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Draft Defect Reports related to ATN QOS Management

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SUMMARY

This Working Paper presents a set of Draft Defect Reports related to QOS Management in the ATN Internet.

1. Introduction

During the first meeting of ATNP WG2, the working group agreed on an action (WG2-14) to review ATN Draft SARPs and Guidance Material related to Quality of Service (QOS) and to develop Defect Reports (DRs) and supporting change proposals (CPs), where appropriate.

In response to this action, this working paper presents some deficiencies concerning the support and the interpretation of QOS parameters in the transport layer and the network layer of the ATN. Some draft change proposals are provided where appropriate, other change proposals will be specified in line with the proposed ATN QOS concept, which is expected to be available as a first draft during the forthcoming WG meeting.

2. Deficiencies in the ATN Draft SARPs

The following sections present deficiencies related to QOS which have been detected in the version 0.0 of the ATN Draft SARPs and Guidance Material.

2.1. Defect Report on lack of consistent interpretation of and mapping rules for QOS parameters

ISO 8072 requires that the "view of QOS at each end of an established TC is always the same."

This common view may be achieved in several ways, e.g.

- by signalling and negotiating the QOS of each particular TC or
- by an a priori knowledge of default values (e.g. static or by management interaction), or
- by not assigning QOS expectations at all.

However, an entirely local assignment of QOS characteristics leads, in general, to different views of QOS at both ends of an TC and thus contradicts to ISO 8072.

Means and requirements to achieve a common view of QOS at each end of an established TC are missing in the Draft ATN SARPs and should be specified.

2.2. Defect Report on Network Service Description

Problem Statement

Section A8.2.5 "Use of the ATN Network Service" and section A8.3.5 "Use of the ATN Network Service" specify requirements concerning Network Service primitives by giving a forward reference to Appendix 9.

Section A8.2.5.1 references Appendix 9 as follows:

> "The COTP shall use the network service primitives described in Appendix 9 for the transmission and reception of TPDUs."

Section A8.3.5.1 references Appendix 9 as follows:

> "The CLTP shall use the NS primitives described in Appendix 9 for the transmission and reception of TPDUs.
>
> *Note.### The method of parameter exchange between the TE and the NS is a local matter."*

Note: Typing error in Note of section A8.3.5.1: "NS" (Network Service) should be replaced by "NE" (Network Entity) or "NS-Provider".

Appendix 9 does not contain any specifications of network service primitives. Furthermore, section A9.1 is called "Network Service Description", but does not contain any requirements on the Network Service nor any references to the sections mentioned above.

Proposed Problem Solution

Section A9.1 should provide a specification of the Network Service including network service primitives. Text of section A8.2.5 and section A8.3.5 should be incorporated into section A9.1.

Note: The text about the network service should be in alignment with the ATN QOS concept to be provided. Thus, a detailed change proposal will be given after the availability of that ATN QOS concept.

2.3. Defect Report on assignment of priority

Problem Statement

In section A5.6 it is required that

> "ATN End Systems and Intermediate Systems shall map Transport, Network and Subnetwork communication protocol priorities as specified in . ATN End Systems shall not originate communication traffic using unassigned protocol priorities."

1. A references is missing in the text above. It is assumed that Table A5-1 is meant.

2. The requirement "ATN End Systems shall not originate communication traffic using unassigned protocol priorities." needs to be clarified:

   a) It could mean that priority has to be assigned to all messages originated by an ATN end systems. According to Table A5-1, priority has then to be supported and used at the TS interface, at the NS interface, in COTP TPDUs, in CLTP TPDUs, and in NPDUs.
   Corresponding requirements are missing in Appendix 8 and 9 as detailed in sections 2.5, 2.6 and 2.6 of this working paper.

   b) Alternatively, the term "unassigned" may refer only to the row that is categorised with "<unassigned>" (COTP - priority = 10). In that case the spelling should be changed.

Proposed Problem Solution:

1. A reference to "Table A5-1" should be added after "as specified in ".

2. In the first section of A5.6 the term "unassigned" should be replaced by "<unassigned>".

Note: References are also missing in several other sentences of section A5.6.

2.4. Defect Report on priority in CLTP TPDUs

Problem Statement

Table A5-1 lists "Protocol Priorities". Thereby it assigns priority values to CLTP TPDUs.

