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AERONAUTICAL TELECOMMUNICATION NETWORK PANEL

WORKING GROUP 3 (APPLICATIONS AND UPPER LAYERS)

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Changes to ULCS SARPs V4.0

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SUMMARY

This paper specifies the detailed modifications to version 4.0 of the ULCS SARPs, arising from Defect Reports and Change Requests received by WG3/SG3 up to the October 1996 meeting of WG3.

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1. INTRODUCTION

Subgroup 3 (Architecture) of ATNP/WG3 met in Toulouse in September 1996 to resolve the Defect Reports and Change Requests raised as a result of validation activities on the ULCS SARPs since the 7th meeting of WG3 (Munich, June 1996). This paper specifies the detailed modifications to version 4.0 of the ULCS SARPs, arising from the resolution of the Defect Reports and Change Requests as agreed by SG3.

The Defect Reports / Change Requests cleared by the changes in this paper are UL-DR 023, 035, and 074 - 105.

The changes apply to the WinWord 6.0 version of the V4.0 ULCS SARPs; they have not to date been checked against the baseline WordPerfect version.

For traceability of changes, each individual modification has been cross-referenced to the related Defect Report / Change Requests. The cross references have been included in this paper using the “hidden text” feature of the word processor, and may be viewed or printed using the electronic version of this paper.

2. CHANGES TO CHAPTER 1: INTRODUCTION

Modification to section 4.1.4.1.5 Note.

Replace “PER” by “Packed Encoding Rules (PER)”

3. CHANGES TO CHAPTER 2: DIALOGUE SERVICE DESCRIPTION

Modification to section 4.2.3.1 Note 2

- In Table 4.2-3, make the following changes:
  1. Insert “for one Dialogue” after “primitives” in the Table caption
  2. Delete all “Y” characters in row 1 (D-START req)
  3. Add a “Y” character in row 5 (D-DATA req), in the column headed “9”.
- The modified rows are as follows (the changed cells are shown by shading):

Table 4.2-3. Sequence of DS primitives for one Dialogue at one DS-User

The DS primitive X -> *may be followed by the DS primitive Y*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1 D-START req													
...													
5 D-DATA req		*Y*		*Y*	*Y*	*Y*			*Y*				
...													

Modification to section 4.2.3.1, Note 3

- Insert the following text at the end of Note 3:

A D-START request results in a new instance of communication with the peer DS-User, so could occur at any time. Table 4.2-3 only applies to a single instance of communication.

Modification to section 4.2.3.2

- Correct the reference to the Priority table:

Note 7.— The Quality Of Service parameter allows the initiating DS-User to specify in the request primitive its requirements for the quality of service (QOS) to be provided for the dialogue. The parameter may be modified by the DS-provider according to what QOS can actually be supported, so that the value in the indication primitive may reflect a reduced QOS compared with the value in the request. The only QOS component which may be modified by the DS-User in the response primitive is Residual Error Rate (see Note 10). Otherwise, the QOS parameter in the response primitive is assumed by the CF to be equal to the value in the indication primitive. The value of the QOS

parameter in the confirmation primitive is equal to that present or assumed in the response primitive. The following QOS parameters may be specified:

a) Routing Class - valid values are defined in Table 5.6-1

b) Priority - valid values are defined in Table 1.3-2~~1.2-2~~

c) Residual Error Rate(RER) - valid values are "low" and "high".

Modification to section 4.2.3.2, Note 7

- Original text (to be deleted):

If specified by the DS-User in the response primitive, the QOS must be equal to or lower than that received in the indication primitive.

- Replacement text:

The only QOS component which may be modified by the DS-User in the response primitive is Residual Error Rate (see Note 10). Otherwise, the QOS parameter in the response primitive is assumed by the CF to be equal to the value in the indication primitive. The value of the QOS parameter in the confirmation primitive is equal to that present or assumed in the response primitive.

4.2.3 The following QOS paramters may be specified:

a) Routing Class -- valid values are defined in Table 5.6-1

b) Priority -- valid values are defined in Table 1.3-2 ~~1.2-2~~

c) Residual Error Rate (RER) -- valid values are "low" and "high".

Modification to section 4.2.3.2, Note 10

- Original text (to be deleted):

The mapping to and from actual RER values is defined in 4.3.3.

- Replacement text

A limited negotiation is possible, such that if the RER value received in the indication primitive is "high", the DS-User may set the value in the response primitive to either "low" or "high".

4. CHANGES TO CHAPTER 3: APPLICATION ENTITY (AE) DESCRIPTION

Modification to section 4.3.1.

- Insert new text after Note 8:

Note 9.— For the purposes of this specification, the ATN-App AE is modelled such that a new instance of communication (effectively a new AE invocation) is implicitly created (a) for each request from the AE-User that will require a new association (i.e. that will result in a D-START request being invoked), and (b) for each indication from

the underlying communications service that a new connection is requested. The AE invocation ceases to exist when the underlying communications service connection is disconnected and the CF is idle (i.e. in the NULL state).

Modification to section 4.3.2.1 Note 2.

Replace the first occurrence of "ITU-T" by "International Telecommunication Union Telecommunication Standardisation Sector (ITU-T)"

Modification to section 4.3.2.3.3.

- Original text (to be replaced by a note):

4.3.2.3.3 The AE Title shall be composed of an Application Process title (AP-title) and an AE-qualifier.

- Replacement text:

4.3.2.3.3 [Requirement deleted]

Note.— The AE Title is composed of an Application Process title (AP-title) and an AE-qualifier.

Modification to section 4.3.2.4, Note 2.

- Original text

Note 2. — For ground stations, the <end-system-id> is derived from a facility designator which is limited in length and syntax to 8 upper case alphabetic characters, e.g. "LFPODLHX". The syntax of the first four characters is defined in ICAO 7910 "Location Indicators"; the syntax of the next three characters is defined in ICAO 8585 "Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services."

- Replacement text

Note 2. — For ground stations, the <end-system-id> is derived from an eight-letter facility designator, e.g. "LFPODLHX". The syntax of the first four letters is defined in ICAO Doc 7910 "Location Indicators"; the syntax of the remaining letters is defined in ICAO Doc 8585 "Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services."

