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Session Control Plane for Ultra Mobile Broadband (UMB) Air Interface Specification

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- 1 No text.

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 Session 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
- Route 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] Reserved.
 - 23 [9] C.S0084-008-0, Route Control Plane for Ultra Mobile Broadband (UMB) Air
24 Interface Specification.
 - 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)
 - 29 [12] IETF RFC 3095, Robust Header Compression (ROHC): Framework and four
30 profiles: RTP, UDP, ESP, and uncompressed
 - 31 [13] RObust Header Compression (ROHC) Profile Identifiers
32 [<http://www.iana.org/assignments/rohc-pro-ids>]

REFERENCES

- 1 No text.

1 INTRODUCTION

1.1 General Overview

The Session Control Plane contain the protocol used to negotiate a session between the access terminal and the access network.

A session is a shared state maintained between the access terminal and the access network, including information such as:

- A unicast address (UATI) and Paging Identifier (PagingID) assigned to the access terminal,
- the set of protocols used by the access terminal and the access network to communicate over the air-link, and
- configuration settings for these protocols (e.g., authentication keys, parameters for Connection Layer and MAC Layer protocols, etc.)

During a single session the access terminal and the access network can open and close a connection multiple times; therefore, sessions will be closed rarely, and only on occasions such as the access terminal leaving the coverage area or such as prolonged periods in which the access terminal is unavailable.

The Session Control Plane contains the following protocol:

- Session Control Protocol: This protocol provides the means to provision the protocols used during the session, and negotiates the configuration parameters for these protocols. In addition, this protocol ensures the session is still valid and manages closing of the session.

The protocol in the Session Control Plane is illustrated in Figure 1-1

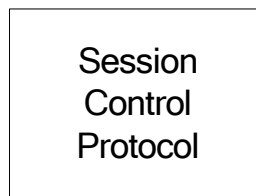


Figure 1-1. Session Control Plane Protocol

1.2 Data Encapsulation for the InUse Protocol Instance

The protocol of the Session Control Plane is a control protocols and thus do not process packets.

- 1 No text.

2 BASIC SESSION CONTROL PROTOCOL

2.1 Overview

The Basic Session Control Protocol provides for the negotiation and configuration of the set of protocols used during a session. This protocol also periodically ensures that the session is still valid and manages closing the session.

This protocol operates in one of eight states:

- **Inactive State:** This state applies only to the access terminal. In this state there are no communications between the access terminal and the access network.
- **ATI Assign State:** In this state the access network assigns a UATI and PagingID to the access terminal.
- **Open State:** In this state a UATI and PagingID has been assigned to the access terminal and the session is open. In this state, the access terminal may initiate the full session configuration procedure or fast configuration procedure and the access network may request the access terminal to initiate the full session configuration procedure or the access network may initiate the fast configuration procedure.
- **AT Initiated State:** In this state, negotiation is performed at the initiative of the access terminal.
- **AN Initiated State:** In this state, negotiation is performed at the initiative of the access network.
- **AT Fast Configuration State:** In this state, fast configuration of the InUse Personality is performed at the initiative of the access terminal.
- **AN Fast Configuration State:** In this state, fast configuration of the InUse Personality is performed at the initiative of the access network.
- **WaitingToClose State:** This state applies only to the access network. In this state the access network waits for the session close procedure to complete.

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

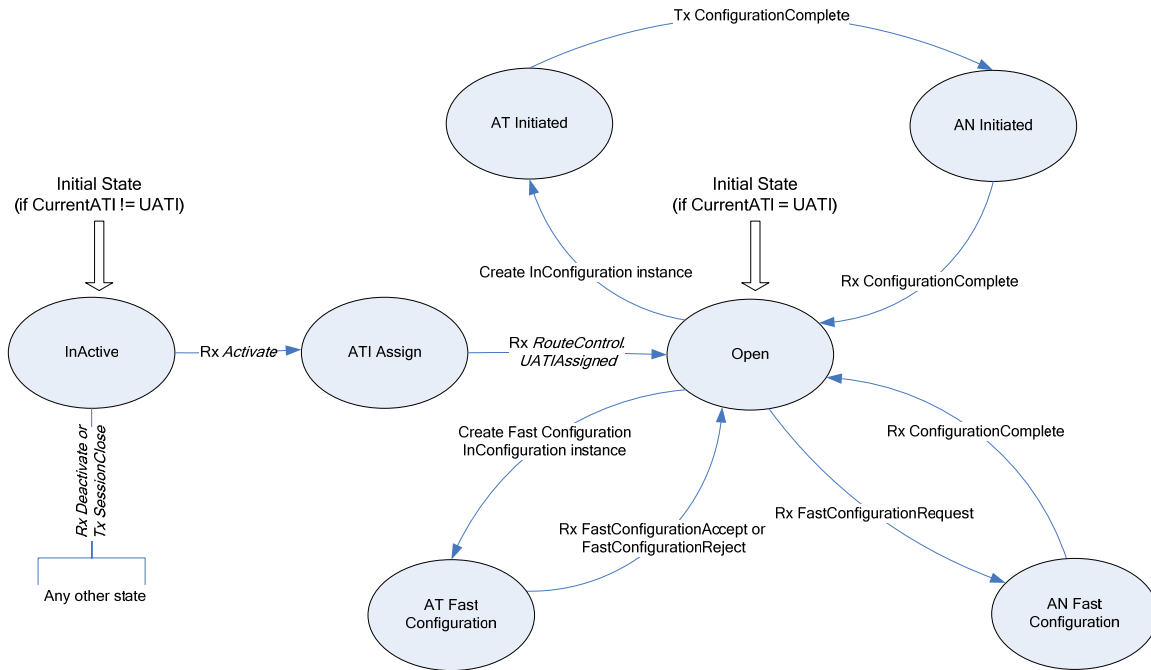


Figure 2-1. Basic Session Control Protocol State Diagram (Access Terminal)

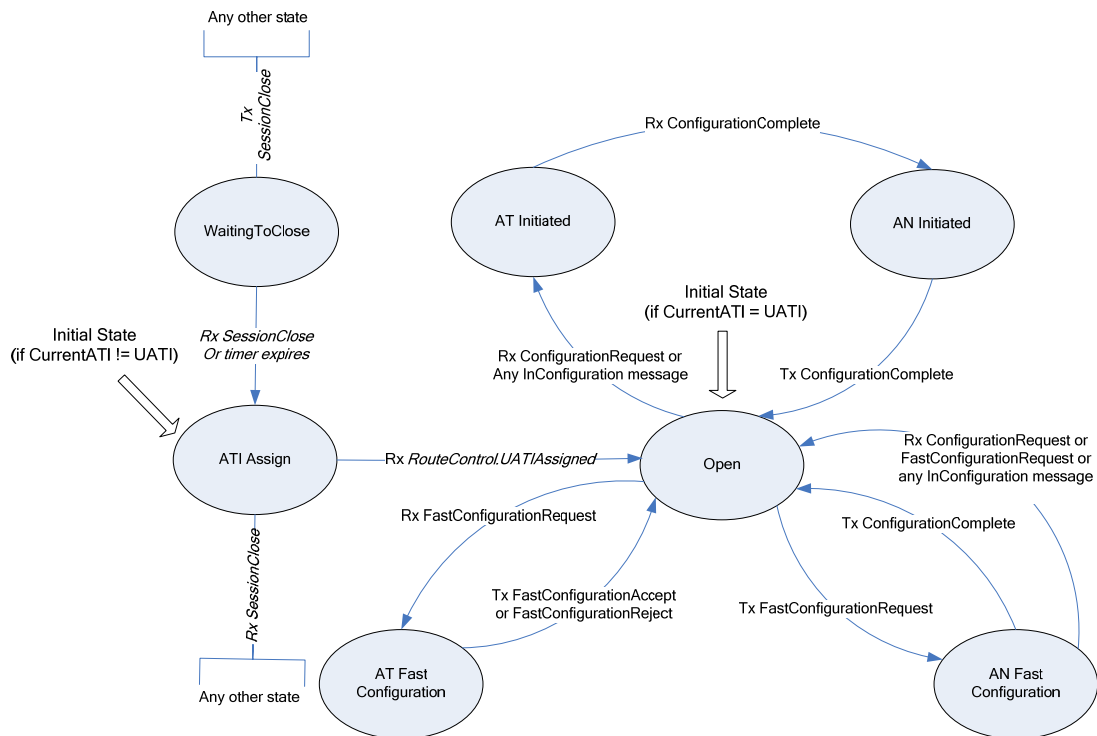


Figure 2-2. Basic Session Control Protocol State Diagram (Access Network)

1 For configuration of the InUse or stored personalities, this protocol supports two phases of
2 negotiation:

- 3 • Access terminal initiated negotiation: In this phase negotiation exchanges are initiated
4 by the access terminal. This phase is used to determine the protocols that will be used
5 in the session and negotiate some of the protocols' parameters (e.g., Radio Link Protocol
6 sequence lengths). Once the protocol subtypes to be instantiated are conveyed via the
7 PersonalityIndex or ProtocolSetIdentifier field of the ConfigurationStart message or
8 initial ConfigurationRequest message, protocol subtypes cannot be modified.
- 9 • Access network initiated negotiation: In this phase negotiation exchanges are initiated
10 by the access network.

11 For fast configuration of the InUse Personality, this protocol supports two modes of
12 negotiation:

- 13 • Access terminal initiated fast configuration: In this mode of negotiation, the access
14 terminal proposes values for one or more attributes of the InUse Personality. Access
15 network may accept or reject the request.
- 16 • Access network initiated fast configuration: In this mode of negotiation, the access
17 network proposes values for one or more attributes of the InUse Personality. Access
18 terminal may accept or reject the request.

19 Additional protocols may be negotiated without further modifications to the Basic Session
20 Control Protocol.

21 **2.2 Primitives, Local Common Data, and Public Data**

22 2.2.1 Commands

23 This protocol defines the following commands:

- 24 • *Activate*
- 25 • *Deactivate*

26 2.2.2 Return Indications

27 This protocol returns the following indications:

- 28 • *Reconfigured* (to all routes)
- 29 • *SessionOpened*
- 30 • *SessionClosed* (to all routes)

31 2.2.3 Local Common Data

32 ~~This protocol does not define any Local Common Data. This protocol defines the following~~
33 ~~Local Common Data (i.e., AT only):~~

- 34
- 35 • PendingPersonalityIndex and corresponding ANID

2.2.4 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- State of this protocol
- Busy
- ~~PendingPersonalityIndex~~
- 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 Procedures and Messages for the InConfiguration Instance of the Protocol

2.4.1 Procedures

This protocol uses the InUse instance of the Session Control Protocol to define the processing of the configuration messages.

2.4.1.1 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 [1].

2.4.1.2 Other Procedures

The access network shall not initiate negotiation of the ATSupportedProtocolSetIdentifiers, ATSupportedApplicationProtocolIDs~~PP~~, and HardwareID attributes.