ISO 8602 (CLTP) does not specify a priority parameter to be included in TPDUs.

Problem Solution

The column CLTP has to be removed from Table A5-1.

2.5. Usage of the Priority parameter in the transport layer

Problem Discussion

Section 8.2.4.1.6.2.1 states

> "Priority is non-negotiable in the ATN."

This statement is not reflected in section A8.2.2.1.

In addition, section A8.2.2.1 specifies only the handling of the priority parameter by the initiating transport entity. The handling of the priority parameter by the peer transport entity and the peer transport user has to be specified also.

Proposed Problem Solution

The following text should be added at the end of section A8.2.2.1:

> "5. The transport entity receiving a CR TPDU shall signal the received priority in accordance with Table A5-1 to the TS-user in a T-CONNECT.indication service primitive.
>
> 6. The called TS-user shall not respond with an other priority value in the T-CONNECT.response service primitive than the priority value that it received in the corresponding T-CONNECT.indication service primitive.
>
> 7. The responding transport entity shall encode the same priority value in the CC TPDU as received in the corresponding CR TPDU."

Note: A change proposal on the handling of the priority parameter in Network service primitives is discussed in the following section.

2.6. Usage of the Priority parameter in Network Service primitives

Problem Discussion

Section 8.2.5.2.2.3 requires implicitly the support of the Priority Parameter by transport entities:

> "The connection mode transport layer does not need to interpret most of the indicated network layer QOS parameters associated with an N-UNITDATA indication. The network layer priority is not interpreted, because transport priority is set explicitly."

Also, Table A5-1 specifies protocol priorities to be encoded in CR TPDUs and CC TPDUs.

Despite of these statements, a requirement about the support of (transport) priority by both the initiating and the receiving transport entity (e.g. the support of the priority parameter in CR TPDUs and CC TPDUs) is not stated in the APRLs in Annex 8.

In addition, the handling of the priority parameter by the transport layer entity needs to be specified.

The support of the priority parameter in CR and CC TPDUs should be required for ATN implementations.[1]

Proposed Problem Solution

Section A8.2.4.1.2.2 "Specific ATN Recommendations" should be renamed into "Specific ATN Requirements and Recommendations".

The status in ATN14 should be changed from "O" to "M".

The status in ATN22 should be changed from "O" to "M".

The following text about the use of the priority parameter in N-UNITDATA requests should be added at the end of section A8.2.5.2.3.1:

> "The value of the priority parameter specified by the connection initiator shall be used as the value of the NS priority parameter for the N-UNITDATA request that contains the CR TPDU. The same value shall be used for all subsequent N-UNITDATA requests used to convey TPDUs sent by the connection initiator on that transport connection.
>
> The value of the priority parameter received in a CR TPDU shall be saved by the transport entity and shall be used for all subsequent N-UNITDATA requests used to convey TPDUs sent by the connection responder on that transport connection."

For clarity a new section A8.2.5.3.3.1 should be added:

> "A8.2.5.3.3.1 Network Layer Priority
>
> Note: There is no need for the transfer of the Network parameter within a N-UNITDATA indication service primitive, if the priority is encoded in TPDUs during the TC establishment."

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[1] This requirement conforms to Flimsy #2 of the second meeting of WG2.

2.7. Defect Report on Security / Protection in N-UNITDATA Request service primitives

References

Chapter 8 specifies the use of the Network Service security / protection parameter for use by the COTP in the ATN. These specifications are not in alignment with the corresponding sections of Appendix A8.

Section 8.2.5.1.2.3 explains the use of the NS security parameter in N-UNITDATA Request service primitives.

Section 8.2.5.1.2.4.1 explains the use of the Network Layer protection parameter in N-UNITDATA Request service primitives.

Section 8.2.5.2.2.4 explains the use of the Network Layer security parameter in N-UNITDATA Indication service primitives.

2.7.1. Mixing the terms "Security" and "Protection"

Problem Statement

ISO 8348 defines a protection parameter to be used in NS primitives:

> "The extent to which an NS provider attempts to prevent unauthorised monitoring or manipulation of NS user-originated information is specified qualitatively by selecting one of four options:
>
> a) no protection
>
> b) protection against passive monitoring
>
> c) protection against modification, replay, addition, or deletion; and
>
> d) both b) and c)."