Modification to section 4.3.2.6.2

- Replace the second occurrence of "PDV-list" by "presentation-data-value (PDV)-list"

Modification to section 4.3.2.6.5 (Table 4.3-3)

- Delete "cdse-apdu".

Modification to section 4.3.2.6.6

- Delete ", cdse-apdu," in bullet d).

Modification to section 4.3.3.1.2.1 Note

- Delete the entire Note and replace with the following text:

Note. — The following conventions are used in Table 4.3-4:

a) Incoming events are shown in the first two columns of the state table, and are enumerated in Table 4.3-5.

b) When an input event occurs and the state table indicates an action, the CF performs that action.

c) Each cell in the state table shows:

i) optionally, one or more predicates, denoted "pN", where N is an integer. The state and action which follow the predicate are only valid if the predicate is TRUE. The inverse (logical NOT) of a predicate is indicated by the prefix "~" (tilde character).

ii) the new state that the CF enters after the action has been performed

iii) the action, if any, which the CF performs. The possible actions are outlined in Table 4.3-6.

d) Blank cells indicate error conditions.

e) When an input event occurs and the state table indicates a state transition, the CF enters the new state after any associated action has been performed.

Modification to section 4.3.3.1.2.1 Table 4.3-4 (ATN-App CF State Table)

- The modified state table is as follows, with modified cells shown shaded:

Table 4.3-4. ATN-App CF State Table (Table 4.3-4A)

Event Source	State--> Event	STA0 Null	STA1 Assoc. Pending	STA2 Data Transfer	STA3 Release Pending	STA4 Release Collision
From ATN-App	ATN-APP function req	STA0 ATN-App ASE req	STA1 ATN-App ASE req	STA2 ATN-App ASE req	STA3 ATN-App ASE req	STA4 ATN-App ASE req
	ATN-APP function rsp	STA0 ATN-App ASE rsp	STA1 ATN-App ASE rsp	STA2 ATN-App ASE rsp	STA3 ATN-App ASE rsp	STA4 ATN-App ASE rsp
From ATN-App ASE (upper)	ATN-APP function ind	STA0 ATN-App ind	STA1 ATN-App ind	STA2 ATN-App ind	STA3 ATN-App ind	STA4 ATN-App ind
	ATN-APP function cnf	STA0 ATN-App cnf	STA1 ATN-App cnf	STA2 ATN-App cnf	STA3 ATN-App cnf	STA4 ATN-App cnf
From ATN-App ASE (lower)	D-START req	p0: STA1 A-ASSOC req				
	D-START rsp+		~p1: STA1 A-ASSOC rsp+			
	D-START rsp-		~p1: STA1 A-ASSOC rsp-			
	D-DATA req			STA2 P-DATA req (User)	~p2: STA3 P-DATA req (User)	
	D-END req			STA3 A-RELEASE req		
	D-END rsp+				~p2: STA3 A-RELEASE rsp+	
	D-END rsp-				~p2: STA3 A-RELEASE rsp-	

Event Source	State--> Event	STA0 Null	STA1 Assoc. Pending	STA2 Data Transfer	STA3 Release Pending	STA4 Release Collision
	D-ABORT req		STA1 A-ABORT req	STA2 A-ABORT req	STA3 A-ABORT req	STA4 A-ABORT req
From ACSE (upper)	A-ASSOCIATE ind		STA1 D-START ind			
	A-ASSOCIATE cnf+		STA2 D-START cnf+			
	A-ASSOCIATE cnf-		STA0 D-START cnf-			
	A-RELEASE ind				STA3 D-END ind	p1: STA4 A-RELEASE rsp+ ~p1: STA4
	A-RELEASE cnf+				STA0 D-END cnf+ P-U-ABORT req	p1: STA0 D-END cnf+ P-U-ABORT req ~p1: STA4 D-END cnf+ A-RELEASE rsp+
	A-RELEASE cnf-				STA2 D-END cnf-	
	A-ABORT ind		STA0 D-ABORT ind	STA0 D-ABORT ind	STA0 D-ABORT ind	
	A-P-ABORT ind		STA0 D-P-ABORT ind	STA0 D-P-ABORT ind	STA0 D-P-ABORT ind	STA0 D-P-ABORT ind
From ACSE (lower)	P-CONNECT req		STA1 P-CONN req			
	P-CONNECT rsp+		STA2 P-CONN rsp+			
	P-CONNECT rsp-		STA0 P-CONN rsp-			
	P-RELEASE req				STA3 P-DATA req (RLRQ)	
	P-RELEASE rsp+				STA0 P-DATA req(RLRE+)	p1: STA4 P-DATA req (RLRE+) ~p1: STA0 P-DATA req (RLRE+)
	P-RELEASE rsp-				STA2 P-DATA req (RLRE-)	

Event Source	State--> Event	STA0 Null	STA1 Assoc. Pending	STA2 Data Transfer	STA3 Release Pending	STA4 Release Collision
	P-U-ABORT req (data)		STA0 P-U-ABORT req	STA0 P-DATA req (ABRT)	STA0 P-U-ABORT req	STA0 P-U-ABORT req
	P-U-ABORT req (no data)		STA0 P-U-ABORT req	STA0 P-U-ABORT req	STA0 P-U-ABORT req	STA0 P-U-ABORT req
From supporting service	P-CONNECT ind	p0: STA1 P-CONN ind				
	P-CONNECT cnf+		STA1 P-CONN cnf+			
	P-CONNECT cnf-		STA1 P-CONN cnf-			
	P-DATA ind (RLRQ)	p3: STA0		STA3 P-RELEASE ind	STA4 P-RELEASE ind	
	P-DATA ind (RLRE+)	p3: STA0			STA3 P-RELEASE cnf+	STA4 P-RELEASE cnf+
	P-DATA ind (RLRE-)	p3: STA0			STA3 P-RELEASE cnf-	
	P-DATA ind (ABRT)	p3: STA0 P-U-ABORT req ~p3: STA0		STA2 P-U-ABORT ind P-U-ABORT req	STA3 P-U-ABORT ind P-U-ABORT req	STA4 P-U-ABORT ind P-U-ABORT req
	P-DATA ind (User)	p3: STA0		STA2 D-DATA ind	p2: STA3 D-DATA ind	
	P-U-ABORT ind	STA0	STA1 P-U-ABORT ind	STA2 P-U-ABORT ind	STA3 P-U-ABORT ind	
	P-P-ABORT ind	STA0	STA1 P-P-ABORT ind	STA2 P-P-ABORT ind	STA3 P-P-ABORT ind	STA4 P-P-ABORT ind

Modification to section 4.3.3.1.2.2.

