

Aeronautical Telecommunication Network Panel

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CPDLC MESSAGE SIZE

Presented by:

Paul CAMUS
Consultant
Aerospatiale

Summary

The implementation of the SARPS has highlighted an unplanned result of the ASN1 message structure leading to unrealistic message size.

Two attitudes can be adopted:

- To correct (paper work) the defect before ICAO releases the annex 10 Appendix A.
- To take the risk of unrecoverable situations due to different implementations of the SARPS.

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Introduction

The SARPs for CNS/ ATM package 1 are nearly completed. It is high time that the implementors take over. This task has been already initialized, in particular at Aerospatiale. The purpose of this paper is to share the implementor experience from computer resources perspective.

Technical statement

The implementation of the CPDLC SARPs has highlighted an unplanned result of the ASN1 message data structure. In fact, with the tools currently used, the ASN1 compilation is done according to the type of ElementId. Since the ATCMsgElementId is present five times in the structure, the compiler reserves five times the memory space corresponding to this type.

When considering the variable of the maximum size, RouteClearance (128 RouteInformation specified with 128 LatitudeLongitude each i.e. 128 squared size times 5), it leads to an unrealistic message size. This is undoubtedly a waste of computer resources.

If nothing is changed the implementor will customize the message structure in order to optimize memory space allocation. In this case the systems will not comply with the SARPS due to ASN1 limitations in the area of subsetting rules and different versions of implementation will compromise the interoperability.

This situation would be contrary to the sought objective. It is crucial that the SARPS cannot be interpreted in different ways.

Operational aspect

This problem has been brought to the attention of the ADSP by the sub-group 2 of the ATNP WG/ 3. It was suggested that they modify or clarify the current operational requirements bearing in mind that these requirements are the source of the system requirements. The CAAs attach a great importance to the traceability.

The recent decision presented at the ADSP meeting in Montreal is twofold and converge to an overall reduction of the maximum message size:

- (a) Limitation of the number of RouteClearance variables in a single message down to two.
- (b) Deletion of TrackDetail information which is deemed obsolete

Items (a) and (b) are covered by PDR 97100011 and PDR A046PD0C. The later complements the change proposal related to (a). The operational limitation has to be reflected in the ASN1 message structure which determine effectively the sizing requirement.

Recommendation

It is of common interest for the Industry and ATS datalink users to get the benefit of these two changes at the initial stage of the implementation of the SARPS. Aerospatiale recommends the incorporation of these two amendments before ICAO releases annex 10 Appendix A.