If ATInitiatedConfigurationAllowed attribute is equal to 0x0001 or if InUse instance of this protocol is in AT Initiated State, the access terminal shall perform the following:

- If the HardwareID attribute is set to its default value, then the access terminal shall initiate negotiation of the HardwareID attribute.
- If the ATSupportedProtocolSetIdentifiers attribute is set to its default value, then the access terminal shall initiate negotiation of the ATSupportedProtocolSetIdentifiers attribute. If any of the ATSupportedApplicationProtocolIDs~~PP~~ attribute is set to its default value and if AT support of the application is not reflected in default value of the attribute, then the access terminal shall initiate negotiation of the ATSupportedApplicationProtocolIDs~~PP~~ attribute, ~~including all the Application ProtocolIDs supported by the access terminal.~~

2.4.2 Message Formats

This protocol does not define any messages.

2.5 Procedures and Messages for the InUse Instance of the Protocol

2.5.1 Procedures

InConfiguration instances of this and other protocols use the messages defined by this protocol for configuration of their attributes.

The Basic Session Control Protocol allows for the negotiation and storage of up to PersonalityCount personalities. A Personality is defined as a complete set of negotiated protocol subtypes, application ProtocolIDs, attribute values, non-attribute data values, and public data that can be used as the InUse instance of the protocols and applications. Only one Personality is in use at a time on a given Route. The total number of stored personalities shall not exceed PersonalityCount. Each Personality is identified by its PersonalityIndex. Valid values of PersonalityIndex are from zero to PersonalityCount – 1, inclusive³.

If the access terminal determines that none of the IPSIs advertised by the access network corresponds to the IPSI of any of the stored personalities, the access terminal should attempt to open a Route to this access network.

2.5.1.1 Generic Configuration Procedures

The Basic Session Control Protocol provides a means to negotiate protocol parameters.

The protocol uses ConfigurationRequest message, ConfigurationResponse message, ConfigurationCopyRequest message, ConfigurationCopyAccept message, ConfigurationCopyReject message, FastConfigurationRequest message, FastConfigurationAccept message, FastConfigurationReject message, AttributeReset message, and AttributeResetAccept message to negotiate a mutually acceptable configuration.

The initiator shall increment the TransactionID for each new ConfigurationRequest message, ConfigurationCopyRequest message, FastConfigurationRequest ~~message~~, or AttributeReset message, DeletePersonalityRequest message, or SwitchPersonality message sent.

The initiator uses the ConfigurationRequest message⁴ to provide the responder with a list of acceptable attribute values for each attribute. The responder uses the ConfigurationResponse message to provide the initiator with the accepted attribute value for each attribute, choosing the accepted attribute value from the initiator's acceptable attribute value list. The initiator shall order the acceptable attribute values for each attribute in descending order of preference. The initiator shall send these ordered attribute-value lists to the responder using one or more ConfigurationRequest messages. If the

³ The personality bin reserved for IPSI-based or PSI-based stack (i.e., PersonalityIndex of 0xf) is not included in PersonalityCount.

⁴ Initiator is allowed to send multiple outstanding requests (e.g. multiple ConfigurationRequest, ConfigurationCopyRequest, AttributeReset messages). However, initiator can send multiple outstanding requests only if the requests are not dependent on each other.

1 ordered attribute value lists fit within one ConfigurationRequest message, then the initiator
2 should use one ConfigurationRequest message. If the ordered attribute value lists do not fit
3 within one ConfigurationRequest message, then the initiator may use more than one
4 ConfigurationRequest message. Each ConfigurationRequest message shall contain one or
5 more complete ordered attribute value lists; an ordered attribute value list for an attribute
6 shall not be split within a ConfigurationRequest message and shall not be split across
7 multiple ConfigurationRequest messages. After sending a ConfigurationRequest message,
8 the sender shall store current value of each attributes that was listed in the message as a
9 fall-back value for that attribute, and then set the value of all attributes that were listed in
10 the message to NULL. After receiving a ConfigurationRequest message, the responder shall
11 respond within $T_{\text{Turnaround}}$.

- 12 • For each attribute included in the ConfigurationRequest message, the responder shall
13 choose an acceptable attribute value from the associated acceptable attribute value list
14 and set the value of the attribute to the accepted value.
- 15 • If the responder does not recognize an attribute in the associated attribute list, then the
16 responder shall skip the attribute.
- 17 • If the responder does not find an acceptable attribute value in the associated attribute
18 list, the responder shall skip the attribute and shall not change set the attribute value
19 to its fall-back value.

20 The responder shall send the accepted attribute value for each attribute within one
21 ConfigurationResponse message. The value included for each attribute shall be one of the
22 values listed in the ConfigurationRequest message. After receiving a ConfigurationResponse
23 message, the initiator shall pair the received message with the associated
24 ConfigurationRequest message using the TransactionID field of the messages. If the
25 ConfigurationResponse message does ~~not~~ contain an attribute found in the associated
26 ConfigurationRequest message then the initiator shall set the value of the attribute to the
27 value accepted by the responder; ~~otherwise, then~~ the initiator shall set the missing
28 attribute to its fall-back value.

29 The initiator uses the ConfigurationCopyRequest message⁴ to provide the responder with a
30 proposed Personality index from where the attributes values for all the attributes in this
31 protocol are to be taken. The subtype for this protocol shall be same as the protocol
32 subtype in the proposed Personality index from where the configuration copy operation is
33 requested. The responder uses the ConfigurationCopyAccept message or
34 ConfigurationCopyReject message to accept or reject the proposed configuration copy
35 operation, respectively. After sending a ConfigurationCopyRequest message, the sender
36 shall store current value of each attribute of the protocol as a fall-back value for that
37 attribute, and then set the value of all the attributes of the protocol to NULL. After receiving
38 a ConfigurationCopyRequest message, the responder shall respond with either
39 ConfigurationCopyAccept or ConfigurationCopyReject within $T_{\text{Turnaround}}$.

- 40 • If the responder accepts the proposed configuration copy operation, the responder shall
41 perform the following:
 - 42 – The responder shall send the ConfigurationCopyAccept message.

- 1 – The responder shall copy all the attribute values from the corresponding protocol in
2 the specified Personality index.
- 3 • If the responder does not accept the proposed configuration copy operation, the
4 responder shall perform the following:
- 5 – The responder shall send the ConfigurationCopyReject message, ~~and shall use the~~
6 ~~fall back values.~~

7 After receiving a ConfigurationCopyAccept message or ConfigurationCopyReject message,
8 the initiator shall pair the received message with the associated ConfigurationCopyRequest
9 message using the TransactionID field of the messages.

- 10 • If the initiator receives a ConfigurationCopyAccept message, the initiator shall copy all
11 the attribute values from the corresponding protocol in the Personality index as
12 specified in the associated ConfigurationCopyRequest message.
- 13 • If the initiator receives a ConfigurationCopyReject message, the initiator shall set all the
14 attributes of this protocol to their fall-back values.

15 The initiator uses the AttributeReset message⁴ to request the responder to set the value of
16 the attributes included in the message to their default value. After sending a AttributeReset
17 message, the sender shall set the value of all attributes that were listed in the message to
18 ~~their default values~~NULL. The responder shall set the value of all attributes that were listed
19 in the message to their default value and shall send a AttributeResetAccept message. After
20 receiving an AttributeResetAccept message, the initiator shall pair the received message
21 with the associated AttributeReset message using the TransactionID field of the messages.
22 The initiator shall set the value of all attributes that were listed in the AttributeReset
23 message to their default value.

24 If the initiator requires no further configuration of negotiated protocols and if the value of
25 any of the parameters for which the initiator has sent a ConfigurationRequest message or
26 ConfigurationCopyRequest message is NULL, then the sender shall ~~declare a failure~~
27 ~~not send a ConfigurationComplete message.~~ ~~The initiator and the responder shall use the~~
28 ~~attribute values in the ConfigurationResponse messages and ConfigurationCopyAccept~~
29 ~~messages as the configured attribute values, provided that the attribute values were also~~
30 ~~present in the associated ConfigurationRequest message and ConfigurationCopyRequest~~
31 ~~message.~~

32 The Basic Session Control Protocol also provides a means to perform fast negotiation of
33 protocol parameters of the InUse instance. The procedure consists of the initiator sending a
34 single FastConfigurationRequest message, listing one or more attributes and for each
35 attribute one or more allowed values. The initiator shall order the acceptable attribute
36 values for each attribute in descending order of preference. If the responder finds at least
37 one acceptable value for each listed attribute, then the responder shall send a
38 FastConfigurationAccept message; otherwise, the responder shall send a
39 FastConfigurationReject message. ~~If the initiator receives a FastConfigurationReject~~
40 ~~message, the initiator shall assume that all the attributes of this protocol are using the fall-~~
41 ~~back values.~~ The initiator shall not include any hard-committable attributes in
42 FastConfigurationRequest message.

2.5.1.2 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 [1].
- If CurrentATI public data of the Route Control Protocol is of type UATI, the protocol at the access network shall enter the Open State; otherwise, it shall enter the ATI Assign State.
- If CurrentATI public data of the Route Control Protocol is of type UATI, the protocol at the access terminal shall enter the Open State; otherwise, it shall enter the Inactive State.

2.5.1.3 Hard Commit Procedures

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

2.5.1.4 Soft Commit Procedures

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

2.5.1.5 Processing the Activate Command

If the access terminal receives the *Activate* command in the Inactive State, it shall transition to the ATI Assign State. If the access terminal receives the *Activate* command in any state other than the Inactive State, the command shall be ignored.

The access network shall ignore the command.

2.5.1.6 Processing the Deactivate Command

If the access terminal receives a *Deactivate* command in the Inactive State, the command shall be ignored.

If the access terminal receives a *Deactivate* command in any state other than the Inactive State and this is the SessionAnchor Route, the access terminal shall perform the following:

- Send a SessionClose message to the access network.
- Return a *SessionClosed* indication.
- Transition to the Inactive State.

If the access network receives a *Deactivate* command in the WaitingToClose State, the command shall be ignored.

If the access network receives a *Deactivate* command in any state other than the WaitingToClose State, the access network shall send a SessionClose message and transition to the WaitingToClose State.

2.5.1.7 Processing the SessionClosed Indication

If the access terminal receives a *SessionControl.SessionClosed* indication from another Route while in the Inactive State, the ~~command-indication~~ shall be ignored. If the access terminal receives a *SessionControl.SessionClosed* indication from another Route while in any state other than the Inactive State, the access terminal shall perform the following:

- Transition to the Inactive State.

2.5.1.8 Processing the SessionClose Message

If the access terminal receives a SessionClose message in the Inactive State, the message shall be ignored.

If the access terminal receives a SessionClose message in any state other than the Inactive State, the access terminal shall perform the following:

- Send a SessionClose message to the access network.
- Return a *SessionClosed* indication.
- Transition to the Inactive State.

If the access network receives a SessionClose message in the WaitingToClose State, the access network shall process it as specified in 2.5.1.20.

If the access network receives a SessionClose message in any state other than the WaitingToClose State, the access network shall:

- Return a *SessionClosed* indication.
- Transition to the ATI Assign State.