- Original text (replaced by Note in 4.3.3.1.2.1):

4.3.3.1.2.2 When an input event occurs and the state table indicates a state transition, the CF shall enter the new state after any associated action has been performed.

- Replacement text:

4.3.3.1.2.2 [Requirement deleted].

Modification to section 4.3.3.1.2.3.

- Original text (replaced by Note in 4.3.3.1.2.1):

4.3.3.1.2.3 When an input event occurs and the state table indicates an action, the CF shall perform that action.

- Replacement text:

4.3.3.1.2.3 [Requirement deleted].

Modification to section 4.3.3.1.2.8

- Delete the entire section, and replace with a new Table 4.3-4bis (4.3-4B), which is part of section 4.3.3.1.2.1.
- Original text:

4.3.3.1.2.8 Predicates are defined as follows:

p1: this CF is the Initiating CF, i.e. the CF which issued the A-ASSOCIATE request primitive.

~p1: this CF is the Responding CF, i.e. the CF which received A-ASSOCIATE indication primitive.

p2: this CF is the Release Initiator, i.e. the CF issued an A-RELEASE request primitive.

~p2: this CF is the Release Responder, i.e. the CF received an A-RELEASE indication primitive.

- Replacement text:

Table 4.3-4bis. Predicates used in Table 4.3-4 (Table 4.3-4B)

Predicate	Meaning
p0	this is a new instance of communication, i.e. no previous association exists (effectively, a new AE invocation is created).
p1	this CF is the initiator CF, i.e. the CF which issued the A-ASSOCIATE request primitive.
~p1	this CF is the responder CF, i.e. the CF which received A-ASSOCIATE indication primitive.
p2	this CF is the Release Initiator, i.e. the CF issued an A-RELEASE request primitive.
~p2	this CF is the Release Responder, i.e. the CF received an A-RELEASE indication primitive.
p3	this CF is the “Abort+Data” initiator, i.e. the CF issued a P-DATA request containing an ABRT APDU and is awaiting disconnection by the peer.
~p3	this CF has not initiated an Abort containing user data

Modification to section 4.3.3.1.2.9 (Table 4.3-5)

- Replace the first occurrence of “ACPM” by “ACSE Protocol Machine (ACPM)”

Modification to section 4.3.3.1.2.9

- Delete the section heading, so that Table 4.3-5 becomes part of section 4.3.3.1.2.1.
- i.e., Delete text:

4.3.3.1.2.9 Input events

Modification to section 4.3.3.1.2.10

- Delete the section heading, so that Table 4.3-6 becomes part of section 4.3.3.1.2.1.
- i.e., Delete text:

4.3.3.1.2.10 Actions taken by the CF

Modification to section 4.3.3.2.1.

- Original text:

Application User Request and Response primitives may be validly invoked by the Application-user when the CF is in any state.

- Replacement text:

Invocations of Application User Request and Response primitives by the Application-user shall be allowed when the CF is in any valid state.

Modification to section 4.3.3.3.1.1.

- Original text:

ATN-App ASE Indication and Confirmation primitives may be validly invoked by the ATN-App ASE when the CF is in any state.

- Replacement text:

Invocations of ATN-App ASE Indication and Confirmation primitives by the ATN-App ASE shall be allowed when the CF is in any valid state.

Modification to section 4.3.3.3.2.1.

- Original text:

The D-START Request primitive may be validly invoked by the ATN-App ASE when the CF is in the NULL state; if it is in any other state then appropriate error recovery action shall be taken.

- Replacement text:

When the D-START Request primitive is invoked by the ATN-App ASE, a new instance of communication shall be created, with its CF initially in the NULL state.

Modification to section 4.3.3.3.2.2e

- Original text:

e) If the Calling Peer Id parameter is present, retrieve the Calling AP Title and Calling AE-qualifier. If it is not present, then do not use these parameters in the A-ASSOCIATE request (they will not then be included in the resulting AARQ APDU).

- Replacement text:

e) If the Calling Peer Id parameter is present, then retrieve the Calling AP Title and Calling AE-qualifier. If it is not present, then Calling AP Title and Calling AE-qualifier are not used in the A-ASSOCIATE request (and they will not then be included in the resulting A-ASSOCIATE-REQUEST (AARQ) APDU).

Note.— The way that the Calling AP Title and the Calling AE Qualifier are retrieved is a local implementation matter.

Modification to section 4.3.3.3.2.3.1.

- Original text (to be replaced by a note):

4.3.3.3.2.3.1 The Quality of Service parameters in D-START Request and Response primitives shall be conveyed to the ATN Internet as specified in the following paragraphs.

- Replacement text:

4.3.3.3.2.3.1 [Requirement deleted]
Note.— The following paragraphs specify how the Quality of Service parameters in D-START Request and Response primitives are conveyed to the ATN Internet.

Modification to section 4.3.3.3.2.3.2.

- Original text:

4.3.3.3.2.3.2 Routing Class shall be conveyed by local means, using the values for Security Tag Value specified in Table 5.6-1.

Note. — 5.2.7.3.1 states: "The mechanism by which the connection initiator determines the appropriate ATN Security Label is a local matter. For example, it may be identified by an extension to the transport service interface, be implicit in the choice of a given TSAP, or be identified using a Systems Management function."

- Replacement text:

4.3.3.3.2.3.2 The Routing Class component of the quality of service parameter in D-START Request and Response primitives shall([59]) be conveyed to the ATN Internet and mapped to ATN Security Label by local means, using the values for Security Tag Value specified in Table 5.6-1.

