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ATN INTERNET PROJECT (ATNIP)

Disposition of Deleted Requirements in Appendix 11 of the ATN Manual

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1. Introduction

1.1 Scope

This document is the result of editing work on appendix 11 of the ATN draft SARPs and provides an editor's report listing out all deleted requirements, recommendations and notes.

1.2 Purpose of Document

This document provides traceability of requirements deleted due to decisions made by WG2, the WG2/CISEC and in the course of the editorial process. It is to be used during the review of the revised appendix and as input to the update of the ATN Requirements Database.

2. Deleted Requirements Report

2.1 ES-IS Protocol

Editor's Note: Provisions for ES-IS use of ISO 9542 deleted in accordance with Conclusion 4(c) of the CCB Meeting, Melbourne, FL, as follows:

Within the ATN, a means shall be provided to allow each ES or IS to discover the existence of neighbor systems attached to the same subnetwork. Furthermore, the NSAP addresses of neighbor ESs and the NET addresses of neighbor ISs, along with the corresponding SNPA addresses, shall be made available to each IS directly connected to the local subnetwork. In addition, a means shall be provided to allow each IS to dynamically monitor connectivity changes on the subnetwork.

2.1.1 Section A11.1.1 Use of ISO 9542 in the ATN

The ISO 9542 End-System to Intermediate-System Routing Information Exchange Protocol (ES-IS) shall be operated over air-ground subnetworks for initialization of air-ground IDRP connection.

Recommendation.— *ISO 9542 should be used over ATN fixed ground subnetworks requiring dynamic discovery of ESs and/or ISs.*

Note.— ISO/IEC 10589 requires the use of ISO 9542.

2.1.2 Section A11.1.2 Selection of ISO 9542 Options

2.1.2.1 Section A11.1.2.1 ISO 9542 over mobile air-to-ground subnetworks

2.1.2.2 Section A11.1.2.2 ISO 9542 over fixed ground subnetworks

2.1.2.2.1 Section A11.1.2.2.1 Broadcast subnetworks

Recommendation.— *Ground ISs and ESs attached to a fixed ground broadcast subnetwork should operate ISO 9542.*

In cases where ISO 9542 is operated, both Configuration Information, Route Redirection Information shall be exchanged.

2.1.2.2.2 Section A11.1.2.2.2 General Topology Subnetworks

Recommendation.—   *Ground ISs and ESs attached to a fixed ground general topology subnetwork should operate ISO 9542.*

In cases where ISO 9542 is operated, Route Redirection Information shall be supported and used. Configuration Information shall not be used.

When ISO 9542 is operated over a general topology subnetwork used as a point to point link between ISs and/or ESs, both Configuration Information and Route Redirection Information shall be supported and used.

2.1.2.2.3 Section A11.1.2.2.3 Point to Point Subnetwork

Recommendation.—   *Ground ISs and ESs attached to a fixed ground point to point subnetwork should operate ISO 9542.*

 In cases where ISO 9542 is operated, both Configuration Information and Route Redirection Information shall be supported and used.

2.1.2.3 Section A11.1.2.3 Selection of ISO 9542 Functions

> ***Editor's Note: this is not in accordance with the Route Initiation Procedures developed so far, and has thus been deleted.***

Airborne and ground ESs and ISs which support ISO 9542 Configuration Information shall implement the Configuration Notification function.

2.1.2.4 Section A11.1.4.1 Support of ATN Specific Recommendations

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

Does the implementation support the following ATN specific features:

Index	Recommendation	ATN Status	Support
ESISB	Does the ES implement ISO 9542 over broadcast subnetworks?	O	Yes No
ESISG	Does the ES implement ISO 9542 over general topology subnetworks?	O	Yes No
ESISP	Does the ES implement ISO 9542 over point to point subnetworks?	O	Yes No

