MTU | The access network shall omit this field if the LinkIDIncluded field is |
| 10 | | set to '0'; otherwise, the access network shall include this field and |
| 11 | | set it such that the maximum transmission unit of IP datagrams over |
| 12 | | this Route (in octets) equals 1280+MTU. |
| 13 | UATIAssignIncluded | The access network shall set this field to '1' if UATI and PagingID |
| 14 | | assignment is included in this message; otherwise, the access |
| 15 | | network shall set this field to '0'. |
| 16 | UATIlsbSameAsPrev | The access network shall omit this field if UATIAssignIncluded field is |
| 17 | | set to '0', otherwise, the access network shall include this field and |
| 18 | | set it 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'. |

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

5 PagingIDInd The access network shall omit this field if UATIAssignIncluded field is
 6 set to '0'; otherwise, the access network shall include this field and
 7 set it as follows:

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

13 PagingID The access network shall omit this field if the PagingIDInd field is not
 14 included or is included and is not set to '00'; otherwise, the access
 15 network shall include this field and set it to the unicast paging
 16 identifier being assigned to the access terminal.

17 Reserved 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

| | | | |
|-------------------|---------|----------------|-----------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key available |

22 2.5.2.3 RouteClose

23 The sender sends the RouteClose message to close the current Route.
 24

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |

25 MessageID The sender shall set this field to 0x02.
 26

| | | | |
|-----------------|---------|------------|--------------------------------|
| Channels | RTC FTC | RLP | Reliable Best Effort (FL only) |
|-----------------|---------|------------|--------------------------------|

| | |
|-------------------|---------|
| Addressing | unicast |
|-------------------|---------|

| | |
|----------------|-----------------------------|
| AuthTag | Required when key available |
|----------------|-----------------------------|

1 2.5.2.4 DAPMoveRequest

2 The access terminal sends the DAPMoveRequest message to request changing the
3 DataAttachmentPoint access network to the access network corresponding to the Route
4 that generated this message.

5

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |

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

7

| | |
|-----------------|-----|
| Channels | RTC |
|-----------------|-----|

| | |
|------------|----------|
| RLP | Reliable |
|------------|----------|

| | |
|-------------------|---------|
| Addressing | unicast |
|-------------------|---------|

| | |
|----------------|--------------------------------|
| AuthTag | Required when key is available |
|----------------|--------------------------------|

8 2.5.2.5 DAPAssignment

9 The access network sends the DAPAssignment message to assign a new
10 DataAttachmentPoint access network to the access terminal.

11

| Field | Length (bits) |
|-------------------------|-----------------|
| MessageID | 8 |
| RestartNetworkInterface | 1 |
| RequestStatus | 1 |
| Reserved1 | 6 |
| TimeStamp | 0 or 16 |
| DAPRefreshTime | 0 or 16 |
| UATIAssignIncluded | 0 or 1 |
| UATIlsbSameAsPrev | 0 or 1 |
| UATIlsb | 0 or 64 |
| PagingIDInd | 0 or 2 |
| PagingID | 0 or 32 |
| Reserved2 | 0-7 (as needed) |