Note. — 5.2.7.3.1 states that the mechanism by which the connection initiator provides the appropriate ATN Security Label is a local matter. For example, it may be identified by an extension to the transport service interface, be implicit in the choice of a given Transport Service Access Point (TSAP), or be identified using a Systems Management function.

Modification to section 4.3.3.3.2.3.4.

- Original text:

4.3.3.3.2.3.4 If no value for Routing Class is specified in the D-START Response primitive, then the value shall be taken to be the same as that which was passed to the DS-User in the D-START Indication primitive.

- Replacement text:

4.3.3.3.2.3.4 The Routing Class value conveyed to the ATN Internet when the D-START Response primitive is invoked shall be the same as that which was passed to the DS-User in the D-START Indication primitive.

Modification to section 4.3.3.3.2.3.5.

- Original text:

4.3.3.3.2.3.5 Priority shall map to the session connection priority component of the A-ASSOCIATE Quality of Service parameter, using the values for Transport Layer Priority specified in Table 1.2-2.

Note. — Although transport priority and network priority are semantically independent of each other, 5.5.1.2 requires that the TS-user specifies the Application Service Priority, which in turn is mapped into the resulting CLNP PDUs according to Table 1.2-2, which defines the fixed relationship between transport priority and the network priority.

- Replacement text:

4.3.3.3.2.3.5 The Priority component of the quality of service parameter in D-START Request and Response primitives shall map to the session connection priority component of the A-ASSOCIATE Quality of Service parameter, using the values for Transport Layer Priority specified in Table 1.3-2~~1.2-2.~~

Note. — Although transport priority and network priority are semantically independent of each other, 5.5.1.2 requires that the Transport Service (TS)-user specifies the Application Service Priority, which in turn is mapped into the resulting Connectionless Network Protocol (CLNP) PDUs according to Table 1.3-2~~1.2-2~~, which defines the fixed relationship between transport priority and the network priority.

Modification to section 4.3.3.3.2.3.6.

- Original text:

4.3.3.3.2.3.6 If no value for Priority is specified in the D-START Request primitive, then the value corresponding to “Network/systems administration” shall be conveyed.

- Replacement text:

4.3.3.3.2.3.6 If no value for Priority is specified in the D-START Request primitive, then the value corresponding to “Network/systems administration” shall be used.

Modification to section 4.3.3.3.2.3.7.

- Original text:

4.3.3.3.2.3.7 If no value for Priority is specified in the D-START Response primitive, then the value shall be taken to be the same as that which was passed to the DS-User in the D-START Indication primitive.

- Replacement text:

4.3.3.3.2.3.7 The Priority value conveyed when the D-START Response primitive is invoked shall be the same as that which was passed to the DS-User in the D-START Indication primitive.

Modification to section 4.3.3.3.2.3.8.

- Original text:

4.3.3.3.2.3.8 RER shall map to the residual error rate component of the A-ASSOCIATE Quality of Service parameter, such that if the RER has the abstract value "low", then the residual error rate is set to zero, and if it has the abstract value "high", then the residual error rate in the A-ASSOCIATE is set to the value 1.

- Replacement text:

4.3.3.3.2.3.8 The residual error rate component of the Quality of Service parameter in D-START Request and Response primitives shallmap to the residual error rate component of the A-ASSOCIATE Quality of Service parameter, and is used to convey requests for the use or non-use of transport checksum to the TS-Provider.

Note.— 5.5.1.2 requires that the TS-user specifies the required residual error rate to determine whether or not the transport checksum is required.

Modification to section 4.3.3.3.2.3.9.

- Original text:

4.3.3.3.2.3.9 If no value for RER is specified in the D-START Response primitive, then the value shall be taken to be the same as that which was passed to the DS-User in the D-START Indication primitive.

Note. —5.5.1.2 requires that the TS-user specifies the required residual error rate to determine whether or not the transport checksum is required.

- Replacement text:

4.3.3.3.2.3.9 If no valid value for RER is specified in the D-START Response primitive, then the value shall be taken to be the same as that which was passed to the DS-User in the D-START Indication primitive.

Note.— If the RER value in the D-START Indication was "high", then valid values in the response are "low" and "high". If the RER value in the D-START Indication was "low", then the only valid value in the response is "low".

Modification to section 4.3.3.3.3.1

- Original text:

The D-START Response primitive may be validly invoked by the ATN-App ASE when the responder CF is in the ASSOCIATION PENDING state; if it is in any other state then appropriate error recovery action shall be taken.

- Replacement text:

The D-START Response primitive may be validly invoked by the ATN-App ASE when the CF is the responder CF (see 4.3.3.6.2.2) and is in the ASSOCIATION PENDING state; if it is in any other state then appropriate error recovery action shall be taken.

Modification to section 4.3.3.3.4.1.

- Make section 4.3.3.3.4.1.2 into a note and renumber 4.3.3.3.4.1.1 as 4.3.3.3.4.1:
- Original text:

4.3.3.3.4.1 When Invoked.

4.3.3.3.4.1.1 The D-END Request primitive may be validly invoked by the ATN-App ASE when the CF is in the DATA TRANSFER state; if it is in any other state then appropriate error recovery action shall be taken.

4.3.3.3.4.1.2 For example, if the CF is in the RELEASE PENDING state, then the D-END Request shall be rejected locally, with an appropriate result code.

- Replacement text:

4.3.3.3.4.1 When Invoked

The D-END Request primitive may be validly invoked by the ATN-App ASE when the CF is in the DATA TRANSFER state; if it is in any other state then appropriate error recovery action shall be taken.

Note.— For example, if the CF is in the RELEASE PENDING state, then the D-END Request is rejected locally, with an appropriate result code.

Modification to section 4.3.3.3.4.2.

- Original text:
  c) Enter the RELEASE PENDING state.
- Replacement text:

  c) Enter the RELEASE PENDING state as the Release Initiator CF.

Modification to section 4.3.3.3.5.1

- Original text:

The D-END Response primitive may be validly invoked by the ATN-App ASE when the responder CF is in the RELEASE PENDING state; if it is in any other state then appropriate error recovery action shall be taken.

