AERONAUTICAL TELECOMMUNICATION NETWORK PANEL

Working Group 2

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Proposed ATN Protocol Requirements Lists (PRLs) for CNS/ATM Package 1: Profile A

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SUMMARY

This paper proposes an integrated set of Protocol Requirements Lists (PRLs) for the first element of CNS/ATM Package 1, referred to as "Package 1-A" (CNS/ATM/1-A). This profile is intended to allow construction of initial ATN aircraft and ground-based equipment implementations for validation and pre-operational trials purposes that require a minimum of new technology, while retaining essential features of the ATN architecture, such as dynamic recognition of mobile routers. This profile is especially suited for early trials implementations, and has been accepted as the basis for the European contribution to the North Atlantic ADS trials. A companion paper (ATNP WG/2-WP/35) presents a description of the architectural aspects of this proposal.

REVISION HISTORY

Section	Date	Issue	Reason for Change
	12 October 1994	Issue 1.0	Document Creation

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1. Introduction

1.1 Scope and Purpose

This paper proposes a set of Protocol Requirements Lists (PRLs) for the first element of CNS/ATM Package 1, referred to in this paper as "Package 1-A" (CNS/ATM/1-A). This profile is intended to allow construction of initial aircraft and ground-based Aeronautical Telecommunication Network (ATN) equipment implementations requiring a minimum of new technology, while retaining essential features of the ATN architecture), such as dynamic recognition of mobile routers.

The PRLs presented in this paper are designed to allow implementations of airborne and ground-based ATN Boundary Intermediate Systems (BISs) and End-Systems (ESs) to proceed immediately, using currently available technology, in order to support ATN validation and pre-operational trials. These PRLs are especially suited for early trials implementations of both airborne and ground-based routers (i.e. BISs) and ESs, and have been accepted as the basis for the European contribution to the North Atlantic Automatic Dependent Surveillance (ADS) trials.

1.2 References

	Reference	Title
1	ATNP/1/WP-4	ATN Manual (2nd Edition)
2	ATNP WG/2-WP1	Draft ATN Standards and Recommended Practices (SARPs) and Guidance Material (GM): Version 0.0
3	ATNP WG/2-WP/35	Proposed ATN Internet Architecture for CNS/ATM Package 1 - Profile A (CNS/ATM/1-A)

1.3 Conformance to Applicable Documents

The profile is in general compatible with requirements detailed in the ATN Manual (Reference 1) and in Draft 0.0 of the ATN SARPs and Guidance Material (Reference 2). A companion paper, ATNP WG/2-WP/35 (Reference 3), presents an overview of the architecture associated with this proposal.

2. Conventions used in the Protocol Requirements List

The supplier of an ATN protocol implementation claimed to conform to CNS/ATM Package 1-A requirements must indicate conformance to those requirements by preparing a Protocol Implementation Conformance Statement (PICS) based on the set of Protocol Requirements Lists presented in this document. The following subsections describe key conventions and symbols used in these PRLs.

2.1 Abbreviations and Special Symbols

2.1.1 Status Symbols

M	mandatory
O	optional
O.<n>	optional, but support of at least one of the group of options labelled by the numeral <n> is required
X	prohibited
<pred>:	conditional-item symbol, including predicate identification (see 3.3.4)

^	logical negation, applied to a conditional item's predicate

2.1.2 Other Symbols

<r> receive aspects of an item
<s> send aspect of an item

2.2 Background Information on the ATN PRL Format

2.2.1 General structure of the PRL

The first part of the PRL - Implementation identification and Protocol Summary - is to be completed as indicated with the information necessary to identify fully both the supplier and the implementation.

The main part of the PRL is a fixed-format questionnaire divided into a number of major subclauses; these can be divided into further subclauses each containing a group of individual items. Answers to the questionnaire items are to be provided in the rightmost column either by simply marking an answer to indicate a restricted choice (usually Yes or No), or by entering a value or a set or range of values. (Note that there are some items where two or more choices from a set of possible answers can apply: all relevant choices are to be marked.)

Each item is identified by an item reference in the first column; the second column contains the question to be answered; the third column contains the reference or references to the material that specifies the item in the main body of the standard The remaining columns record the status of the item - whether support is mandatory, optional, prohibited or conditional - and provide the space for the answers.

A supplier may also provide - or be required to provide - further information categorised as either Additional Information or Exception information. When present, each kind of further information is to be provided in a further subclause of items labelled A<i> or X<i>, respectively for cross-referencing purposes, where <i> is any unambiguous identification for the item (e.g. a number); there are no other restrictions on its format and presentation.

A completed PICS proforma based on a PRL including any Additional Information and Exception information is the Protocol Implementation Conformance Statement for the implementation in question.

NOTE - where an implementation is capable of being configured in more than one way, a single PICS may be able to describe all such configurations. However, the supplier has the choice of providing more than one PICS, each covering some subset of implementation's configuration capabilities, in cases where this makes for and clearer presentation of the information.

2.2.2 Additional Information

Items of Additional Information allow a supplier to provide further information intended to assist the interpretation of the PICS. It is not intended or expected that a large quantity of Additional Information will be supplied, and a PICS can be considered complete without any such information. Examples might be an outline of the ways in which a (single) implementation can be set up to operate in a variety of environments and configurations; or a brief rationale - based perhaps upon specific application needs - for the exclusion of features which, although optional, are nonetheless commonly present in implementations of the specification.

References to items of Additional Information may be entered next to any answer in the questionnaire, and may be included in items of Exception information.

2.2.3 Exception Information

It may occasionally happen that a supplier will wish to answer an item with mandatory or prohibited status (after any conditions have been applied) in a way that conflicts with the indicated requirement. No pre-printed answer will be found in the support column for this; instead, the supplier shall write the missing answer into the support column, together with an X<i> reference to an item of Exception information, and shall provide the appropriate - rationale in the Exception item itself.

An implementation for which an Exception item is required in this way does not conform to the CNS/ATM Package 1-A specification.

A possible reason for the situation described above is that a defect in the specification has been reported, a correction for which is expected to change the requirement that has not been met by the implementation.

2.2.4 Conditional items

The PRL contains a number of conditional items. These are items for which the status - mandatory, optional or prohibited - that applies is dependent upon whether or not certain other items are supported, or upon the values supported for other items.

In many cases. whether or not the item applies at all is conditional in this way, as well as the status when the item does apply.

Where a group of items is subject to the same condition for applicability, a separate preliminary question about the condition appears at the head of the group. with an instruction to skip to a later point in the questionnaire if the Not Applicable answer is selected. Otherwise, individual conditional items are indicated by one or more conditional symbols (on separate lines) in the status column.

A conditional symbol is of the form "<pred>:<x>" where "<pred>" is a predicate as described below and "<x>" is one of the status symbols M, O, O.<n> or X.

If the value of the predicate in any line of a conditional item Is true, the conditional item is applicable, and its status is that indicated by the status symbol following the predicate: the answer column is to be marked in the usual way. If the value of predicate is false, the Not Applicable answer is to be marked in the relevant line. (Each line in a multi-line conditional Item should be marked: at most one line will require an answer other than N/A.)

2.2.5 Predicates

A predicate is one of the following:-

a) an item-referenced for an item in the PICS proforma: the value of the predicate is true if the Item is marked as supported, and is false otherwise; or

b) a predicate name, for a predicate defined elsewhere in the PICS proforma (usually in the major capabilities section, or at the end of section containing the conditional item): see below: or

c) the logical negation symbol "^" prefixed to an item-reference or predicate name: the value of the predicate is true if the value of the predicate formed omitting the "^" is false, and vice versa.

The definition for a predicate name is one of the following

i) an item reference, evaluated as at (a) above: or

ii) an relation containing a comparison operator (=, <, etc.) with at least one of its operands being an item-reference for an item taking numerical values as its answer; the predicate is true if the relation holds when each item-reference is replaced by the value entered in the Support column as an answer to the item referred to; or

iii) a boolean expression constructed by combining simple predicated, as at (i) and (ii), using the boolean operators AND, OR and NOT, and parentheses. in the usual way; the value of such a predicate is true if the boolean expression evaluates to true when the simple predicates are interpreted as described above.

Each item whose reference is used in a predicate or predicate definition is indicated by an asterisk in the Item column.

3. Transport Protocol Requirements List

3.1 Introduction

This section presents a description of the compliance of Profile A of CNS/ATM Package 1 to the Transport protocol requirements specified in the ATN Manual (Second Edition), as approved by the ICAO SICAS Panel during November 1993.

3.2 ATN Connection-Mode Transport Protocol

3.2.1 Major Capabilities

The ATN COTP shall implement the features marked "M" in the table.

Index	Class	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
C0	Class 0	14.2	O.1	I	No
C1	Class 1	14.4	C0:O	I	No
C2	Class 2	14.2	O.1	I	No
C3	Class 3	14.3	C2:O	I	No
C4	Class 4 operation over CONS	14.3	C2:O	I	No
C4L	Class 4 operation over CLNS	14.3	C2:O	M	Yes

3.2.2 Specific ATN Recommendations

Note.- The ATN recommendations for use of optional ISO functionality are presented below. If the recommendation is accepted, the indexed predicate indicates the specific implementation features required to support the recommendation. The index of indices indicates where the features for each recommendation are found.

Does the implementation support the ATN recommendation on:

Index	Recommendation	ATN Status	CNS/ATM/1 Profile A Support
ATN1	Initiating CR TPDU?	O.2	Yes
ATN2	Responding to CR TPDU?	O.2	Yes
ATN3	Extended TPDU Numbering	O	Yes
ATN4	Acceptance of Non-use of Checksum?	O	Yes
ATN5	Use of Concatenation?	O	No
ATN6	Use of Selective Acknowledgement?	O	No
ATN7	Use of Request of Acknowledgment?	O	No

ATN8	Reduction of Credit Window	O	Yes
ATN9	ER TPDU Transmission?	O	No
ATN10	Use of Called TSAP-ID Parameter in CR TPDU?	O	Yes
ATN11	Use of Calling TSAP-ID Parameter in CR TPDU?	O	Yes
ATN12	Use of TPDU Size Parameter in CR TPDU?	O	Yes
ATN13	Use of the Additional Option Selection Parameter in CR TPDU?	O	Yes
ATN14	Use of the Priority Parameter in CR TPDU?	O	Yes
ATN15	Use of the Acknowledgment Timer Parameter in CR TPDU?	O	Yes
ATN16	Use of Preferred Maximum TPDU Size Parameter in CR TPDU?	O	No
ATN17	Use of Inactivity Time Parameter in CR TPDU?	O	No
ATN18	Use of Called TSAP-ID Parameter in CC TPDU?	O	Yes
ATN19	Use of Calling TSAP-ID Parameter in CC TPDU?	O	Yes
ATN20	Use of TPDU Size Parameter in CC TPDU?	O	Yes

ATN10:: *Note.- This option is recommended to support congestion control.*

Index	Recommendation	ATN Status	CNS/ATM/1 Profile A Support
ATN21	Use of the Additional Option Selection Parameter in CC TPDU?	O	Yes
ATN22	Use of the Priority Parameter in CC TPDU?	O	Yes
ATN23	Use of the Acknowledgment Timer Parameter in CC TPDU?	O	Yes
ATN24	Use of Preferred Maximum TPDU Size Parameter in CC TPDU?	O	No
ATN25	Use of Inactivity Time Parameter in CC TPDU?	O	No
ATN26	1024 octets as the minimum preferred maximum TPDU size in a CR TPDU?	O	No
ATN27	1024 octets as the minimum preferred maximum TPDU size in a CC TPDU?	O	No
ATN28	1024 octets as the largest value of the maximum TPDU size parameter in a CR TPDU with preferred class 4?	O	Yes
ATN29	1024 octets as the largest value of the maximum TPDU size parameter which may be sent in a CC TPDU when class 4 is selected?	O	Yes
ATN30	Congestion Avoidance Measures?	O	Yes

ATN31	Quality of Service Mapping?	O	No
ATN32	Timer Settings?	O	No

note - ATN28 and ATN29:: This value is configurable. Retix supports values of TPDU size up to 8192 octets (see T4S1 and T4S2)

note - ATN30:: Yes for the mandatory ones - No for the optionals (i.e. those based on Network Layer signaling)

note - ATN31:: RETIX does not support the Quality of Service Mapping but, in CNS/ATM/Package 1 - Profile A , the Network Service QoS is directly given by the application (and so, there is no need to do the QOS mapping within the Transport Layer).

3.2.3 Initiator/Responder Capability for Protocol Classes 0-4

The ATN transport protocol shall implement at least one of the features marked "O.2" in the table.

Index		References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
IR1	Initiating CR TPDU	14.5 a)	O.2	ATN1:M	Yes
IR2	Responding to CR TPDU	14.5 a)	O.2	ATN2:M	Yes

Note. - ISO 8073 requires that at least one of these options shall be implemented.

3.2.4 Supported Functions

3.2.4.1 Supported Functions for Class 4 (C4 OR C4L::).

3.2.4.1.1 Mandatory Functions for Class 4.

The ATN COTP shall implement the features marked "M" in the table.

Index	Function	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
T4F1	TPDU transfer	6.2	M	M	Yes
T4F2	Segmenting	6.3	M	M	Yes
T4F3	Reassembling	6.3	M	M	Yes
T4F4	Separation	6.4	M	M	Yes
T4F5	Connection establishment	6.5	M	M	Yes
T4F6	Connection refusal	6.6	M	M	Yes
T4F7	Data TPDU numbering (normal)	6.10	M	M	Yes
T4F8	Retention and acknowledgement of TPDUs (AK)	6.13.4.1	M	M	Yes
T4F9	Explicit flow control	6.16	M	M	Yes
T4F10	Checksum	6.17	M	M	Yes

T4F11	Frozen references	6.18	M	M	Yes
T4F12	Retransmission on time-out	6.19	M	M	Yes
T4F13	Resequencing	6.20	M	M	Yes
T4F14	Inactivity control	6.21	M	M	Yes

3.2.4.1.2 Mandatory Functions for Operation over Connectionless Network Service.

The ATN COTP shall implement the features marked "M" in the table.

Index	Function	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
T4F23	Transmission over CLNS	6.1.2	M	M	Yes
T4F24	Normal release when operating over CLNS (explicit)	6.7.2	M	M	Yes
T4F25	Association of TPDUs with transport connections when operating over CLNS	6.9.2	M	M	Yes
T4F26	Expedited data transfer when operating over CLNS (Network normal)	6.11.2	M	M	Yes
T4F27	Treatment of protocol errors when operating over CLNS	6.22.2	M	M	Yes

3.2.4.1.3 ISO 8073 Optional Functions.

The ATN COTP shall implement the features marked "Predicate:M" in the table if the predicate is true, i.e., the ATN recommendation has been followed..

Index	Feature	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
T4F28	Data TPDU numbering (extended)	6.10	O	ATN3:M	Yes
T4F29	Non-use of checksum	6.17	O	ATN4:M	Yes
T4F30	Concatenation	6.4	O	ATN5:M	Yes
T4F31	Retention and acknowledgement of TPDUs Use of selective acknowledgement	6.13.4.3	O	ATN6:M	No
T4F32	Retention and acknowledgement of TPDUs Use of request acknowledgement	6.13.4.2	O	ATN7:M	No

note - T4F31 and T4F32:: See T4F8

T4F30:: The transport layer shall not concatenate TPDUs from TCs with different transport priorities.

T4F31:: *Note.- The use of selective acknowledgement is recommended for conservation of bandwidth by preventing retransmission of correctly received out-of-sequence TPDUs.*

T4F32:: *Note.- The use of request of acknowledgement is recommended to reduce AK traffic.*

3.2.5 Supported TPDUs

The ATN COTP shall implement the features marked "M" in the table.