12 MessageID The access network shall set this field to 0x04.

13 RestartNetworkInterface

14 If the access network wants to request the access terminal to restart

| | | |
|----|--------------------|---|
| 1 | | the network interface, the access network shall set this field to '1'; |
| 2 | | otherwise, the access network shall set this field to '0'. |
| 3 | RequestStatus | If this message is being sent in response to a DAPMoveRequest |
| 4 | | message from the access terminal and the access network does not |
| 5 | | accept the DataAttachmentPoint move request, the access network |
| 6 | | shall set this field to '0'; Otherwise, the access network shall set this |
| 7 | | field to '1'. |
| 8 | Reserved1 | The access network shall set this field to '000000'. The access |
| 9 | | terminal shall ignore this field. |
| 10 | Timestamp | The access network shall omit this field if the RequestStatus field is |
| 11 | | set to '0'; otherwise, the access network shall include this field and |
| 12 | | set it as follows: |
| 13 | | The access network shall set this field to the system time at which |
| 14 | | this message was generated, specified in the NTP timestamp format |
| 15 | | [RFC1305]. |
| 16 | DAPRefreshTime | The access network shall omit this field if the RequestStatus field is |
| 17 | | set to '0'; otherwise, the access network shall include this field and |
| 18 | | set it as follows: |
| 19 | | The access network shall set this field to the refresh time, in seconds, |
| 20 | | associated with this DataAttachmentPoint assignment. The access |
| 21 | | network shall set this field to 0xffff to indicate a timer value of |
| 22 | | infinity. |
| 23 | UATIAssignIncluded | The access network shall omit this field if the RequestStatus field is |
| 24 | | set to '0'; otherwise, the access network shall include this field and |
| 25 | | set it to '1' if UATI and PagingID assignment is included in this |
| 26 | | message; otherwise, the access network shall set this field to '0'. |
| 27 | UATIlsbSameAsPrev | The access network shall omit this field if UATIAssignIncluded field is |
| 28 | | not included or is included and is set to '0', otherwise, the access |
| 29 | | network shall include this field and set it as follows: |
| 30 | | The access network shall set this field to '1' if the 64 LSB of the UATI |
| 31 | | being assigned is the same as the 64 LSB of the UATI currently |
| 32 | | assigned to the access terminal; otherwise, the access network shall |
| 33 | | set this field to '0'. |
| 34 | UATIlsb | If the UATIlsbSameAsPrev field is not included or is included and is |
| 35 | | set to '1', the access network shall omit this field; otherwise, the |
| 36 | | access network shall include this field and set it to the 64 LSB of the |
| 37 | | UATI being assigned to the access terminal. |

1 PagingIDInd The access network shall omit this field if UATIAssignIncluded field is
 2 not included or is included and is set to '0'; otherwise, the access
 3 network shall include this field and set it as follows:

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

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

13 Reserved2 The access network shall add reserved bits to make the length of the
 14 entire message equal to an integer number of octets. The access
 15 network shall set these bits to '0'. The access terminal shall ignore
 16 this field.

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key is available |

18 2.5.2.6 RouteMap

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

| Field | Length (bits) |
|---|----------------------|
| MessageID | 8 |
| TransactionID | 8 |
| Reserved1 | 4 |
| NumRoutes | 4 |
| <i>NumRoutes occurrences of the following record:</i> | |
| Reserved2 | 1 |
| RouteID | 7 |
| ANIDmsb | 64 |

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

23 TransactionID The access terminal shall increment this value for each new
 24 RouteMap message sent.

- 1 Reserved1 The access terminal shall set this field to '0000'. The access network
2 shall ignore this field.
- 3 NumRoutes The access terminal shall set this field to the number of Routes in
4 RouteMap.
- 5 Reserved2 The access terminal shall set this field to '0'. The access network
6 shall ignore this field.
- 7 RouteID The access terminal shall set this field to the RouteID assigned to the
8 Route. The access terminal shall not change the RouteID assigned to
9 this Route.
- 10 ANIDmsb The access terminal shall set this field to the 64 MSB of the access
11 network identifier corresponding to this Route.

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | RTC | RLP | Reliable |
| Addressing | Unicast | AuthTag | Required when key is available |

13 2.5.2.7 RouteMapAck

14 The access network sends the RouteMapAck message to acknowledge the reception of a
15 RouteMap message from the access terminal.

| Field | Length (bits) |
|---------------|---------------|
| MessageID | 8 |
| TransactionID | 8 |

- 17 MessageID The access network shall set this field to 0x06.
- 18 TransactionID The access network shall set this field to the value of the
19 TransactionID field in the RouteMap message to which this message
20 is the acknowledgement.

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key is available |

22 2.5.2.8 RouteMapRequest

23 The access network sends the RouteMapRequest message to query the access terminal for
24 the current RouteMap.

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |

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

2

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key is available |

3 2.5.2.9 UATIAssignment

4 The access network sends the UATIAssignment message to assign a UATI to the access
5 terminal.

6

| Field | Length (bits) |
|-------------------|-----------------|
| MessageID | 8 |
| UATIlsbSameAsPrev | 1 |
| UATIlsb | 0 or 64 |
| PagingIDInd | 2 |
| PagingID | 0 or 32 |
| Reserved | 0-7 (as needed) |

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

8 UATIlsbSameAsPrev The access network shall set this field to '1' if the 64 LSB of the UATI
9 being assigned is the same as the 64 LSB of the UATI currently
10 assigned to the access terminal; otherwise, the access network shall
11 set this field to '0'.