- Replacement text:

The D-END Response primitive may be validly invoked by the ATN-App ASE when the CF is the Release Responder CF and is in the RELEASE PENDING state; if it is in any other state then appropriate error recovery action shall be taken.

Modification to section 4.3.3.3.7.1.

- Original text:

The D-ABORT Request primitive may be validly invoked by the ATN-App ASE when the CF is in any state, except NULL.

- Replacement text:

Invocations of the D-ABORT Request primitive by the ATN-App ASE shall be allowed when the CF is in any valid state, except the NULL state; if an invocation occurs when the CF is in the NULL state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.4.1.3.1.

- Original text (to be replaced by a note):

4.3.3.4.1.3.1 The Quality of Service parameters in A-ASSOCIATE Indication and Confirmation primitives shall be conveyed to the DS-User as parameters of the D-START Indication and Confirmation primitives, as specified in the following paragraphs.

- Replacement text:

Note.— The following paragraphs specify how the Quality of Service parameters in A-ASSOCIATE Indication and Confirmation primitives are conveyed to the DS-User as parameters of the D-START Indication and Confirmation primitives.

4.3.3.4.1.3.1 [Requirement deleted]

Modification to section 4.3.3.4.1.3.2.

- Original text:

4.3.3.4.1.3.2 Routing Class shall be conveyed by local means, using the abstract values for Security Tag Values as specified in Table 5.6-1.

- Replacement text:

4.3.3.4.1.3.2 The Routing Class component of the quality of service parameter in D-START Indication and Confirmation primitives shall be obtained from the ATN Internet by local means, using the abstract values for Security Tag Values as specified in Table 5.6-1.

Modification to section 4.3.3.4.1.3.3.

- Original text:

4.3.3.4.1.3.3 Priority shall be taken from the session connection priority component of the A-ASSOCIATE Quality of Service parameter, using the abstract values for Transport Layer Priority as specified in Table 1.2-2.

- Replacement text:

4.3.3.4.1.3.3 The Priority component of the quality of service parameter in D-START Indication and Confirmation primitives shall be taken from the session connection priority component of the A-ASSOCIATE Quality of Service parameter, using the abstract values for Transport Layer Priority as specified in Table 1.3-2~~1.2-2~~.

Modification to section 4.3.3.4.1.3.4.

- Original text:

4.3.3.4.1.3.4 RER shall be taken from the residual error rate component of the A-ASSOCIATE Quality of Service parameter, such that if the residual error rate has a value less than 10^{-8} then RER is set to “low”, otherwise it is set to “high”.

- Replacement text:

4.3.3.4.1.3.4 The RER component of the quality of service parameter in D-START Indication and Confirmation primitives shall be taken from the residual error rate component of the A-ASSOCIATE Quality of Service parameter.

Modification to section 4.3.3.4.5.1.

- Original text:

The A-ABORT Indication primitive may be validly invoked by the ACPM when the CF is in any state, except NULL.

- Replacement text:

Invocations of the A-ABORT Indication primitive by the ACPM shall be allowed when the CF is in any of the states ASSOCIATION PENDING, DATA TRANSFER, or RELEASE PENDING; if an invocation occurs when the CF is in any other state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.4.6.1.

- Original text:

The A-P-ABORT Indication primitive may be validly invoked by the ACPM when the CF is in any state, except NULL.

- Replacement text:

Invocations of the A-P-ABORT Indication primitive by the ACPM shall be allowed when the CF is in any valid state, except the NULL state; if an invocation occurs when the CF is in the NULL state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.5.1.2

- Original text:

When a P-CONNECT Request primitive is validly invoked, the CF shall transparently invoke the equivalent presentation service primitive.

- Replacement text:

When a P-CONNECT Request primitive is validly invoked, the CF shall transparently invoke the equivalent presentation service primitive and remain in the same state.

Modification to section 4.3.3.5.3.1.

- Original text:

The P-U-ABORT Request primitive may be validly invoked by the ACPM when the CF is in any state, except NULL.

- Replacement text:

Invocations of the P-U-ABORT Request primitive by the ACPM shall be allowed when the CF is in any valid state, except the NULL state; if an invocation occurs when the CF is in the NULL state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.5.3.2.b).

- Original text:

b) Otherwise, invoke a P-U-ABORT Request primitive.

- Replacement text:

b) Otherwise, invoke a P-U-ABORT Request primitive with no parameters.

Modification to section 4.3.3.5.5.2.1.

- Insert a new note after bullet c):

Note.— the peer AEI is now expected to issue a P-U-ABORT request, which will cause the release of the underlying connection.

Modification to section 4.3.3.5.5.2.4.

- Insert a new note after bullet c):

Note.— the peer AEI is now expected to issue a P-U-ABORT request, which will cause the release of the underlying connection.

Modification to section 4.3.3.5.5.2.

- Insert new text after 4.3.3.5.5.2.4:

4.3.3.5.5.2.5**Recommendation**.— *After entering the NULL state*, i*mplementations should release the underlying connection (e.g. by issuing P-U-ABORT request) if the communication peer does not cause the connection to be released as expected, after a period of time not less than twice the anticipated end-to-end transit time.*

Modification to section 4.3.3.6.

- Replace 4.3.3.6.1 with a new Note 2, renumber the existing Note as Note 1:
- Original text:

4.3.3.6 Supporting Services delivered to the CF

Note. —The mapping by the CF of presentation service indication and confirmation primitives, which are invoked by the presentation service provider, is defined in the following paragraphs.

4.3.3.6.1 When the supporting communications service exhibits the behaviour modelled by the passing of indication or confirmation primitives to the application layer, the ATN upper layers shall exhibit the behaviour specified in the following subsections.

- Replacement text:

4.3.3.6 Supporting Services delivered to the CF

Note 1. —The mapping by the CF of presentation service indication and confirmation primitives, which are invoked by the presentation service provider, is defined in the following paragraphs.

Note 2.—The following provisions describe the behaviour to be exhibited by the ATN-App AE when the supporting communications service exhibits behaviour modelled by the passing of indication or confirmation primitives to the application layer.

4.3.3.6.1 [Requirement deleted]

Modification to section 4.3.3.6.2.1.