2.5.1.9 Processing the Reconfigured Indication

If the access terminal receives a *SessionControl.Reconfigured* indication from another Route while in the Inactive State, the ~~command-indication~~ shall be ignored. If the access terminal receives a *SessionControl.Reconfigured* indication from another Route while in any state other than the Inactive State, the access terminal shall perform the following:

- The Session Control Protocol shall direct all the InUse protocol instances to execute their Soft Commit procedures.
- The access terminal shall send a SessionUpdated message to the access network, conveying the updated value of session signature.

2.5.1.10 Processing the IdleInitiated indication

If the access terminal receives an *AirLinkManagement.IdleInitiated* indication while in the Inactive State or ATI Assign State, the indication shall be ignored. If the access terminal receives an *AirLinkManagement.IdleInitiated* indication while in any other state, the access terminal shall perform the following:

- Delete any InConfiguration instance that has been created.
- Transition to the Open State.

1 If the access network receives an *AirLinkManagement.IdleInitiated* indication while in the
 2 WaitingToClose State or ATI Assign State, the indication shall be ignored. If the access
 3 network receives an *AirLinkManagement.IdleInitiated* indication while in any other state, the
 4 access network shall perform the following:

- 5 • Delete any InConfiguration instance that has been created.
- 6 • Transition to the Open State.

7 2.5.1.102.5.1.11 Keep Alive Functions

8 If this is the SessionAnchor Route ~~and TimerBasedRegPeriod is not set to 0x0000~~, the
 9 access terminal shall perform the following session keep alive procedures:

- 10 • When this Route became the SessionAnchor Route, the access terminal shall start the
 11 timer based registration timer, with the value initialized to TimerBasedRegPeriod.
- 12 • If the access terminal receives an *AirlinkManagement.RegistrationSucceeded* indication,
 13 the access terminal shall reset the timer based registration timer.
- 14 • If the access terminal receives a *RouteControl.RouteOpened* indication from any route,
 15 the access terminal shall reset the timer based registration timer.
- 16 • If the timer based registration timer expires, the access terminal shall send
 17 *AirlinkManagement.SendRegistration* command and shall reset the timer based
 18 registration timer.
- 19 • If the access terminal does not receive an *AirlinkManagement.RegistrationSucceeded*
 20 indication for a period equal to SCPCloseTime, the access terminal shall close the
 21 session.

22 If this is the SessionAnchor Route ~~and TimerBasedRegPeriod is not set to 0x0000~~, the
 23 access network shall perform the following session keep alive procedures:

- 24 • The access network may close the session if it does not receive any registrations from
 25 the access terminal for a period equal to SCPCloseTime.

26 2.5.1.112.5.1.12 Busy Maintenance

27 The access terminal shall set the Busy public data to TRUE whenever the access terminal
 28 is in the AT initiated state, AN initiated state, AT Fast Configuration State, or AN Fast
 29 Configuration state; otherwise, the access terminal shall set the Busy public data to
 30 FALSE.

31 The access network shall set the Busy public data to TRUE whenever the access network is
 32 in the AT initiated state, AN initiated state, AT Fast Configuration State, or AN Fast
 33 Configuration state; otherwise, the access network shall set the Busy public data to FALSE.

34 2.5.1.122.5.1.13 Inactive State

35 This state only applies to the access terminal. In this state there are no communications
 36 between the access terminal and the access network. The access terminal does not
 37 maintain any session-related state and the access network may be unaware of the access

1 terminal's existence within its coverage area when the access terminal's Session Control
2 Protocol is in this state.

3 2.5.1.13.2.5.1.14 ATI Assign State

4 In this state the Session Control Protocol in the access terminal waits for *UATIAssigned*
5 indication from the Route Control Protocol.

6 2.5.1.13.12.5.1.14.1 Access Terminal Requirements

7 If the access terminal receives an *RouteControl.UATIAssigned* indication, it shall perform
8 the following:

- 9 • Return a *SessionOpened* indication.
- 10 • Transition to the Open State.

11 2.5.1.13.22.5.1.14.2 Access Network Requirements

12 If the access network receives an *RouteControl.UATIAssigned* indication, it shall perform the
13 following:

- 14 • Return a *SessionOpened* indication.
- 15 • Transition to the Open State.

16 2.5.1.14.2.5.1.15 Open State

17 In the Open State the access terminal has an assigned UATI and the access terminal and
18 the access network have a session. The access terminal and the access network shall
19 support the keep-alive mechanism defined in 2.5.1.11. In this protocol state the access
20 terminal and the access network can initiate session negotiation.

21 2.5.1.14.12.5.1.15.1 Access Terminal Requirements

22 While in this state, the access terminal may start the negotiation process by entering the
23 AT-initiated state or AT Fast Configuration state. If the access terminal wants to change the
24 value of any session data, the access terminal must first enter the AT-initiated state or AT
25 Fast Configuration state and send a *ConfigurationRequest* or *FastConfigurationRequest*
26 message, respectively, to start the configuration process. If the access terminal wants to
27 configure a Personality, the access terminal must first enter the AT-initiated state and send
28 a *ConfigurationRequest* message to start the configuration process.

29 While in this state, the access terminal may send a *ConfigurationStartRequest* message to
30 request the access network to start session negotiation for creating a new personality.

31 If the access terminal wants to start the session negotiation process, the access terminal
32 shall perform the following:

- 33 • The access terminal shall not start the session negotiation process if the access
34 terminal is performing session configuration with another access network (i.e., an
35 *InConfiguration* instance has been created).

- 1 • ~~The access terminal shall not start the session negotiation process i~~ If the value of the
2 ATInitiatedConfigurationAllowed attribute is equal to 0x0000, then the access terminal
3 shall comply to following requirements:-
 - 4 – The access terminal shall not enter the AT-initiated state to send an unsolicited
5 ConfigurationRequest message.
 - 6 – The access terminal shall not enter the AT Fast Configuration state.
- 7 • If none of the above conditions are true, the protocol in the access terminal shall
8 transition to the AT Initiated State or the AT Fast Configuration State.

9 While in this state, the access terminal may send a SwitchPersonalityRequest message to
10 the access network to suggest switching the current InUse Personality of that access
11 network. The access terminal shall not send this request unless the Route Control Protocol
12 State public data of the Route Control Protocol is set to Open.

13 The access terminal shall ignore a ConfigurationComplete message,
14 FastConfigurationAccept message, or DeletePersonalityRequest message received in this
15 state.

16 If the access terminal receives a SwitchPersonality message, then the access terminal shall
17 perform the following:

- 18 • If the value of the SessionSignature field in the message is not equal to the value at the
19 access terminal, the access terminal shall send a SwitchPersonalityReject message to
20 the access network, with the RejectReason set to 'SessionSignature out of sync' and
21 including the value of the SessionSignature at the access terminal.
- 22 • If the HardSwitch field of the SwitchPersonality message is set to '0' and Personality
23 conveyed via the PersonalityIndex field is not soft-switchable with respect to the
24 Personality of the InUse instance of any of the Routes (i.e., the difference between these
25 two personalities include hard-commitable attributes), then the access terminal may
26 accept this switch Personality request. If the access terminal does not accept the
27 request, the access terminal shall send a SwitchPersonalityReject message to the
28 access network, with the RejectReason set to 'switch not accepted'
- 29 • If none of the above conditions are true, then the access terminal shall accept this
30 switch Personality request.
- 31 • If the access terminal accepts switching to the Personality indicated by PersonalityIndex
32 field of the SwitchPersonality message, the access terminal shall perform the following:
 - 33 – The access terminal shall send a SwitchPersonalityAccept message to the access
34 network
 - 35 – If the HardSwitch field of the SwitchPersonality message is set to '0', the access
36 terminal shall perform the following:
 - 37 + The Session Control Protocol shall direct all the InUse protocol instances to
38 execute their Soft Commit procedures.
 - 39 – If the HardSwitch field of the SwitchPersonality message is set to '1', the access
40 terminal shall perform the following:

- 1 + The access terminal shall set PendingPersonalityIndex to PersonalityIndex field
- 2 of the SwitchPersonality message.
- 3 + Issue an *AirlinkManagement.CloseConnection* command.

4 If the access terminal receives a ConfigurationStart message or a FastConfigurationRequest
5 message, the access terminal shall perform the following:

- 6 • If the value of the SessionSignature field in the message is not equal to the value at the
7 access terminal, the access terminal shall send a ConfigurationReject message to the
8 access network, with the RejectReason set to 'SessionSignature out of sync' and shall
9 include the value of the SessionSignature at the access terminal.
- 10 • If the access terminal is currently performing session configuration with another access
11 network (i.e., an InConfiguration instance has been created), the access terminal shall
12 send a ConfigurationReject message to the access network, with the RejectReason set
13 to 'Session Configuration in progress'.
- 14 • If none of the above conditions are true, the access terminal shall accept this request.
- 15 • If the access terminal accepts this request, the access terminal shall perform the
16 following:
 - 17 – If the message being accepted is the ConfigurationStart message, the protocol in the
18 access terminal shall transition to the AT Initiated State
 - 19 – If the message being accepted is the FastConfigurationRequest message, the
20 protocol in the access terminal shall transition to the AN Fast Configuration State.

21 2.5.1.14, 2.5.1.15.2 Access Network Requirements

22 While in this state, the access network may send a ConfigurationStart message or a
23 FastConfigurationRequest message to start the negotiation process (e.g., the access
24 network may send this message to negotiate a new stream). If the access network wants to
25 change any session data, the access network must first send a ConfigurationStart message
26 or a FastConfigurationRequest message to start the configuration process. If the access
27 network wants to create or delete personalities, the access network must first send a
28 ConfigurationStart message to start the configuration process. While in this state, the
29 access network may send a SwitchPersonality message to request switching of its InUse
30 Personality to another stored Personality. The access network shall not send a Personality
31 switch request unless the Route Control Protocol State public data of the Route Control
32 Protocol is set to Open.

33 If the access network sends a ConfigurationStart message, the access network shall
34 transition to the AT Initiated State.

35 If the access network sends a FastConfigurationRequest message for fast configuration of
36 the InUse Personality, the access network shall perform the following:

- 37 • For each attribute included in this message, the access network shall include one or
38 more proposed values, in the order of decreasing preference.

- 1 • Upon sending the message, the access network shall transition to the AN Fast
2 Configuration State.

3 If the access network receives a ConfigurationRequest message or a
4 FastConfigurationRequest message, the access network shall perform the following:

- 5 • If the value of the SessionSignature field in the message is not equal to the value at the
6 access network, the access network shall send a ConfigurationReject message to the
7 access terminal, with the RejectReason set to 'SessionSignature out of sync' and
8 including the value of the SessionSignature at the access network.
- 9 • If the request is not being rejected, the access network shall perform the following:
 - 10 – If the message being accepted is the ConfigurationRequest message, the protocol in
11 the access network shall transition to the AT Initiated State.
 - 12 – If the message being accepted is the FastConfigurationRequest message, the
13 protocol in the access network shall transition to the AT Fast Configuration State.