Index	TPDUs		References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
ST1	CR	supported on transmission	13.1	IR1:M	ATN1:M	Yes
ST2	CR	supported on receipt	13.1	IR2:M	ATN2:M	Yes
ST3	CC	supported on transmission	13.1	IR2:M	ATN2:M	Yes
ST4	CC	supported on receipt	13.1	IR1:M	ATN1:M	Yes
ST5	DR	supported on transmission	13.1	IR2:M	ATN2:M	Yes
ST6	DR	supported on receipt	13.1	IR1:M	ATN1:M	Yes
ST7	DC	supported on transmission	13.1	C4L:M	M	Yes
ST8	DC	supported on receipt	13.1	C4L:M	M	Yes
ST9	DT	supported on transmission	13.1	M	M	Yes
ST10	DT	supported on receipt	13.1	M	M	Yes
ST11	ED	supported on transmission	13.1	C4L:M	MO	Yes
ST12	ED	supported on receipt	13.1	C4L:M	MO	Yes
ST13	AK	supported on transmission	13.1	C4L:M	M	Yes
ST14	AK	supported on receipt	13.1	C4L:M	M	Yes
ST15	EA	supported on transmission	13.1	C4L:M	MO	Yes
ST16	EA	supported on receipt	13.1	C4L:M	MO	Yes

ST19	ER	supported on receipt	13.1	M	M	Yes

ISO Note.- The following table states for which classes, if any, ER TPDU is supported on transmission:

Index	Class	References	ISO Status	ATN Support	CNS/ATN/1 Profile A Support
SER4L	Class 4 over CLNS	6.22.2	O	ATN9:M	No

3.2.6 Supported Parameters of Issued TPDUs

3.2.6.1 Parameter Values for CR TPDU (C4L::).

If the additional options selection parameter is issued in a CR TPDU it is mandatory that:

Index		Reference
ICR1	Bits 8 to 7 shall be set to zero	13.3.4 g)

If the preferred class in the CR is 2,3 or 4

Index		Reference	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
ICR2	Is class 0 always offered as an alternative class?	14.4	O	X	N/A

3.2.6.2 Supported Parameters for Class 4 TPDUs (C4L::).

3.2.6.2.1 Optional Parameters for a Connection Request TPDU.

The ATN COTP shall implement the features marked "M" in the table.

Index	Supported parameters	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4CR7	Called TSAP-ID	13.3.4 a)	O	ATN10:M	Yes
I4CR8	Calling TSAP-ID	13.3.4 a)	O	ATN11:M	Yes
I4CR9	TPDU size	13.3.4 b)	O	ATN12:M	Yes
I4CR10	Version Number	13.3.4 d)	O	O	No
I4CR11	Protection parameters	13.3.4 e)	O	O	No
I4CR12	Additional option selection	13.3.4 g)	O	ATN13:M	Yes
I4CR13	Throughput	13.3.4 k)	O	O	Yes
I4CR14	Residual error rate	13.3.4 m)	O	O	No
I4CR15	Priority	13.3.4 n)	O	ATN14:M	No

I4CR16	Transit delay	13.3.4 p)	O	O	Yes
I4CR17	Acknowledgement time	13.3.4 j)	O	ATN15:M	Yes
I4CR18	Preferred maximum TPDU size	13.3.4 c)	O	ATN16:M	No
I4CR19	Inactivity timer	13.3.4 r)	O	ATN17:M	No

I4CR9:: **Recommendation.-** *The transport layer should propose a TPDU size of 1024 octets or more.*

The transport layer should use the TPDU size parameter rather than the preferred maximum TPDU size parameter.

3.2.6.2.2 Optional Parameters for a Connection Confirm TPDU.

ISO Note. - The following parameters are optional if a CC TPDU is issued in class 4:

Index	Supported parameters	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4CC6	Called TSAP-ID	13.4.4	O	ATN18:M	Yes
I4CC7	Calling TSAP-ID	13.4.4	O	ATN19:M	Yes
I4CC8	TPDU size	13.4.4	O	ATN20:M	Yes
I4CC9	Protection parameters	13.4.4	O	O	No
I4CC10	Additional option selection	13.4.4	O	ATN21:M	Yes
I4CC11	Acknowledgement time	13.4.4	O	ATN22:M	Yes
I4CC12	Throughput	13.4.4	O	O	Yes
I4CC13	Residual error rate	13.4.4	O	O	No
I4CC14	Priority	13.4.4	O	ATN23:M	No
I4CC15	Transit delay	13.4.4	O	O	Yes
I4CC16	Preferred maximum TPDU size	13.4.4	I4CR18 :O	ATN24:M	No
I4CC17	Inactivity timer	13.4.4	O	ATN25:M	No

I4CC10:: *Note.- The support of T4F26 implies that the Additional Options Selection parameter is mandatory.*

3.2.6.2.3 Optional Parameter for a Disconnect Request TPDU.

Index	Supported parameter	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4DR4	Additional information	13.5.4 a)	O	O	No

3.2.6.2.4 Mandatory Parameter for a Data TPDU.

ISO Note.- The following parameter is mandatory in a DT TPDU if request of acknowledgement has been selected.

Index	Supported parameter	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4DT4	ROA	13.7.3 b)	T4F32:M	T 4F32:M	No

3.2.6.2.5 Optional Parameter for an Acknowledgement TPDU.

ISO Note.- An AK TPDU containing flow control information will be transmitted if an AK TPDU is received under the conditions specified in ISO 8073 12.2.3.9. The following parameter is mandatory if an AK TPDU is issued in Class 4.

Index	Supported parameter	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4AK4	Flow control confirmation	13.9.4 c)	O	M	Yes

3.2.6.2.6 Use of the Subsequence Number Parameter in the Acknowledgement TPDU.

ISO Note.- If an implementation can reduce credit and does so in the manner outlined in ISO 8073 12.2.3.8.2 then subsequence number in AK is mandatory.

Index	Supported parameters	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4AK5	Subsequence number	13.9.4. b)	ATN8:M ^ATN8:O	ATN8:M	Yes

3.2.6.2.7 Use of the Selective Acknowledgement Parameter in the Acknowledgement TPDU.

ISO Note.- The following parameter is optional in an AK TPDU if selective acknowledgement has been negotiated.

Index	Supported parameter	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4AK6	Selective acknowledgement parameters	13.9.4. d)	T4F31:O	T4F31:O	No

3.2.6.2.8 Optional Parameters for an Error TPDU.

Index	Supported parameter	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
I4ER3	Invalid TPDU	13.12.4 a)	O	O	No

3.2.7 Supported Parameters for Received TPDUs

Note.- ISO 8073 requires implementations to be capable of receiving and processing all possible parameters for all possible TPDUs, depending upon the class and optional functions implemented.

TPDUs in Class 4 (C4L::).

ISO Note.- If use of checksum has been selected then it is mandatory to process a checksum parameter in the following TPDUs:

The ATN COTP shall implement the features marked "M" in the table.

Index	TPDU	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
R4CCch	CC TPDU	13.4.4	M	M	Yes
R4DRch	DR TPDU	13.5.4 b)	M	M	Yes
R4DCch	DC TPDU	13.6.4	M	M	Yes
R4DTch	DT TPDU	13.7.4	M	M	Yes
R4EDch	ED TPDU	13.8.4	M	M	Yes
R4AKch	AK TPDU	13.9.4 a)	M	M	Yes
R4EAch	EA TPDU	13.10.4	M	M	Yes
R4ERch	ER TPDU	13.12.4 b)	M	M	Yes

3.2.8 User Data in Issued TPDUs

Class 4 (C4 or C4L::).

The ATN COTP shall implement the features marked "M" in the table.

Index	User Data	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
D4ICR	User data of up to 32 octets in a CR with preferred class 4	13.3.5	M	M	Yes
D4ICC	User data of up to 32 octets in a CC	13.4.5	M	M	Yes
D4IDR	User data of up to 64 octets in a DR	13.5.5	M	M	Yes

3.2.9 User Data in Received TPDUs

The transport layer shall be able to receive the following:

Index	User Data	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
DRCC	32 octets of user data in a CC TPDU	13.4.5	IR1:M	IR1:M	Yes

DRDR	64 octets of user data in a DR TPDU	13.5.5	IR1:M	IR1:M	Yes
DRCR	32 octets of user data in a CR TPDU	13.3.5	IR2:M	IR2:M	Yes

3.2.10 Negotiation

Note.- If an option is not returned in the CC, it is considered to have been refused. This allows compatible negotiation between versions of the ISO 8073 transport protocol.

3.2.10.1 Class Negotiation - Initiator

Index	Feature	References	ATN Supported Value	CNS/ATM/ Profile A Supported Value
NC	The preferred class in the CR TPDU may contain any of the classes supported by the implementation	6.5.5 j)	Class 4	Class 4

Note 1.- Negotiation of other protocol classes is out of scope. If this is the only profile supported then it is not possible to negotiate any other protocol class.

Note 2.- The table below specifies valid alternative classes

Index	Preferred class	References	ISO Allowed values	ATN Supported values	CNS/ATM/1 Profile A Supported Values
NAC5	Class 4 over CLNS	6.5.5 j)	None	None	None

NAC5:: *Note.- The class cannot be negotiated since Class 4 is the only class allowed over CLNS.*

3.2.10.2 Class Negotiation - Responder

Index	Preferred class	References	ISO Allowed responses	ATN Supported values	CNS/ATM/1 Profile A Supported Values
RC4	What classes can you respond with if CR proposes only class 4?	6.5.4 j) Table 3	2,4 or connection refused depending on classes supported	4	4
RC4a	What classes can you respond with if CR proposes class 4 as preferred class and the alternative class parameter is present?	6.5.4 j) Table 3	0,1,2,3,4 or connection refused depending on classes supported and coding of alternative class	4	4

Note.- This table does not preclude connection refusal for other reasons.

3.2.10.3 TPDU Size Negotiation.

Index	TPDU size	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support

TS1	If maximum TPDU size is proposed in a CR TPDU then the initiator shall support all TPDU sizes from 128 octets to the maximum proposed	14.6 e)	I4CR9:M	I4CR9:M	Yes
TS2	If the preferred maximum TPDU size parameter is used in a CR TPDU then the initiator shall support all TPDU sizes, except 0, that are multiples of 128 octets up to the preferred maximum proposed	14.6 e)	I4CR18:M	I4CR18:M	No
Index	TPDU size	References	ISO Allowed values	ATN Supported values	CNS/ATM/1 Profile A Supported values
TS3	What is the largest value of the preferred maximum TPDU size parameter in a CR TPDU?	14.6 e)	any multiple of 128 octets	any multiple of 128 octets	No
TS4	What is the largest value of the preferred maximum TPDU size parameter in a CC TPDU?	14.6 e)	any multiple of 128 octets	any multiple of 128 octets	No

TS3, TS4:: *Note.- An implementation of the transport layer can support a preferred maximum TPDU size larger than 1024 octets.*

TS3, TS4:: **Recommendation.**- *1024 octets is the recommended minimum maximum-TPDU size.*

Index	TPDU size	References	Allowed Values	Supported Values	CNS/ATM/1 Profile A Supported Values
T4S1	What is the largest value of the maximum TPDU size parameter in a CR TPDU with preferred class 4?	14.6 e)	One of 128, 256, 512, 1024, 2048, 4096, 8192	One of 128, 256, 512, 1024, 2048, 4096, 8192	One of 128, 256, 512, 1024, 2048, 4096, 8192 (Configurable)
T4S2	What is the largest value of the maximum TPDU size parameter which may be sent in the CC TPDU when class 4 is selected?	14.6 e)	128, 256, 512, 1024, 2048, 4096, 8192	128, 256, 512, 1024, 2048, 4096, 8192	One of 128, 256, 512, 1024, 2048, 4096, 8192 (Configurable)

TS3, TS4, T4S1, T4S2:: **Recommendation.**- *The supported TPDU size of 1024 octets is recommended to support efficient transmission of anticipated application data exchanges.*

TS3, TS4, T4S1, T4S2:: *Note.- A given transport implementation may support a smaller TPDU size.*

3.2.10.4 Use of Extended Format.

Index	Extended format	References	ISO Allowed Values	ATN Supported Value	CNS/ATM/1 Profile A Supported Values

NEF3	What formats can you propose in the CR TPDU in class 4?	6.5.5 n)	normal, extended	normal,extended	normal,extended
NEF6	What formats can you select in CC when extended has been proposed in CR in class 4?	6.5.5 n)	normal, extended	normal,extended	normal,extended

NEF3:: **Recommendation.-** *Implementations of the ATN transport layer should propose use of normal format in the CR TPDU.*

NEF3:: *Note.- Because the increased TPDU size resulting from use of extended data TPDU numbering may be more inefficient, this option should be used on a TC only when absolutely required.*

NEF3, NEF6:: *Note.- This table does not preclude proposal of the extended format.*

3.2.10.5 Expedited data Transport service.

The ATN COTP shall implement the feature marked "M" in the table.

Note. - Use of the feature is optional.

Index	Expedited data	References	ISO Status	ATN Supported values	CNS/ATM/1 Profile A Supported Values
TED1	Is the expedited data indication supported in CR and CC TPDU?	6.5.5 r)	M	MO	Yes

TED1:: *Note.- Expedited data is proposed using the Additional Options Parameters in the CR and CC TPDUs.*

3.2.10.6 Non-use of Checksum (C4L and T4F29::).

Index	Non-use of checksum	References	ISO Allowed Values	ATN Supported Values	CNS/ATM/1 Profile A Supported Values
NUC1	What proposals can you make in the CR?	6.5.5 p)	non-use, use	non-use, use	non-use, use
NUC2	What proposals can you make in CC when non-use of checksum has been proposed in CR?	6.5.5 p)	non-use, use	non-use	non-use, use

NUC1:: *Note.- A transport layer is able to propose either use or non-use of checksum in a CR TPDU.*

NUC2:: *Note.- The term "non-use" means that the transport layer may respond accepting non-use of checksum. A transport layer may also respond with use of checksum if non-use has been proposed.*

NUC2:: **Recommendation.--** *The transport layer should accept non-use of checksum when proposed in a CR TPDU.*

3.2.10.7 Use of Selective Acknowledgement

Index	Selective Acknowledgement	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support

USA1	Is use of selective acknowledgement proposed in CR TPDUs ?	6.5.5 s)	O	ATN6:M	No
USA2	Is use of selective acknowledgement selected in a CC when it has been proposed in a CR ?	6.5.5 s)	O	ATN6:M	No

3.2.10.8 Use of Request Acknowledgement

Index	Request of Acknowledgement	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
ROA1	Is use of request of acknowledgement proposed in CR TPDUs ?	6.5.5 t)	O	ATN7:M	No
ROA2	Is use of request of acknowledgement selected in a CC when it has been proposed in a CR ?	6.5.5 t)	O	ATN7:M	No

3.2.11 Error Handling

Note.- Using Class 4 over CLNS, a TPDU with an invalid checksum will be discarded.

Action on Receipt of a Protocol Error.

Index	Item	References	Values		
			ISO Allowed	ATN Supported	CNS/ATM/1 Profile A Supported
PE4L	Class 4 over CLNS	6.22.2	ER, DR, Discard	ER, DR, Discard	DR, Discard

PE0-PE3:: *Note.- N/A*

PE4L:: *Note.- The choice of action (DR, Discard) is an implementation choice and may depend on the type of error encountered.*

3.2.11.1 Actions on receipt of an invalid or undefined parameter in a CR TPDU.

The ATN COTP shall implement the features marked "M" in the table.

Index	Event	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
RR1	A parameter not defined in ISO 8073 shall be ignored	13.2.3	M	M	Yes
RR2	An invalid value in the alternative protocol class parameter shall be treated as a protocol error	13.2.3	M	M	Yes

RR3	An invalid value in the class and option parameter shall be treated as a protocol error	13.2.3	M	M	Yes
RR4	On receipt of the additional option selection parameter bits 8 to 7, and bits 6 to 1 if not meaningful for the proposed class, shall be ignored	13.3.4 g)	M	M	Yes
RR6	On receipt of the class option parameter bits 4 to 1 if not meaningful for the proposed class shall be ignored	13.3.3 h)	M	M	Yes

Index	Event	Reference	Value		
			ISO Allowed	ATN Supported	CNS/ATM/1 Profile A Supported
RR7	A parameter defined in ISO 8073 (other than those covered above) and having an invalid value	13.2.3	Ignore, Protocol Error	Ignore, Protocol Errors	Ignore, Protocol Errors

RR7:: *Note.- The choice of action (Ignore, Protocol error) is an implementation choice and may depend on the type of error encountered.*

3.2.11.2 Actions on receipt of an invalid or undefined parameter in a TPDU other than a CR TPDU.

The ATN COTP shall implement the features marked "M" in the table.

Index	Event	References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
U11	A parameter not defined in ISO 8073 shall be treated as a protocol error	13.2.3	M	M	Yes
U12	A parameter which has an invalid value as defined in ISO 8073 shall be treated as a protocol error	13.2.3	M	M	Yes
U13 (class 4 only)	A TPDU received with a checksum which does not satisfy the defined formula shall be discarded	6.17.3	M	M	Yes

3.2.12 Class 4 Timers and Protocol Parameters

The ATN COTP shall implement the features marked "M" in the table.