- Original text:

The P-CONNECT Indication primitive may be validly invoked by the supporting service when the CF is in the NULL state; if it is in any other state then appropriate error recovery action shall be taken.

- Replacement text:

When the P-CONNECT Indication primitive is invoked by the supporting service, a new instance of communication shall be created, with its CF initially in the NULL state.

Modification to section 4.3.3.6.4.1.

- Original text:

The P-U-ABORT Indication primitive may be validly invoked by the supporting service when the CF is in any state.

- Replacement text:

Invocations of the P-U-ABORT Indication primitive by the supporting service shall be allowed when the CF is in any valid state, except RELEASE COLLISION; if an invocation occurs when the CF is in the RELEASE COLLISION state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.6.5.1.

- Original text:

The P-P-ABORT Indication primitive may be validly invoked by the supporting service when the CF is in any state, except NULL.

- Replacement text:

Invocations of the P-P-ABORT Indication primitive by the supporting service shall be allowed when the CF is in any valid state.

Modification to section 4.3.3.6.5.2.

- Original text:

When a P-P-ABORT Indication primitive is validly invoked, the CF shall transparently invoke the corresponding presentation service primitive at the lower ACSE service boundary, and remain in the same state.

- Replacement text:

When a P-P-ABORT Indication primitive is validly invoked, the CF shall:

a) if the CF is in the NULL state, then take no action;

b) otherwise, transparently invoke the corresponding presentation service primitive at the lower ACSE service boundary; and

c) remain in the same state.

Modification to section 4.3.3.6.6.1.

- Original text:

The P-DATA Indication primitive may be validly invoked by the supporting service when the CF is in any state, except NULL.

- Replacement text:

Invocations of the P-DATA Indication primitive by the supporting service shall be allowed when the CF is in a valid state to receive the decoded APDU, as listed in 4.3.3.6.6.2; if an invocation occurs when the CF is not in a valid state then an error has occurred (see 4.3.3.1.2.6).

Modification to section 4.3.3.6.6.2.

- Delete entire section and replace with the following text:
- Replacement text:

4.3.3.6.6.2 Action Upon Invocation

4.3.3.6.6.2.1 When a P-DATA Indication primitive is validly invoked, the CF shall decode the presentation user data as indicated in 4.3.2 to determine the destination ASE of the APDU, and extract the presentation data value.

Note.— The destination ASE is determined from the value of the presentation-context-identifier in the received User-data. Valid values are acse-apdu and user-ase-apdu, which correspond to destination ASEs of ACSE and ATN-App ASE, respectively.

4.3.3.6.6.2.2 ACSE APDU Received

4.3.3.6.6.2.2.1 If the destination ASE is ACSE then the CF shall determine the type of ACSE APDU present in the extracted presentation data value.

Note.— ACSE APDUs which may validly be received in a P-DATA indication are A-Release-Request (RLRQ), A-Release-Response (RLRE), and A-Abort (ABRT) APDUs/

4.3.3.6.6.2.2.2 If the received APDU is RLRQ, the CF shall:

a) if in the DATA TRANSFER state, then invoke a P-RELEASE Indication primitive at the ACSE lower service boundary with the RLRQ as User Data, and enter the RELEASE PENDING state as the Release Responder CF;

b) if in the RELEASE PENDING state, then invoke a P-RELEASE Indication primitive at the ACSE lower service boundary with the RLRQ as User Data , and enter the RELEASE COLLISION state;

c) if in the NULL state, and this CF has previously issued an ABRT APDU and is awaiting disconnection by the peer, then take no action and remain in the NULL state;

d) if none of the conditions a) to c) is satisfied, then take error handling action as described in 4.3.3.6.6.2.4.

4.3.3.6.6.2.2.3 If the received APDU is RLRE, the CF shall:

a) if the Reason field in the RLRE has the value “not-finished”, and the CF is in the RELEASE PENDING state, then invoke a P-RELEASE Confirmation primitive at the ACSE lower service boundary, with the result parameter set to “negative”, and the RLRE as User Data; remain in the RELEASE PENDING state.

b) if the Reason field in the RLRE has the value “normal”, and the CF is in the RELEASE PENDING or RELEASE COLLISION state, then invoke a P-RELEASE Confirmation primitive at the ACSE lower service boundary, with the result parameter set to “affirmative”, and the RLRE as User Data; remain in the same state.

c) if the CF is in the NULL state, and this CF has previously issued an ABRT APDU and is awaiting disconnection by the peer, then take no action and remain in the NULL state.

d) if none of the conditions a) to c) is satisfied, then take error handling action as described in 4.3.3.6.6.2.4.

4.3.3.6.6.2.2.4 If the received APDU is ABRT, the CF shall:

a) if the CF is in state DATA TRANSFER, or RELEASE PENDING, or RELEASE COLLISION, then invoke a P-U-ABORT Indication primitive at the ACSE lower service boundary, with the ABRT as User Data, and issue a P-U-ABORT request with no parameters to the underlying service; remain in the same state

b) if the CF is in the NULL state, then take no action unless this CF has previously issued an ABRT APDU and is awaiting disconnection by the peer, in which case issue a P-U-ABORT request to the underlying service; remain in the same state

c) if neither of the conditions a) and b) is satisfied, then take error handling action as described in 4.3.3.6.6.2.4.

4.3.3.6.6.2.3 ATN-App APDU Received

If the destination ASE is ATN-App ASE, then the CF shall:

a) if the CF is in the DATA TRANSFER state, or the CF is in the RELEASE PENDING state and is the Release Initiator CF, then issue a D-DATA Indication primitive to the DS-User, with the received presentation data value as the user data parameter, and remain in the same state.

b) if the CF is in the NULL state, and this CF has previously issued an ABRT APDU and is awaiting disconnection by the peer, then take no action and remain in the same state.

c) if neither of the conditions a) and b) is satisfied, then take error handling action as described in 4.3.3.6.6.2.4.

4.3.3.6.6.2.4 Error conditions

If the destination ASE is invalid (i.e. neither ACSE nor ATN-App ASE), or an unrecognised APDU is received, or a valid APDU is received when the CF is not in the correct state (as defined in 4.3.3.6.6.2 and 4.3.3.6.6.3), then the CF shall:

a) if not in the NULL state then issue a P-U-ABORT request with no parameters to the supporting service; and

b) regardless of CF state, behave as if a P-U-ABORT indication has been received.