14 If the access network desires switching its InUse Personality to another stored Personality,
15 the access network shall send a SwitchPersonality message to the access terminal. The
16 access network shall set the fields of the SwitchPersonality message as follows:

- 17 • The SessionSignature field shall be set to the current signature of the session
18 corresponding to the PersonalityIndex conveyed in this message.
- 19 • The PersonalityIndex field shall be set to the index of the desired stored Personality to
20 switch to. The PersonalityIndex field shall not be set to 0xf.
- 21 • The HardSwitch field shall be set to '0' if and only if the difference between the current
22 InUse Personality and the desired stored Personality to switch to does not include any
23 hard-committable attributes.

24 Upon sending the SwitchPersonality message, the access network shall perform the
25 following:

- 26 • If the access network receives a SwitchPersonalityReject message, the access network
27 shall not proceed with the Personality switch procedures.
- 28 • If the access network receives a SwitchPersonalityAccept message, the access network
29 shall perform the following:
 - 30 – If the HardSwitch field of the corresponding SwitchPersonality message was set to
31 '0', the access network shall perform the following:
 - 32 + The Session Control Protocol shall direct all the InUse protocol instances to
33 execute their Soft Commit procedures.

34 If the current InUse Personality is based on an InitialProtocolSetIdentifier (i.e.,
35 corresponding stored Personality index equals 0xf), then the access network shall send a

1 SwitchPersonality message to switch the current InUse Personality to a stored Personality
2 in Personality index other than 0xf⁵.

3 If the access network receives a SwitchPersonalityRequest message, the access network
4 may send a SwitchPersonality message to initiate switch of its InUse Personality.

5 If the access network receives a ConfigurationStartRequest message, the access network
6 may send a ConfigurationStart message to initiate session negotiation procedures.

7 ~~2.5.1.15~~ 2.5.1.16 AT Initiated State

8 During the AT Initiated State of the Basic Session Control Protocol, session configuration is
9 performed with the access terminal being the initiator of each exchange. The access
10 terminal and the access network use the messages defined in this protocol to configure
11 their associated parameters that will be used for the session.

12 ~~The protocol in the access terminal or the access network shall return a Failed indication
13 and transition to the Inactive state, if any of the negotiated protocols declares a failure.~~

14 ~~2.5.1.15~~ 2.5.1.16.1 Access Terminal Requirements

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

- 16 • If the access terminal entered this state due to accepting a ConfigurationStart message
17 from the access network, then the InConfiguration instances below are created based
18 on the value of the PersonalityIndexOrPSI field in the ConfigurationStart message
19 received from the access network; otherwise, the InConfiguration instances below are
20 created based on the value of the PersonalityIndexOrPSI field in the
21 ConfigurationRequest message sent by the access terminal.
- 22 • Create an InConfiguration protocol instance for each of the protocols as follows:
 - 23 – If the InConfiguration instances are being created from a stored Personality (i.e.,
24 PersonalityIndexOrPSI field is set to '1'), create the InConfiguration protocol
25 instance with the same protocol subtype as that of the corresponding protocol in
26 the stored Personality
 - 27 – If the InConfiguration instances are being created from a ProtocolSetIdentifier (i.e.,
28 PersonalityIndexOrPSI field is set to '0'), create the InConfiguration protocol
29 instance with a subtype same as the subtype value of the corresponding Protocol
30 Type of the ProtocolSetIdentifier.
- 31 • Create an InConfiguration application instances as follows:

⁵ Personality index 0xf is reserved for personalities created from InitialProtocolSetIdentifier or
~~ProtocolSetIdentifier. This Personality bin needs to be vacated since the access terminal may want to~~
~~add other Routes based on an InitialProtocolSetIdentifier.~~

- 1 – If the InConfiguration instances are being created from a stored Personality (i.e.,
2 PersonalityIndexOrPSI field is set to '1'), for each stream that is bound to an
3 application in the stored Personality, create an InConfiguration application instance
4 with the same application ProtocolID as that of the application instance
5 corresponding to that stream in the stored Personality
- 6 – If the InConfiguration instances are being created from a ProtocolSetIdentifier (i.e.,
7 PersonalityIndexOrPSI field is set to '0'), for each stream that is bound to an
8 application as specified by the ProtocolSetIdentifier, create an InConfiguration
9 application instance with the same application ProtocolID as that of the application
10 instance corresponding to that stream in the ProtocolSetIdentifier.

11 If the access terminal entered this state due to accepting a ConfigurationStart message
12 from the access network, and if the access terminal sends a ConfigurationRequest
13 message, the access terminal shall set the PersonalityIndexOrPSI, PersonalityIndex, and
14 ProtocolSetIdentifier fields to the corresponding values received in the ConfigurationStart
15 message.

16 The access terminal shall not send a DeletePersonalityAccept message.

17 The access terminal shall process the configuration messages it receives (i.e.
18 ConfigurationResponse message, ConfigurationCopyAccept message,
19 ConfigurationCopyReject message, or AttributeResetAccept message) according to the
20 procedures specified 2.5.1.1.

21 The access terminal may use the protocol configuration procedures defined in 2.5.1.1 to
22 perform access terminal-initiated parameter configuration.

23 If the protocol in access terminal requires no further configuration of protocols, it shall
24 send a ConfigurationComplete message to the access network and transition to the AN
25 Initiated State.

26 ~~2.5.1.15~~ 2.5.1.16.2 Access Network Requirements

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

- 28 • If the access network entered this state due to sending a ConfigurationStart message,
29 then the InConfiguration instances below are created based on the value of the
30 PersonalityIndexOrPSI field in the ConfigurationStart message. If the access network
31 entered this state due to receiving a ConfigurationRequest message, the
32 InConfiguration instances below are created based on the value of the
33 PersonalityIndexOrPSI field in the ConfigurationRequest message.
- 34 • Create an InConfiguration protocol instance for each of the protocols as follows:
 - 35 – If the InConfiguration instances are being created from a stored Personality (i.e.,
36 PersonalityIndexOrPSI field is set to '1'), create the InConfiguration protocol
37 instance with the same protocol subtype as that of the corresponding protocol in
38 the stored Personality.

- 1 – If the InConfiguration instances are being created from a ProtocolSetIdentifier (i.e.,
2 PersonalityIndexOrPSI field is set to ‘0’), create the InConfiguration protocol instance
3 with a subtype same as the subtype value of the corresponding Protocol Type of the
4 ProtocolSetIdentifier.
- 5 • Create an InConfiguration application instances as follows:
- 6 – If the InConfiguration instances are being created from a stored Personality (i.e.,
7 PersonalityIndexOrPSI field is set to ‘1’), for each stream that is bound to an
8 application in the stored Personality, create an InConfiguration application instance
9 with the same application ProtocolID as that of the application instance
10 corresponding to that stream in the stored Personality,
- 11 – If the InConfiguration instances are being created from a ProtocolSetIdentifier (i.e.,
12 PersonalityIndexOrPSI field is set to ‘0’), for each stream that is bound to an
13 application as specified by the ProtocolSetIdentifier, create an InConfiguration
14 application instance with the same application ProtocolID as that of the application
15 instance corresponding to that stream in the ProtocolSetIdentifier.
- 16 • Upon creating the InConfiguration protocol and application instances as specified
17 above, if the access network receives a ConfigurationRequest message containing a
18 different value in PersonalityIndexOrPSI, PersonalityIndex, or ProtocolSetIdentifier
19 fields, the access network shall perform the following:
- 20 – The access network shall purge the current InConfiguration protocol and
21 application instances
- 22 – The access network shall create new InConfiguration protocol and application
23 instances as specified above, based on the value of PersonalityIndexOrPSI,
24 PersonalityIndex, and ProtocolSetIdentifier fields received in the
25 ConfigurationRequest message.

26 If the access network receives a configuration messages from the access terminal (i.e.
27 ConfigurationRequest message, ConfigurationCopyRequest message, or AttributeReset
28 message), it shall process it as specified in 2.5.1.1. If the protocol in the access network
29 receives a ConfigurationComplete message, it shall transition to the AN Initiated State.

30 ~~2.5.1.16~~2.5.1.17 AN Initiated State

31 During the AN Initiated State of the protocol, the access network and the access terminal
32 execute the access network-initiated configuration procedures specified by each negotiated
33 protocol. These procedures typically allow the access network to override default values
34 otherwise used by the access terminal.

35 ~~The protocol in the access terminal or the access network shall return a *Failed* indication
36 and transition to the Inactive state, if any of the negotiated protocols declares a failure.~~

37 ~~2.5.1.16~~2.5.1.17.1 Access Terminal Requirements

38 If the access terminal receives a configuration messages from the access network (i.e.
39 ConfigurationRequest message, ConfigurationCopyRequest message, or AttributeReset
40 message), it shall process it as specified in 2.5.1.1.

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

- 3 • If all of the personalities included in the message are currently the InUse Personality of
4 a Route, the access terminal shall send a DeletePersonalityReject message to the access
5 network, with the RejectReason set to 'Personality currently InUse'; otherwise, the
6 access terminal shall select the first n number of available (i.e., not InUse) personalities
7 in the list for deletion, where $n = \min$ (NumDeletePersonality, number of available
8 personalities for deletion).
- 9 • If the access terminal accepts the request, the access terminal shall send a
10 DeletePersonalityAccept message to the access network conveying the PersonalityIndex
11 of the stored Personalities to be deleted at the completion of this session configuration
12 (i.e., when a ConfigurationComplete message with updated session signature is received
13 from the access network).

14 The access terminal shall not send a DeletePersonalityAccept message unless as a
15 response to a DeletePersonalityRequest message from the access network.

16 If the access terminal receives a ConfigurationComplete message with an updated session
17 signature, it shall perform the following:

- 18 • The Session Control Protocol shall store the InConfiguration protocol and application
19 instances as a Personality that is identified by the PersonalityIndexStore field of the
20 ConfigurationComplete message.
- 21 • The access terminal shall update the static attributes and static data of all stored
22 personalities with the negotiated values of the corresponding data.
- 23 • The Session Control Protocol shall direct all the InUse protocol instances to execute
24 their Soft Commit procedures.
- 25 • The Session Control Protocol shall return a *Reconfigured* indication.
- 26 • The access terminal shall send a SessionUpdated message to the access network,
27 conveying the updated value of session signature.
- 28 • The access terminal shall transition to the Open State.

29 ~~2.5.1.16~~ 2.5.1.17.2 Access Network Requirements

30 In this protocol state, the access network may execute the configuration procedures as
31 specified in 2.5.1.1. If the access network receives a configuration messages from the
32 access terminal (i.e ConfigurationResponse message, ConfigurationCopyAccept message,
33 ConfigurationCopyReject message, or AttributeResetAccept message), it shall process it as
34 specified in 2.5.1.1.

35 If the access network desires to delete one or more stored personalities, the access network
36 shall send a DeletePersonalityRequest message to the access terminal conveying the
37 PersonalityIndex of one or more stored personalities, ordered in decreasing preference for
38 deletion, and indicating the number of personalities to be deleted. If the access network
39 receives a DeletePersonalityAccept message, the access network shall delete the stored
40 personalities indicated by the PersonalityIndex field of the received message at the

1 completion of this session configuration (i.e., when a ConfigurationComplete message with
2 updated session signature is sent to the access terminal).

