

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL
SECOND MEETING

Montreal 4th - 15th November 1996

Agenda Item 3: Development of the CNS/ATM-1 Package (SARPs and Guidance Material)

VDL Requirements on the ATN Mobile SNDCF

(Presented by ATNP WG2 Rapporteur)

WORKING PAPER

SUMMARY

The ATN Mobile SNDCF function is specified in the Internet Communications Service draft SARPs. It has been recognised by WG2 that the VDL SARPs adopted by the AMCP in April 1996 specify a set of additional requirements on this function. The Mobile SNDCF function has been specified in such a manner that it is intended to be common to all mobile subnetworks, i.e. that one implementation of this function should be able to operate over the Mode S, VDL and AMSS subnetworks. WG2 considered the fact that an additional set of VDL specific requirements on the Mobile SNDCF to be an unsatisfactory situation with the potential for implementations not being able to inter-operate depending on whether or not they support the VDL specific requirements. WG2 has reviewed all VDL specific Mobile requirements and incorporated them into the Internet Communications draft SARPs in such a manner that there was no impact on operation over other mobile subnetworks.

REFERENCES

AMCP VDL SARPs

1. Introduction

1.1 The ATN Mobile SNDCF function is specified in the Internet Communications Service draft SARPs. It has been recognised by WG2 that the VDL SARPs (for mode 1 and mode 2) adopted by the AMCP in April 1996 specify a set of additional requirements on this function. The Mobile SNDCF function has been specified by ATNP in such a manner that it was intended to be common to all mobile subnetworks, i.e. that one implementation of this function should be able to operate over the Mode S, VDL and AMSS subnetworks.

2. Background

2.1 The function of the Mobile SNDCF as specified in the Internet Communications Service draft SARPs is to provide the Internet network layer protocols a common interface to operate over the known mobile subnetworks.

2.2 In recognition of the limited bandwidth nature of such subnetworks one of the primary functions of the Mobile SNDCF is to implement compression techniques which have the potential to significantly reduce the amount of data that is actually transferred over the air/ground network, one example being the "Local Reference Mechanism" which is capable of reducing the header and addressing information of the CLNP network layer protocol to be transferred across a subnetwork from 60 octets to 6 octets.

3. Discussion

3.1 WG2 considered the fact that an additional set of VDL specific requirements for the Mobile SNDCF defined elsewhere in Annex 10 to be an unsatisfactory situation with the potential for implementations not being able to inter-operate depending on whether or not they support the VDL specific requirements.

3.2 WG2 consequently reviewed all VDL specific requirements and incorporated them into the Internet Communications draft SARPs in such a manner that there was no known impact on operation of the Mobile SNDCF over other mobile subnetworks.

3.3 Attachment 1 to this paper includes a comparison of the VDL requirements that have been defined in the VDL SARPs and where and how such requirements have now been incorporated, where necessary, into the Internet Communications Service draft SARPs.

4. Recommendation

4.1 The Panel is invited to:

a) develop a recommendation defining a principle that all requirements related to the Mobile SNDCF, and indeed, any requirements related to ATN components should be solely contained within the ATN SARPs and that this be communicated to other Panels defining SARPs for CNS/ATM systems;

b) develop a recommendation that the section of the VDL SARPs that defines requirements for the Mobile SNDCF be removed based upon the premise that all such requirements have been incorporated into the Internet Communications Service draft SARPs as demonstrated in attachment 1 to this paper.

Attachment 1 to ATNP/2-WP-xx

A1 ATNP WG2 Review of the VDL SARPs

1.1 Section A1.1 of this Attachment presents the comparison of the VDL and ATN SARPs requirements regarding ISO/IEC 8208 facilities.

1.2 Section A1.2 shows how the requirements of section 5 of the VDL SNDCF are accounted for in

the Internet Communications Service draft SARPs.

1.3 Shaded areas of this attachment reproduce relevant extracts from the VDL and Internet Communications Service draft SARPs.

A1.1 ISO 8208 facilities

A.1.1.1 VDL SARPs

Specifications

SECTION 4 - SUBNETWORK LAYER PROTOCOLS AND SERVICES

Supported facilities. Table 4-2 lists options and facilities, documented in ISO 8208, that shall be supported by VDL.