This definition of *Protection* is not in conformance with the use of *Security* to be used in the ATN.

Since *Protection* as defined by ISO 8348 is not the same as *Security* as specified for use in the ATN, the term *Protection* should not be used in the ATN SARPs when it is to be interpreted as *Security*. Notice that neither a requirement nor a recommendation for the support of *Protection* in the ATN is stated in the ATN Draft SARPs nor in the Guidance Material.

E.g. section 8.2.4.1.6.2.1 states:

> "the support of the protection parameter is not currently recommended as no security mechanisms have been defined for the ATN besides the network layer IDRP traffic type parameter."

This statement about the non-support of the protection parameter is true although the identified reason is incorrect. The IDRP traffic type parameter that is related to *Security* but not to *Protection*.

Proposed Problem Solution

It is proposed to change the text of sections 8.2.5.1.2.3 and 8.2.5.1.2.4 as follows:

~~"8.2.5.1.2.3 Security.~~

~~The value of the security parameter specified by the connection indicator is used as the value of the NS security parameter for the N-UNITDATA that contains the CR TPDU. The same value is used for all subsequent N-UNITDATA requests used to convey TPDUs sent by both the connection initiator and the connection responder on that transport connection.~~

8.2.5.1.2.4 Network Quality of Service.

8.2.5.1.2.4.1 Network Layer ~~Protection~~ Security.

~~The possible actions that can occur when the user specifies a protection parameter are:~~

~~a. the transport layer can use protection techniques peer-to-peer~~

~~b. the transport layer can use network protection techniques by setting the network layer protection parameter~~

~~c. the transport layer can use a combination of the above actions~~

~~d. the transport layer can pass protection parameters but not interpret them.~~

~~The ATN implements option (b) by passing the ATN Security Label to the network layer.~~

The value of the security parameter specified by the connection initiator is used as the value of the NS security parameter for the N-UNITDATA request that contains the CR TPDU. The same value is used for all subsequent N-UNITDATA requests used to convey TPDUs sent by both the connection initiator and the connection responder on that transport connection.

ES security techniques can also be performed at any of the other protocol layers, including the application layer for a given application. At the application layer, the security mechanisms can be directly selected to best fit the needs of the particular application."

It is proposed to change the text of sections 8.2.4.1.6.2.1 as follows:

"8.2.4.1.6.2.1 Optional Parameters for a Connection Request TPDU.

Support of the protection parameter is not currently recommended as no ~~security~~ protection mechanisms have been defined for the ATN ~~besides the network layer IDRP traffic type parameter~~. Use of this feature may be specified in later versions of the ATN ~~manual~~SARPs, when an ATN-wide solution to the ~~security~~ protection problem has been specified."

Note: The term "ATN manual" should be replaced with the term "ATN SARPs" throughout the document.

2.7.2. Usage of the Security parameter in the CO transport layer

Problem Discussion

The (current) Section 8.2.5.1.2.3 specifies the use of the Security Parameter by the transport entity initiating a transport connection. Section 8.2.5.2.2.4 specifies the use of the Security Parameter by the transport entity responding to a transport connection request.

These specifications are not reflected in Annex 8, nor is the use of security parameters specified by transport layer ISO standards. Therefore, the correct use of the ATN Security Parameters is not guaranteed by the current ATN Draft SARPs which is an important requirement on the ATN internetwork.

In addition, the procedure specified in section 8.2.5.2.2.4 is to be applied only in the cases where the received N-UNITDATA indication contains a CR TPDU. This restriction should be stated in the text.

Notice that since ISO 8073 TPDUs can not carry Security parameters, the signalling of the security level of a transport connection has to be performed by using the network layer.[2]

Proposed Problem Solution

The following text should replace the current text of section A8.2.5.2.3.2.

> ~~"The COTP shall use the security label provided in the T-CONNECT request as the value of the N-UNITDATA security parameter.~~
>
> The transport layer entity that initiates a transport connection shall use the value of the security parameter provided in the T-CONNECT request as the value of the NS security parameter for the N-UNITDATA request that contains the CR TPDU. The same value shall be used for all subsequent N-UNITDATA requests used to convey TPDUs sent by the connection initiator on that transport connection."