3 The access network shall send a ConfigurationComplete message if all of the following
4 conditions are satisfied⁶:

- 5 • The access network does not require further changes to session data.
- 6 • The access network does not require further deletion of stored personalities.

7 When sending a ConfigurationComplete message to complete the negotiation, the access
8 network shall set the fields of the message as follows:

- 9 • SessionSignature field shall be set to one more (modulo 2^{16}) than the current value of
10 the session signature.
- 11 • PersonalityIndexStore field shall not be set to the index of an existing Personality
12 unless the difference between that existing Personality and the InConfiguration
13 instance does not include any hard-committable attributes.
- 14 • PersonalityIndexStore field shall not be set to 0xf.

15 Upon sending a ConfigurationComplete message with updated session signature, the
16 access network shall perform the following:

- 17 • The Session Control Protocol shall store the InConfiguration protocol and application
18 instances as a Personality that is identified by the PersonalityIndexStore field of the
19 ConfigurationComplete message.
- 20 • The access network shall update the static attributes and static data of all stored
21 personalities with the negotiated values of the corresponding data.
- 22 • The Session Control Protocol shall direct all the InUse protocol instances to execute
23 their Soft Commit procedures.
- 24 • The access network shall transition to the Open State.

25 ~~2.5.1.172.5.1.18~~ AT Fast Configuration State

26 During the AT Fast Configuration State of the Basic Session Control Protocol, the access
27 terminal sends a single FastConfigurationRequest message to request changes to one or
28 more attributes of the current InUse Personality.⁷

29 ~~The protocol in the access terminal or the access network shall return a *Failed* indication
30 and transition to the Inactive state, if any of the negotiated protocols declares a failure.~~

⁶ In cases where the access network wants the access terminal to send a SessionUpdated message but without negotiating the session data with the access terminal (for example when session was modified by the access network without access terminal involvement), the access network can send the ConfigurationComplete message (with an updated SessionSignature) immediately upon entering the AN-initiated State.

⁷ If the current InUse Personality is not stored in the session (i.e. PersonalityIndex 0xf is associated with the current InUse Personality), then Fast Configuration is not allowed.

1 2.5.1.17.12.5.1.18.1 Access Terminal Requirements

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

- 3 • Create an InConfiguration protocol instance for each of the protocols with the same
4 protocol subtype as that of the corresponding protocol in the InUse Personality.
- 5 • Create an InConfiguration application instance for each of the applications with the
6 same application ProtocolID as that of the corresponding application in the InUse
7 Personality.

8 The access terminal shall send a FastConfigurationRequest message requesting changes to
9 one or more attributes of the InUse Personality. For each attribute included in this
10 message, the access terminal shall include one or more proposed values, in the order of
11 decreasing preference.

12 If the access terminal receives a FastConfigurationAccept message, the access terminal
13 shall perform the following:

- 14 • The Session Control Protocol shall set attribute value of each attribute listed in the
15 FastConfigurationAccept message to the accepted value in the message.
- 16 • The Session Control Protocol shall store the InConfiguration protocol and application
17 instances as the Personality identified by the Personality index of the current InUse
18 Personality.
- 19 • The Session Control Protocol shall direct all the InUse protocol instances to execute
20 their Soft Commit procedures.
- 21 • The access terminal shall update the static attributes and static data of all stored
22 personalities with the negotiated values of the corresponding data.
- 23 • The Session Control Protocol shall return a *Reconfigured* indication.
- 24 • The access terminal shall send a SessionUpdated message to the access network,
25 conveying the updated value of session signature.
- 26 • The access terminal shall transition to the Open State.

27 If the access terminal receives a FastConfigurationReject message, the access terminal
28 shall perform the following:

- 29 • The access terminal shall discard all InConfiguration instances.
- 30 • The access terminal shall transition to the Open State.

31 2.5.1.17.22.5.1.18.2 Access Network Requirements

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

- 33 • Create an InConfiguration protocol instance for each of the protocols with the same
34 protocol subtype as that of the corresponding protocol in the InUse Personality.
- 35 • Create an InConfiguration application instance for each of the applications with the
36 same application ProtocolID as that of the corresponding application in the InUse
37 Personality.

1 If the access network accepts a proposed value for each of the attributes listed in the
2 received FastConfigurationRequest message, the access network shall send a
3 FastConfigurationAccept message; otherwise, the access network shall send a
4 FastConfigurationReject message:

5 • If a FastConfigurationAccept message is being sent to the access terminal, the access
6 network shall perform the following:

7 – The access network shall include the selected value for each of the attributes listed
8 in the corresponding FastConfigurationRequest message. The access network shall
9 set attribute value of each attribute listed in the FastConfigurationAccept message
10 to the selected value.

11 – The access network shall set the SessionSignature field to one more (modulo 2^{16})
12 than the current value of the session signature

13 – Upon sending this message, the access network shall perform the following:

14 + The Session Control Protocol shall store the InConfiguration protocol and
15 application instances as the Personality identified by the Personality index of the
16 current InUse Personality

17 + The access network shall update the static attributes and static data of all
18 stored personalities with the negotiated values of the corresponding data

19 + The Session Control Protocol shall direct all the InUse protocol instances to
20 execute their Soft Commit procedures

21 + The access network shall transition to the Open State

22 • If a FastConfigurationReject message is being sent to the access terminal, the access
23 network shall perform the following:

24 – The access network shall discard the InConfiguration instances

25 – The access network shall transition to the Open State

26 ~~2.5.1.18~~2.5.1.19 AN Fast Configuration State

27 During the AN Fast Configuration State of the Basic Session Control Protocol, the access
28 network sends a single FastConfigurationRequest message to request changes to one or
29 more attributes of the current InUse Personality.⁷

30 ~~The protocol in the access terminal or the access network shall return a Failed indication~~
31 ~~and transition to the Inactive state, if any of the negotiated protocols declares a failure.~~

32 ~~2.5.1.18~~2.5.1.19.1 Access Terminal Requirements

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

34 • Create an InConfiguration protocol instance for each of the protocols with the same
35 protocol subtype as that of the corresponding protocol in the InUse Personality.

- 1 • Create an InConfiguration application instance for each of the applications with the
2 same application ProtocolID as that of the corresponding application in the InUse
3 Personality.

4 If the access terminal accepts a proposed value for each of the attributes listed in the
5 received FastConfigurationRequest message, the access terminal shall send a
6 FastConfigurationAccept message; otherwise, the access terminal shall send a
7 FastConfigurationReject message:

- 8 • If a FastConfigurationAccept message is being sent to the access network, the access
9 terminal shall include the selected value for each of the attributes listed in the
10 corresponding FastConfigurationRequest message. The access terminal shall set
11 attribute value of each attribute listed in the FastConfigurationAccept message to the
12 selected value.
- 13 • If a FastConfigurationReject message is being sent to the access network, the access
14 terminal shall discard the InConfiguration instances and shall transition to the Open
15 State.

16 If the access terminal receives a ConfigurationComplete message with an updated
17 SessionSignature, the access terminal shall perform the following:

- 18 • The Session Control Protocol shall store the InConfiguration protocol and application
19 instances as the Personality identified by the Personality index of the current InUse
20 Personality.
- 21 • The Session Control Protocol shall direct all the InUse protocol instances to execute
22 their Soft Commit procedures.
- 23 • The access terminal shall update the static attributes and static data of all stored
24 personalities with the negotiated values of the corresponding data.
- 25 • The Session Control Protocol shall return a *Reconfigured* indication.
- 26 • The access terminal shall send a SessionUpdated message to the access network,
27 conveying the updated value of session signature.
- 28 • The access terminal shall transition to the Open State.

29 2.5.1.18.22.5.1.19.2 Access Network Requirements

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

- 31 • Create an InConfiguration protocol instance for each of the protocols with the same
32 protocol subtype as that of the corresponding protocol in the InUse Personality.
- 33 • Create an InConfiguration application instance for each of the applications with the
34 same application ProtocolID as that of the corresponding application in the InUse
35 Personality.

36 While in this state, if the access network receives a ConfigurationRequest message or a
37 FastConfigurationRequest message, the access network shall discard all InConfiguration
38 instances and shall enter the Open State and shall process the received message in the
39 Open State.

1 If the access network receives a FastConfigurationAccept message, the access network
2 shall perform the following:

- 3 • The access network shall set attribute value of each attribute listed in the
4 FastConfigurationAccept message to the accepted value in the message.
- 5 • The access network shall send a ConfigurationComplete message to the access terminal
6 as follows:
 - 7 – The access network shall set the SessionSignature field to one more (modulo 2^{16})
8 than the current value of the session signature
 - 9 – The access network shall set the PersonalityIndexStore field to the Personality index
10 corresponding to the InUse Personality.
- 11 • Upon sending the ConfigurationComplete message, the access network shall perform
12 the following:
 - 13 – The Session Control Protocol shall store the InConfiguration protocol and
14 application instances as the Personality identified by the Personality index of the
15 current InUse Personality
 - 16 – The access network shall update the static attributes and static data of all stored
17 personalities with the negotiated values of the corresponding data.
 - 18 – The Session Control Protocol shall direct all the InUse protocol instances to execute
19 their Soft Commit procedures.
 - 20 – The access network shall transition to the Open State

21 If the access network receives a FastConfigurationReject message, the access network shall
22 perform the following:

- 23 • The access network shall discard all InConfiguration instances.
- 24 • The access network shall transition to the Open State.

25 2.5.1.192.5.1.20 WaitingToClose State

26 The WaitingToClose State is associated only with the protocol in the access network. In this
27 state the protocol in the access network waits for a SessionClose message from the access
28 terminal or an expiration of a timer.

29 The access network shall set the WaitingToClose State timer upon entering this state. The
30 value of this timer shall be set to TimerBasedRegPeriod or $T_{SCPMinClose}$, whichever is larger.

31 When the access network receives a SessionClose message or when the WaitingToClose
32 State timer expires the protocol shall:

- 33 • Return a *SessionClosed* indication.
- 34 • Transition to the ATI Assign State.

35 While in this state, if the access network receives any packet from the access terminal
36 which is addressed by the UATI assigned during this session and contains anything but a
37 SessionClose message, it shall stay in the WaitingToClose State and perform the following:

- 1 • Discard the packet.
- 2 • Respond with a SessionClose message.