Index		References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support

TA1	T1 (Local Retransmission)	12.2.1.1.4	M	M	Yes
TA2	N (Maximum Transmission)	12.2.1	M	M	Yes
TA3	I_L (Inactivity Time)	12.2.1.1.7	M	M	Yes
TA4	W (Window Update)	12.2.1	M	M	Yes
TA5	L (Frozen Reference Time)	12.2.1.1.6	M	M	Yes

Index		References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
ATN-TA1	R (Persistence)	12.2.1.1.5	O	O	Yes
ATN-TA2	M_{LR} (NSDU Lifetime)	12.2.1.1.1	O	O	Yes
ATN-TA3	M_{RL} (NSDU Lifetime)	12.2.1.1.1	O	O	Yes
ATN-TA4	E_{LR} (Maximum Transmission Delay)	12.2.1.1.2	O	O	Yes
ATN-TA5	E_{RL} (Maximum Transmission Delay)	12.2.1.1.2	O	O	Yes
ATN-TA6	A_L (Acknowledgement Time)	12.2.1.1.3	O	ATN15:M	Yes
ATN-TA7	A_R (Acknowledgement Time)	12.2.1.1.3	O	ATN15:M	Yes
ATN-TA8	I_R (Inactivity Time)	12.2.1.1.7	O	ATN17:M	Yes

ISO Note.- The following applies to an implementation under test:

Index		References	ISO Status	ATN Support	CNS/ATM/1 Profile A Support
OT9	Does IUT support optional timer TS2 when operating in class 4?	6.22.2.3	O	O	No

3.3 ATN Connectionless Transport Protocol

The ATN CLTP shall implement the features marked "M" in the table.

Item	**Protocol Function Support**	**Clause**	**ISO Status**	**ATN Support**	**CNS/ATM/1 Profile A Support**
NS	Network service selection	5.3.2.2	M	M	Yes
AM	Address mapping	5.3.2.3	M	M	Yes
	PDU Support				

UD1	Unitdata PDU supported on transmission	6.1.3	M	M	Yes
UD2	Unitdata PDU supported on reception	6.1.3	M	M	Yes
	Parameters of the Unitdata PDU on Transmission				
TpTc	<t> TPDU UD Checksum	6.2.4.1	O	M	Yes
TpTs	<t> TPDU UD Source TSAP-ID	6.2.4.1	M	M	Yes
TpTd	<t> TPDU UD Destination TSAP-ID	6.2.4.1	M	M	Yes
TpTu	<t> TPDU UD User Data	6.2.4.1	O	M	Yes
	Parameters of the Unitdata PDU on Reception				
TpRc	<r> TPDU UD Checksum	6.2.4.2	M	M	Yes
TpRs	<r> TPDU UD Source TSAP-ID	6.2.4.2	M	M	Yes
TpRd	<r> TPDU UD Destination TSAP-ID	6.2.4.2	M	M	Yes
TpRu	<r> TPDU UD User Data	6.2.4.2	M	M	Yes
	Service Support				Yes
CL	Connectionless Mode Network Service	6.2	M	M	Yes

4. Internetwork Protocol Requirements List

4.1 Introduction

This section presents a description of the compliance of Profile A of CNS/ATM Package 1 to the internetworking protocol requirements specified in the ATN Manual (Second Edition), as approved by the ICAO SICAS Panel during November 1993.

4.2 Support of ATN Specific Recommendations

Does the implementation support the following ATN specific features:

Index	**Recommendations**	**ATN Status**	**CNS/ATM/1 Profile A Support**
ATNCLNP1	Does the implementation support ATN Operational Communications?	O	Y
ATNCLNP2	Does the implementation support ATN Administrative Communications?	O	Y
ATNCLNP3	Does the implementation support General Communications?	O	Y
ATNCLNP4	Does the implementation support Congestion Notification?	O	N
ATNCLNP5	Implementation includes the Congestion Notification Function?	O.1	N
ATNCLNP6	Implementation includes the <r> PDU Lifetime Control function ?	O.1	Y
ATNCLNP7	Does the implementation support ATN Systems Management Communications ?	O	Y (note)

note - ATNCLNP7 : Systems Management Communications are supported but without the security parameter (Security Registration ID) as defined in the latest version of the ATN manual ; this is due to the fact that the SSR 1.3 is based on the 18th June version of the ATN Manual. Systems Management data are transferred with an "empty" Security parameter.

4.3 Major Capabilities

An ATN IS or ES protocol implementation shall conform to the following APRLs.

Item	**Capability**	**Reference**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
ES	End System		O.1	O.1	Y
IS	Intermediate System		O.1	O.1	Y
FL-r	<r> Full protocol	6	M	M	Y
FL-s	<s> Full protocol	6	M	M	Y
NSS-r	<r> Non-segmenting subset	5.2	M	M	Y

NSS-s	<s> Non segmenting subset	5.2	IS:M ^IS:O	IS:M ^IS:X	Y N
IAS-r	<r> Inactive subset	5.2	ES:O	ES:O	N
IAS-s	<s> Inactive subset	5.2	IAS-r:M ^IAS-r:X	IAS-r:M ^IAS-r:X	N
S802	SNDCF for ISO 8802	8473-2 5.4	O.2	O	Y
SCLL	SNDCF for CL Link Service	8473-4 5.3.1	O.2	O	Y
SCOL	SNDCF for CO Link Service	8473-4 5.3.2	O.2	O	N
SX25	SNDCF for ISO 8208	8473-3 5.4	O.2	O	Y
ATN SNDCF	SNDCF for Mobile Subnetworks	ATN Manual Ref: Appendix 10	N/A	ISMOB:M ISGRD:O ^IS:O	Y Y N

ISMOB : If ISO 8473 is used over mobile subnetworks, then ISMOB is true, else ISMOB is false.

ISGRD : If ISO 8473 is used over ground subnetworks, then ISGRD is true, else ISGRN is false.

O.1 : The supported functions, NPDUs, associated parameters and timers required for ESs are provided in APRLs A9.6.2.3 through A9.6.2.10. The supported functions, NPDUs, associated parameters and timers required for ISs are provided in APRLs A9.6.2.11 through A9.6.2.23.

O.2 : APRLs for the SNDCF for use with ISO 8802-é subnetworks are provided in A9.6.2.18 and A9.6.2.19. APRLs for the SNDCF for use with ISO 8208 subnetworks are provided in A9.6.2.20 through A.9.6.2.23

4.4 CLNP: End Systems

4.4.1 End Systems - Supported Functions

Item	Function	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
ePDUC	PDU Composition	6.1	M	M	Y
ePDUD	PDU Decomposition	6.2	M	M	Y
eHFA	Header Format Analysis	6.3	M	M	Y
ePDUL-s	<s> PDU Lifetime Control	ATN Manual Ref. A9.3.4	M	M	Y
ePDUL-r	<r> PDU Lifetime Control	ATN Manual Ref. A9.3.44	O	ATNCLNP6:M	Y
eRout	Route PDU	6.5	M	M	Y
eForw	Forward PDU	6.6	M	M	Y
eSegm	Segment PDU	6.7	M	M	Y
eReas	Reassemble PDU	6.8	M	M	Y
eDisc	Discard PDU	6.9	M	M	Y

eErep	Error Reporting	6.10	M	M	Y
eEdec-s	<s> Header Error Detection	6.11	M	M	Y
eEdec-r	<r> Header Error Detection	6.11	M	M	Y
eSecu-s	<s> Security	6.13, ATN Manual Ref: A9.5.4	O	ATNCLNP1:M ATNCLNP2:M ATNCLNP3:O ATNCLNP7:M	Y
eSecu-r	<r> Security	6.13, ATN Manual Ref:A9.5.4	O	ATNCLNP1:M ATNCLNP2:M ATNCLNP3:O ATNCLNP7:M	Y
eCRR-s	<s> Complete Route Recording	6.15	O	OX	N
eCRR-r	<r> Complete Route Recording	6.15	O	O	N
ePRR-s	<s> Partial Route Recording	6.15	O	M	N
ePRR-r	<r> Partial Route Recording	6.15	O	M	Y
eCSR	Complete Source Routing	ATN Manual Ref. A9.4.3	O	OX	N
ePSR	Partial Source Routing	ATN Manual Ref. A9.4.3	O	OX	N
ePRI-s	<s> Priority	ATN Manual Ref. A9.4.6	O	M	N(note)
ePRI-r	<r> Priority	ATN Manual Ref. A9.4.6	O	M	N(note)
eQOSM-s	<s> QOS Maintenance	ATN Manual Ref. A9.4.5	O	M	Y
eQOSM-r	<r> QOS Maintenance	ATN Manual Ref. A9.4.5	O	M	Y
eCong-s	<s> Congestion Notification	6.18	eQOSM-s:M	eQOSM-s:M	Y (note)
eCong-r	<r> Congestion Notification	6.18	O	O	Y (note)
ePadd-s	<s> Padding	ATN Manual Ref. A9.4.5	O	OX	N
ePadd-r	<r> Padding	ATN Manual Ref. A9.4.5	M	M	Y
eEreq	Echo request	6.19	O	O	N

eErsp	Echo response	6.20	O	O	N
eSegS	Create segments smaller than necessary	6.8	O	O	N

note - ePRI-s & e-PRI-r : The ressources of ES and IS network entities are not used preferentially to process high priority PDUs.

note - eCong-s & eCong-r : The treatment of the Congestion notification corresponds to the following :

- for transmission : the CE flag is set to zero before transmission,

- for receipt : the fact that a given PDU suffered by congestion is signalled to the Transport Layer, when delivering this PDU to the Transport Layer (standard RETIX mechanism).

4.4.2 End Systems - Supported NPDUs

An ATN ES protocol implementation shall conform to the following APRL for supported DT parameters.

Item	NPDU	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
eDT-t	DT (full protocol) transmit	7.7	M	M	Y
eDT-r	DT (full protocol) receive	7.7	M	M	Y
eDTNS-t	DT (non-segment) transmit	7.7	NSS-s:M	NSS-s:M	N (note)
eDTNS-r	DT (non-segment) receive	7.7	M	M	Y
eER-t	ER transmit	7.9	M	M	Y
eER-r	ER receive	7.9	M	M	Y
eIN-t	Inactive PDU transmit	7.8	IAS-s:M	IAS-s:M	N
eIN-r	Inactive PDU receive	7.8	IAS-r:M	IAS-r:M	N
eERQ-t	ERQ transmit	7.10	eEerq:M	eEreq:M	N
eERQ-r	ERQ receive	7.10	M	M	N
eERP-t	ERP transmit	7.11	eErsp:M	eErsp:M	N
eERP-r	ERP receive	7.11	M	M	N

note - eDTNS-t : This is supported only for ISs.

4.4.3 End Systems - Supported DT Parameters

An ATN ES protocol implementation shall conform to the following APRL for supported DT parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
edFxPt-s	<s> Fixed Part	7.2	M	M	Y
edFxPt-r	<r> Fixed Part	7.2	M	M	Y

edAddr-s	<s> Address	7.3	M	M	Y
edAddr-r	<r> Address	7.3	M	M	Y
edSeg-s	<s> Segmentation Part	7.4	M	M	Y
edSeg-r	<r> Segmentation Part	7.4	M	M	Y
edPadd-s	<s> Padding	7.5.2	ePadd-s:M	ePadd-s:M	N
edPadd-r	<r> Padding	7.5.2	M	M	Y
edSecu-s	<s> Security	7.5.3	eSecu-s:M	eSecu-s:M	Y
edSecu-r	<r> Security	7.5.3	eSecu-r:M	eSecu-r:M	Y
edCRR-s	<s> Complete Route Recording	7.5.5	eCRR-s:M	eCRR-s:M	N
edCRR-r	<r> Complete Route Recording	7.5.5	eCRR-r:M	eCRR-r:M	N
edPRR-s	<s> Partial Route Recording	7.5.5	ePr-s:M	ePrr-s:M	N
edPRR-r	<r> Partial Route Recording	7.5.5	ePr-r:M	ePrr-r:M	Y
edCSR-s	<s> Complete Source Routing	7.5.4	eCSR:M	eCSR:M	N
edPSR-s	<s> Partial Source Routing	7.5.4	ePSR:M	ePSR:M	N
edQOSM-s	<s> QOS Maintenance	7.5.6	eQOSM-s or eCong-s:M	eQOSM:M	Y
edQOSM-r	<r> QOS Maintenance	7.5.6	eQOSM-r or eCong-r :M	eQOSM or eCong-r:M	Y
edPri-s	<s> Priority	7.5.7	ePri-s:M	ePri-s:M	Y
edPri-r	<r> Priority	7.5.7	ePri-r:M	ePri-r:M	Y
edData-s	<s> Data	7.6	M	M	Y
edData-r	<r> Data	7.6	M	M	Y
edUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.21	M	M	Y
edUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.21	M	M	Y

4.4.4 End Systems - Supported ER Parameters

An ATN ES protocol implementation shall conform to the following APRL for supported ER parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support

eeFxPt-s	<s> Fixed Part	7.2	M	M	Y
eeFxPt-r	<r> Fixed Part	7.2	M	M	Y
eeAddr-s	<s> Address	7.3	M	M	Y
eeAddr-r	<r> Address	7.3	M	M	Y
eePadd-s	<s> Padding	7.5.2	ePadd-s:M	ePadd-s:M	N
eePadd-r	<r> Padding	7.5.2	M	M	Y
eeSecu-s	<s> Security	7.5.3	eSecu-s:M	eSecu-s:M	Y
eeSecu-r	<r> Security	7.5.3	eSecu-r:M	eSecu-r:M	Y
eeCRR-s	<s> Complete Route Recording	7.5.5	eCRR-s:M	eCRR-s:M	N
eeCRR-r	<r> Complete Route Recording	7.5.5	eCRR-r:M	eCRR-r:M	N
eePRR-s	<s> Partial Route Recording	7.5.5	ePRR-s:M	ePRR-s:M	N
eePRR-r	<r> Partial Route Recording	7.5.5	ePRR-r:M	ePRR-r:M	Y
eeCSR-s	<s> Complete Source Routing	7.5.4	eCSR:M	eCSR:M	N
eePSR-s	<s> Partial Source Routing	7.5.4	ePSR:M	ePSR:M	N
eeQOSM-s	<s> QOS Maintenance	7.5.6	eQOSM-s or eCong-s:M	eQOSM-s or eCong-s:M	Y
eeQOSM-r	<r> QOS Maintenance	7.5.6	eQOSM-r or eCong-r:M	eQOSM-r or eCong-r:M	Y
eePri-s	<s> Priority	7.5.7	ePri-s:M	ePri-s:M	Y
eePri-r	<r> Priority	7.5.7	ePri-r:M	ePri-r:M	Y
eeDisc-s	<s> Reason for discard	7.9.5	M	M	Y
eeDisc-r	<r> Reason for discard	7.9.5	M	M	Y
eeData-s	<s> Data	7.9.6	M	M	Y
eeData-r	<r> Data	7.9.6	M	M	Y
eeUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.21	M	M	Y

eeUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.21	M	M	Y

note - Previous table : When generating an ER PDU, the options part of the PDU that caused the generation of the ER PDU, must be copied in the options part of the ER PDU generated. However, a bug in the RETIX software has been dicovered recently, due to which the previous statement is not always true. The previous table is valid under the condition that this bug is corrected.

4.4.5 End Systems - Inactive DT Parameters

An ATN ES protocol implementation shall conform to the following APRL for inactive DT parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
eiNLPI-s	<s> Inactive Network Layer Protocol identifier	7.8.2	IAS-s:M	IAS-s:M	N
eiNLPI-r	<r> Inactive Network Layer Protocol Identifier	7.8.2	IAS-r:M	IAS-r:M	N
eiData-s	<s> Data	7.8.3	IAS-s:M	IAS-s:M	N
eiData-r	<r> Data	7.8.3	IAS-r:M	IAS-r:M	N

4.4.6 End Systems - Supported ERQ Parameters

An ATN ES protocol implementation shall conform to the following APRL for supported ERQ parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
eqFxPt-s	<s> Fixed Part	7.2	M	M	**N**
eqFxPt-r	<r> Fixed Part	7.2	M	M	**N**
eqAddr-s	<s> Address	7.3	M	M	**N**
eqAddr-r	<r> Address	7.3	M	M	**N**
eqSeg-s	<s> Segmentation Part	7.4	M	M	**N**
eqSeg-r	<r> Segmentation Part	7.4	M	M	**N**
eqPadd-s	<s> Padding	7.5.2	ePadd-s:M	ePadd-s:M	**N**
eqPadd-r	<r> Padding	7.5.2	M	M	**N**
eqSecu-s	<s> Security	7.5.3	eSecu-s:M	eSecu-s:M	**N**
eqSecu-r	<r> Security	7.5.3	eSecu-r:M	eSecu-r:M	**N**
eqCRR-s	<s> Complete Route Recording	7.5.5	eCRR-s:M	eCRR-s:M	**N**

eqCRR-r	<r> Complete Route Recording	7.5.5	eCRR-r:M	eCRR-r:M	**N**
eqPRR-s	<s> Partial Route Recording	7.5.5	ePr-s:M	ePrr-s:M	**N**
eqPRR-r	<r> Partial Route Recording	7.5.5	ePr-r:M	ePrr-r:M	**N**
eqCSR-s	<s> Complete Source Routing	7.5.4	eCSR:M	eCSR:M	**N**
eqPSR-s	<s> Partial Source Routing	7.5.4	ePSR:M	ePSR:M	**N**
eqQOSM-s	<s> QOS Maintenance	7.5.6	eQOSM-s or eCong-s:M	eQOSM:M	**N**
eqQOSM-r	<r> QOS Maintenance	7.5.6	eQOSM-r or eCong-r :M	eQOSM or eCong-r:M	**N**
eqPri-s	<s> Priority	7.5.7	ePri-s:M	ePri-s:M	**N**
eqPri-r	<r> Priority	7.5.7	ePri-r:M	ePri-r:M	**N**
eqData-s	<s> Data	7.6	M	M	**N**
eqData-r	<r> Data	7.6	M	M	**N**
eqUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.21	M	M	**N**
eqUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.21	M	M	**N**

note - Previous and next table : The Connectionless NL RETIX product is based on the OSI Stable Implementation Agreements, version 3, 1990, which does not include ERQ and ERP features.