12 UATIlsb If the UATIlsbSameAsPrev field is set to '1', the access network shall
13 omit this field; otherwise, the access network shall include this field
14 and set it to the 64 LSB of the UATI being assigned to the access
15 terminal.

16 PagingIDInd The access network shall set this field to '00' if the PagingID field is
17 included in this message. The access network shall set this field to
18 '01' if PagingID corresponds to the 32 LSB of the UATI assigned to
19 the access terminal. The access network shall set this field to '10' if
20 the PagingID is the same as the current value of PagingID.

21 PagingID The access network shall omit this field if the PagingIDInd field is not
22 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** This field shall be set to reserved bits to make the length of the entire
 4 message equal to an integer number of octets. These bits shall be set
 5 to '0'.
 6

| | | | |
|-------------------|---------|----------------|-----------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key available |

7 2.5.2.10 UATIComplete

8 The access terminal sends this message to notify the access network that it has received
 9 the UATI assignment.
 10

| Field | Length (bits) |
|-------------------|----------------------|
| MessageID | 8 |
| RouteID | 7 |
| UATIlsbSameAsPrev | 1 |
| UATIlsb | 0 or 64 |
| PagingIDInd | 2 |
| PagingID | 0 or 32 |
| Reserved | 0-7 (as needed) |

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

12 **RouteID** The access terminal shall set this field to the RouteID of the Route
 13 that performed the UATI assignment.

14 **UATIlsbSameAsPrev** The access terminal shall set this field to '1' if the 64 LSB of the UATI
 15 that was assigned is the same as the 64 LSB of the UATI previously
 16 assigned to the access terminal; otherwise, the access terminal shall
 17 set this field to '0'.

18 **UATIlsb** If the UATIlsbSameAsPrev field is set to '1', the access terminal shall
 19 omit this field; otherwise, the access terminal shall include this field
 20 and set it to the 64 LSB of the UATI that was assigned to the access
 21 terminal.

22 **PagingIDInd** The access terminal shall set this field to '00' if the PagingID field is
 23 included in this message. The access terminal shall set this field to
 24 '01' if PagingID corresponds to the 32 LSB of the UATI conveyed in

1 this message. The access terminal shall set this field to '10' if the
 2 PagingID is the same as the previous value of PagingID.

3 **PagingID** The access terminal shall omit this field if the PagingIDInd field is not
 4 set to '00'; otherwise, the access terminal shall include this field and
 5 set it to the unicast paging identifier assigned to the access terminal.

6 **Reserved** This field shall be set to reserved bits to make the length of the entire
 7 message equal to an integer number of octets. These bits shall be set
 8 to '0'.
 9

| | | | |
|-------------------|---------|----------------|-----------------------------|
| Channels | RTC | RLP | Reliable |
| Addressing | Unicast | AuthTag | Required when key available |

10 2.5.2.11 RouteCreate

11 The access network sends the RouteCreate message to request the access terminal to open
 12 a Route to the indicated access network⁵.
 13

| Field | Length (bits) |
|--------------------------|----------------------|
| MessageID | 8 |
| ANIDmsb | 64 |
| Reserved1 | 5 |
| NumProtocolSetIdentifier | 3 |

NumProtocolSetIdentifier occurrences of the following field:

| | |
|-----------------------|----|
| ProtocolSetIdentifier | 16 |
|-----------------------|----|

| | |
|---------------------|---|
| NumPersonalityIndex | 3 |
| Reserved2 | 5 |

NumPersonalityIndex occurrences of the following field:

| | |
|------------------|---|
| PersonalityIndex | 4 |
|------------------|---|

| | |
|-----------|-----------------|
| Reserved3 | 0-7 (as needed) |
|-----------|-----------------|

14 **MessageID** The access network shall set this field to 0x0a.

⁵ For example, this can be used by an access network that intends to become the SessionAnchor.

- 1 ANIDmsb The access network shall set this field to the 64 MSB of the access
2 network identifier corresponding to the access network to which a
3 Route is to be created.