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

2.1.2.5 Section A.11.1.4.2 ISO 9542 - End System

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

Item	Protocol Function	Clauses	Status	ATN Requirement
CI	Is configuration information supported?	ATN Manual Ref.: A11.1.2.2	O	ESISB:M ESISG:X ESISP:M
RI	Is redirection information supported ?	ATN Manual Ref.: A11.1.2.2	O	ESISB:M ESISG:M ESISP:M
	Are the following functions supported ?			
CfRs	Configuration Response	6.6	M	M
ErrP	Protocol Error Processing	6.13	(CIvRI):M	(CI):M
HCsV	PDU Header Checksum Validation	6.12	(CIvRI):M	(CI):M
HCsG	PDU Header Checksum Generation	6.12	O	O
RpCf	Report Configuration	6.2, 6.2.1	CI:M	CI:M
RcCf	Record Configuration	6.3, 6.3.2	CI:M	CI:M
FlCf	Flush Old Configuration	6.4	CI:M	CI:M
QyCf	Query Configuration	6.5	CI:M	CI:M
RcRd	Record Redirect	6.9	RI:M	M
FlRd	Flush Old Redirect	6.11	RI:M	M
RfRd	Refresh Redirect	6.10	RI:O	O
CfNt	Configuration Notification	6.7 ATN Manual Ref.: A11.1.2.3	CI:O	CI:M
CTPr	ESCT Processing	6.3.2	CI:O	CI:O
AMPr	Address Mask (only) Processing	7.4.5	RI:O	O
SMPr	Address Mask and SNPA Mask Processing	7.4.5, 7.4.6	RI:O	O
	Are the following PDUs supported ?			
ESH-s	\<s\> End System Hello	7.1,7.5	M	M
ESH-r	\<r\> End System Hello	7.1,7.5	CI:M	CI:M
ISH-r	\<r\> Intermediate System Hello	7.1,7.6	CI:M	CI:M
RD-r	\<r\> Redirect	7.1,7.7	RI:M	RI:M
Item	**Protocol Function**	**Clauses**	**Status**	**ATN Requirement**
	Are the following PDU fields supported?			
FxPt FxPt	\<s\> Fixed Part	7.2.1-7.2.7	M	M
	\<r\> Fixed Part	7.2.1-7.2.7	(CIvRI):M	(CI):M
SA-sl	\<s\> Source Address, one NSAP only	7.3.1	O.1	O.1
SA-rl	\<r\> Source Address, one NSAP only	7.3.2	CI:M	CI:M
SA-sm	\<s\> Source Address, two or more NSAPs	7.3.3	O.1	O.1
SA-rm	\<r\> Source Address, two or more NSAPs		CI:M	CI:M
NET-r	\<r\> Network Entity Title	7.3.1/2/4	(CIvRI):M	(CI):M
DA-r	\<r\> Destination Address	7.3.1/2/5	RI:M	M
BSNPA-r	\<r\> Subnetwork Address	7.3.1/2/6	RI:M	M
Scty-s	\<s\> Security	7.4.2	O	O
Scty-r	\<r\> Security	7.4.2	O	O
Pty-s	\<s\> Priority	7.4.3	O	O
Pty-r	\<r\> Priority	7.4.3	O	O
QosM-r	\<r\> QOS Maintenance	7.4.4	RI:O	O
AdMk-r	\<r\> Address Mask	7.4.5	RI:O	O

SNMk-r	<r> SNPA mask	7.4.6	RI:O	O
ESCT-r	<r> Suggested ES Configuration Timer	7.4.7	CI:O	CI:O
OOpt-r	<r> (ignore) unsupported or unknown options	7.4.1	M	M
OOpt-s	<s> Other options		P	P
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
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

O.1: Delete if inapplicable

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

2.2   Section A11.2 Intra-Domain Routing Protocol

> ***Editor's Note: This section has been deleted, as it is understood that WG2 did decide to move recommendations on use of 10589 to Guidance Material. However, it has not yet been possible to find written confirmation of this decision.***

2.2.1   Section A11.2.1 Intra-Domain Routing Requirements

Recommendation : *An ATN RD should use the ISO IS-to-IS Intra-Domain Routing Information Exchange protocol (ISO/IEC 10589) to support intra-domain Routing.*

Note 1.— The choice of an Intra-Domain Routing within an ATN RD is a local matter. The following requirements listed in A11.2.1.1 are implicitly met when ISO/IEC 10589 IS-to-IS Intra-Domain Routing Exchange Protocol is operated.