4.4.7 End Systems - Supported ERP Parameters

An ATN ES protocol implementation shall conform to the following APRL for supported ERP parameters.

Item	**Parameter**	**Reference**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
epFxPt-s	<s> Fixed Part	7.2	M	M	N
epFxPt-r	<r> Fixed Part	7.2	M	M	N
epAddr-s	<s> Address	7.3	M	M	N
epAddr-r	<r> Address	7.3	M	M	N

epSeg-s	<s> Segmentation Part	7.4	M	M	N
epSeg-r	<r> Segmentation Part	7.4	M	M	N
epPadd-s	<s> Padding	7.5.2	ePadd-s:M	ePadd-s:M	N
epPadd-r	<r> Padding	7.5.2	M	M	N
epSecu-s	<s> Security	7.5.3	eSecu-s:M	eSecu-s:M	N
epSecu-r	<r> Security	7.5.3	eSecu-r:M	eSecu-r:M	N
epCRR-s	<s> Complete Route Recording	7.5.5	eCRR-s:M	eCRR-s:M	N
epCRR-r	<r> Complete Route Recording	7.5.5	eCRR-r:M	eCRR-r:M	N
epPRR-s	<s> Partial Route Recording	7.5.5	ePr-s:M	ePrr-s:M	N
epPRR-r	<r> Partial Route Recording	7.5.5	ePr-r:M	ePrr-r:M	N
epCSR-s	<s> Complete Source Routing	7.5.4	eCSR:M	eCSR:M	N
epPSR-s	<s> Partial Source Routing	7.5.4	ePSR:M	ePSR:M	N
epQOSM-s	<s> QOS Maintenance	7.5.6	eQOSM-s or eCong-s:M	eQOSM:M	N
epQOSM-r	<r> QOS Maintenance	7.5.6	eQOSM-r or eCong-r :M	eQOSM or eCong-r:M	N
epPri-s	<s> Priority	7.5.7	ePri-s:M	ePri-s:M	N
epPri-r	<r> Priority	7.5.7	ePri-r:M	ePri-r:M	N
epData-s	<s> Data	7.6	M	M	N
epData-r	<r> Data	7.6	M	M	N
epUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.21	M	M	N
epUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.21	M	M	N

4.4.8 End Systems - Timers

An ATN ES protocol implementation shall conform to the following APRL for timers.

Item	**Timer**	**Ref**	**ISO Status**	**ISO Range**	**ATN Requirement**	**Values Supported**	**CNS/ATM/1 Profile A supported values**
ELifReas eReasTim	Is reassembly timer <= received derived PDU lifetime? Reassembly Timer	6.8 6.8	M	500ms to 127.5s	M	<= lifetime	Y (1 - 255)

4.5 CLNP: Intermediate Systems

4.5.1 Intermediate Systems - Supported Functions

An ATN IS protocol implementation shall conform to the following APRL for supported functions.

Item	Function	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
iPDUC	PDU Composition	6.1	M	M	Y
iPDUD	PDU Decomposition	6.2	M	M	Y
iHFA	Header Format Analysis	6.3	M	M	Y
iPDUL	<s> PDU Lifetime Control	6.4	M	M	Y
iRout	Route PDU	6.5	M	M	Y
iForw	Forward PDU	6.6	M	M	Y
iSegm	Segment PDU	6.7	iDSNS:M	iDSNS:M	Y
iReas	Reassemble PDU	6.8	O	O	N
iDisc	Discard PDU	6.9	M	M	Y
iErep	Error Reporting	6.10	M	M	Y
iEdec	<s> Header Error Detection	6.11	M	M	Y
iSecu	<s>Security	6.13 ATN Manual Ref: A9.4.2, A9.5.4	O	ATNCLNP1:M ATNCLNP2:M ATNCLNP3:O ATNCLNP7:M	Y
iCRR	<s> Complete Route Recording	ATN Manual Ref. A9.4.4	O	OX	N
iPRR	<s> Partial Route Recording	6.15, ATN Manual Ref:A9.4.4	O	M	N

iCSR	Complete Source Routing	ATN Manual Ref. A9.4.3	O	OX	N
iPSR	Partial Source Routing	6.14	O	OX	N
iPri	<s> Priority	6.17, ATN Manual Ref: A9.4.6	O	M	N
iQOSM	<s> QOS Maintenance	6.16, ATN Manual Ref: A9.4.5	O	M	Y
iCong	<s> Congestion Notification	6.18, ATN Manual Ref: 9.4.7	O	ATNCLNP:5	N
iPadd	<s> Padding	6.12	M	M	N
iEreq	Echo request	6.19	O	O	N
iErsp	Echo response	6.20	O	O	N
iSegS	Create segments smaller than necessary	6.8	O	O	N
iDSNS	Simultaneous support of subnetworks with different SN-User data sizes	6.7	O	O	Y

note - iPRI: The ressources of IS network entities are not used preferentially to process high priority PDUs.

note - iCong: Mechanisms for detection of congestion have not been implemented.

4.5.2 Supported Security Parameters

An ATN IS protocol implementation shall conform to the following APRL for supported security parameters.

Item	**Function**	**Reference**	**Status**	**ATN Support**	**CNS/ATM/1 Profile A Requirement**
iSADSSEC	Source Address Specific Security	7.5.3.1	iSecu:O.5	iSecu:O	N
iDADSSEC	Destination Address Specific Security	7.5.3.2	iSecu:O.5	iSecu:O	N
iGUNSEC	Globally Unique Security	ATN Manual Ref. A9.4.2	iSecu:O.5	iSecu:M	Y

O.5 : The Security parameter within a single NPDU specifies a security format code indicating Source Address Specific, Destination Address Specific or Globally Unique Security.

4.5.3 Quality of Service Maintenance Function

An ATN IS protocol implementation shall conform to the following APRL for the Quality of Service Maintenance function.

Item	Function	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
iQOSNAVAIL	If requested QOS not available, deliver at different QOS	6.16	iQOSM:M	iQOSM:M	Y
iQOSNOT	Notification of failure to meet requested QOS	6.16	iQOSM:O	iQOSM:M	N
	Which of the following formats of QOS are implemented ?				
iSADDQoS	Source Address Specific QoS	7.5.6.1	iQoSM:O.3	iQOSM:O	N
iDADDQoS	Destination Address Specific QoS	7.5.6.2	iQoSM:O.3	iQOSM:O	N
iGUNQoS	Globally Unique QoS	7.5.6.3	iQoSM:O.3	iQOSM:M	Y
iSvTD	Sequencing versus Transit Delay	7.5.6.3	iGUNQoS:O.4	iQOSM:M	N
iCongE	Congestion Experienced	7.5.6.3	iGUNQoS:O.4	ATNCLNP5:M	N (note)
iTDvCst	Transit Delay versus Cost	7.5.6.3	iGUNQoS:O.4	iQOSM:M	Y
iREPvTD	Residual Error Probability versus Transit Delay	7.5.6.3	iGUNQoS:O.4	iQOSM:M	Y
iREPvCst	Residual Error Probality versus Cost	7.5.6.3	iGUNQoS:O.4	iQOSM:M	Y

O.3: The Quality of Service Maintenance parameter within a single NPDU specifies a QoS format code indicating Source Address Specific, Destination Address Specific or Globally Unique QoS.

O.4: If the QOS format code indicates that the Globally Unique QoS maintenance function is employed, then each bit in the associated parameter value may be set to indicate the order of intra and inter domain routing decisions based on QoS. The parameter values which apply to inter-domain routing are provided in Table 4 of ISO/IEC 10747.

note - iCongE : The parameter is normally set in transmission (ES) and processed in reception (ES); however in an IS, no congestion detection mechanisms have been implemented, so the parameter will not be set to one in case of congestion.

4.5.4 Intermediate Systems - Supported NPDUs

An ATN IS protocol implementation shall conform to the following APRL for supported NPDUs.

Item	Function	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
iDT-t	DT (full protocol) transmit	7.7	M	M	Y
iDT-r	DT (full protocol) receive	7.7	M	M	Y
iDTNS-t	DT (non-segment) transmit	7.7	M	M	Y
iDTNS-r	DT (non-segment) receive	7.7	M	M	Y
iER-t	ER transmit	7.9	M	M	Y
iER-r	ER receive	7.9	M	M	Y
iERQ-t	ERQ transmit	7.10	iEreq:M	O	N
iERQ-r	ERQ receive	7.10	M	M	N
iERP-t	ERP transmit	7.11	iErsp:M	O	N
iERP-r	ERP receive	7.11	M	M	N

4.5.5 Intermediate Systems - Supported DT Parameters

An ATN IS protocol implementation shall conform to the following APRL for supported DT parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
idFxPt-s	<s> Fixed Part	7.2	M	M	Y
idFxPt-r	<r> Fixed Part	7.2	M	M	Y
idAddr-s	<s> Addresses	7.3	M	M	Y
idAddr-r	<r> Addresses	7.3	M	M	Y
idSeg-s	<s> Segmentation Part	7.4	M	M	Y
idSeg-r	<r> Segmentation Part	7.4	M	M	Y
idPadd-s	<s> Padding	7.5.2	M	M	N
idPadd-r	<r> Padding	7.5.2	M	M	Y
idSecu-s	<s> Security	7.5.3	iSecu:M	iSecu-s:M	Y
idSecu-r	<r> Security	7.5.3	iSecu:M	iSecu-r:M	Y

idCRR-s	<s> Complete Route Recording	7.5.5	iCRR:M	M	N
idCRR-r	<r> Complete Route Recording	7.5.5	iCRR:M	iCRR:M	N
idPRR-s	<s> Partial Route Recording	7.5.5	M	M	N
idPRR-r	<r> Partial Route Recording	7.5.5	iPRR:M	iPRR:M	Y
idCSR-s	<s> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
idCSR-r	<r> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
idPSR-s	<s> Partial Source Routing	7.5.4	M	M	N
idPSR-r	<r> Partial Source Routing	7.5.4	iPSR:M	iPSR:M	N
idQOSM-s	<s> QOS Maintenance	7.5.6	M	M	Y
idQOSM-r	<r> QOS Maintenance	7.5.6	iQOSM or iCong:M	iQOSM or ICong:M	Y
idPri-s	<s> Priority	7.5.7	M	M	Y
idPri-r	<r> Priority	7.5.7	iPRi:M	iPri:M	Y
idData-s	<s> Data	7.6	M	M	Y
idData-r	<r> Data	7.6	M	M	Y
idUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.19	M	M	Y
idUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.19	M	M	Y

4.5.6 Intermediate Systems - Supported ER Parameters

An ATN IS protocol implementation shall conform to the following APRL for supported ER parameters.

Item	**Parameter**	**Reference**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
ieFxPt-s	<s> Fixed Part	7.2	M	M	Y
ieFxPt-r	<r> Fixed Part	7.2	M	M	Y
ieAddr-s	<s> Address	7.3	M	M	Y
ieAddr-r	<r> Address	7.3	M	M	Y
iePadd-s	<s> Padding	7.5.2	M	M	N
iePadd-r	<r> Padding	7.5.2	M	M	Y
ieSecu-s	<s> Security	7.5.3	iSecu:M	iSecu:M	Y
ieSecu-r	<r> Security	7.5.3	iSecu:M	iSecu:M	Y

ieCRR-s	<s> Complete Route Recording	7.5.5	M	M	N
ieCRR-r	<r> Complete Route Recording	7.5.5	iCRR:M	iCRR:M	N
iePRR-s	<s> Partial Route Recording	7.5.5	M	M	N
iePRR-r	<r> Partial Route Recording	7.5.5	iPRR:M	iPRR:M	Y
ieCSR-s	<s> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
ieCSR-r	<r> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
iePSR-s	<s> Partial Source Routing	7.5.4	M	M	N
iePSR-r	<r> Partial Source Routing	7.5.4	iPSR:M	iPSR:M	N
ieQOSM-s	<s> QOS Maintenance	7.5.6	M	M	Y
ieQOSM-r	<r> QOS Maintenance	7.5.6	iQOSM or iCong:M	iQOSM or iCong:M	Y
iePri-s	<s> Priority	7.5.7	M	M	Y
iePri-r	<r> Priority	7.5.7	iPri:M	iPri:M	Y
ieDisc-s	<s> Reason for Discard	7.9.5	M	M	Y
ieDisc-r	<r> Reason for Discard	7.9.5	M	M	Y
ieData-s	<s> Data	7.6	M	M	Y
ieData-r	<r> Data	7.6	M	M	Y
ieUnsup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded ?	6.21	M	M	Y
ieUnsup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.21	M	M	Y

note - Previous table : When generating an ER PDU, the options part of the PDU that caused the generation of the ER PDU, must be copied in the options part of the ER PDU generated. However, a bug in the RETIX software has been dicovered recently due to which the previous statement is not always true. The previous table is valid under the condition that this bug is corrected.

4.5.7 Intermediate Systems - Supported ERQ Parameters

An ATN IS protocol implementation shall conform to the following APRL for supported ERQ parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
iqFxPt-s	<s> Fixed Part	7.2	M	M	N
iqFxPt-r	<r> Fixed Part	7.2	M	M	N
iqAddr-s	<s> Addresses	7.3	M	M	N
iqAddr-r	<r> Addresses	7.3	M	M	N
iqSeg-s	<s> Segmentation Part	7.4	M	M	N
iqSeg-r	<r> Segmentation Part	7.4	M	M	N
iqPadd-s	<s> Padding	7.5.2	M	M	N
iqPadd-r	<r> Padding	7.5.2	M	M	N
iqSecu-s	<s> Security	7.5.3	iSecu:M	iSecu-s:M	N
iqSecu-r	<r> Security	7.5.3	iSecu:M	iSecu-r:M	N
iqCRR-s	<s> Complete Route Recording	7.5.5	iCRR:M	M	N
iqCRR-r	<r> Complete Route Recording	7.5.5	iCRR:M	iCRR:M	N
iqPRR-s	<s> Partial Route Recording	7.5.5	M	M	N
iqPRR-r	<r> Partial Route Recording	7.5.5	iPRR:M	iPRR:M	N
iqCSR-s	<s> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
iqCSR-r	<r> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
iqPSR-s	<s> Partial Source Routing	7.5.4	M	M	N
iqPSR-r	<r> Partial Source Routing	7.5.4	iPSR:M	iPSR:M	N
iqQOSM-s	<s> QOS Maintenance	7.5.6	M	M	N
iqQOSM-r	<r> QOS Maintenance	7.5.6	iQOSM or iCong:M	iQOSM or ICong:M	N
iqPri-s	<s> Priority	7.5.7	M	M	N
iqPri-r	<r> Priority	7.5.7	iPRi:M	iPri:M	N
iqData-s	<s> Data	7.6	M	M	N
iqData-r	<r> Data	7.6	M	M	N
iqUnSup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.19	M	M	N
iqUnSup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.19	M	M	N

note - Previous and next table : The Connectionless NL RETIX product is based on the OSI Stable Implementation Agreements, version 3, 1990, which does not include ERQ and ERP features.

4.5.8 Intermediate Systems - Supported ERP Parameters

An ATN IS protocol implementation shall conform to the following APRL for supported ERP parameters.