A new section A8.2.5.3.3.2 should be added above the present Note of A8.2.5.3.3:

> "A8.2.5.3.3.2 Network Layer Security
>
> The value of the security parameter received in an N-UNITDATA indication containing a CR TPDU shall be saved by the TS-provider and shall be used for all subsequent N-UNITDATA requests used to convey TPDUs sent by the connection responder on that transport connection."

Section 8.2.5.2.2.4 should be revised as follows:

> "8.2.5.2.2.4 Security.
>
> The value of the security parameter received in an N-UNITDATA indication that contains a CR TPDU is saved by the TS-provider and used with all subsequent N-UNITDATA requests on that transport connection."

[2] Only a Protection parameter is defined by ISO 8073 to be used in CR TPDUs and CC TPDUs.

2.8. Defect Report on support of QOS parameters in T-CONNECT primitives

Table 8-1 of Chapter 8 of the ATN Draft SARPs states that Quality of Service is present in all T-CONNECT service primitives. Quality of Service is a set of (sub-) parameters including the priority parameter. Thereby it remains unspecified whether all or only some of these sub-parameters need to be present, or if even an empty list of sub-parameters is sufficient to meet this requirement.

The related text in section 8.2.2.1.2 describes the use of QOS parameters as optional:

> **"Requested Quality of service:** QOS parameters are used to describe the desired characteristics of the data flow over the transport connection. The parameters which may be negotiated are transit delay, residual error rate, and priority."

Note 2 of that section implicitly allows the lack of (up to all) QOS parameters.

> "Note 2.### In practice, not all of the parameters in a connection request must be explicitly specified, even though they exist in the service interface. ... For example, most implementations today do not require explicit specification of QOS values. If not specified, one of two things may occur: QOS parameters may not be conveyed in the CR TPDU or the TE may select a standard set of parameters."

No requirements about the QOS parameters in the T-CONNECT primitives are given in Appendix 8, section A8.2.2:

> "Recommendation. ### The transport layer should support the dynamic selection of QOS parameters and checksums on a per TC basis.
>
> Note.### The QOS values are negotiated between the TS-users and TS-provider on a per TC basis during the connection establishment phase. The agreed values apply throughout the lifetime of the TC."

Conclusion

The requirement statement on the mandatory support or use of QOS parameters in T-CONNECT service primitives given in Table 8-1 needs to be changed or clarified, in particular with respect to the priority parameter. The following text should be revised correspondingly.

Section A8.2.2 should specify the support of QOS parameters by the transport layer implementations in T-CONNECT service primitives. Requirements or Recommendations should be given on the support of each individual (sub-)parameter specified in ISO 8072.

Proposed Problem Solution

Therefore, it is proposed to remove the first Recommendation and the first Note given in section A8.2.2 and to add a new section A8.2.2.3 as follows:

> "A8.2.2.3 Other Transport Layer QOS:

Note: Text is to be provided in alignment with the QOS concept to be provided; a parameter "Cost" may be added. "

2.9. Defect Report on support of QOS parameters in CR TPDUs and CC TPDUs

Section 8.2.4.1.6.2.1 and section 8.2.4.1.6.2.2 recommend the use or non-use of QOS parameters in CR TPDUs and CC TPDUs:

- protection parameter: non-use recommended
- residual error rate parameter: non-use recommended
- transit delay parameter: non-use recommended
- priority parameter: use recommended

These recommendations are not reflected in the APRLs of Appendix 8.

Proposed Problem Solution

Note: A solution is to be provided in alignment with the QOS concept to be provided.

2.10. Defect Report on QOS parameter Cost

Problem Statement

The ISO 8473 QOS Maintenance parameter concerning cost is required to be supported in the network layer (A9.6.2.5 [edQOSM-s, edQOSM-r], A9.6.2.13 [idQOSM-s, idQOSM-r]). However, a cost parameter is not specified by ISO standards to be supported in the transport layer, neither in TPDUs (ISO 8073) nor in transport service primitives (ISO 8072).

Neither any requirements on the support of a cost parameter by the transport layer are stated in the ATN Draft SARPs. Thus, the specification of cost requirements by an application is not recognised by the network layer and is thus meaningless.