Note 2.— This manual has not recommended any additional requirements to ISO/IEC 10589 beyond the mandatory conformance requirements that are specified in the ISO standard, therefore no APRL for ISO/IEC 10589 is provided in this Manual.

2.2.1.1 Section A11.2.1.1 General requirements

Intra-Domain Routing shall operate within the Network Layer of each Router of the local RD.

Recommendation.— *Intra-Domain Routing should take into account the distinction made in ISO-OSI Routing between the ES and the IS role.*

Recommendation.— *Routing Information dissemination should preferably be performed dynamically by a Routing Information exchange protocol. The protocol should provide mechanisms for the exchange of connectivity and topology information among ATN Routers within a RD. It should support dynamic configuration of ATN Internet Routing tables on a domain-wide basis.*

Recommendation.— *Distributed adaptive and performance-based routing be should be used for Intra-Domain Routing in the ATN.*

2.2.1.2 A11.2.1.2 Requirements related to the ATN NSAP Addressing Plan

Intra-Domain Routing shall support the ATN NSAP Addressing Plan.

Routing within a RD shall be performed on the basis of the lower part of the NSAP address, i.e. the LOC, SYSTEM and SEL fields.

2.2.1.3 A11.2.1.3 Intra-Domain Requirements related to Inter-Domain Routing

Consistency with the ATN Inter-Domain Routing shall be ensured by fulfilling the following requirements.

Intra-Domain Routing shall be able to route the following types of packets within the local RD:

1. CLNP packets issued by an ES of the local RD and bound to a destination ES of the local RD.

    Note.— The routing procedure applied in this case is a local matter within the local RD. It depends on the selected Intra-Domain Routing protocol.

2. CLNP packets issued by an ES of the local RD and bound to a destination ES of an external RD. Intra-Domain routing shall route to a BIS located at the local RD boundary, where they will be passed to Inter-Domain Routing.

3. CLNP packets issued by an ES of an external RD and bound to a destination ES of the local RD. These packets shall be passed to Intra-Domain Routing by the BIS where they enter the local RD, and then routed to the destination ES by Intra-Domain Routing according to the internal routing procedure of the local RD.

2.2.1.4 Section A11.2.1.4 Cooperation with ISO 8473 Internetwork Protocol

The route determination function of Intra-Domain Routing shall interface with the Route PDU function of CLNP in order to provide routing information to the Route PDU function.

Recommendation.— *The Intra-Domain Routing metrics should include metrics corresponding to the CLNP QOS parameters, so that CLNP QOS Maintenance function be able to resolve routing ties on the basis of required QoS when more than one path is available. The routing metrics for Intra-Domain Routing should include Throughput, Transit Delay, Residual Error Rate and Expense.*

2.2.1.5 Section A11.2.1.5 Cooperation with ISO 9542 ES to IS Routing Protocol

Recommendation.— *ISO 9545 ES to IS Routing Protocol should be used by the Intra-Domain Routing Protocol to determine the existence and reachability of the neighbor systems.*

2.2.2   Section A11.3.1 BIS - BIS Communications

2.2.2.1 Section A11.3.1.1 General

Editor's Note: The first requirement needs to be modified to cope with optional non-use of IDRP and really deals with appendix 6 material (deployment). The second requirement is redundant as this is in IDRP and strictly speaking is outside of the scope of the SARP.

All ATN RDs shall include at least one BIS, and the ISO/IEC 10747 protocol (IDRP) shall be used for the exchange of routing information between BISs located in different RDs.