Item	Parameter	Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
ipFxPt-s	<s> Fixed Part	7.2	M	M	N
ipFxPt-r	<r> Fixed Part	7.2	M	M	N
ipAddr-s	<s> Addresses	7.3	M	M	N
ipAddr-r	<r> Addresses	7.3	M	M	N
ipSeg-s	<s> Segmentation Part	7.4	M	M	N
ipSeg-r	<r> Segmentation Part	7.4	M	M	N
ipPadd-s	<s> Padding	7.5.2	M	M	N
ipPadd-r	<r> Padding	7.5.2	M	M	N
ipSecu-s	<s> Security	7.5.3	iSecu:M	iSecu-s:M	N
ipSecu-r	<r> Security	7.5.3	iSecu:M	iSecu-r:M	N
ipCRR-s	<s> Complete Route Recording	7.5.5	iCRR:M	M	N
ipCRR-r	<r> Complete Route Recording	7.5.5	iCRR:M	iCRR:M	N
ipPRR-s	<s> Partial Route Recording	7.5.5	M	M	N
ipPRR-r	<r> Partial Route Recording	7.5.5	iPRR:M	iPRR:M	N
ipCSR-s	<s> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
ipCSR-r	<r> Complete Source Routing	7.5.4	iCSR:M	iCSR:M	N
ipPSR-s	<s> Partial Source Routing	7.5.4	M	M	N
ipPSR-r	<r> Partial Source Routing	7.5.4	iPSR:M	iPSR:M	N
ipQOSM-s	<s> QOS Maintenance	7.5.6	M	M	N
ipQOSM-r	<r> QOS Maintenance	7.5.6	iQOSM or iCong:M	iQOSM or ICong:M	N
ipPri-s	<s> Priority	7.5.7	M	M	N
ipPri-r	<r> Priority	7.5.7	iPRi:M	iPri:M	N
ipData-s	<s> Data	7.6	M	M	N
ipData-r	<r> Data	7.6	M	M	N
ipUnsup2	Are received PDUs containing parameters selecting unsupported type 2 functions discarded and where appropriate an Error Report PDU generated ?	6.19	M	M	N

ipUnsup3	Are parameters selecting unsupported Type 3 functions ignored ?	6.19	M	M	N

4.5.9 Intermediate Systems - Timer and Parameter Values

An ATN protocol implementation shall conform to the following APRL for timers.

Item	Timer	Ref	Status	ATN Requirement	CNS/ATM/1 Profile A Support
iReasTim	Reassembly Timer	6.8	iReas:M	M	Y (1- 255)

4.6 Subnetwork Dependent Convergence Facility

4.6.1 SNDCF for use with ISO 8802-2 Subnetworks - Functions

When ISO 8802-2 is used as a subnetwork to support ATN service, the following APRL shall apply.

Item	Function	ISO/IEC 8473-2 Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
S802SNUD	Is subnetwork user data of at least 512 octets transferred transparently by the SNDCF ?	5.2	M	M	Y
S802SNTD	Is Transit Delay determined by the SNDCF prior to the processing of User Data ?	5.2	M	M	N

4.6.2 SNDCF for use with ISO 8802-2 Subnetworks - Multi Layer Dependencies

When ISO 8802-2 is used as a subnetwork to support ATN service, the following APRL shall apply.

Item	Dependency	ISO/IEC 8473-2 Reference	Requirement	CNS/ATM/1 Profile A Supported Values
S802SSg-r	<r> Maximum SN data unit size (RX)	5.2	>=512	>= 512
S802SSg-s	<s> Maximum SN data unit size (TX)	5.2	>=512	>= 512

4.6.3 SNDCF for use with ISO 8208 Subnetworks - Functions

When ISO 8208 is used as a subnetwork to support ATN service, the following APRL shall apply.

Item	Function	ISO/IEC 8473-3 Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
XSNUD	Is Subnetwork User Data of at least 512 octets transferred transparently by the SNDCF ?	5.2	M	M	Y
XSNTD	Is Transit Delay determined by the SNDCF prior to the processing of user data ?	5.2	M	M	N
	Call Setup Considerations **Is a new call setup:**	5.31			
XCalla	a. when no suitable call exists ?	5.3.1 a.	O.3	O.3	Y
XCallb	b. when queue threshold reached ?	5.3.1 b.	O.3	O.3	N
XCallc	c. by systems management ?	5.3.1 c.	O.3	O.3	N
XCalld	d. when queue threshold reached and timer expires ?	5.3.4	O.3	O.3	N
XCalle	e. by other local means ?	5.3.1	O.3	O.3	N
	Call clearing considerations **Are calls cleared:**	5.3.2			
XClra	a. when idle timer expires	5.3.2 a.5.3.4	O	O	Y
XClrb	b. when need to re-use circuit	5.3.2 b.	O	O	N
XClrc	c. by systems management	5.3.2 c.	O	O	N
XClrd	d. by provider ?	5.3.2 d.	M	M	Y
XClrer	e. by other local means ?	5.3.2	O	O	N
XPD	X.25 Protocol Discrimination	5.3.3	M	M	Y
XVCC	Resolution of VC collisions	5.3.5	M	M	Y
XMCR	Multiple VCs responding	5.3.6	M	M	N
XMCI	Multiple VCs initiating	5.3.6	O	O	N
Xpri	X.25 Priority procedure	5.3.7	O	M	N

4.6.4 SNDCF for use with ISO 8208 Subnetworks - X.25 Call User Data

When ISO 8208 is used as a subnetwork to support ATN service, the following APRL shall apply.

Item	Parameter	ISO/IEC 8473-3 Reference	Status	ATN Support	CNS/ATM/1 Profile A Support
PD-s	<s> Protocol Discrimination	5.3.3	M	M	Y
PD-r	<r> Protocol Discriminator	5.3.3	M	M	Y

LI-s	<s> Length Indication	5.3.6	XMCI:M	XMCI:M	N
LI-r	<r> Length Indication	5.3.6	M	M	Y
Ver-s	<s> SNCR Version	5.3.6	XMCI:M	XMCI:M	N
Ver-r	<r> SNCR Version	5.3.6	M	M	Y
SNCR-s	<s> SNCR Value	5.3.6	XMCI:M	XMCI:M	N
SNCR-r	<r> SNCR Value	5.3.6	M	M	Y

4.6.5 SNDCF for use with ISO 8208 Subnetworks - ISO 8208 SNDCF Timers

When ISO 8208 is used as a subnetwork to support ATN service, the following APRL shall apply.

Item	Timer	ISO/IEC 8473-3 Reference	Status	Values	ATN Requirement	CNS/ATM/1 Profile A Support
XIDL	X25 VC Idle	5.3.4	XClra:O	Any	M	Y
XNVC	additional VC	5.3.4	O	Any	M	N

4.6.6 SNDCF for use with ISO 8208 Subnetworks - SNDCF Multi Layer Dependencies

When ISO 8208 is used as a subnetwork to support ATN service, the following APRLs shall apply.

Item	Dependency	ISO/IEC 8473-3 Reference	Requirement	CNS/ATM/1 Profile A Supported Values
XSSg-r	<r> Maximum SN data unit size (Rx)	5.2	>=512	>=512
XSSg-s	<s> Maximum SN data unit size (Tx)	5.2	>=512	>=512

Item	Dependency	ISO/IEC 8473-3 Reference	Status	ATN Requirement	CNS/ATM/1 Profile A Support
Xvc	X.25 Virtual call service	5.3.8	M	M	Y
Xdt	X.25 Data transfer	5.3.8	M	M	Y
Xfc	X.25 flow control procedures	5.3.8	M	M	Y
Xfrp	X.25 flow control + reset packets	5.3.8	M	M	Y
Xccp	X.25 call setup and clear packets	5.3.8	M	M	Y

Xdp	X.25 DTE and DCE data packets	5.3.8	M	M	Y
Xrs	X.25 restart procedures	5.3.8	M	M	Y
XDct	X.25 DCE timeouts	5.3.8	M	M	Y
XDtT	X.25 time limits	5.3.8	M	M	Y
Xpco	X.25 network packet coding	5.3.8	M	M	Y
Xfcn	X.25 flow control parameter negotiation	5.3.8	O	O	Y
Xtd	X.25 transit delay selection and negoiation	5.3.8	O	O	Y
Xtc	X.25 throughput class negotiation	5.3.8	O	O	Y
Xoth	Other X.25 elements	5.3.8	O	O	Y

5. ISO 9542 (ES-IS) Protocol Requirements List

5.1 Introduction

This section presents a description of the compliance of Profile A of CNS/ATM Package 1 to the ISO 9542 protocol requirements specified in the ATN Manual (Second Edition), as approved by the ICAO SICAS Panel during November 1993.

5.2 ISO 9542 - End System

Does the implementation support the following ATN specific features:

Index	Recommendation	ATN Status	CNS/ATM/1 Profile A Support
ESISB	Does the ES implement ISO 9542 over broadcast subnetworks?	O	Y
ESISG	Does the ES implement ISO 9542 over general topology subnetworks?	O	Y
ESISP	Does the ES implement ISO 9542 over point to point subnetworks?	O	Y

ESISB:: Note.- This option is recommended in A11.1.2.2.1

ESISG:: Note.- This option is recommended in A11.1.2.2.2

ESISP:: Note.- This option is recommended in A11.1.2.2.3

When ISO 542 is supported, then the protocol implementation shall conform to the following APRLs.

Item	**Protocol Function**	**Clauses**	**Status**	**ATN requirement**	**CNS/ATM/1 Profile A Support**
CI RI	Is configuration information supported? Is redirection information supported ?	ATN Manual Ref.: A11.1.2.2	O O	ESISB : M,M ESISG:X,M ESISP:M,M	Y Y
	Are the following functions supported ?				
CfRs	Configuration Response	6.6	M	M	Y
ErrP	Protocol Error Processing	6.13	(CIvRI):M	(CI):M	Y
HCsV	PDU Header Checksum Validation	6.12	(CIvRI):M	(CI):M	Y
HCsG	PDU Header Checksum Generation	6.12	O	O	Y

RpCf	Report Configuration	6.2, 6.2.1	CI:M	CI:M	Y
RcCf	Record Configuration	6.3, 6.3.2	CI:M	CI:M	Y
FlCf	Flush Old Configuration	6.4	CI:M	CI:M	Y
QyCf	Query Configuration	6.5	CI:M	CI:M	Y
RcRd	Record Redirect	6.9	RI:M	M	Y
FlRd	Flush Old Redirect	6.11	RI:M	M	Y
RfRd	Refresh Redirect	6.10	RI:O	O	Y
CfNt	Configuration Notification	6.7 ATN Manual Ref.: A11.1.2.3	CI:O	CI:M	Y
CTPr	ESCT Processing	6.3.2	CI:O	CI:O	N
AMPr	Address Mask (only) Processing	7.4.5	RI:O	O	N
SMPr	Address Mask and SNPA Mask Processing	7.4.5, 7.4.6	RI:O	O	N

Item	**Protocol Function**	**Clauses**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
	Are the following PDUs supported ?				
ESH-s	<s> End System Hello	7.1,7.5	M	M	Y
ESH-r	<r> End System Hello	7.1,7.5	CI:M	CI:M	Y
ISH-r	<r> Intermediate System Hello	7.1,7.6	CI:M	CI:M	Y
RD-r	<r> Redirect	7.1,7.7	RI:M	RI:M	Y

	Protocol Function	**Clauses**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
	Are the following PDU fields supported?				
FxPt	<s> Fixed Part <r> Fixed Part	7.2.1-7.2.7 7.2.1-7.2.7	M (CIvRI):M	M (CI):M	Y Y
SA-sl	<s> Source Address, one NSAP only	7.3.1	O.1	O.1	Y

SA-rl	<r> Source Address, one NSAP only	7.3.2	CI:M	CI:M	Y
SA-sm	<s> Source Address, two or more NSAPs	7.3.3	O.1	O.1	Y
SA-rm	<r> Source Address, two or more NSAPs		CI:M	CI:M	Y
NET-r	<r> Network Entity Title	7.3.1/2/4	(CIvRI):M	(CI):M	Y
DA-r	<r> Destination Address	7.3.1/2/5	RI:M	M	Y
BSNPA-r	<r> Subnetwork Address	7.3.1/2/6	RI:M	M	Y
Scty-s	<s> Security	7.4.2	O	O	N
Scty-r	<r> Security	7.4.2	O	O	N
Pty-s	<s> Priority	7.4.3	O	O	N
Pty-r	<r> Priority	7.4.3	O	O	N
QosM-r	<r> QOS Maintenance	7.4.4	RI:O	O	N
AdMk-r	<r> Address Mask	7.4.5	RI:O	O	N
SNMk-r	<r> SNPA mask	7.4.6	RI:O	O	N
ESCT-r	<r> Suggested ES Configuration Timer	7.4.7	CI:O	CI:O	Y
OOpt-r	<r> (ignore) unsupported or unknown options	7.4.1	M	M	Y
OOpt-s	<s> Other options		P	P	N
	Parameter Ranges				
HTv	What range of values can be set for the holding time field in transmitted PDUs ?	6.1, 6.1.2	M	M	1 sec to 65535
CTv	If configuration information is supported, what range of information can be set for the Configuration Timer ?	6.1, 6.1.1	CI:M	CI:M	1 sec to 65535

O.1: Delete if inapplicable

5.3 ISO 9542 - Intermediate System

Index	Recommendation	ATN Status	CNS/ATM/1 Profile A Support
ESISB	Does the IS implement ISO 9542 over broadcast subnetworks?	O	Y

ESISG	Does the IS implement ISO 9542 over general topology subnetworks?	O	Y
ESISP	Does the IS implement ISO 9542 over point to point subnetworks?	O	Y

ESISB: This option is recommended in A11.1.2.2.1

ESISG: This option is recommended in A11.1.2.2.2

ESISP: This option is recommended in A11.1.2.2.3

When ISO 9542 is supported, then the protocol implementation shall conform to the following APRL.

Item	**Protocol Function**	**Clauses**	**Status**	**ATN Requirement**	**CNS/ATM/1 Profile A Support**
CI	Is configuration information supported over the associated subnetwork?	ATN Manual Ref.: A11.1.2.1, A11.1.2.2	O	(ESISP):M (ESISM):M (ESISG):M (ESISB):M	Y
RI	Is redirection information supported over the associated subnetwork?	ATN Manual Ref.: A11.1.2.2	O	(ESISM):X (ESISG):M (ESISB):M (ESISP):M	Y (except for mobile subnetworks)
	Are the following functions supported ?				
ErrP	Protocol Error Processing	6.13	M	M	Y
HCsV	PDU Header Checksum Validation	6.12	M	M	Y
HCsG	PDU Header Checksum Generation	6.12	O	O	Y
RpCf	Report Configuration	6.2,6.2.2	CI:M	CI:M	Y
RcCf	Record Configuration	6.3,6.3.1	CI:M	CI:M	Y
FlCf	Flush Old Configuration	6.4	CI:M	CI:M	Y
RqRd	Request Redirect	6.8	RI:M	RI:M	Y
CfNt	Configuration Notification	6.7 ATN Manual Ref.: A11.1.2.3	CI:O	CI:M	Y
CTGn	ESCT Generation	6.3.2	CI:O	CI:O	Y
AMGn	Address Mask (only) generation	6.8	RI:O	RI:O	N

SMGn	Address mask and SNPA Mask generation	6.8	RI:O	RI:O	N
	Are the following PDUs Supported ?				
ESH-r	<r> End System Hello	7.1,7.5	CI:M	CI:M	Y
ISH-<r>	<r> Intermediate System Hello	7.1,7.6	CI:O	CI:O	Y
ISH-<s>	<s> Intermediate System Hello	7.1,7.6	CI:M	CI:M	Y
RD-s	<s> Redirect	7.1,7.7	RI:M	RI:M	Y
RD-r	<r> (ignore) Redirect	6.9,7.1,7.7	M	M	Y
	Are the following PDU fields supported ?				
FxPt	<s> Fixed Part	7.2.1-7.2.7	M	M	Y
	<r> Fixed Part	7.2.1-7.2.7	M	M	Y
SA-r	<r> Source Address, one or more NSAPs	7.3.1/2/3	CI:M	CI:M	Y
NET-s	<s> Network Entity Title	7.3.1/2/4	M	M	Y
NET-r	<r> Network Entity Title	7.3.1/2/4	ISH-r:M	ISH-r:M	Y
DA-s	<s> Destination Address	7.3.1/2/5	RI:M	RI:M	Y
BSNPA-s	<s> Subnetwork Address	7.3.1/2/6	RI:M	RI:M	Y
Scty-s	<s> Security	7.4.2	O	O	N
Scty-r	<r> Security	7.4.2	O	O	N
Pty-s	<s> Priority	7.4.3	O	O	N
Pty-r	<r> Priority	7.4.3	O	O	N
QoSM-s	<s> QOS Maintenance	7.4.4	RI:O	RI:O	N
AdMk-s	<s> Address Mask	7.4.5	RI:O	RI:O	N
SNMk-s	<s> SNPA Mask	7.4.6	RI:O	RI:O	N
ESCT-s	<s> Suggested ES Configuration Timer	7.4.7	CI:O	CI:O	Y
ESCT-r	<r> (ignore) Suggested ES Configuration Timer	7.4.7	ISH-r:M	ISH-r:M	Y
OOpt-r	<r> (ignore) unsupported or unknown options	7.4.1	M	M	Y
OOpt-s	<s> Other options		P	P	N
	Parameter Ranges				
HTv	What range of values can be set for the Holding Time Field in transmitted PDUs ?		M	M	1 sec to 65535

CTv	If configuration information is supported, what range of values can be set for the Configuration Timer ?		CI:M	CI:M	1 sec to 65535

note - Previous table : For the RD PDUs the options included are the same with the options present in the ISO 8473 PDU header that caused the transmission of the RD PDU. So, the options Security, Priority, QOS maintenance may also be present for RD PDUs.

