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Additional Guidance Material Related to ATN Network Layer and Transport Layer Addressing (Action WG2-12)

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SUMMARY

This paper proposes additional Guidance Material related to ATN Network and Transport Layer Addressing to be included in the draft ATN SARPs. The new guidance material is concerned with mechanisms in the network and transport layer to handle the address parameters of the service primitives and the address information conveyed in NPDUs and TPDUs.

1. Introduction

During the first meeting of ATNP WG2 the working group agreed on an action (Action WG2-12) to develop additional guidance material related to ATN addressing.

The analysis of the current version of the ATN draft SARPs showed lacking information concerning the mechanisms that will exist in the transport and network layer to handle the address parameters of the service primitives and the address information conveyed in NPDUs and TPDUs.

The additional guidance text proposed in section 2 shall fill this gap. It is proposed not as defect reports in order to allow broader recognition and greater discussion prior to be raised in the formal CCB process.

2. Additional Guidance Material

---------- *editor's note: begin of proposed text* ----------

7.7.6 Address Mechanisms in the Network Layer

7.7.6.1 Address Mechanism in the Source Endsystem

The network entity in the source endsystem receives the source and destination NSAP address parameters in the N-UNITDATA request service primitives from the network service user, i.e. from the transport entity.

The received source NSAP address and destination NSAP address have to be encoded as Network Protocol Address Information (NPAI) and embedded into the header of the associated DT NPDU.

The endsystem will query a Network Address Directory Facility (NADF) to obtain information about NSAP address - SNPA address mappings. It will use the destination NSAP address as input parameter to return the source and destination SNPA addresses.

The source SNPA address may be used to select the outgoing link among different subnetworks to which the endsystem is attached.

The destination SNPA address is the first hop SNPA address. It will be the SNPA address of the target endsystem, if the endsystem is directly reachable, i.e. connected to the same subnetwork as the source endsystem. It will be the SNPA address of an intermediate system, if the endsystem is not directly reachable.

The source SNPA address and the destination SNPA address are passed as parameters of the SN-UNITDATA request service primitive down to the subnetwork layer.

7.7.6.2 Address Mechanism in the Intermediate System

On receipt of an NPDU the network entity in the intermediate system decodes the NPAI to derive the destination NSAP address. The information contained in the destination NSAP address is used for routing.

The intermediate system will query a Routing Information Base (RIB) to obtain information about NSAP address - SNPA address mappings. It will use the destination NSAP address as input parameter to return the source and destination SNPA addresses.

The source SNPA address may be used to select the outgoing link among different subnetworks to which the intermediate system is attached.

The destination SNPA address is the next hop SNPA address. It will be the SNPA address of the target endsystem, if the endsystem is directly reachable. It will be the SNPA address of another intermediate system, if the endsystem is not directly reachable.

The source SNPA address and the destination SNPA address are passed as parameters of the SN-UNITDATA request service primitive down to the subnetwork layer.

7.7.6.3 Address Mechanism in the Destination Endsystem

On receipt of an NPDU the network entity in the destination system decodes the received NPAI to derive the source and destination NSAP addresses.

The source NSAP address and the destination NSAP address are passed as parameters of the N-UNITDATA indication service primitive up to the network service user, i.e. to the transport entity.

The network entity may use the information contained in the SEL field of the destination NSAP address (i.e. the destination NSAP selector) to select the recipient among different network service users.

7.8.4 Address Mechanisms in the Transport Layer

7.8.4.1 Address Mechanism in the Source System

The transport entity in the source system receives the source and destination TSAP address parameters in the T-CONNECT request or T-UNITDATA request service primitive from the transport service user, e.g. from the session entity.

The TSAP addresses are split into their constituent parts, i.e. the TSAP selector and the NSAP address.

The source NSAP address and the destination NSAP address are passed as parameters of the N-UNITDATA request service primitive down to the ATN network layer.

The source TSAP selector and the destination TSAP selector are encoded and embedded into the TPDU header. They are conveyed as the source and destination TSAP-ID parameters of the CR TPDU for the connection mode transport protocol or of the UD TPDU for the connectionless mode transport protocol respectively.

7.8.4.2 Address Mechanism in the Destination System

The transport entity in the destination system receives the source and destination NSAP address parameters in the N-UNITDATA indication service primitive from the ATN network layer.

The transport entity in the destination system obtains the source and destination TSAP-ID parameters from the header of the received CR TPDU for the connection mode transport protocol or of the received UD TPDU for the connectionless mode transport protocol respectively.

The transport entity may use the information contained in the destination TSAP-ID parameter to select the recipient among different transport service users.

The transport entity decodes the received source and destination TSAP-IDs to derive the TSAP selectors. The TSAP selectors are concatenated with the NSAP addresses to construct the (full) TSAP addresses.

The source TSAP address and the destination TSAP address are passed as parameters of the T-CONNECT indication or T-UNITDATA indication service primitives up to the transport service user, e.g. to the session entity.

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3. Recommendation

It is recommended that

- the Additional Guidance text proposed in section 2 be reviewed by WG-2 and a decision be made as to its correctness and appropriateness,
- a new section 7.7.6 with the text about network layer address mechanisms as proposed in section 2 be included in the draft ATN SARPs, and
- a new section 7.8.4 with the text about transport layer address mechanisms as proposed in section 2 be included in the draft ATN SARPs.