Notice that in the case the transport layer does not support the cost parameter, the cost parameter may be used in the network layer, e.g. in a static way: a general rule may be specified that if no other QOS constraints are specified in a service primitive the "cheapest" path has to be selected.
However, that static use of the cost parameter in the network layer is not influenced by the application requirements on cost which remain meaningless.

Proposed Problem Solution

One of the following solutions should be selected:

1. Solution: The corresponding section in chapter 2 of the ATN Draft SARPs should be deleted.

> ~~**"2.3.2.3.6 Cost**~~
>
> ~~For a certain number of applications, the financial cost of communication is an important parameter to be taken into account. In this respect, an application may specify a maximum acceptable cost as a quality of service parameter. This parameter may influence the choice of the subnetwork to be used for data transfer when more than one is available. From the subnetwork point of view, the effective cost may be calculated in different ways (i.e., free for some users, on a bit volume basis, on a time duration basis, etc.) depending on the subnetwork and on the user."~~

2. Solution: The support of cost parameters in the transport layer has to be required in the ATN SARPs, e.g. in section A8.2.2 and in section A8.3.2.

2.11. Defect Report on the category of Cost statements

Problem Statement

In section "2.3.2.3.6 Cost" of the ATN Draft SARPs it is stated that

> "For a certain number of applications, the financial cost of communication is an important parameter to be taken into account. In this respect, an application may specify a maximum acceptable cost as a quality of service parameter."

This statement is categorised as "Guidance" but not as an "User Requirement" in the ATN Requirements Database.

Proposed Problem Solution

The statement about cost should be categorised as an "User Requirement".

2.12. Need for clarification of the determination of ranking of QOS parameters by transport or network layer

Problem Statement

Section A9.2 requires the provision of the Network Service as specified in ISO 8348:

> "The ISO 8473 *internetwork protocol* (CLNP) shall be used to provide the Connectionless-mode Network Service as described in *Network Service Definition ### Addendum 1: Connectionless-mode Transmission* (ISO 8348/AD1)."

ISO 8348 specifies in its section 17, that individual parameters for Transit Delay, Protection from unauthorised access, Cost determinants, Residual Error Probability, and Priority (with numerical values assigned to each of them) may be transferred in N-UNITDATA Request service primitives. Consequently, the ranking between the parameters Transit Delay, Cost determinants, and Residual Error Probability as required by the ISO 8473 QOS Maintenance parameter has to be performed in the network layer.

In contradiction to ISO 8348, the Note given in section A8.3.5.2.3.3 states that the relative ranking of the Network Layer QOS parameters Transit Delay, Cost and Residual Error Probability may be determined by the Transport Layer Entity and may be transferred in N-UNITDATA Request service primitives to the Network Layer:

> "Note.### The determination of the relative ranking of these parameters can be based on several methods such as configuration of the TE through layer management techniques (see 12.6.2) or by dynamic determination of the ranking based on the user specification of QOS parameters (see 8.3.5.1.2.3). The choice of the method is a local matter."

Also, the guidance material given in section 8.2.5.1.2.4.2 (Table 8-11) describes the determination of Transit Delay, Cost, and Residual Error Probability as a function to be provided by the transport layer.

Need for Clarification

The rationale for the assumption stated in the guidance material section 8.2.5.1.2.4.2 and in the ATN SARPs that the determination of the ranking should be performed in the transport layer should be explained.

The requirement to provide such a mapping function should be explicitly stated in the SARPs text of Appendix 8 if it has to be provided by the transport layer.

A Note should be added in section A9.2 that clarifies the difference between ATN implementations and ISO 8348.

2.13. Need for clarification on the determination of ranking of QOS parameters

Problem Statement

Section A8.2.5.2.3 contains only a subsection for Network Layer Priority and a subsection for Network Layer Security. It does not contain a subsection for Network Layer Transit Delay, Cost and Residual Error Probability (like section A8.3.5.2.2) and does not describe the use of these QOS parameters in N-UNITDATA request service primitives issued by the connection-oriented transport layer entity.