3 2.5.2 Message Formats

4 2.5.2.1 SessionClose

5 The sender sends the SessionClose message to terminate the session.

6

Field	Length (bits)
MessageID	8
CloseReason	8
MoreInfoLen	8
MoreInfo	8 × MoreInfoLen

7 MessageID The sender shall set this field to 0x19.

8 CloseReason The sender shall set this field to the close reason as shown in Table
9 2-1.

10

Table 2-1. Encoding of CloseReason Field

Field Value	Meaning	MoreInfoLen	MoreInfo
0x00	Normal Close	0	N/A
0x01	Close Reply	0	N/A
0x02	Protocol Error	0	N/A
0x03	Protocol Set Configuration Failure	0	
0x04	Protocol Negotiation Error	variable	See 2.5.2.1.1.
0x05	Session Signature Mismatch	0	N/A
0x06	Session Lost at Session Anchor Access Network	0	N/A
0x07	Session Anchor Access Network not reachable	0	N/A
0x08	All session resources busy	0	N/A
0x09	Authentication failure	0	N/A
All other values are reserved			

11 MoreInfoLen Length in octets of the MoreInfo field.

1 MoreInfo Additional information pertaining to the closure. The format of this
 2 field is determined by the particular close reason.
 3

Channels	FTC RTC	RLP	Reliable on Forward Link and Best effort on Reverse Link
Addressing	unicast	AuthTag	Required when key is available

4 2.5.2.1.1 Definition of MoreInfo record when the CloseReason is 0x04
 5

Field	Length (bits)
One or more occurrences of the following record:	
Type	8 or 16
SubType	8
NumAttributeRecords	8
NumAttributeRecords occurrences of the following field:	
OffendingAttributeRecord	Variable Length
Reserved	Variable

6 Type This field shall be set to type of the protocol to which this attribute
 7 belongs.

8 SubType The sender shall set this field to the subtype value for the protocol
 9 subtype (as defined in [1]) for which configuration failed.

10 NumAttributeRecords This field shall be set to the number of occurrences of the
 11 OffendingAttributeRecord field following this field in this record.
 12

13 OffendingAttributeRecord This field shall be set to the offending attribute record. The format of
 14 the attribute record is specified in [1].
 15

16 Reserved The sender shall add reserved bits to make the length of the entire
 17 record an integer number of octets. The sender shall set these bits to
 18 '0'. The receiver shall ignore this field.

19 2.5.2.2 ConfigurationRequest

20 The sender sends the ConfigurationRequest message to propose new values for attributes
 21 of one or more protocols.
 22

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	0 or 16
PersonalityIndexOrPSI	0 or 1
PersonalityIndex	0 or 4
ProtocolSetIdentifier	0 or 16
Reserved	0 – 7 (as needed)

One or more instances of the following record

ProtocolType	8 or 16
AttributeRecord	Attribute dependent

- 1 MessageID The access terminal shall set this field to 0x00; the access network
2 shall set this field to 0x01.
- 3 TransactionID The sender shall increment this value for each new
4 ConfigurationRequest message, ConfigurationCopyRequest message,
5 FastConfigurationRequest message, AttributeReset message,
6 DeletePersonalityRequest message, or SwitchPersonality message
7 ConfigurationRequest message sent.
- 8 SessionSignature If the MessageID field is set to 0x01, this field shall be omitted;
9 otherwise, this field shall be set to the signature of the current
10 session.
- 11 PersonalityIndexOrPSI
12 If the MessageID field is set to 0x01, this field shall be omitted;
13 otherwise, this field shall be set as follows:
14
15 If this message is being sent due to an AT-initiated session
16 negotiation: the access terminal shall set this field to '1'.
17
18 If this message is being sent due to an AN-initiated session
19 negotiation (i.e., a response to a ConfigurationStart message): the
20 access terminal shall set this field to the value of the
PersonalityIndexOrPSI field in the received ConfigurationStart
message.
- 21 PersonalityIndex If the MessageID field is set to 0x01, this field shall be omitted;
22 otherwise, this field shall be set as follows:

1 The access terminal shall omit this field if the PersonalityIndexOrPSI
 2 field is set to '0'; otherwise, the access terminal shall set this field as
 3 follows:

4 If this message is being sent due to an AT-initiated session
 5 negotiation: the access terminal shall set this field to the index of
 6 the stored Personality corresponding to the current InUse
 7 Personality.

8 If this message is being sent due to an AN-initiated session
 9 negotiation (i.e., a response to a ConfigurationStart message): the
 10 access terminal shall set this field to the value of the
 11 PersonalityIndex field in the received ConfigurationStart message.

12 ProtocolSetIdentifier If the MessageID field is set to 0x01, this field shall be omitted;
 13 otherwise, this field shall be set as follows:

14 The access terminal shall omit this field if the PersonalityIndexOrPSI
 15 field is set to '1'; otherwise, the access terminal shall set this field as
 16 follows: the access terminal shall set this field to the value of the
 17 ProtocolSetIdentifier field in the received ConfigurationStart message.

18 Reserved The sender shall add reserved bits to make the length of the entire
 19 message equal to an integer number of octets. The sender shall set
 20 these bits to '0'. The receiver shall ignore this field.

21 ProtocolType The sender shall set this field to type of the protocol to which this
 22 attribute belongs.

23 AttributeRecord The format of this record is specified in [1].
 24

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

25 2.5.2.3 ConfigurationResponse

26 The sender sends the ConfigurationResponse message to respond to a
 27 ConfigurationRequest message.
 28

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

ProtocolType	8 or 16
AttributeRecord	Attribute dependent

- 1 MessageID The sender shall set this field to 0x02.
- 2 TransactionID The sender shall set this value to the TransactionID field of the
3 corresponding ConfigurationRequest message.
- 4 ProtocolType The sender shall set this field to type of the protocol to which this
5 attribute belongs.
- 6 AttributeRecord An attribute record containing a single attribute value. If this
7 message selects a complex attribute, then fields up to the ValueID
8 field of the complex attribute shall be included in the message (i.e.
9 AttributeValue field is not included). The format of the
10 AttributeRecord is given in [1]. The sender shall not include more
11 than one attribute record with the same attribute identifier.
12

Channels	FTC RTC	RPL	Reliable
Addressing	unicast	AuthTag	Required when key is available

13 2.5.2.4 ConfigurationCopyRequest

14 The sender sends the ConfigurationCopyRequest message to request setting the attributes
15 to corresponding values in the specified stored Personality.
16

Field	Length (bits)
MessageID	8
TransactionID	8
ProtocolType	8 or 16
PersonalityIndex	4
Reserved	0-7 (as needed)

- 17 MessageID The sender shall set this field to 0x03.
- 18 TransactionID The sender shall increment this value for each new
19 [ConfigurationRequest message, ConfigurationCopyRequest message,](#)

1 FastConfigurationRequest message, AttributeReset message,
 2 DeletePersonalityRequest message, or SwitchPersonality message
 3 ConfigurationCopyRequest message sent.

4 ProtocolType The sender shall set this field to type of the protocol from which the
 5 attribute values are to be copied.

6 PersonalityIndex The sender shall set this field to the index of the stored Personality
 7 from which the attribute values are to be set.

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

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

12 2.5.2.5 ConfigurationCopyAccept

13 The sender sends the ConfigurationCopyAccept message to accept a
 14 ConfigurationCopyRequest message.

Field	Length (bits)
MessageID	8
TransactionID	8

16 MessageID The sender shall set this field to 0x04.

17 TransactionID The sender shall set this field to the value of TransactionID field in
 18 the ConfigurationCopyRequest message to which the sender is
 19 responding.

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

21 2.5.2.6 ConfigurationCopyReject

22 The sender sends the ConfigurationCopyReject message to reject a
 23 ConfigurationCopyRequest message.

24

Field	Length (bits)
MessageID	8
TransactionID	8

1 MessageID The sender shall set this field to 0x05.

2 TransactionID The sender shall set this field to the value of TransactionID field in
3 the ConfigurationCopyRequest message to which the sender is
4 responding.

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

6 2.5.2.7 AttributeReset

7 The sender sends the AttributeReset message to request setting the included attributes to
8 their default values.

Field	Length (bits)
MessageID	8
TransactionID	8

9 One or more instances of the following record

ProtocolType	8 or 16
AttributeID	16

10 MessageID The sender shall set this field to 0x06.

11 TransactionID The sender shall increment this value for each new
12 [ConfigurationRequest message, ConfigurationCopyRequest message,](#)
13 [FastConfigurationRequest message, AttributeReset message,](#)
14 [DeletePersonalityRequest message, or SwitchPersonality](#)
15 [messageAttributeReset message](#) sent.

16 ProtocolType The sender shall set this field to type of the protocol to which this
17 attribute belongs.

18 AttributeID The sender shall set this field to the AttributeID of the attribute to be
19 reset to its default value.
20

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

1 2.5.2.8 AttributeResetAccept

2 The sender sends the AttributeResetAccept message to accept the request received in the
3 AttributeReset message.

4

Field	Length (bits)
MessageID	8
TransactionID	8

5 MessageID The sender shall set this field to 0x07.

6 TransactionID The sender shall set this field to the value of TransactionID in the
7 AttributeReset message to which the sender is responding.

8

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

9 2.5.2.9 FastConfigurationRequest

10 The sender sends the FastConfigurationRequest message to propose new values for
11 attributes of one or more protocols of the current InUse Personality.

12

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	16

~~One~~ Zero or more instances of the following record

ProtocolType	8 or 16
AttributeRecord	Attribute dependent

13 MessageID The sender shall set this field to 0x08.

14 TransactionID The sender shall increment this value for each new
15 ConfigurationRequest message, ConfigurationCopyRequest message,
16 FastConfigurationRequest message, AttributeReset message,
17 DeletePersonalityRequest message, or SwitchPersonality message
18 FastConfigurationRequest message sent.

- 1 SessionSignature The sender shall set this field to the signature of the current session.
- 2 ProtocolType The sender shall set this field to type of the protocol to which this
3 attribute belongs.
- 4 AttributeRecord The format of this record is specified in [1].

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

6 2.5.2.10 FastConfigurationAccept

- 7 The sender sends the FastConfigurationAccept message to accept a
8 FastConfigurationRequest message.

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	0 or 16

Zero or more instances of the following record

ProtocolType	8 or 16
AttributeRecord	Attribute dependent

- 10 MessageID The access terminal shall set this field to 0x09. The access network
11 shall set this field to 0x0a.
- 12 TransactionID The sender shall set this value to the TransactionID field of the
13 corresponding FastConfigurationRequest message.
- 14 SessionSignature If the MessageID field is set to 0x09, this field shall be omitted;
15 otherwise, this field shall be set to the signature of the updated
16 session.
- 17 ProtocolType The sender shall set this field to type of the protocol to which this
18 attribute belongs.
- 19 AttributeRecord An attribute record containing a single attribute value. If this
20 message selects a complex attribute, then fields up to the ValueID
21 field of the complex attribute shall be included in the message (i.e.
22 AttributeValue field is not included). The format of the
23 AttributeRecord is given in [1]. The sender shall not include more
24 than one attribute record with the same attribute identifier.

25

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

1 2.5.2.11 FastConfigurationReject

2 The sender sends the FastConfigurationReject message to reject a
3 FastConfigurationRequest message.

4

Field	Length (bits)
MessageID	8
TransactionID	8

5 MessageID The sender shall set this field to 0x0b.

6 TransactionID The sender shall set this value to the TransactionID field of the
7 corresponding FastConfigurationRequest message.

8

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

9 2.5.2.12 ConfigurationComplete

10 The sender sends the ConfigurationComplete message to indicate that it has completed the
11 negotiation procedures performed at its initiative.