6. ISO 8208 Protocol Requirements List

6.1 Introduction

This section presents a description of the compliance of Profile A of CNS/ATM Package 1 to the ISO 8208 protocol requirements for an ISO 8208 DTE using the MCS SATCOM as DCE.

6.2 ISO 8208 PRLs

This group of protocol requirements lists is a subset of the options listed in the ISO 8208 PICS proforma. Options listed by ISO 8208 but not listed here are either not applicable, or are optional and are deemed not to affect this specification.

Each option is related to the ISO 8208 PICS by its ISO 8208 item reference number. Support of the option is classified as follows:

[Y]es	The option is supported
[N]o	The option is not supported
[E]rror	The option is not supported and causes the virtual call to be cleared on receipt. This applies to the support of optional facilities only.
[I]gnore	The option is not supported and is ignored on receipt. This applies to the support of optional facilities only.

6.2.1 General DTE Characteristics

Item	Protocol Feature	CNS/ATM/1 Profile A Support
	Service supported:	
Vs	Virtual Call	[Y]
Vp	Permanent Virtual Circuit	[Y] *(not used)*
	What environments are supported?	
Ec/8	DTE/DCE (1988)	[Y]
Ec/4	DTE/DCE (1984)	[Y]
Ec/0	DTE/DCE (1980)	[Y] *(not used)*
Et/t	DTE/DTE in fixed role as DTE	[Y]
Et/c	DTE/DTE in fixed role as DCE	[Y]
Et/d	DTE/DTE with dynamic role selection	[Y] *(not used)*
	What packet sequence numbering is supported?	
M8	Modulo 8	[Y]
M128	Modulo 128 (extended)	[Y]
	Is the reference number optional user facility supported?	
RNa, RNb		

6.2.2 Link Layer Interactions

Item	Protocol Feature	CNS/ATM/1 Profile A Support
	Is restarting of the packet layer initiated (in the DTE):	
L1a	on completion of link layer initialization?	[Y]
L1b	on recovery from failure of the link layer?	[Y] *(not used)*
L2	Can packets consisting of a non-integral number of octets be received from the link layer?	[N]

6.2.3 General Packet formatting

Item	Protocol Feature	CNS/ATM/1 Profile A Support
P2	Do all (DTE) transmitted packets consist of an integral number of octets?	[Y]
	Do all (DTE) transmitted packets contain the following fields:	
P3a	General Format Identifier	[Y]
P3b	Logical Channel Identifier	[Y]
P3c	Packet Type Identifier	[Y]
P4	Are all (DTE) received packets that do not contain valid GFI, LCI and PTI fields treated as erroneous?	[Y]

6.2.4 Packet layer functions independent of logical channels

Item	Protocol Feature	CNS/ATM/1 Profile A Support
	Are the following packet layer functions supported?	
	(DTE) restarting the packet layer:	
Z1i	- as initiator	[Y]
Z1r	- as responder	[Y]
Z2r	(DTE) receiving DIAGNOSTIC packet	
Z2s	(DTE) sending DIAGNOSTIC packet	
Z3	DISCARD, or ERROR restart, on erroneous received packets not assignable to a logical channel and not covered by item Z2s	[Y]
Z4i	(DTE) initiating On-line Facility Registration:	[N]

6.2.5 Call Setup

Item	Protocol Feature	CNS/ATM/1 Profile A Support
	Are outgoing Virtual Calls supported:	
S1a	Fast Select, no restriction on response?	[Y]
S1b	Fast Select with restricted response?	[Y]
S1c	non-Fast-Select? (See Note)	[Y]
SP1b	(DTE) send CALL REQUEST, basic format	[Y]
SP1e	(DTE) send CALL REQUEST, extended format	[Y]

SP2b	(DTE) receive CALL CONNECTED, basic format	[Y]
SP2e	(DTE) receive CALL CONNECTED, extended format	[Y]
	Are incoming Virtual Calls supported:	
S2a	Fast Select with acceptance possible?	[Y]
S2b	Fast Select, always cleared?	[Y]
S2c	non-Fast-Select with acceptance possible?	[Y]
S2d	non-Fast-Select, always cleared?	[Y]
SP3b	(DTE) receive INCOMING CALL, basic format	[Y]
SP3e	(DTE) receive INCOMING CALL, extended format	[Y]
SP4b	(DTE) send CALL ACCEPTED, basic format	[Y]
SP4e	(DTE) send CALL ACCEPTED, extended format	[Y]
	Is D-bit negotiation supported:	
DN1	for outgoing Virtual Calls?	[Y] *(not used)*
DN2	for incoming Virtual Calls?	[Y] *(not used)*

Note: Non-Fast-Select is the default if the facility is not specified.

6.2.6 Call clearing

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
	Is call clearing supported, as:	
C1	response to indication of clearing?	[Y]
C2a	aborting an outgoing Virtual Call attempt?	[Y]
C2b	rejecting an incoming Virtual Call?	[Y]
C2c	originating clearing of an established Virtual Call?	[Y]
CP1b	(DTE) receive CLEAR CONFIRMATION, basic format	[Y]
CP1e	(DTE) receive CLEAR INDICATION, basic format	[Y]
CP2b	(DTE) receive CLEAR INDICATION, extended format	[Y]
CP2e	(DTE) send CLEAR CONFIRMATION, basic format	[Y]
CP3b	(DTE) send CLEAR CONFIRMATION, extended format	[Y]
CP3e	(DTE) send CLEAR REQUEST, basic format	[Y]
CP4b	(DTE) send CLEAR REQUEST, extended format	[Y]
CP4e	(DTE) receive CLEAR CONFIRMATION, extended format	[Y]

Note 1: CP2e, CP4e. The extended format is only used in conjunction with the Charging Information facility.

Note 2: CP3e. The extended format is used in conjunction with the Fast Select facility.

6.2.7 Resetting of logical channels

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
	Is resetting supported:	

RSi	(DTE) as initiator?	[Y]
RSr	(DTE) as responder?	[Y]

6.2.8 Interrupt transfer

Item	Protocol Feature	CNS/ATM/1 Profile A Support
Is	Is sending interrupts supported?	[Y]
Ir	Is receiving interrupts supported?	[Y]

6.2.9 Sending data

Item	Protocol Feature	CNS/ATM/1 Profile A Support
DS1	Is sending of DATA packets supported?	[Y]
DS2	Send-window rotation on receiving updated P(R) values	[Y]
DS3	Response to flow control by received RNR and RR packets (See Note)	[Y]
DS4a DS4b	Sending M=0 in DATA packets Sending M=1 in DATA packets	[Y] [Y]
DS5a DS5b	Sending Q=0 in DATA packets Sending Q=1 in DATA packets	[Y] [Y]

Note: The DCE implements flow control by Non-Rotation of the receive window, and will not send RNR packets.

6.2.10 Receiving data

Item	Protocol Feature	CNS/ATM/1 Profile A Support
DR1	Receiving DATA packets	[Y]
DR2	Receive-window rotation by sending updated P(R) values	[Y]
DR3	Flow control by sending RNR and RR packets (See Note)	[Y]
DR4a DR4b	Receiving M=0 in DATA packets Receiving M=1 in DATA packets	[Y] [Y]
DR5a DR5b	Receiving Q=0 in DATA packets Receiving Q=1 in DATA packets	[Y] [Y]
DR6	Requesting packet retransmission by sending REJECT packets	

Note: The DCE implements flow control by Non-Rotation of the receive window, and will not send RNR packets.

6.2.11 Delivery Confirmation

Item	Protocol Feature	CNS/ATM/1 Profile A Support
DC	Is Delivery Confirmation supported?	[Y]

6.2.12 Values of Cause and Diagnostic Code fields

Item	Protocol Feature	CNS/ATM/1 Profile A Support
	In RESTART REQUEST packets sent (by DTE):	
Y1a Y1b Y1c	Cause = 0, standard diagnostic codes, - specific codes - generic codes (including zero) - code zero, always	[Y]
Y1d	Cause = 128, private diagnostic codes	
Y1e	other	[N]
	In RESTART INDICATION packets received (by DTE):	
Y2a	Cause = 0 or 128, any diagnostic code value	[Y]
Y2b	Cause not 0 or 128, any diagnostic code value	[N]
	In CLEAR REQUEST packets sent (by DTE):	
Y3a Y3b Y3c	Cause = 0, standard diagnostic codes, - specific codes - generic codes (including zero) - code zero, always	[Y]
Y3d	Cause = 128, private diagnostic codes	
Y3e	other	
	In CLEAR INDICATION packets received (by DTE):	
Y4a	Cause = 0 or 128, any diagnostic code value	[Y]
Y4b	Cause not 0 or 128, any diagnostic code value	[Y]
	In RESET REQUEST packets sent (by DTE):	
Y5a Y5b Y5c	Cause = 0, standard diagnostic codes, - specific codes - generic codes (including zero) - code zero, always	[Y]
Y5d	Cause = 128, private diagnostic codes	
Y5e	other	
	In RESET INDICATION packets received (by DTE):	
Y6a	Cause = 0 or 128, any diagnostic code value	
Y6b	Cause not 0 or 128, any diagnostic code value	

6.2.13 Facilities sent in outgoing CALL REQUEST packets (DTE to DCE)

Item	Protocol Feature	CNS/ATM/1 Profile A Support
FS1pi	Flow Control Parameter Negotiation, packet size (Note 1)	[Y]
FS1wi	Flow Control Parameter Negotiation, window size (Note 1)	[Y]
FS2i	Throughput Class Negotiation	[Y]

FS3b	Closed User Group Selection, basic format	[Y]
FS3e	Closed User Group Selection, extended format	[Y]
FS4b	Closed User Group With Outgoing Access Selection, basic format	[Y]
FS4e	Closed User Group With Outgoing Access Selection, extended format	[Y]
FS5	Bilateral Closed User Group Selection	[Y]
FS6a	Fast Select	[Y]
FS6b	Reverse Charging	[Y]
FS7i	Network User Identification	[Y]
FS8i	Charging Information, requesting service	[Y]
FS9b	RPOA Selection, basic format	[Y]
FS9e	RPOA Selection, extended format	[Y]
FS12	Transit Delay Selection And Indication	[Y]
FS99i	Local non-X.25 facilities, following Facility Marker	[Y]
FS98i	Remote non-X.25 facilities, following Facility Marker	[Y]
FS20i	Facility Marker, CCITT-specified DTE facilities	[Y]
FS21i	Calling Address Extension	[Y]
FS22i	Called Address Extension	[Y]
FS23i	Minimum Throughput Class Negotiation	[Y]
FS24i	End-to-End Transit Delay Negotiation	[Y]
FS25i	Expedited Data Negotiation (See Note 2)	[Y]
FS26i	Priority	[Y]
FS27i	Protection	

Note 1: The DCE always negotiates Packet Size to 128 and Window Size to 2.
Note 2: If not negotiated, the DCE defaults to Expedited Data OFF.

6.2.14 Facilities sent in incoming CALL ACCEPT packets (DTE to DCE)

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
FS1pr	Flow Control Parameter Negotiation, packet size (Note 1)	[Y]
FS1wr	Flow Control Parameter Negotiation, window size (Note 1)	[Y]
FS2r	Throughput Class Negotiation	[Y]
FS7r	Network User Identification	[Y]
FS8r	Charging Information, requesting service	[Y]
FS10r	Called Line Address Modified Notification	[Y]
FS99r	Local non-X.25 facilities, following Facility Marker	[Y]
FS98r	Remote non-X.25 facilities, following Facility Marker	[Y]
FS20r	Facility Marker, CCITT-specified DTE facilities	[Y]
FS22r	Called Address Extension	[Y]
FS24r	End-to-End Transit Delay Negotiation	[Y]
FS25r	Expedited Data Negotiation (See Note 2)	[Y]
FS26r	Priority	[Y]
FS27r	Protection	

Note 1: The DCE never negotiates Packet Size or Window Size on an incoming call; the defaults of 128 and 2 are always used.
Note 2: If not negotiated, the DCE defaults to Expedited Data OFF.

6.2.15 Facilities sent in CLEAR REQUEST packets

Item	Protocol Feature	CNS/ATM/1 Profile A Support
FS10d	Called Line Address Modified Notification	
FS13	Call Deflection Selection	
FS99d	Local non-X.25 facilities, following Facility Marker	
FS98d	Remote non-X.25 facilities, following Facility Marker	
FS20d	Facility Marker, CCITT-specified DTE facilities	
FS22d	Called Address Extension	

6.2.16 Facilities received in INCOMING CALL packets (DCE to DTE)

Item	Protocol Feature	CNS/ATM/1 Profile A Support
FR1pi	Flow Control Parameter Negotiation, packet size (Note 1)	[Y]
FR1wi	Flow Control Parameter Negotiation, window size (Note 1)	[Y]
FR2i	Throughput Class Negotiation	[Y]
FR3b	Closed User Group Selection, basic format	[Y]
FR3e	Closed User Group Selection, extended format	[Y]
FR4b	Closed User Group With Outgoing Access Selection, basic format	[Y]
FR4e	Closed User Group With Outgoing Access Selection, extended format	[Y]
FR5	Bilateral Closed User Group Selection	[Y]
FR6a	Fast Select	[Y]
FR6b	Reverse Charging	[Y]
FR11	Call Redirection or Call Deflection Notification	[Y]
FR12i	Transit Delay Selection And Indication	[Y]
FR99i	Local non-X.25 facilities, following Facility Marker	[Y]
FR20i	Facility Marker, CCITT-specified DTE facilities	[Y]
FR21	Calling Address Extension	[Y]
FR22i	Called Address Extension	[Y]
FR23	Minimum Throughput Class Negotiation	[Y]
FR24i	End-to-End Transit Delay Negotiation	[Y]
FR25i	Expedited Data Negotiation (See Note 2)	[Y]
FR26i	Priority	[Y]
FR27i	Protection	

Note 1: The DCE never negotiates Packet Size and Window Size on an incoming call; the defaults of 128 and 2 are always used.
Note 2: If not negotiated, the DCE defaults to Expedited Data OFF.

6.2.17 Facilities received in outgoing CALL CONNECT packets (DCE to DTE)

Item	Protocol Feature	CNS/ATM/1 Profile A Support

FR1pr	Flow Control Parameter Negotiation, packet size (Note 1)	[Y]
FR1wr	Flow Control Parameter Negotiation, window size (Note 1)	[Y]
FR2r	Throughput Class Negotiation	[Y]
FR10r	Called Line Address Modified Notification	[Y]
FR12r	Transit Delay Selection And Indication	[Y]
FR99r	Local non-X.25 facilities, following Facility Marker	[Y]
FR20r	Facility Marker, CCITT-specified DTE facilities	[Y]
FR22r	Called Address Extension	[Y]
FR24r	End-to-End Transit Delay Negotiation	[Y]
FR25r	Expedited Data Negotiation (See Note 2)	[Y]
FR26r	Priority	[Y]
FR27r	Protection	

Note 1: The DCE always negotiates the Packet Size to 128 and the Window Size to 2.
Note 2: If not negotiated, the DCE defaults to Expedited Data OFF.