2.2.2.2 Section A11.3.1.2 Requirements related to the ATN NSAP Addressing Plan.

Editor's Note: This requirement is dangerous as BISs deal in prefixes and should not have knowledge of the address syntax. The real requirement is that CLNP should be supported and that the NLRI contains NSAP Address Prefixes. See A11.3.1.9.

ATN Inter-Domain routing shall support the ATN NSAP Addressing Plan.

Editor's Note: This requirement is implicit in 10747 and incomplete (e.g. what about alias RDIs?). Better phrased alternative already present in Appendix 6. Hence deleted as no added value and possible problems.

Each BIS shall have an unambiguous RDI which shall consist of an ATN NET.

2.2.2.3 Section A11.3.1.3 BIS-BIS Protocol Data Units

2.2.2.3.1 Section A11.3.1.3.1 The OPEN PDU

> ***Editor's Note: These requirements duplicate 10747. Hence deleted.***

An ATN BIS shall support the OPEN PDU for both origination and reception. If the RIB-ATTSet field in the OPEN PDU contains a SECURITY attribute, the SECURITY attribute value shall comprise the Security Registration Identifier that identifies the Security Authority for which security related information is supported by this RIB-Att. Its encoding shall be as defined in A11.3.1.3.2.5 including length fields, but with a zero length security information.

> ***Editor's Note: Note replaced with reference to these codes being outside the scope of the SARP. As to their meaning - RTFS.***

Note.— The following additional codes are also available. Code 2 indicates that the Validation field in the header of each BISPDU provides both peer-BIS authentication and data integrity for the contents of the BISPDU. The specific mechanisms are mutually agreed to by the pair of BISs, and is a local matter. Code 3 indicates that the Validation field in the header of each BISPDU contains an unencrypted checksum covering the concatenation of the contents of the BISPDU with untransmitted password string(s).

2.2.2.3.2 Section A11.3.1.3.2 UPDATE PDU

> ***Editor's Note: This requirement duplicates 10747. Hence deleted.***

An ATN BIS shall support the UPDATE PDU for both origination and reception.

2.2.2.3.2.1 *Section A11.3.1.3.2.1 Path Attributes.*

> ***Editor's Note: These requirements duplicate 10747, or vary now depending on Router type. APRL is now definitive specification.***

An ATN BIS shall support at minimum generation, propagation and reception of the following attributes:

    ROUTE_SEPARATOR

RD_PATH

    RD_HOP_COUNT

    CAPACITY

    DIST_LIST_INCL

    SECURITY

An ATN BIS shall support both propagation and reception of the DIST_LIST_EXCL attribute.

2.2.2.3.2.2 *Section A11.3.1.3.2.2 Network Layer Reachability Information.*

> ***Editor's Note: Incomplete specification - replaced by A11.3.1.9.***

This variable length field shall contain a list of reachable destinations encoded as defined in ISO/IEC 10747.

2.2.2.3.2.3 Section A11.3.1.3.2.4 EXPENSE Path Attribute.

Editor's Note: No longer required for package 1 - CISEC Paris meeting decisiion.

For the ATN environment, the EXPENSE units shall be encoded in units of International Monetary Fund (IMF) Special Drawing Rights.

Note.-The EXPENSE path attribute is a well known discretionary attribute. The value of Expense associated with a given RD is contained in the managed object attribute LocExpense.

2.2.2.3.2.4 Section A11.3.1.3.2.5 SECURITY Path Attribute.

Editor's Note: Major revision due to selection of Option #4 by Washington meeting. Replaced by new A11.3.1.2 and A11.3.1.3.

The SECURITY Path Attribute shall consist of the Security Registration ID, and if the data is other than unclassified then Security Information indicating the security level of the data. When the SECURITY Path attribute is not present in the UPDATE PDU, a Default value shall be assumed indicating that the route is suitable for General Communications.

The format and encoding of the Security attribute shall be as specified in ISO/IEC 10747, and hence the parameter value shall be encoded as:

Security Registration ID Length	Security Registration ID (variable)	Security Information Length	Security Information (optional)

2.2.2.3.2.4.1 Section A11.3.1.3.2.5.1 Security Registration ID Length

This one octet field shall contain the length in octets of the Security Registration Identifier.