5. CHANGES TO CHAPTER 4: SESSION LAYER REQUIREMENTS

Modification to section 4.4.2

Replace “Session functional units shall” with “Session functional units (S-FUs) shall”

Modification to section 4.4.2 (Table 4.4-2)

- Replace “Half Duplex” by “Half Duplex (HD)”
- Replace “Expedited Data” by “Expedited Data (EX)”
- Replace “Minor Synchronize” by “Minor Synchronize (SY)”
- Replace “Symmetric Synchronize” by “Symmetric Synchronize (SS)”
- Replace “Activity Management” by “Activity Management (ACT)”

Modification to section 4.4.3.1 (Table 4.4-3)

- Change “ATN Support” entry for Basic concatenation, and add new Note 2:
- Original text:

Ref.	Mechanism	ISO Status	ATN Support	Associated mnemonic
S.A.6.2/3	Basic concatenation	M	M	

…

See note	Null-encoding protocol option	-	M	
See note	Short-connect protocol option	-	M	
See note	Short-encoding protocol option	-	X	

Note.— Protocol options added by efficiency enhancement ISO/IEC 8327-1 Amendment 2.

- Replacement text:

Ref.	Mechanism	ISO Status	ATN Support	Associated mnemonic
S.A.6.2/3	Basic concatenation	M	M	

…

See note 1	Null-encoding protocol option	-	M	
See note 1	Short-connect protocol option	-	M	
See note 1	Short-encoding protocol option	-	X	

Note 1.— Protocol option added by efficiency enhancement ISO/IEC 8327-1 Amendment 2.

Note 2.— Only Category 1 SPDUs are used for this ATN profile. By definition, these are never concatenated. Therefore, Basic concatenation is not applicable to this specification, but is supported to the extent necessary for compliance with the ISO PICS.

Modification to section 4.4.3.3

- Replace first occurrence of “SPM” by “Session Protocol machine (SPM)”

Modification to section 4.4.3.4

- Replace “SPDUs” with “Session Protocol Data Units (SPDUs)”
- Replace “(i.e. SCN, SAC and SRF)” with “(i.e. Short Connect (SCN), Short Accept (SAC), Short Accept Continue (SACC), Short Refuse (SRF) and Short Refuse Continue(SRFC))”

Modification to section 4.4.5.

- Insert new Note after section 4.4.5 heading:

Note.— This section specifies the SPDUs associated with the supported Session functional units. There are no additional SPDUs associated with the Duplex functional unit, or with the No Orderly Release functional unit.

Modification to section 4.4.5.3.

- Delete the following text:

4.4.5.3 Support for the SPDUs associated with the Duplex functional unit

There are no additional SPDUs associated with the Duplex functional unit (this clause is present for completeness).

Modification to section 4.4.5.4.

- Delete the following text:

4.4.5.4 Support for the SPDUs associated with the No Orderly Release functional unit

There are no additional SPDUs associated with the No Orderly Release functional unit (this clause is present for completeness).

Modification to section 4.4.6 (Table 4.4-9)

- In row “b” of the table, replace “presentation-requirements” by “session-requirements”.

Modification to section 4.4.7.2

- Replace “TSAP” by “Transport Service Access Point (TSAP)”, and “PSAP” by “Presentation Service Access Point (PSAP)”

Modification to section 4.4.7.4.

- Re-word existing text, add new Note 2, and renumber existing Note as Note 1:
- Original text:

4.4.7.4 The required residual error rate shall be provided to the TS-Provider on a per Transport Connection basis, using the residual error rate quality of service parameters.

Note. —5.5.1.2 requires that the TS-user specifies the required residual error rate to determine whether or not the transport checksum is required. In the ATN, the Quality of Service provided to applications is maintained using capacity planning techniques that are outside of the scope of this specification. Network administrators are responsible for designing and implementing a network that will meet the QOS requirements of the CNS/ATM applications that use it.

- Replacement text:

4.4.7.4 Information on the use or non-use of the transport checksum shall be conveyed between the TS-User and TS-Provider via the "residual error rate" component of the T-CONNECT quality of service parameter.

Note 1.— 5.5.1.2 requires that the TS-user specifies the required residual error rate to determine whether or not the transport checksum is required. In the ATN, the Quality of Service provided to applications is maintained using capacity planning techniques that are outside of the scope of this specification. Network administrators are responsible for designing and implementing a network that will meet the QOS requirements of the CNS/ATM applications that use it.

Note 2.— If the TS-User requests the use of checksum (RER = "low") in the request primitive, the peer can only accept the use of checksum for this Transport Connection. If the TS-User proposes non-use of checksum (RER = "high") in the request primitive, the peer can either accept the non-use of checksum or force the use of checksum for this Transport Connection.

Modification to section 4.4.7.5.

- Original text:

4.4.7.5 If the required residual error rate is set to the value zero, then the TS-provider shall use best endeavours to obtain the lowest available residual error rate, including the use of the transport checksum in all TPDUs.

- Replacement text:

4.4.7.5 The use or non-use of the transport checksum shall be negotiated by the TS-Provider on a per Transport Connection basis, based on TS-User requests in the T-CONNECT request and response primitives, as follows:

a) If the required residual error rate in the T-CONNECT request has the abstract value "low", then the TS-provider uses best endeavours to obtain the lowest available residual error rate, including the use of the transport checksum in all Transport Protocol Data Units (TPDUs). The residual error rate in the T-CONNECT indication is set to the abstract value "low", and the responder can only accept this value in the T-CONNECT response.

b) If the required residual error rate in the T-CONNECT request has the abstract value "high", then the TS-provider proposes non-use of the transport checksum. The residual error rate in the T-CONNECT indication is set to the abstract value "high", and the responder can either accept this value, or request "low" in the T-CONNECT response. In the former case, transport checksum is not used, and in the latter case the TS-provider uses the transport checksum for all TPDUs.

Modification to section 4.4.7.6.