6.2.18 Facilities received in CLEAR INDICATION packets

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
FR8ad	Charging Information, monetary unit	
FR8bd	Charging Information, segment count	
FR8cd	Charging Information, call duration	
FR10d	Called Line Address Modified Notification	
FR99d	Local non-X.25 facilities, following Facility Marker	
FR20d	Facility Marker, CCITT-specified DTE facilities	
FS22d	Called Address Extension	

6.2.19 Facilities received in CLEAR CONFIRMATION packets

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
FR8af	Charging Information, monetary unit	
FR8bf	Charging Information, segment count	
FR8cf	Charging Information, call duration	

6.2.20 Values for flow control parameters and throughput class, Virtual Call service

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
	What values are supported for:	

V1s V1r V2s V2r V3s V3r	Default packet sizes, sending (octets)? Default packet sizes, receiving? Default window sizes, sending? Default window sizes, receiving? Default throughput classes, sending? Default throughput classes, receiving?	128 128 2 2 9600 9600
V5	Can different default packet sizes be set for sending and receiving?	[N]
V7	Can different window sizes be set for sending and receiving?	[N]
V8	Can different default throughput classes be set for sending and receiving?	[N]
	What values are supported in Flow Control Parameter Negotiation for:	
V9s V9r V10s V10r	Packet sizes negotiable, sending (octets)? Packet sizes negotiable, receiving? Window sizes negotiable, sending? Window sizes negotiable, receiving?	[16/32/64/128/256/512/1024/2048/4096] [16/32/64/128/256/512/1024/2048/4096] [1-7 if basic format; 1-127 if extended] [1-7 if basic format; 1-127 if extended]
	What values are supported for:	
V12 V13	Throughput classes negotiable, sending (bits/sec.)? Throughput classes negotiable, receiving (bits/sec.)?	

Note 1: V1s, V1r, V9s, V9r. The term "packet size" refers to the maximum length of the User Data Field in a DATA packet.
Note 2: V9s, V9r. The maximum size of the information field supported over the link layer is 260 octets, allowing a maximum User Data Field of 256 octets (giving a DATA packet size of 259 octets).

6.2.21 Timers, Retransmission Counts and logical channel ranges

Item	**Protocol Feature**	**CNS/ATM/1 Profile A Support**
	(See Note 1)	
T20	Restart Request Response Timer	180 s.
T21	Call Request Response Timer	200 s.
T22	Reset Request Response Timer	180 s.
T23	Clear Request Response Timer	180 s.
T24	Window Status Transmission Timer	
T25	Window Rotation Timer	
T26	Interrupt Response Timer	180 s.
	Logical Channel Range Parameters	
LC1	LIC	
LC2	HIC	
LC3	LTC	
LC4	HTC	
LC5	LOC	
LC6	HOC	
LC8	Maximum number of logical channels for Virtual Calls	

Note 1: All timers use ISO 8208 default values.

7. ATN Mobile SNDCF Protocol Requirements List

7.1 Introduction

7.1.1 Scope

This section presents a description of the compliance of Profile A of CNS/ATM Package 1 to the ATN Mobile SNDCF requirements specified in the ATN Manual (Second Edition) as approved by the ICAO SICAS Panel during November 1993.

7.1.2 References

	Ref	Title
1.	ATNP/1/WP-4	ATN Manual (2nd Edition)
2.	ISO/IEC 9496-1: 1991	OSI Conformance Testing Methodology and Framework, Part 1: General Concepts
3.	ISO 8208	Information Technology - Data Communications - X.25 Packet Layer Protocol for Data Terminal Equipment (Revision of Second Edition)
4.	ITU-T Recommendation V.42bis	Data Compression Procedures for Data Circuit Terminating Equipment (DCE) using Error Correction Procedures.

7.2 Conformance

7.2.1 Static Conformance for All Implementations

A system implementing the ATN Mobile SNDCF shall:

a) implement the mandatory functions for call setup specified in paragraph A10.6.4.3 of the ATN Manual V2.0

b) Generate and accept call request user data, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

c) Implement the call clearing procedures specified in A10.6.4.10 of the ATN Manual V2.0

d) Implement the Call Reset procedures specified in A10.6.4.11 of the ATN Manual V2.0

e) Implement the procedures for satisfying SN-UNITDATA requests specified in clause A10.6.4.5 and A10.6.4.5.1. of the ATN Manual V2.0

7.2.2 Static Conformance: Optional Functions

7.2.2.1 Negotiation of Compression Algorithm

A system implementing Negotiation of Compression Algorithm shall:

a) support and use the “Fast Select” optional user facility specified in ISO 8208, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

b) Generate and accept call accept user data, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

7.2.2.2 Local Reference Header Compression

A system implementing Local Reference Header Compression shall:

a) Implement the procedures for offering the Local Reference Header Compression option during call setup, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

b) When the Negotiation of Compression Algorithm optional function is supported, the system shall implement the procedures for accepting Local Reference Header Compression when offered by the call initiator.

c) Implement a local directory as specified in clauses A10.6.4.3.2, A10.6.4.4, A10.6.4.5.2, A10.6.4.5.3, A10.6.4.7.2.2, A10.6.4.7.3.1, A10.6.4.7.3.1.3, A10.6.4.7.3.2.1, A10.6.4.7.3.4, A10.6.4.7.3.4.3, A10.6.4.7.5, A10.6.4.10, and A10.6.4.11 of the ATN Manual V2.0

d) Implement local reference establishment as specified in clauses A10.6.4.5.3., A10.6.4.5.5 and A10.6.4.7.2 of the ATN Manual V2.0

e) Implement compression and decompression of Initial, Derived and Error PDU types, as specified in clauses, A10.6.4.5.2, A10.6.4.6.1, A10.6.4.6.2, A10.6.4.6.3, A10.6.4.7.3, and A10.6.4.7.4 of the ATN Manual V2.0, and subordinate clauses.

f) Implement the procedures for processing incoming PDUs specified in clause A10.6.4.7.1 of the ATN Manual V2.0

g) Implement the procedures for generation of the SNDCF Error Report as specified in clause A10.6.4.8 of the ATN Manual V2.0, and for handling incoming SNDCF Error Reports as specified in clause A10.6.4.7.5. of the ATN Manual V2.0

7.2.2.3 Local Reference Cancellation

A system implementing Local Reference Cancellation shall:

a) Implement procedures compliant with the specification for Local Reference Header Compression (see 2.2.2 above).

b) Implement the procedures for offering the Local Reference Cancellation option during call setup, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

c) When the Negotiation of Compression Algorithm optional function is supported, the system shall implement the procedures for accepting Local Reference Cancellation when offered by the call initiator.

d) Implement the procedures for Local Reference Cancellation specified in clauses A10.6.4.9, A10.6.4.9.1 and A10.6.4.9.2 of the ATN Manual V2.0.

e) Implement the management of local references specified in clause A10.6.4.5 of the ATN Manual V2.0

7.2.2.4 ICAO Address Compression Algorithm

A system implementing the ICAO Address Compression Algorithm shall:

a) Implement the procedures for offering the ICAO Address Compression Algorithm option during call setup, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

b) When the Negotiation of Compression Algorithm optional function is supported, the system shall implement the procedures for accepting ICAO Address Compression when offered by the call initiator.

c) If the Local Reference Compression option is supported then the procedures for ICAO Address Compression shall be applied after local reference compression for outgoing PDUs and before the applicable procedures for incoming PDUs, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

d) Implement the procedures for inspection of all outgoing PDUs for compressible NSAPs according to clause A10.9.5.2 of the ATN Manual V2.0.

e) Implement the procedures for inspection of all incoming PDUs for compressed NSAP Addresses, according to clause A10.9.6.2 of the ATN Manual V2.0.

f) Implement the procedures for compression of NSAPs in outgoing PDUs according to clauses A10.9.2 to A10.9.5.1.9 inclusive of the ATN Manual V2.0.

g) Implement the procedures for decompression all compressed PDUs in incoming PDUs according to clauses A10.9.6 to A10.9.6.1.9 inclusive of the ATN Manual V2.0.

7.2.2.5 V.42bis Compression

A system implementing the V.42bis compression algorithm shall:

a) Implement the procedures for offering the V.42bis Compression Algorithm option during call setup, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

b) When the Negotiation of Compression Algorithm optional function is supported, the system shall implement the procedures for accepting V.42bis Compression when offered by the call initiator.

c) If the Local Reference Compression option is supported then the procedures for V.42bis Compression shall be applied after local reference compression for outgoing PDUs and before the applicable procedures for incoming PDUs, as specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

7.2.3 Dynamic Conformance for all Implementations

An implementation claiming conformance to the ATN Manual V2.0 procedures for the Mobile SNDCF shall exhibit externally observable behaviour consistent with its having implemented:

a) The protocol specified in clause A10.6.4.3.2 of the ATN Manual V2.0 for initiating call setup.

b) The use of the ISO 8208 subnetwork option user facilities specified in clause A10.6.4.3.2 of the ATN Manual V2.0.

c) The protocol for each optional function for which static conformance is claimed.

An implementation which does not support a function specified as optional shall, on receiving a PDU in which that function is selected or wholly concerned with the function, generate an appropriate SNDCF Error Report.

7.3 The Protocol Requirements Lists for the ATN Mobile SNDCF

7.3.1 Identification

7.3.1.1 Implementation Identification

Supplier	
Contact point for queries about the PICS	
Implementation Name(s) and Version (s)	
Other Information necessary for full identification (e.g. name(s) and version(s) of machines and/or operating systems, System name(s))	
Date of Statement	

7.3.2 Protocol Summary

Identification of protocol specification	ATN Manual 2nd Edition (1994)	
Identification of amendments to the protocol specification		
Protocol Version(s) supported		
Have any Exception items been required (see 3.3.3) *Note: The answer Yes means that the implementation does not conform to the ATN Manual V2.0 specification.*	Yes ☑	No ☐

7.3.3 Major Capabilities

Item	Capability	Reference	Status	CNS/ATM/1 Profile A Support
mcSetup	Call Setup and Clearing Procedures	6.2.1	M	Yes ☑
*mcNego	Negotiation of Compression Algorithm	6.2.2.1	O	Yes ☐ No ☐
*mcLocRef	Local Reference Header Compression	6.2.2.2	O.1	Yes ☐ No ☐
*mcCan	Local Reference Cancellation	6.2.2.3	mcLocRef:O ^mcLocRef:X	Yes ☐ No ☐
*mcACA	ICAO Address Compression Algorithm	6.2.2.4	O.1[1]	Yes ☐ No ☑
mcV42	V.42bis Compression	6.2.2.5	O.1[1]	Yes ☐ No ☑

7.3.4 Call Setup and Clearing Procedures

Item	Function	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
csDynam	Dynamic Call Setup	A10.6.4.3.2	O.2	Yes ☐ No ☑
csSys	Call Setup by Systems Management	A10.6.4.3.2	O.2	Yes ☑ No ☐
csPri	Mapping onto subnetwork priority[2]	A10.6.4.3.2	M	Yes ☑
csDef	Use of non-standard Default packet size	A10.6.4.3.2	M	Yes ☑

[1] Dynamically, if both V.42bis compression and the ICAO ACA are implemented, only one of these options may be accepted if Negotiation Of Compression Algorithm is implemented. Alternatively, if Negotiation Of Compression Algorithm is not implemented, or Fast Select is not available, then only one of these options may be offered.

[2] The supplier shall explain how the mapping between the SN-Unitdata priority and subnetwork priority is performed.

csFast	Use of Fast Select[3]	A10.6.4.3.2	M	Yes ☑
csOther	Use of other optional User Facilities and CCITT-specified DTE facilities	A10.6.4.3.2	O[4]	Yes ☐ No ☐
csAdd	Use of additional call user data in call request	A10.6.4.3.2	O	Yes ☐ No ☐
csReq	Required use of additional user data in incoming call request	A10.6.4.3.2	X	No ☑
csCol	Call Collision Resolution	A10.6.4.3.2	M	Yes ☑
csNeg	Call Acceptance/Rejection Procedures	A10.6.4.3.2	M	Yes ☑
csDiag	Use of call rejection diagnostic codes	A10.6.4.3.2	O	Yes ☑ No ☐
csReset	Call Reset procedures	A10.6.4.11	M	Yes ☑
csSMClear	Call Clearing by Systems Management	A10.6.4.10	O.3	Yes ☑ No ☐
csTimeClear	Call Clearing on an inactivity timeout	A10.6.4.10	O.3	Yes ☐ No ☑
csResClear	Call Clearing when resources required by a higher priority VC	A10.6.4.10	O.3	Yes ☐ No ☑

7.3.5 Negotiation of Compression Algorithm

Item	**Function**	**ATN Manual Reference**	**Status**	**CNS/ATM/1 Profile A Support**
caUserData	Use of Call Accept User data to signal acceptable options	A10.6.4.3.2	mcNego:M	N/A ☐ Yes ☑
caAdd	Use of additional call user data in call accept	A10.6.4.3.2	mcNego:O	N/A ☐ Yes ☐ No ☐

[3] Only required if supported by subnetwork

[4] If answered "yes", suppliers shall describe each optional User Facilities and CCITT-specified DTE facilities supported and the use made of it.

caReq	Required use of additional user data on received call accept	A10.6.4.3.2	mcNego:X	N/A ☐	No ☑

7.3.6 Local Reference Header Compression

Item	Function	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
lrVC	Opening additional virtual circuits	A10.6.4.5	mcLocRef:M	N/A ☐ Yes ☑
*lrDirSize	Local Directory with more than 128 entries	A10.6.4.4	mcLocRef:O	N/A ☐ Yes ☐ No ☐
lrProt	Identification of Network Layer Protocol	A10.6.4.5.1	mcLocRef:M	N/A ☐ Yes
lrMod	Processing of SN-UnitData Requests	A10.6.4.5.2	mcLocRef:M	N/A ☐ Yes ☑
lrEst	Establishment of new local reference	A10.6.4.5.3	mcLocRef:M	N/A ☐ Yes ☑
lrTransfer	Transfer of modified ISO 8473 PDU	A10.6.4.5.5	mcLocRef:M	N/A ☐ Yes ☑
lrInitial	Initial DT PDU Compression	A10.6.4.6.1	mcLocRef:M	N/A ☐ Yes ☑
lrDerived	Derived DT PDU Compression	A10.6.4.6.2	mcLocRef:M	N/A ☐ Yes ☑
*lrError-s	Generation of Error PDU Compression	A10.6.4.6.2	mcLocRef:M	N/A ☐ Yes ☑
lrDiscard	Compression of discarded PDU encapsulated within Error PDU	A10.6.4.6.3	lrError-s:M	N/A ☐ Yes ☑
lrCompTr	Transfer of compressed PDUs	A10.6.4.6.3.10	mcLocRef:M	N/A ☐ Yes ☑
lrReceived	Processing of received PDUs	A10.6.4.7	mcLocRef:M	N/A ☐ Yes ☑
lrUncomp-r	Processing of received uncompressed PDUs	A10.6.4.7.2	mcLocRef:M	N/A ☐ Yes ☑
lrUnMod-r	Processing of received unmodified PDUs	A10.6.4.7.2.1	mcLocRef:M	N/A ☐ Yes ☑
lrComp-r	Processing of received compressed data PDUs	A10.6.4.7.3	mcLocRef:M	N/A ☐ Yes ☑

lrError-r	Processing of received compressed Error PDUs	A10.6.4.7.4	mcLocRef:M	N/A ☐ Yes ☑
lrSNDCFerr-s	Generation of SNDCF Error Report	A10.6.4.8	mcLocRef:M	N/A ☐ Yes ☑
lrSNDCFerr-r	Processing of received SNDCF Error Report	A10.6.4.7.5	mcLocRef:M	N/A ☐ Yes ☑

7.3.7 Local Reference Cancellation

Item	**Function**	**ATN Manual Reference**	**Status**	**CNS/ATM/1 Profile A Support**
lrcMgmt	Management of local references	A10.6.4.5.4	mcCan:M	N/A ☐ Yes ☑
lrcRequest-s	Generation of Cancellation Request PDU	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
lrcRequest-r	Processing of incoming Cancellation Request PDU	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
lrcReliable	Reliable transfer of Cancellation Request	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
lrcAccept-s	Generation of Cancellation Accept PDU	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
lrcAccept-r	Processing of incoming Cancellation Accept PDU	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑

7.3.8 ICAO Address Compression Algorithm

Item	**Function**	**ATN Manual Reference**	**Status**	**CNS/ATM/1 Profile A Support**
acOut	Compression of outgoing PDUs	A10.9.1	mcACA:M	N/A ☑ Yes ☐
acIn	Decompression of incoming PDUs	A10.9.1	mcACA:M	N/A ☑ Yes ☐
acAddr	Address Length Determination	A10.9.2	mcACA:M	N/A ☑ Yes ☐
acComp	Compression of NSAP Addresses and address prefixes	A10.9.5	mcACA:M	N/A ☑ Yes ☐

acDecomp	Decompression of NSAP Addresses and address prefixes	A10.9.6	mcACA:M	N/A ☑ Yes ☐

7.3.9 PDU Formats

7.3.9.1 Call Request User Data

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
crLen	Length Indicator	A10.6.4.3.2	M	Yes ☑
crVersion	Version Indicator	A10.6.4.3.2	M	Yes ☑
crSNCR	Subnetwork Connection Reference (SNCR)	A10.6.4.3.2	M	Yes ☑
crComp	Offerred Compression Techniques	A10.6.4.3.2	M	Yes ☑
crDir	Maximum Directory Size	A10.6.4.3.2	mcLocRef:M [5]	N/A ☐ Yes ☑
crAdd-s	Additional User Data on send	A10.6.4.3.2	O [6]	Yes ☐ No ☐
crAdd-r	Additional User Data on receive	A10.6.4.3.2	O [6]	Yes ☐ No ☐

Item	Description	ATN Manual Reference	Range	CNS/ATM/1 Profile A Support
MaxDir	Maximum number of directory entries supported	A10.6.4.3.2	128..32767	Configurable

[5] Dynamically, this field is only generated if Local Reference Compression is offered.