2.2.2.3.2.4.2 Section A11.3.1.3.2.5.2 Security Registration ID

This field shall contain the value of the route's security type for ATN Operational, ATN Administrative and General Communications as defined in A9.5.4.1.2.

2.2.2.3.2.4.3 Section A11.3.1.3.2.5.3 Security Information Length

This one octet field shall contain the length in octets of the Security Information. If there is no security information, this field shall indicate a zero length.

2.2.2.3.2.4.4 Section A11.3.1.3.2.5.4 Security Information

If the route is suitable for data with a security level other than unclassified, then this field shall comprise the **Security Classification** Registered Field Set as defined in A9.5.4.1.4.1.1.

2.2.2.3.3 Section A11.3.1.3.3 The KEEPALIVE PDU

> *Editor's Note: This requirement duplicates 10747. Hence deleted.*

An ATN BIS shall support the KEEPALIVE PDU for both origination and reception.

2.2.2.3.4 Section A11.3.1.3.4 The RIB REFRESH PDU

> *Editor's Note: This requirement duplicates 10747, and now overridden for Airborne Routers. Hence deleted.*

An ATN BIS shall support the RIB REFRESH PDU for both origination and reception.

2.2.2.3.5 Section A11.3.1.3.5 The IDRP ERROR PDU

> *Editor's Note: This requirement duplicates 10747. Hence deleted.*

An ATN BIS shall support the IDRP ERROR PDU for both origination and reception.

2.2.2.3.6 Section A11.3.1.3.6 The CEASE PDU

> *Editor's Note: This requirement duplicates 10747. Hence deleted.*

An ATN BIS shall support the CEASE PDU for both origination and reception.

2.2.3   Section A11.3.2 Boundary Intermediate System (BIS) - Model of Operations

> *Editor's Note: Implicit in the text of the new A11.3.2. Hence deleted.*

An ATN BIS shall implement the procedures of operation specified in ISO/IEC 10747.

2.2.3.1 Section A11.3.2.1 Routing Paths and Path Attributes

2.2.3.2 Section A11.3.2.2 The Update Receive Process

> *Editor's Note: These requirements duplicate 10747. Hence deleted.*

An ATN BIS shall implement the Receive Process as specified in ISO/IEC 10747. When an UPDATE PDU is received, the BIS shall update the appropriate Adj-RIB-Ins. For each feasible route, the Adj-RIB-In shall be identified by the set of distinguishing path attributes contained between consecutive instances of ROUTE-SEPARATORs or between the last ROUTE-SEPARATOR and the end of the UPDATE PDU.

2.2.3.3 Section A11.3.2.3 The Routing Decision Process

> *Editor's Note: These requirements duplicate 10747. Hence deleted.*

An ATN BIS shall implement a Decision Process which shall break ties between candidate routes as specified in ISO/IEC 10747.

The Decision Process shall update the LOC-RIBs as specified in ISO/IEC 10747. When RIB-Att includes the priority attribute then all routes with the same NLRI shall be copied to the loc-RIB unless their computed preference is less than another such route which the applicable PIB Security Policy rules identify as providing equivalent or poorer protection and are usable by the same or more NPDUs.

Editor's Note: Replaced by separate wording for different router types - see new A11.3.2.2.

All ATN BISs shall implement the Information Reduction methods as specified in ISO/IEC 10747.

All ATN BISs shall be able to aggregate routing information as specified in ISO/IEC 10747.

Editor's Note: Subject matter of this requirement is now in appendix 6.

When an ATN BIS selects the subnetwork addresses for the next hop in the process of creating a FIB entry, it shall reflect the access restrictions imposed on that subnetwork.

2.2.3.4 Section A11.3.2.4 The Update Send Process

Editor's Note: These requirements duplicate 10747. Hence deleted.

An ATN BIS shall perform the internal route updates procedures as specified in ISO/IEC 10747.