12

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	0 or 16
PersonalityIndexStore	0 or 4
Reserved	0-7 (as needed)

13 MessageID The access terminal shall set this field to 0x0c. The access network
14 shall set this field to 0x0d.

15 TransactionID The access terminal shall increment this value for each new
16 ConfigurationComplete message sent. The access network shall set
17 this field to the value of TransactionID included in the last
18 ConfigurationComplete message received from the access terminal.

1 SessionSignature If the MessageID field is set to 0x0c, this field shall be omitted;
 2 otherwise, this field shall be set to the signature of the updated
 3 session.

4 PersonalityIndexStore
 5 If the MessageID field is set to 0x0c, this field shall be omitted;
 6 otherwise, this field shall be set to the index of the Personality in
 7 which the InConfiguration instances of the negotiated protocols and
 8 applications are to be stored, in the range from 0 to PersonalityCount
 9 – 1, inclusive

10 Reserved The sender shall add reserved bits to make the length of the entire
 11 message equal to an integer number of octets. The sender shall set
 12 these bits to '0'. The receiver shall ignore this field.

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

14 2.5.2.13 ConfigurationStart

15 The access network sends this message to start a session configuration process.

16

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	16
PersonalityIndexOrPSI	1
PersonalityIndex	0 or 4
ProtocolSetIdentifier	0 or 16
Reserved	0 – 7 (as needed)

17 MessageID The sender shall set this field to 0x0e.

18 TransactionID The access network shall increment this value for each new
 19 ConfigurationStart message sent.

20 SessionSignature The access network shall set this field to the signature of the current
 21 session.

22 PersonalityIndexOrPSI
 23 The access network shall set this field to '1' if the starting
 24 configuration for the Personality to be negotiated is a stored
 25 Personality; the access network shall set this field to '0' if the starting

1 configuration for the Personality to be negotiated is an
 2 ProtocolSetIdentifier.

3 **PersonalityIndex** The access network shall omit this field if PersonalityIndexOrPSI is
 4 set to '0'; otherwise, the access network shall set this field to the
 5 index of the stored Personality that is to be the starting configuration
 6 for the Personality to be negotiated.

7 **ProtocolSetIdentifier** The access network shall omit this field if PersonalityIndexOrPSI is
 8 set to '1'; otherwise, the access network shall set this field to the
 9 ProtocolSetIdentifier that is to be the starting configuration for the
 10 Personality to be negotiated.

11 **Reserved** 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.
 15

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

16 2.5.2.14 ConfigurationReject

17 The access terminal sends the ConfigurationReject message to reject the ConfigurationStart
 18 message or FastConfigurationRequest message from the access network. The access
 19 network sends the ConfigurationReject message to reject the ConfigurationRequest
 20 message or FastConfigurationRequest message from the access terminal.
 21

Field	Length (bits)
MessageID	8
TransactionID	8
RejectReason	8
SessionSignature	0 or 16
Reserved	0 – 7 (as needed)

22 **MessageID** The sender shall set this field to 0x0f.

23 **TransactionID** The access terminal shall set this field to the value of TransactionID
 24 included in the ConfigurationStart message or
 25 FastConfigurationRequest message received from the access network
 26 to which this message is the response. The access network shall set
 27 this field to the value of TransactionID included in the
 28 ConfigurationRequest message or FastConfigurationRequest message

1 received from the access terminal to which this message is the
 2 response.

3 **RejectReason** The access terminal shall set this field to indicate the reason the
 4 ConfigurationStart message or FastConfigurationRequest message is
 5 being rejected, as specified in Table 2-2. The access network shall set
 6 this field to indicate the reason the ConfigurationRequest message or
 7 FastConfigurationRequest message is being rejected, as specified in
 8 Table 2-3.

9 **Table 2-2. RejectReason Values for access terminal**

RejectReason	Reason
00000000	SessionSignature out of sync
00000001	Session Configuration in progress
All other values	Reserved

10 **Table 2-3. RejectReason Values for access network**

RejectReason	Reason
00000000	SessionSignature out of sync
All other values	Reserved

11 **SessionSignature** If the RejectReason field is not set to '00000000', the sender shall
 12 omit this field; otherwise, the sender shall include this field and set it
 13 to the signature of the current session.

14 **Reserved** The access terminal shall add reserved bits to make the length of the
 15 entire message equal to an integer number of octets. The access
 16 terminal shall set these bits to '0'. The access network shall ignore
 17 this field.
 18

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

19 2.5.2.15 DeletePersonalityRequest

20 The access network sends a DeletePersonalityRequest message to request deletion of one or
 21 more stored Personalities.
 22

Field	Length (bits)
MessageID	8
TransactionID	8
NumDeletePersonality	4
PersonalityCount	4

PersonalityCount instances of the following record

PersonalityIndex	4
------------------	---

Reserved	0-7 (as needed)
----------	-----------------

- 1 MessageID The access network shall set this field to 0x10.

- 2 TransactionID The access network shall increment this value for each new
3 ConfigurationRequest message, ConfigurationCopyRequest message,
4 FastConfigurationRequest message, AttributeReset message,
5 DeletePersonalityRequest message, or SwitchPersonality message
6 ~~DeletePersonalityRequest message~~ sent.

- 7 NumDeletePersonality
8 The access network shall set this field to the number of personalities
9 that the access terminal is to delete. The access network shall set
10 this field to a value less than or equal to the value of the
11 PersonalityCount field.

- 12 PersonalityCount The access network shall set this field to the number of
13 PersonalityIndex fields in this message.

- 14 PersonalityIndex The access network shall set this field to the Personality which the
15 access network is requesting to delete. The access network shall
16 order the list in decreasing preference for deletion.

- 17 Reserved This field shall be set to reserved bits to make the length of the entire
18 message equal to an integer number of octets. These bits shall be set
19 to '0'.

Channels	FTC
-----------------	-----

RLP	Reliable
------------	----------

Addressing	unicast
-------------------	---------

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

21 2.5.2.16 DeletePersonalityAccept

22 The access terminal sends a DeletePersonalityAccept message to indicate the Personalities
23 AN is to delete.

24

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

PersonalityCount instances of the following record

PersonalityIndex	4
Reserved2	0-7 (as needed)

- 1 MessageID The access terminal shall set this field to 0x11
- 2 TransactionID The access terminal shall set this field to the value of the
3 corresponding field in the DeletePersonalityRequest message being
4 accepted.
- 5 PersonalityCount The access terminal shall set this field to the number of
6 PersonalityIndex fields in this message.
- 7 Reserved1 The sender shall set these bits to '0000'. The receiver shall ignore
8 this field.
- 9 PersonalityIndex The access terminal shall set this field to the Personality being
10 deleted.
- 11 Reserved2 This field shall be set to reserved bits to make the length of the entire
12 message equal to an integer number of octets. These bits shall be set
13 to '0'.
14

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

15 2.5.2.17 DeletePersonalityReject

16 The access terminal sends a DeletePersonalityReject message to reject the access network
17 request for Personality deletion.
18

Field	Length (bits)
MessageID	8
TransactionID	8
RejectReason	8
Reserved	0-7 (as needed)

- 1 MessageID The access terminal shall set this field to 0x12.
- 2 TransactionID The access terminal shall set this field to the value of the
- 3 corresponding field in the DeletePersonalityRequest message being
- 4 rejected.
- 5 RejectReason The access terminal shall set this field to indicate the reason the
- 6 DeletePersonalityRequest message is being rejected, as specified in
- 7 Table 2-4.

Table 2-4. RejectReason Values

RejectReason	Reason
00000000	Personality currently InUse
All other values	Reserved

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

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

13 2.5.2.18 SwitchPersonality

- 14 The access network sends a SwitchPersonality message to request the access terminal to
- 15 switch to the indicated Personality.

Field	Length (bits)
MessageID	8
TransactionID	8
SessionSignature	16
PersonalityIndex	4
HardSwitch	1
Reserved	0-7 (as needed)

- 17 MessageID The access network shall set this field to 0x13.
- 18 TransactionID The access network shall increment this value for each new
- 19 ConfigurationRequest message, ConfigurationCopyRequest message,
- 20 FastConfigurationRequest message, AttributeReset message,
- 21 DeletePersonalityRequest message, or SwitchPersonality message
- 22 SwitchPersonality message sent.

- 1 SessionSignature The access network shall set this field to the signature of the current
2 session.
- 3 PersonalityIndex The access network shall set this field to the Personality to which the
4 access terminal is to switch. The access network shall not set this
5 field to 0xf.
- 6 HardSwitch The access network shall set this field to '1' if the Route needs to be
7 closed for the Personality switch to take effect; otherwise, the access
8 network shall set this field to '0'.
- 9 Reserved This field shall be set to reserved bits to make the length of the entire
10 message equal to an integer number of octets. These bits shall be set
11 to '0'.

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

13 2.5.2.19 SwitchPersonalityAccept

- 14 The access terminal sends the SwitchPersonalityAccept message to indicate it has accepted
15 the Personality switch request from the access network.

Field	Length (bits)
MessageID	8
TransactionID	8

- 17 MessageID The access terminal shall set this field to 0x14.
- 18 TransactionID The access terminal shall set this field to the value received in the
19 corresponding SwitchPersonality message.

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

21 2.5.2.20 SwitchPersonalityReject

- 22 The access terminal sends the SwitchPersonalityReject message to indicate it cannot accept
23 the Personality switch request from the access network.

24

Field	Length (bits)
MessageID	8
TransactionID	8
RejectReason	8
SessionSignature	0 or 16

- 1 MessageID The access terminal shall set this field to 0x15.
- 2 TransactionID The access terminal shall set this field to the value received in the
3 corresponding SwitchPersonality message.
- 4 RejectReason The access terminal shall set this field to indicate the reason the
5 SwitchPersonality message is being rejected, as specified in Table
6 2-5.

7 **Table 2-5. RejectReason Values**

RejectReason	Reason
00000000	SessionSignature out of sync
00000001	Proposed personality not accepted
All other values	Reserved

- 8 SessionSignature If the RejectReason field is not set to '00000000', the access terminal
9 shall omit this field; otherwise, the access terminal shall include this
10 field and set it to the signature of the current session.

11

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

12 2.5.2.21 SwitchPersonalityRequest

- 13 The access terminal sends the SwitchPersonalityRequest message to suggest access
14 network to switch to the indicated Personality.

15

Field	Length (bits)
MessageID	8
PersonalityIndex	4
Reserved	0-7 (as needed)

- 16 MessageID The access terminal shall set this field to 0x16.

1 PersonalityIndex The access terminal shall set this field to the suggested Personality to
2 switch to.

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	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

7 2.5.2.22 SessionUpdated

8 The access terminal sends the SessionUpdated message to indicate to the access network
9 the session has been updated.
10

Field	Length (bits)
MessageID	8
SessionSignature	16

11 MessageID The access terminal shall set this field to 0x17.

12 SessionSignature The access terminal shall set this field to the session signature
13 corresponding to the updated session.
14

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

15 2.5.2.23 ConfigurationStartRequest

16 The access terminal sends this message to request access network to start the indicated
17 session configuration process.
18

Field	Length (bits)
MessageID	8
PersonalityIndexOrPSI	1
PersonalityIndex	0 or 4
ProtocolSetIdentifier	0 or 16
Reserved	0 – 7 (as needed)

19 MessageID The access terminal shall set this field to 0x18.

- 1 PersonalityIndexOrPSI
 2 The access terminal shall set this field to '1' if the requested starting
 3 configuration for the Personality to be negotiated is a stored
 4 Personality; the access terminal shall set this field to '0' if the
 5 requested starting configuration for the Personality to be negotiated
 6 is an ProtocolSetIdentifier.