- 4 Reserved1 The access network shall set this field to '00000'. The access terminal
5 shall ignore this field.

- 6 NumProtocolSetIdentifier
7 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 a personality allowed for this Route.
11 The access network shall list these field in decreasing order of
12 preference.

- 13 NumPersonalityIndex
14 The access network shall set this field to the number of
15 PersonalityIndex fields included in this message.

- 16 Reserved2 The access network shall set this field to '00000'. The access terminal
17 shall ignore this field.

- 18 PersonalityIndex The access network shall set this field to the PersonalityIndex
19 corresponding to a personality allowed for this Route.
20
21 The access network shall list these field in decreasing order of
22 preference.

- 23 Reserved3 The access network shall add reserved bits to make the length of the
24 entire message equal to an integer number of octets. The access
25 network shall set these bits to '0'. The access terminal shall ignore
26 this field.

| | |
|-------------------|---------|
| Channels | FTC |
| Addressing | unicast |

| | |
|----------------|-----------------------------|
| RLP | Reliable |
| AuthTag | Required when key available |

27 2.5.2.12 RouteOpenReject

28 The access network sends the RouteOpenReject message to reject a RouteOpenRequest
29 message from the access terminal.
30

| Field | Length (bits) |
|--------------|---------------|
| MessageID | 8 |
| RejectReason | 8 |
| RetryDelay | 0 or 8 |

- 1 MessageID The access network shall set this field to 0x0b.
- 2 RejectReason The access network shall set this field to the reason for rejection as
3 specified in Table 2-2.

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

| RejectReason | Meaning |
|------------------|--|
| 0x00 | Route Open Request queued |
| 0x01 | Session fetch failed due to session not found |
| 0x02 | Session fetch failed due to authentication failure |
| 0x03 | General authentication/billing failure/Other |
| 0x04 | No network connectivity |
| 0x05 | System overloaded |
| 0x06 | Pilot belongs to existing Route |
| All other values | Reserved |

- 5 RetryDelay The access network shall omit this field if the RejectReason field is
6 not set to 0x00; otherwise, the access network shall include this field
7 and set it to the retry delay in units of seconds as follows:
8 Let $a = \text{RetryDelay}[4:0]$ and $b = \text{RetryDelay}[7:5]$, the effective retry delay
9 is $2^b \times a$ in units of seconds.

| | | | |
|-------------------|---------|----------------|-----------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key available |

11 2.5.2.13 LinkIDAssignment

- 12 The access network sends the LinkIDAssignment message to convey its link identifier to
13 the access terminal.

14

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |
| LinkID | 64 |
| MTU | 8 |

- 1 MessageID The access network shall set this field to 0x0c.
- 2 LinkID The access network shall set this field to its link identifier.
- 3 MTU The access network shall include this field and set it such that the
- 4 maximum transmission unit of IP datagrams over this route (in
- 5 octets) equals 1280+MTU.

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key is available |

7 2.5.2.14 DAPMoveRequestRequest

8 The access network sends the DAPMoveRequestRequest message to request the access
 9 terminal to send a DAPMoveRequest message.

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |

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

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Channels | FTC | RLP | Reliable |
| Addressing | unicast | AuthTag | Required when key is available |

13 2.5.2.15 RouteOpenRequestRequest

14 The access network sends the RouteOpenRequestRequest message to request the access
 15 terminal to send a RouteOpenRequest message for the same Route

| Field | Length (bits) |
|-----------|---------------|
| MessageID | 8 |

17 MessageID The access network shall set this field to 0x0e.

| | | | |
|-----------------|-----|------------|----------|
| Channels | FTC | RLP | Reliable |
|-----------------|-----|------------|----------|

| | | | |
|-------------------|---------|----------------|--------------------------------|
| Addressing | unicast | AuthTag | Required when key is available |
|-------------------|---------|----------------|--------------------------------|