Table 4-2. Facilities supported by the VDL

| <i>FACILITY</i> | <i>ISO 8208 SECTION</i> |
|---|-------------------------|
| Packet retransmission | 13.4 |
| Nonstandard default packet sizes | 13.9 |
| Nonstandard default window sizes | 13.10 |
| Flow control param. negotiation | 13.12 |
| Fast select | 13.16 |
| Fast select acceptance | 13.17 |
| Called line address modified notification | 13.26 |
| Called address extension | 14.2 |

A1.1.2 ATN SARPs specification

The ATN SARPs only explicitly refers to the following ISO/IEC 8208 facilities in section 5.7.6.2.1 (Calling DTE Procedures):

- Priority
- Non standard default packet size
- Fast select Facilities

5.7.6.2.1.2 *The Priority Facility*

- 5.7.6.2.1.2.1 The Priority Facility shall be used if the subnetwork provider supports prioritisation of Virtual Circuits and specifies the mapping of Network Service to Subnetwork Service priorities.

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5.7.6.2.1.3 *The Non-Standard default packet size Facility*

5.7.6.2.1.4 Non-standard default packet size Facility shall be used and the value requested set to the maximum supported by the subnetwork.

- 5.7.6.2.1.4 *The Fast Select Facility*

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- 5.7.6.2.1.4 The Fast Select Facility shall be used if supported by all Subnetwork Provider(s) in the DTE-DTE virtual path.

For all the other facilities , the use of these facilities is a local matter , as specified in the following note, section 5.7.6.2.1.1.3:

Note. — Other optional user facilities and CCITT-specified DTE facilities may be required by subnetworks. The use of these facilities is a local matter.

- **A1.1.3 Conclusion**

- 1) Priority : As VDL does not support priority, the fact that VDL does not mandate priority is not in contradiction with the ATN specification.
- 2) Non standard default packet size and Fast select facility : the fact that VDL supports and mandates these two facilities is fully compatible with the ATN specification.
- 3) Other facilities : As all other ISO/IEC 8208 facilities are a local matter , Table 4-2 in the VDL SARPs is fully compatible with the ATN specification.

A2.1 Tracing VDL requirements in Internet Communications Service SARPs

A2.1.1 Section 5 from the VDL SARPs:

SECTION 5 - THE VDL MOBILE SUBNETWORK DEPENDENT CONVERGENCE FUNCTION (SNDCF)

VDL MOBILE SNDCF

Introduction. The VDL mobile SNDCF shall be the standard mobile SNDCF specified in the ATN Manual, except as described below.

New function. The VDL mobile SNDCF shall support maintaining context (e.g., compression tables) across subnetwork calls. The SNDCF shall use the same context (e.g., compression tables) across all SVCs negotiated to a DTE, when negotiated with the same parameters. The SNDCF shall support at least 2 SVCs sharing a context.

Note.- Because handoffs can be expected to reorder packets, certain compression algorithms do not lend themselves to use over the VDL. Further, implementors of dictionary-based compression algorithms must be sensitive to the problem of updates arriving on either the old or newly established call.

Call user data encoding.

The Call User Data field shall be as detailed in the ATN Manual, except as modified below.

ISH PDU. The ISH PDU shall be included in both the CALL REQUEST and CALL CONFIRMATION packets.

Maintained/initialized status bit. The fifth bit of the compression technique octet (i.e., the sixth octet of the Call User Data field) shall be the maintained/initialized (M/I) status bit which is used to indicate whether the SNDCF context (e.g., the compression state) was maintained from an old SVC to a new SVC.

CALL REQUEST. If the calling SNDCF is requesting that the SNDCF context be maintained from an existing call to the new call being established, it shall set the M/I bit to 1; otherwise, the M/I bit shall be set to 0.

CALL CONFIRMATION. If the called SNDCF has successfully maintained the entire SNDCF context to the new call being established, it shall set the M/I bit to 1; otherwise, the M/I bit shall be set to 0.

A2.1.2 Interrelationship with the ATN SARPs

A2.1.2.1 New Function

In the ATN proposed compression procedure, only the Local Reference Compression procedure requires that a compression table (Local Reference Directory), be associated with the subnetwork connection . The maintenance of the Local Reference Directory across SVCs negotiated with a DTE are now specified in the Internet Communications Service draft SARPs.

This specification contains no limitations regarding the number of Virtual Circuits which can share the same Local Reference Directory.

A2.1.2.2 Call user data encoding and ISHs

In section 5.7.6.2.1.5 of the SARPs the following note is included:

Note. — When the fast select facility is available, the User Data field may be used to convey the ISO/IEC 9542 ISH PDU as part of the routing initiation sequence.

A2.1.2.3 Call User Data encoding and M/I bit setting

The VDL requirements regarding the M/I bit setting and use are now included in the specification of the procedure for maintaining the Local reference Directory.