[6] If Yes, suppliers shall specify the format and use made of this field.

7.3.9.2 Call Accept User Data

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
caComp	Offerred Compression Techniques	A10.6.4.3.2	mcNego:M	N/A ☐ Yes ☑
caAdd-s	Additional User Data on send	A10.6.4.3.2	mcNego:O[6]	N/A ☐ Yes ☐ No ☐
caAdd-r	Additional User Data on receive	A10.6.4.3.2	mcNego:O[6]	N/A ☐ Yes ☐ No ☐

7.3.9.3 Modified ISO 8473 NPDU

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
npLocRef-s	Local Reference Option field	A10.6.4.5.2	mcLocRef:M	N/A ☐ Yes ☑

7.3.9.4 Compressed Initial PDU

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
inType	PDU Type	A10.6.4.6.1.1	mcLocRef:M	N/A ☐ Yes ☑
inPri	Priority	A10.6.4.6.1.2	mcLocRef:M	N/A ☐ Yes ☑
inLifetime	Lifetime	A10.6.4.6.1.3	mcLocRef:M	N/A ☐ Yes ☑
inFlags	Flag Bits	A10.6.4.6.1.4 to A10.6.4.6.1.7	mcLocRef:M	N/A ☐ Yes ☑
inLocRef	Local Reference (1 octet)	A10.6.4.6.1.7	mcLocRef:M	N/A ☐ Yes ☑
inLocRef2	Local Reference (2 octet)	A10.6.4.6.1.7	lrDirSize:M ^lrDirsize:X	N/A ☐ Yes☐ No☐
inPDUId	PDU Identifier	A10.6.4.6.1.9	mcLocRef: M[7]	N/A ☐ Yes ☑

[7] Note that dynamically this field is only present if the SP flag is set to one.

inNSDU	User Data	Figure A10.3	mcLocRef:M	N/A ☐ Yes ☑

7.3.9.5 Compressed Derived PDU

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
drType	PDU Type	A10.6.4.6.2.1	mcLocRef:M	N/A ☐ Yes ☑
drPri	Priority	A10.6.4.6.2.2	mcLocRef:M	N/A ☐ Yes ☑
drLifetime	Lifetime	A10.6.4.6.2.3	mcLocRef:M	N/A ☐ Yes ☑
drFlags	Flag Bits	A10.6.4.6.2.4 to A10.6.4.6.2.7	mcLocRef:M	N/A ☐ Yes ☑
drLocRef	Local Reference (1 octet)	A10.6.4.6.1.7	mcLocRef:M	N/A ☐ Yes ☑
drLocRef2	Local Reference (2 octet)	A10.6.4.6.1.7	lrDirSize:M ^lrDirsize:X	N/A ☐ Yes ☐ No ☐
drPDUId	PDU Identifier	A10.6.4.6.2.8	mcLocRef: M	N/A ☐ Yes ☑
drSegOff	Segment Offset	A10.6.4.6.2.9	mcLocRef: M	N/A ☐ Yes ☑
drTotalLen	Total Length	A10.6.4.6.2.10	mcLocRef: M	N/A ☐ Yes ☑
drNSDU	User Data	Figure A10.3	mcLocRef:M	N/A ☐ Yes ☑

7.3.9.6 Compressed Error PDU

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
erType	PDU Type	A10.6.4.6.3.1	mcLocRef:M	N/A ☐ Yes ☑
erPri	Priority	A10.6.4.6.3.2	mcLocRef:M	N/A ☐ Yes ☑
erLifetime	Lifetime	A10.6.4.6.3.3	mcLocRef:M	N/A ☐ Yes ☑
erFlags	Flag Bits	A10.6.4.6.3.4 to A10.6.4.6.3.7	mcLocRef:M	N/A ☐ Yes ☑
erLocRef	Local Reference (1 octet)	A10.6.4.6.1.7	mcLocRef:M	N/A ☐ Yes ☑
erLocRef2	Local Reference (2 octet)	A10.6.4.6.1.7	lrDirSize:M ^lrDirsize:X	N/A ☐ Yes☐ No☐
erReason	Discard Reason	A10.6.4.6.3.8	mcLocRef: M	N/A ☐ Yes ☑
erNSDU	Compressed Header of discarded PDU	A10.6.4.6.3	mcLocRef:M	N/A ☐ Yes ☑

7.3.9.7 SNDCF Error Report PDU

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
sfType	PDU Type	A10.6.4.8	mcLocRef:M	N/A ☐ Yes ☑
sfReason	Discard Reason	A10.6.4.8	mcLocRef:M	N/A ☐ Yes ☑
sfLocRef	Local Reference	A10.6.4.8	mcLocRef:M	N/A ☐ Yes ☑
sfLocRef2	Local Reference (2 octet)	A10.6.4.6.1.7	lrDirSize:M ^lrDirsize:X	N/A ☐ Yes☐ No ☐

7.3.9.8 Cancellation Request

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
cqType	PDU Type	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
cqRef	Cancellation Reference	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
cqLocRef	Local Reference	A10.6.4.9	mcLocRef:M	N/A ☐ Yes ☑
cqLocRef2	Local Reference (2 octet)	A10.6.4.6.1.7	lrDirSize:M ^lrDirsize:X	N/A ☐ Yes ☐ No ☐

7.3.9.9 Cancellation Accept

Item	Description	ATN Manual Reference	Status	CNS/ATM/1 Profile A Support
ccType	PDU Type	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑
ccRef	Cancellation Reference	A10.6.4.9	mcCan:M	N/A ☐ Yes ☑

8. ISO 10747 (IDRP) Protocol Requirements List

8.1 Introduction

This section contains the description of the compliance of Profile A of CNS/ATM Package 1 to the ISO 10747 (IDRP) protocol requirements specified in the ATN Manual (Second Edition), as approved by the SICAS Panel during November 1993.

8.2 Protocol Requirements Lists

Table 1. PICS Proforma for IDRP: Implementation Identification	
Supplier	
Contact point for queries about this PICS	
Implementation Name(s) and Version(s)	
Other information necessary for full identification (e.g., Name(s) and Version(s) for machines and operating systems, System Name(s)	

Table 2. PICS Proforma for IDRP: Protocol Summary	
Protocol Version	1
Addenda Implemented (if applicable)	None
Amendments Implemented	None
Have any Exception items been required?	No

Table 3. PRLs for IDRP: General

Item	Questions/Features	ISO 10747 References	ISO Status	CNS/ATM/1 Profile A Support
BASIC	Are all basic BIS functions implemented?	12.1	M	YES
MGT	Is this system capable of being managed by the specified management information?	11	M	NO
VER	Does this BIS support version negotiation?	7.8	M	NO
RTSEP	Does this BIS support the ROUTE_SEPARATOR attribute?	6.3.1.1, 7.12.1	M	YES
HOPS	Does this BIS support the RD_HOP_COUNT attribute?	6.3.1.13, 7.12.13	M	YES
PATH	Does this BIS support the RD_PATH attribute?	6.3.1.3, 7.12.3	M	YES
CAPY	Does this BIS support the CAPACITY attribute?	6.3.1.15, 7.12.15	M	NO
FSM	Does this BIS manage BIS-BIS connections according to the BIS FSM description?	7.6.1	M	YES
FCTL	Does this BIS provide flow control?	7.7.5	M	YES
SEQNO	Does this BIS provide sequence number support?	7.7.4	M	YES
INTG1	Does this BIS provide data integrity using authentication type 1?	7.7.1	0.1	YES
INTG2	Does this BIS provide data integrity using authentication type 2?	7.7.2	0.1	NO
INTG3	Does this BIS provide data integrity using authentication type 3?	7.7.3	0.1	NO
ERROR	Does this BIS handle error handling for IDRP?	7.20	M	YES
RIBCHK	Does this BIS operate in a "failstop" manner with respect to corrupted routing information?	7.10.2	M	YES

Table 4. PRLs for IDRP: Update-Send				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
INT	Does this BIS provide the internal update procedures?	7.17.1	M	YES
RTSEL	Does this BIS support the MinRouteSelectionInterval timer?	7.17.3.1	M	YES
RTORG	Does this BIS support the MinRDOriginationInterval timer?	7.17.3.2	M	YES
JITTER	Does this BIS provide jitter on its timers?	7.17.3.3	M	NO

Table 5. PRLs for IDRP: Update-Receive				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
INPDU	Does this BIS handle inbound BISPDUs correctly?	7.14	M	YES
INCONS	Does this BIS detect inconsistent routing information?	7.15.1	M	YES

Table 6. PRLs for IDRP: Decision				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
TIES	Does the BIS break ties between candidate routes correctly?	7.16.2.1	M	YES
RIBUPD	Does this BIS update the correct Loc-RIBs?	7.16.2	M	YES
AGGRT	Does this BIS support route aggregation?	7.18.2.1, 7.18.2.2, 7.18.2.3	O	NO
LOCK	Does this BIS provide interlocks between its decision process and the updating of the information in its Adj-RIBs-In?	7.16.4	M	YES
FIBUPD	Does this BIS create FIB entries reflecting subnetwork access restrictions correctly?	7.16.2	M	YES

Table 7: PRLs for IDRP: Receive				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
RCV	Does the BIS process incoming BISPDUs and respond correctly to error conditions?	7.14, 7.20	M	YES
OSIZE	Does the BIS accept incoming OPEN PDUs whose size in octets is between minBISPDULength and 3000?	6.2, 7.20	M	YES
MXPDU	Does the BIS accept incoming UPDATE, IDRP ERROR and RIB REFRESH PDUs whose size in octets is between minBISPDULength and maxBISPDULength?	6.2, 7.20	M	YES

Table 8: PRLs for IDRP: CLNS Forwarding				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
PSRCRT	Does the BIS correctly handle NPDUs that contain a partial source route?	8	M	N/A
DATTS	Does the BIS correctly extract the NPDU-derived Distinguishing Attributes with the corresponding FIB-Atts?	8.2	M	N/A
MATCH	Does the BIS correctly match the NPDU-derived Distinguishing Attributes with the corresponding FIB-Atts?	8.3	M	N/A
EXTF	Does the BIS correctly forward NPDUs with destinations outside its own routing domain?	8.4	M	YES
INTF	Does the BIS correctly forward NPDUs with destinations inside its own routing domain?	8.1	M	YES

Table 9: PRLs for IDRP: Peer Entity Authentication				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
AUTH	Does the BIS correctly authenticate the source of a BISPDU?	7.7.2	0	YES

Table 10: PRLs for IDRP: Optional Transitive Attributes				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
MEXIT	Does the BIS support use of the MULTI_EXIT_DISC attribute?	6.3.1.7, 7.12.7	0	YES

Table 11: PRLs for IDRP: Generating Well Known Discretionary Attributes				
Item	**Questions/Features**	**ISO 10747 References**	**ISO Status**	**CNS/ATM/1 Profile A Support**
EXTG	Does the BIS support generation of the EXT_INFO attribute?	6.3.1.2, 7.12.2	0	YES
NHRS	Does the BIS support generation of the NEXT_HOP attribute in support of route servers?	6.3.1.4, 7.12.4	0	NO
NHSN	Does the BIS support generation of the NEXT_HOP attribute to advertise SNPAs?	6.3.1.4, 7.12.4	0	NO
DLI	Does the BIS support generation of the DIST_LIST_INCL attribute?	6.3.1.5, 7.12.5	0	YES
DLE	Does the BIS support generation of the DIST_LIST_EXCL attribute?	6.3.1.6, 7.12.6	0	YES
TDLY	Does the BIS support generation of the TRANSIT DELAY attribute?	6.3.1.8, 7.12.8	0	NO
RERR	Does the BIS support generation of the RESIDUAL ERROR attribute?	6.3.1.9, 7.12.9	0	NO
EXP	Does the BIS support generation of the EXPENSE attribute?	6.3.1.10, 7.12.10	0	NO
LQOSG	Does the BIS support generation of the LOCALLY DEFINED QOS attribute?	6.3.1.11, 7.12.11	0	NO
HREC	Does the BIS support generation of the HIERARCHICAL RECORDING attribute?	6.3.1.12, 7.12.12	0	NO
SECG	Does the BIS support generation of the SECURITY attribute?	6.3.1.14, 7.12.14	0	NO
PRTY	Does the BIS support generation of the PRIORITY attribute?	6.3.1.16, 7.12.16	0	NO

Table 12: PRLs for IDRP: Propagating Well Known Discretionary Attributes				
Item	**Questions/Features**	**References**	**Status**	**CNS/ATM/1 Profile A Support**
EXTGP	Does the BIS support propagation of the EXT_INFO attribute?	6.3.1.2, 7.12.2	M	YES
NHRSP	Does the BIS support propagation of the NEXT_HOP attribute in support of route servers?	6.3.1.4, 7.12.4	0	YES
NHSNP	Does the BIS support propagation of the NEXT_HOP attribute to advertise SNPAs?	6.3.1.4, 7.12.4	0	YES
DLIP	Does the BIS support propagation of the DIST_LIST_EXCL attribute?	6.3.1.5, 7.12.5	0	YES
DLEP	Does the BIS support propagation of the DIST_LIST_EXCL attribute?	6.3.1.6, 7.12.6	0	YES
TDLYP	Does the BIS support propagation of the TRANSIT DELAY attribute?	6.3.1.8, 7.12.8	0	NO
RERRP	Does the BIS support propagation of the RESIDUAL ERROR attribute?	6.3.1.9, 7.12.9	0	NO
EXPP	Does the BIS support propagation of the EXPENSE attribute?	6.3.1.10, 7.12.10	0	NO
LQOSP	Does the BIS support propagation of the LOCALLY DEFINED QOS attribute?	6.3.1.11, 7.12.11	0	NO
HRECP	Does the BIS support propagation of the HIERARCHICAL RECORDING attribute?	6.3.1.12, 7.12.12	0	NO
SECP	Does the BIS support propagation of the SECURITY attribute?	6.3.1.14, 7.12.14	0	NO
PRTYP	Does the BIS support propagation of the PRIORITY attribute?	6.3.1.16, 7.12.16	0	NO

Table 13: PRLs for IDRP: Receiving Well Known Discretionary Attributes				
Item	**Questions/Features**	**References**	**Status**	**CNS/ATM/1 Profile A Support**
EXTR	Does the BIS recognize upon receipt the EXT_INFO attribute?	6.3.1.2, 7.12.2	M	YES
NHRSR	Does the BIS recognize upon receipt the NEXT_HOP attribute?	6.3.1.4, 7.12.4	M	YES
DLIR	Does the BIS recognize upon receipt the DIST_LIST_INCL attribute?	6.3.1.5, 7.12.5	M	YES
DLER	Does the BIS recognize upon receipt the DIST_LIST_EXCL attribute?	6.3.1.6, 7.12.6	M	YES
TDLYR	Does the BIS recognize upon receipt the TRANSIT DELAY attribute?	6.3.1.8, 7.12.8	M	NO
RERRR	Does the BIS recognize upon receipt the RESIDUAL ERROR attribute?	6.3.1.9, 7.12.9	M	NO
EXPR	Does the BIS recognize upon receipt the EXPENSE attribute?	6.3.1.10, 7.12.10	M	NO
LQOSR	Does the BIS recognize upon receipt the LOCALLY DEFINED QOS attribute?	6.3.1.11, 7.12.11	M	NO
HRECR	Does the BIS recognize upon receipt the HIERARCHICAL RECORDING attribute?	6.3.1.12, 7.12.12	M	NO
SECR	Does the BIS recognize upon receipt the SECURITY attribute?	6.3.1.14, 7.12.14	M	NO
PRTYR	Does the BIS recognize upon receipt the PRIORITY attribute?	6.3.1.16, 7.12.16	M	NO