1 2.5.3 Interface to Other Protocols

2 2.5.3.1 Commands Sent

3 This protocol does not issue any commands.

4 2.5.3.2 Indications

5 This protocol registers to receive the following indications:

- 6 • *AirLinkManagement.AirLinkInitialized*
- 7 • *AirLinkManagement.IdleInitiated*
- 8 • *AirLinkManagement.ConnectionClosed*
- 9 • *RouteControl.UATIAssigned(RouteID)* (from other Routes)
- 10 • *RouteControl.DAPAssigned(RouteID)* (from other Routes)
- 11 • *RouteControl.RouteOpened* (from other Routes)
- 12 • *RouteControl.RouteClosed* (from otherRoutes)
- 13 • *Route.PersonalityFailure*
- 14 • *Route.RouteExists*
- 15 • *Route.RouteReopen*
- 16 • *Route.UATIFailed*
- 17 • *Signaling.ReliableSignalingStreamReset*

18 **2.6 Configuration Attributes**

19 2.6.1 Simple Attributes

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

Table 2-3. Configurable Attributes

| Attribute ID | Attribute | Commit / Scope | Values | Meaning |
|---------------------|-------------------|-----------------------|------------------|---------------------------------------|
| 0x0000 | ATRouteCloseTimer | Soft/ Static | 0x0005 | Route close timer period of 5 seconds |
| | | | 0x0001-0x0004 | Route close timer period in seconds |
| | | | All other values | Reserved |

2.6.2 Complex Attributes

2.6.2.1 ATassistedDAPMoveMode Attribute

The sender shall set AttributeID field to 0x8000.

| Field | Length (bits) | Default |
|---------------------------|----------------------|----------------|
| ATassistedDAPMove | 1 | 1 |
| DAPMoveRequestTimer | 15 | 0x0000 |
| L2HotoDAPMoveRequestTimer | 15 | 0x0000 |

ATassistedDAPMove The sender shall set this field to 1 if the access terminal is allowed to send a DAPMoveRequest message.

DAPMoveRequestTimer

The sender shall set this field to Recommended minimum period, in units of 10ms, between unsolicited DAPMoveRequest messages. The sender shall not set this field to a value greater than 0x03e8.

L2HotoDAPMoveRequestTimer

The sender shall set this field to the interval, in units of 10ms, for which the access terminal must wait after detecting a L2 handoff before sending a DAPMoveRequest message. The sender shall not set this field to a value greater than 0x03e8.

| | |
|---------------|------|
| Commit | Soft |
|---------------|------|

| | |
|--------------|--------|
| Scope | Static |
|--------------|--------|

2.7 Non-Attribute Data

This protocol defines the following static Non-attribute data. This protocol does not define any dynamic Non-attribute data.

2.7.1 PagingID

The sender shall set DataID field to 0x0000.

1

| Field | Length (bits) |
|--------------|----------------------|
| NumPagingID | 3 |

NumPagingID occurrences of the following record

| | |
|--------------|-----------------|
| PagingIDType | 2 |
| PagingID | 32 |
| Reserved | 0-7 (as needed) |

- 2 NumPagingID This field shall be set to the number of PagingID records included.
- 3 PagingIDType This field shall be set to the type of the included PagingID as follows:
4 This field shall be set to '01' for Multicast PagingID and '10' for
5 Unicast PagingID. No more than one occurrence of PagingID of each
6 PagingIDType shall be included.
- 7 PagingID This field shall be set to the current paging identifier assigned to the
8 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 2.7.2 SessionSeed

13 The sender shall set DataID field to 0x0001.

14

| Field | Length (bits) |
|--------------|----------------------|
| SessionSeed | 128 |

- 15 SessionSeed This field shall be set to the value of the SessionSeed associated with
16 the access terminal's session.

17 2.8 Protocol Numeric Constants

18

| Constant | Meaning | Value |
|-----------------------|---|--------------|
| $N_{RCPTtype}$ | Type field for this protocol | [1] |
| $N_{RCPBasic}$ | Subtype field for this protocol | 0x00 |
| $T_{RCPATWaitOpen}$ | Duration is seconds for access terminal to wait in the WaitingToOpen state for a RouteOpenAccept message from the access network | 1 |
| $T_{RCPANRouteClose}$ | Duration is seconds for access network to wait, after sending a RouteClose message, for a RouteClose message from the access terminal | 1 |

1 **2.9 Session State Information**

- 2 The Session State Information record (see [1]) consists of parameter records.
- 3 All configuration attributes and Non-attribute data are Session State Information records.
- 4 This protocol does not define additional parameter records.

- 1 No text.