Proposed Clarification

A subsection A8.3.5.2.3.3. about the determination of the relative ranking of QOS parameters in N-UNITDATA request service primitives issued by the CLTP should be added:

> **"A8.3.5.2.3.3 Network Layer Transit Delay, Cost and Residual Error Probability**
>
> *Note.### The determination of the relative ranking of these parameters can be based on several methods such as configuration of the TE through layer management techniques (see 12.6.2) or by dynamic determination of the ranking based on the user specification of QOS parameters (see 8.2.5.1.2.3). The choice of the method is a local matter."*

Note: As discussed in the section above, the rationale for the determination of the ranking by the transport entity and not be the network entity is not clear.

2.14. Defect Report on support of a default value for the QOS Maintenance parameter

Problem Statement

Section A9.4.5 requires that the QOS Maintenance parameter is present in each NPDU created by an ATN system.

> "ATN ES and IS Network entities shall implement the QUALITY OF SERVICE MAINTENANCE function, using the **Globally Unique** encoding for any NPDUs originated within the ATN Domain. ATN ES Network entities shall use the **Globally Unique** encoding option for all created NPDUs.

No requirement is stated in the ATN Draft SARPs that every network service request primitive contains a QOS parameter.

A default value should be recommended that is used in the case that no QOS parameter is contained in a network request service primitive. A recommendation is already given in

section 8.2.5.1.2.4., Table 8-11, which results in encoding "cost" as the most relevant parameter for route selection.

Proposed Problem Solution

A new section A9.2.4 should be added and the following sections should be renumbered.

> "A9.2.4 Network Quality of Service
>
> Recommendation.- In the case, that no QOS parameters in addition to priority and security are passed to a network layer entity, the network layer entity should generate an NPDU containing a QOS maintenance parameter that indicates Cost as the most significant parameter."

2.15. Defect Report on using the eQOSM-s, eQOSM-r, iQOSM predicates

Problem Statement

The APRLs given in ATN Draft SARPs, section A9.6.2.3 [eQOSM-s, eQOSM-r] require the support of the QOS Maintenance Function for ATN ES implementations; those in section A9.6.2.11 [iQOSM] require the support of the QOS Maintenance Function for ATN IS implementations, i.e. the support of this function is mandatory for all ATN implementations.

In the APRLs following these sections, the predicates eQOSM and iQOSM are used.

First, a statement relating to the predicate eQOSM is not defined in the APRLs. Instead, two different statements are present for sending and receiving aspects of the QOS Maintenance Function: eQOSM-s and eQOSM-r. Consequently, in the various sections of Appendix 9 the predicate eQOSM should not appear as it is not defined.

Second, both statements eQOSM-s and eQOSM-r are mandatory for ATN implementations in end systems (section A9.6.2.3). Since the predicates eQOSM-s and eQOSM-r always evaluate to TRUE, they should be suppressed.

Third, the statement iQOSM is mandatory for all ATN implementations in intermediate systems (section A9.6.2.11). Since the predicate iQOSM always evaluates to TRUE, it should be suppressed.

Forth, all predicates in which either eQOSM or iQOSM appears in an OR-conjunction evaluate to TRUE and should be suppressed.

Proposed Problem Solution

The predicate "eQOSM:M", "eQOSM-s:M" or "eQOSM-r:M" should be replaced by a direct requirement for support, i.e. "M" in the row ATN Requirement in the following sections:

> A9.6.2.3, A9.6.2.5, A9.6.2.8, A9.6.2.9

The predicate "eQOSM-s or eCong-s:M" or "eQOSM-r or eCong-r:M" should be replaced by a direct requirement for support, i.e. "M" in the row ATN Requirement in the following sections:

> A9.6.2.5, A9.6.2.6 (two times)

The predicate "eQOSM or eCong-r:M" should be replaced by a direct requirement for support, i.e. "M" in the row ATN Requirement in the following sections:

A9.6.2.8, A9.6.2.9

The predicate "iQOSM:M" should be replaced by a direct requirement for support, i.e. "M" in the row ATN Requirement in the following sections:

A9.6.2.11.2 (seven times)

The predicate "iQOSM:O" should be replaced by a direct requirement for optional support, i.e. "O" in the row ATN Requirement in the following sections:

A9.6.2.11.2 (two times)

The predicate "iQOSM or ICong:M" or "iQOSM or iCong:M" should be replaced by a direct requirement for support, i.e. "M" in the row ATN Requirement in the following sections:

A9.6.2.13, A9.6.2.14, A9.6.2.15, A9.6.2.16.