An ATN BIS shall perform the external route updates procedures as specified in ISO/IEC 10747.

Editor's Note: Different wording for airborne and ground BISs now required. Also, ATN specific procedures.

An ATN BISs shall support the MinRouteSelectionInterval timer as specified in ISO/IEC 10747.

Editor's Note: These requirements duplicate 10747. Hence deleted.

An ATN BIS shall support the MinRDOriginationInterval timer as specified in ISO/IEC 10747.

An ATN BIS shall support jitter as specified in ISO/IEC 10747.

2.2.3.5 Section A11.3.2.5 Stability of Routes

Editor's Note: These requirements duplicate 10747. Hence deleted.

An ATN BIS shall support detection of unsatisfiable policies as specified in ISO/IEC 10747, and shall notify system management upon detection of a set of unsatisfiable policies.

Note 1.— Suppression of such policies is outside the scope of this manual, and is left as a local option.

Note 2.— A particular routing policy within an RD is called "active" when the current route of the RD is selected based on that policy. Otherwise, that policy is said to be "passive". The approach outlined in ISO/IEC 10747 provides a mechanism to detect a set of active routing policies that cannot be satisfied simultaneously; it cannot detect sets of passive policies which are mutually unsatisfiable.

2.2.3.6 Section A11.3.2.6 The Forwarding Process

Editor's Note: No longer true(!) given strong routing policy requirements. Subject matter is now in appendix 6.

An ATN BIS shall correctly forward NPDUs with destinations outside its own RD as specified in ISO/IEC 10747.

2.2.4   Section A11.3.3 ATN Requirements List - ISO/IEC 10747

2.2.4.1 Section A11.3.3.1 Support of ATN Specific Recommendations

Editor's Note: No longer applicable - hence deleted.

Does the implementation support the following ATN specific features:

Index	Recommendations	ATN Status	Support
ATNIDRP1	Does the implementation support ATN Operational Communications ?	O	Yes/No
ATNIDRP2	Does the implementation support ATN Administrative Communications ?	O	Yes/No
ATNIDRP3	Does the implementation support General Communications ?	O	Yes/No
ATNIDRP4	For Operational Communications, does this implementation support propagation and generation of the EXPENSE attribute?	O	Yes/No
ATNIDRP5	For Administrative Communications, does this implementation support propagation and generation of the EXPENSE attribute?	O	Yes/No
ATNIDRP6	For General Communications, does this implementation support propagation and generation of the EXPENSE attribute?	O	Yes/No
ATNIDRP7	For Operational Communications, does this implementation support propagation and generation of the TRANSIT DELAY attribute?	O	Yes/No
ATNIDRP8	For Administrative Communications, does this implementation support propagation and generation of the TRANSIT DELAY attribute?	O	Yes/No
ATNIDRP9	For General Communications, does this implementation support propagation and generation of the TRANSIT DELAY attribute?	O	Yes/No

Editor's Note: Redundent text deleted - see new compliance statement, and section on applicability of requirements.

When ISO/IEC 10747 is supported,the protocol implementation shall conform to the following APRL.

Editor's Note: The following was not part of the original ISO PICS Proforma and should really have been in the ATN Requirements Table above. Subject matter now in appendix 6, hence deleted.

FIBUPD	Does this BIS create FIB entries reflecting subnetwork access restrictions correctly ?	7.16.2	-	M	M	M

Editor's Note: Redundent text deleted - see new compliance statement, and section on applicability of requirements.

When ISO/IEC 10747 is supported, the protocol implementation shall conform to the following APRL.

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Note: Items ATNIDRP4, ATNIDRP5, ATNIDRP6, ATNIDRP7, ATNIDRP8 and ATNIDRP9 are from the table in A11.3.3.1.

When ISO/IEC 10747 is supported, the protocol implementation shall conform to the following APRL.

Note: Items ATNIDRP4, ATNIDRP5, ATNIDRP6, ATNIDRP7, ATNIDRP8 and ATNIDRP9 are from the table in A11.3.3.1.

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