- 7 PersonalityIndex The access terminal shall omit this field if PersonalityIndexOrPSI is
 8 set to '0'; otherwise, the access terminal shall set this field to the
 9 index of the stored Personality that is to be the starting configuration
 10 for the Personality to be negotiated.

- 11 ProtocolSetIdentifier The access terminal shall omit this field if PersonalityIndexOrPSI is
 12 set to '1'; otherwise, the access terminal shall set this field to the
 13 ProtocolSetIdentifier that is to be the starting configuration for the
 14 Personality to be negotiated.

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

19

Channels	RTC	RLP	Reliable
Addressing	unicast	AuthTag	Required when key is available

20 **2.6 Interface to Other Protocols**

21 2.6.1 Commands

22 This protocol issues the following command:

- 23 • *RouteControl.CloseRoute*
- 24 • *AirLinkManagement.CloseConnection*
- 25 • *AirLinkManagement.SendRegistration*

26 2.6.2 Indications

27 This protocol registers to receive the following indication:

- 28 • *SessionControl.Reconfigured* (from other routes)
- 29 • *SessionControl.SessionClosed* (from other routes)
- 30 • *RouteControl.RouteClosed*
- 31 • *RouteControl.UATIAssigned*
- 32 • *RouteControl.RouteOpened (from all routes)*

- *AirLinkManagement.IdleInitiated*
- *AirLinkManagement.RegistrationSucceeded*

2.7 Configuration Attributes

2.7.1 Simple Attributes

The following attribute-value pairs are defined (see [1] for attribute record format).

The simple configuration attributes are listed in Table 2-6. The Attribute ID fields for all these attributes are two octets in length and the value fields for these attributes are two octets in length. The access terminal shall use as defaults the values in Table 2-6 typed in ***bold italics*** as defaults.

Table 2-6. Simple Configuration Attributes

Attribute ID	Attribute	Commit/Scope	Values	Meaning
0x0000	PersonalityCount	Hard Soft/Static	<i>0x0004</i>	Maximum of four personalities are supported
			0x0005 – 0x0010	Maximum number of personalities supported
			All other values	Reserved
0x0001	SCPCloseTime	Soft/Static	<i>0x0CA8</i>	Default is 54 hours.
			0x0000 to 0xffff	Session keep alive period in minutes.
0x0002	ATInitiatedConfigurationAllowed	Soft/Static	<i>0x0000</i>	Access terminal is not allowed to initiate session configuration
			0x0001	The access terminal is allowed to initiate session configuration
			All other values	Reserved
0x0003	TimerBasedRegPeriod	Soft/Static	<i>0x003c</i>	One hour
			0x000e-0xffff	Timer based registration period in minutes. This value of this attribute shall be a multiple of the PagePeriod3 public data of the Idle State Protocol.
			0x0000 All other values	Timer based registration is disabled Reserved

1 2.7.2 Complex Attributes

2 The following static and dynamic complex attribute and default values are defined (see [1]
3 for attribute record definition).

4 2.7.2.1 ATSupportedProtocolSetIdentifiers Attribute (access terminal capability)

5 The sender shall set AttributeID field to 0x8000.

6

Field	Length (bits)	Default
NumProtocolSetIdentifiers	8	0x00

NumProtocolSetIdentifiers occurrences of the following field:

ProtocolSetIdentifiers	16	N/A
------------------------	----	-----

7 NumProtocolSetIdentifiers

8 The sender shall set this field to the number of ProtocolSetIdentifiers
9 included.

10 ProtocolSetIdentifiers

11 This field shall be set to the Protocol Set Identifier supported by the
12 access terminal.

13

Commit	Hard <u>Soft</u>
---------------	-----------------------------

Scope	Static
--------------	--------

14 2.7.2.2 ATSupportedApplicationProtocolIDs~~PP~~ Attribute (access terminal capability)

15 This is a static complex attribute.

16 The sender shall set AttributeID field to ~~0x8001~~0x81PP. PP is the two-digit hexadecimal
17 Application ProtocolID.

18

Field	Length (bits)	Default for <u>PP=0x00, 0x05, 0x06, 0x07, 0x08</u>	Default for <u>other values of PP</u>
NumAppProtocolIDs	8	0	0
NumAppProtocolIDs occurrences of the following field:			
ApplicationProtocolID ProtocolSupported	8	N/A0x01	0x00
SupportedProtocolParametersValuesLength	8	0x00	0x00
SupportedProtocolParametersValues	SupportedProtocolParametersValuesLength × 8	N/A	N/A

~~NumAppProtocolIDs This field shall be set to the number of occurrences of the ApplicationProtocolID field following this field in this record.~~

~~ApplicationProtocolID This field shall be set to the Application ProtocolID that the access terminal supports.~~

~~ProtocolSupported The sender shall set this field to 0x00 if the Application Protocol corresponding to ProtocolID PP is not supported. Otherwise, the sender shall set this field to 0x01 if the Application Protocol corresponding to ProtocolID PP is supported. All other values are reserved.~~

SupportedProtocolParametersValuesLength

If the SupportedProtocolParametersValues record is not included, the sender shall set this field to 0x00. Otherwise, the sender shall set this field to the length of the SupportedProtocolParametersValues record in units of octets.

SupportedProtocolParametersValues

Unless specified otherwise by this protocol or [1], the sender shall omit this record. If PPApplicationProtocolID is 0x04 and ProtocolSupported is 0x01, then the sender shall set this record as defined in 2.7.2.2.1. If PPApplicationProtocolID is 0x08 and ProtocolSupported is 0x01, then the sender shall set this record as defined in 2.7.2.2.2. If PPApplicationProtocolID is less than 0x08 and not equal to 0x04, the sender shall omit this record.

2.7.2.2.1 Definition of SupportedProtocolParametersValues record when the Application ProtocolID is ROHC (PPApplicationProtocolID=0x04)

Field	Length (bits)	Default
MaxSupportedMaxCID	16	0
LargeCIDSUPPORTED	1	0
MaxSupportedMRRU	16	0
TimerBasedCompressionSupported	1	1
SupportedProfileCount	8	4

SupportedProfileCount occurrences of the following field:

SupportedProfile	16	0x0000 (uncompressed), 0x0001 (RTP), 0x0002 (UDP), 0x0003 (ESP)
------------------	----	-----------------------------------------------------------------------------

Reserved	0 - 7 (as needed)	N/A
----------	-------------------	-----

- 1 MaxSupportedMaxCID
- 2 The sender shall set this field to the maximum MAX_CID parameter
- 3 supported (See [12]).

- 4 LargeCIDSUPPORTED The sender shall set this field to '0' if large CID representation is not
- 5 supported according to [12]. Otherwise, the sender shall set this field
- 6 to '1' if large CID representation is supported.

- 7 MaxSupportedMRRU The sender shall set this field to the MRRU supported by the
- 8 decompressor according to [12]. Default value is 0x0000 (no
- 9 segmentation).

- 10 TimerBasedCompressionSupported
- 11 The sender shall set this field to '1' if the compressor at the access
- 12 terminal supports timer based compression mode. Otherwise, the
- 13 sender shall set this field to '0'.

- 14 SupportedProfileCount
- 15 The sender shall set this field to the number of ROHC profiles
- 16 supported.

- 17 SupportedProfile The sender shall set this field to the ROHC profile supported by the
- 18 compressor and decompressor. IANA ROHC profile identifier
- 19 definitions can be found at [13].

1 Reserved The sender shall add reserved bits to make the length of the entire
 2 record an integer number of octets. The sender shall set these bits to
 3 '0'. The receiver shall ignore this field.

4 2.7.2.2.2 Definition of SupportedProtocolParametersValues record when the Application
 5 ProtocolID is EAP (*PPApplicationProtocolID*=0x08)
 6

Field	Length (bits)	Default
EAPFastReauthenticationSupported	1	'0'
Reserved	7	N/A

7 EAPFastReauthenticationSupported

8 If EAP Fast Reauthentication is supported, then the sender shall set
 9 this field to '1'; otherwise, the sender shall set this field to '0'.

10 Reserved The sender shall set all the bits in this field to '0'. The receiver shall
 11 ignore this field.
 12

Commit	<i>HardSoft</i>
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Scope	Static
--------------	--------

13 2.7.2.3 HardwareID Attribute (*access terminal capability*)

14 The sender shall set AttributeID field to 0x8002.
 15

Field	Length (bits)	Default
HardwareIDType	4	0xf
HardwareIDLength	8	0x00
HardwareIDValue	8×HardwareIDLength	N/A
Reserved	4	N/A

16 HardwareIDType The access terminal shall set this field according to Table 2-7.

Table 2-7. HardwareIDType encoding

HardwareIDType field value	Meaning
0x0	HardwareID not provisioned
0x1	Mobile Equipment Identifier (MEID);
0xf	Null
Other values	Reserved

HardwareIDLength If HardwareIDType field is not set to 0x0 or 0xf, the access terminal shall set this field to the length in octets of the HardwareIDValue field; otherwise the access terminal shall set this field to 0x00.

HardwareIDValue The access terminal shall set this field to the unique ID (specified by HardwareIDType) that has been assigned to the terminal by the manufacturer.

Reserved The access terminal shall set all the bits in this field to '0'. The access network shall ignore this field.

Commit	HardSoft
---------------	-----------------

Scope	Static
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2.7.3 Non-Attribute Data

The static non-attribute data for this protocol are defined below.

2.7.3.1 SessionSignature

The sender shall set DataID field to 0x0000.

Field	Length (bits)
SessionSignature	16

SessionSignature This field shall be set to the signature of the current session.

2.8 Protocol Numeric Constants

Constant	Meaning	Value
N _{SCPT} Type	Type field for this protocol	[1]
N _{SCPB} Basic	Subtype field for this protocol	0x00
T _{SCPM} MinClose	Minimum recommended timer setting for WaitingToClose State	300 seconds
T _{Turnaround}	The elapsed duration before which a receiver must respond to a ConfigurationRequest, FastConfigurationRequest, or	2 seconds

Constant	Meaning	Value
	ConfigurationCopyRequest.	

2.9 Session State Information

The Session State Information record (see [1]) consists of parameter records. All configuration attributes are Session State Information records. The following Non-Attribute Static Data are Session State Information record: SessionSignature. ~~This protocol defines the following parameter records: This protocol does not define additional parameter records.~~

2.9.1 ProtocolSetIdentifier

~~The ParameterType for this record shall be set to 0x02.~~

Field	Length (bits)
ProtocolSetIdentifier	16

~~ProtocolSetIdentifier This field shall be set to the ProtocolSetIdentifier corresponding to the Personality.~~