2.16. Change Proposal on section 8.2.5.1.2.3

If Change Proposal 2.8.1 of this paper is accepted, this Change Proposal becomes obsolete.

Problem Statement

In Section 8.2.5.1.2.3 a connection "indicator" is written where a "connection initiator" is meant.

In addition, the term "N-UNITDATA" should be clarified into "N-UNITDATA request".

Proposal

The text of section 8.2.5.1.2.3 should be changed as follows:

> "The value of the security parameter specified by the connection ~~indicator~~ initiator is used as the value of the NS security parameter for the N-UNITDATA request that contains the CR TPDU. The same value is used for all subsequent N-UNITDATA requests used to convey TPDUs sent by both the connection initiator and the connection responder on that transport connection."

2.17. Defect Report on support of the Lifetime control function

Problem Statement

ISO 8473, section A.6.2, ePDUL-s, requires from all end system implementations the support of the Lifetime control function when sending an NPDU. The APRL state the same requirement for ES implementations in section A9.6.2.3, ePDUL-s.

Both the text and the Note in section A9.3.4 are not in line with this requirement as they express only a recommendation or an option for ESs, respectively:

> "ATN ISs shall perform the PDU LIFETIME CONTROL function. ATN ESs should perform the PDU LIFETIME CONTROL function.

> Note.### If an ES supports lifetime control, care must be taken to choose the lifetime value. Lifetime may be statically configured in a sending ES, but if this value is too short, the receiving ES may end up discarding all packets from the sending ES. However, if an ES does not support lifetime control, it may not properly reassemble incoming segmented NPDUs.

Proposed Problem Solution

The current text in section A9.3.4 should be changed in the following way:

> "ATN ISs shall perform the PDU LIFETIME CONTROL function. ATN ESs ~~should~~ shall perform the PDU LIFETIME CONTROL function when they send PDUs..
>
> Note.### ~~If an ES supports lifetime control, care must be taken~~ ESs must take care to choose the lifetime value. Lifetime may be statically configured in a sending ES, but if this value is too short, the receiving ES may end up discarding all packets from the sending ES. However, if an ES does not support lifetime control, it may not properly reassemble incoming segmented NPDUs.

2.18. Defect Report on initial value for PDU Lifetime

Problem Statement

Text in section 9.3.4 states that

> "The lifetime of the Initial NPDU is at least three (3) times the ATN Internet span or three (3) times the maximum expected transit delay (in units of 500 milliseconds), whichever is greater. This value is set by the originating Network entity, and placed in the PDU Lifetime field of the NPDU. "

The text in section 9.3.4 presents a firm statement on the initial value for the lifetime parameter that is to be applied for ATN systems. However, this statement is not reflected as requirement in Appendix 9 of the ATN Draft SARPs.

It is not considered feasible to state such a requirement as it is difficult to test. Therefore, it is proposed to translate the firm statement of section 9.3.4 into a recommendation and to add a recommendation in section A9.3.4.

Proposed Problem Solution

Text in section 9.3.4 should be changed into:

> "The lifetime of the Initial NPDU is recommended to be at least three (3) times the ATN Internet span or three (3) times the maximum expected transit delay (in units of 500 milliseconds), whichever is greater. This value is set by the originating Network entity, and placed in the PDU Lifetime field of the NPDU. "

A recommendation should be added into section A9.3.4:

> "An ATN ES should determine the value for the lifetime of the Initial NPDU at least three (3) times the ATN Internet span or three (3) times the maximum expected transit delay (in units of 500 milliseconds), whichever is greater."

Note:

Text in section 9.1.4.2 defines the ATN span:

> "This service characteristic is primarily used to configure the ATN NS to accommodate the expected maximum number of hops required to construct a path between any two ATN NS users. This maximum hop count is denoted the ATN span; knowledge of the ATN span by ATN NS providers allows control of NSDU cycling and looping in the ATN Internet."

The definition of the ATN span should be added into the Glossary.

3. Recommendation

It is recommended that

1. Working Group 2 reviews and discusses the presented Draft Defect Reports and Change Proposals

2. formal Draft Defect Reports and Change Proposals are prepared as a result of the WG 2 review and discussion.