- Original text:

If the required residual error rate is set to the value 1, then the TS-provider shall select non-use of the transport checksum.

- Replacement text:

[Requirement deleted]

Modification to section 4.4.7.7.

- Original text:

The Application Service Priority shall be provided to the TS-Provider on a per Transport Connection basis, via the TC priority quality of service parameter, using the values for Transport Layer Priority specified in Table 1.2-2.

Note. — Although transport priority and network priority are semantically independent of each other, it is required (in 5.5.1.2), that the TS-user specifies the Application Service Priority, which in turn is mapped into the resulting CLNP PDUs according to Table1.2-2, which defines the fixed relationship between transport priority and the network priority.

- Replacement text:

The Application Service Priority shall be provided to the TS-Provider on a per Transport Connection basis, via the TC priority quality of service parameter, using the values for Transport Layer Priority specified in Table 1.3-2~~1.2-2.~~

Note. — Although transport priority and network priority are semantically independent of each other, it is required (in 5.5.1.2), that the TS-user specifies the Application Service Priority, which in turn is mapped into the resulting CLNP PDUs according to Table 1.3-2~~1.2-2~~, which defines the fixed relationship between transport priority and the network priority.

Modification to section 4.4.7.9.

- Replace reference “5.6.2.2.1” with “5.6.2.2.2”.

Modification to section 4.4.7.10.

- In Note 1, replace “determines” with “provides”.

6. CHANGES TO CHAPTER 5: PRESENTATION LAYER REQUIREMENTS

Modification to section 4.5.1.1 (Table 4.5-1)

- Change “ATN Support” for the following mechanisms from “O” to “N/A”:
- Replacement text:

…

Ref.	Protocol Mechanism	ISO Status	ATN Support	Mnemonic
See note	Nominated context	O	N/A	
See note	Short encoding	O	N/A	
See note	Packed encoding rules	O	N/A	

…

Modification to section 4.5.2.1 (Table 4.5-2)

- In row “a” of the table , replace “PPM” by “Presentation Protocol Machine (PPM)”

Modification to section 4.5.5.2.

- Renumber as section 4.5.6, replace section heading “Supported PPDUs associated with the Kernel services”, insert new Note, add new heading 4.5.6.1, as follows:
- Replacement text:

4.5.6 Supported Presentation Protocol Data Units (PPDUs)

Note.— This section specifies the PPDUs associated with the supported Presentation functional units. There are no additional PPDUs or additional pass through functionality associated with the supported Session functional units.

4.5.6.1 Supported PPDUs associated with the Kernel services

Modification to section 4.5.6.

- Renumber as section 4.5.6.2:

Modification to section 4.5.7.

- Delete the following text:

4.5.7 Pass through to Session functional units

There is no additional pass through functionality associated with the duplex Session functional unit. *(Note.– This clause is present for completeness only).*

7. CHANGES TO CHAPTER 6: ACSE SPECIFICATION

Modification to section 4.6.4.2.2.

- Replace “specified above” with “specified in 4.6.4.2.1”.

Modification to section 4.6.4.2.3

- Replace “PCI” by “Protocol Control Information (PCI)”

Modification to section 4.6.6.2.1.1 (Table 4.6-9)

- Change "Receiver ATN Support" entries from "See text" to the following values (the changed cells are indicated by shading):
- Replacement text:

...

		Sender		Receiver	
Ref.	Parameter	ISO Status	ATN Support	ISO Status	ATN Support
A.A.10.1/11	ACSE-requirements	C8	See text	C9	M
A.A.10.1/12	Authentication-mechanism name	C8	X	C9	N/A
A.A.10.1/13	Authentication-value	C8	See text	C9	M

Modification to section 4.6.6.2.1.3.

- Original text:

The AARQ parameters "ACSE-Requirements" "Authentication-value" and, optionally "Authentication-mechanism-name" shall([174]) be supported, for receiving, only if the connection responder role (A-CON_responder) and the Authentication functional unit (A-FU(AU)) are supported.

Note.— The ATN specification is non-conformant to the ISO PICS proforma, in that the "Authentication-mechanism-name" parameter is made optional for receiving, if the Authentication functional unit is selected..

- Replacement text:

The AARQ parameters "ACSE-Requirements" and "Authentication-value" shall([174]) be supported for receiving if the connection responder role (A-CON_responder) is supported, but are ignored if the Authentication functional unit (A-FU(AU)) is not supported by the responder.

Note.— The ATN specification is non-conformant to the ISO PICS proforma, in that the "Authentication-mechanism-name" parameter is "N/A" for receiving, if the Authentication functional unit is selected, and "ACSE-requirements" and "Authentication-value" are "M" for receiving, even if the Authentication functional unit is not supported.

Modification to section 4.6.6.2.2.1 (Table 4.6-10 - AARE Parameters)

- Change "Sender ATN Support" and "Receiver ATN Support" entries for Authentication mechanism name from "See text" to the following values (the changed cells are indicated by shading):
- Replacement text:

...

	Sender	Receiver

Ref.	Parameter	ISO Status	ATN Support	ISO Status	ATN Support
A.A.10.2/10	Authentication-mechanism name	C9	X	C8	N/A

Modification to section 4.6.6.2.2.3.

- Original text:

The AARE parameters “ACSE-Requirements”, Authentication-mechanism-name” and “Authentication-value” shall be supported, for receiving, only if the connection initiator role (A-CON_initiator) and the Authentication functional unit (A-FU(AU)) are supported.

- Replacement text:

The AARE parameters “ACSE-Requirements” and “Authentication-value” shall be supported, for receiving, only if the connection initiator role (A-CON_initiator) and the Authentication functional unit (A-FU(AU)) are supported.

Modification to section 4.6.6.3.2.1 (Table 4.6-15 - Authentication Value Form)

- Change “Sender ATN Support” and “Receiver ATN Support” entries for row “Other” from “See text” and “M” to the following values (the changed cells are indicated by shading):

- Replacement text:

...

		Sender		Receiver	
Ref.	Authentication value form	ISO Status	ATN Support	ISO Status	ATN Support
A.A.11.4/4	Other	O.6	X	C14	N/A