ATNP WG2/WP-535

Aeronautical Telecommunication Network Panel
Working Group 2
19th Meeting, September 1999
Gran Canaria, Spain

Proposed COMMUNIQUE TO AMCP

Presented by Ron Jones

Proposed Communiqué to AMCP are attached.

COMMUNIQUE from ATNP WG2 to AMCP
October 1, 1999

ATN Mobile Subnetwork Requirement in Order to Satisfy the Continuity of Service Operational Requirements

BACKGROUND –

The ICAO ADSP has established operational requirements for the overall end-to-end data link service in support of ATS applications. The following table is from the ICAO Manual of ATS Data Link Applications as produced by the ADSP.

Application	Availability	Integrity	Reliability	Continuity
DLIC	99.9%	10^{-6}	99.9%	99.9%
ADS	99.996%	10^{-7}	99.996%	99.996%
CPDLC	99.99%	10^{-7}	99.99%	99.99%
FIS	99.9%	10^{-6}	99.9%	99.9%
AIDC	99.996%	10^{-7}	99.9%	99.9%
ADS-B	99.996%	10^{-7}	99.996%	99.996%

Table 3A-2: Application Specific Performance Requirements

> "Except in catastrophic situations, no single end-to-end outage should exceed 30 seconds (end-to-End availability may be achieved through provision of alternate communications routings where feasible)."

It is important to note the very demanding requirements for continuity of service and service availability for the CPDLC and ADS (contract) applications. As noted in the accompanying text (above) the availability may be achieved through provision of alternate communications routing. Although not explicitly stated, this comment could also be applicable to the requirement for continuity of service.

The ATN SARPs and Doc 9705 define the technical provisions for an internetwork communication service that is able to utilize multiple paths via multiple subnetworks in order to achieve a high service availability and high continuity of service. However, this capability can only be provided if the subnetworks provide, to the connected ATN routers, accurate and timely information on the connectivity that they offer. The current published ATN technical provisions (i.e., Doc 9705) were intended to enable initial operational capabilities, but were not intended to include all of the features and capabilities to satisfy all for the long-term requirements. The working groups of the ATNP are now task with the development of a series of enhancements that will be published as the third edition of Doc 9705 along with revisions to the ATN SARPs (i.e., Annex 10). This forthcoming version of the ATN provisions are intended to progress the ATN related provisions with the goal of satisfying the operational requirements as expressed by the ADSP. In reviewing the existing ATN and mobile subnetwork SARPs and associated technical provisions several areas of concern have been identified with the lack of specific requirements associated with connectivity reporting by the mobile subnetworks. The ATNP is also investigating potential enhancements to the ATN provisions to improve the overall continuity of the end-to-end service.

ATNP WG2 has drafted explicit new requirements, for the ATN Package-2 SARPs, associated with connectivity reporting that will be imposed on any ATN compliant mobile subnetwork. Specifically it was felt that the lack of explicit requirements associated with the mobile subnetwork issuance of Join and Leave Events must be addressed as a matter of importance. This subject was raised by ATNP WG2 with AMCP WG-D at a joint session in Honolulu in January 1999. Further coordination between the ATNP WG2 and the working groups of the AMCP is needed in order to develop fully coordinated SARPs defining capabilities that, when integrated within an overall future ATN infrastructure, will yield an end-to-end communications service consistent with the operational requirements as laid out by the ADSP.

DISCUSSION -

The draft third edition of Doc 9705 proposes to amend the ATN technical provisions to require that all mobile ATN subnetworks support the issuance of Join and Leave events. This is an option in the current ATN technical provisions where less desirable alternatives for mobile subnetwork connectivity reporting were allowed. Further more the new provisions are proposed to characterize the classes of ATSC traffic that can be supported by mobile subnetworks through the definition of associated transit delay and latency in reporting the loss of subnetwork connectivity (see below). These two characteristics of the mobile subnetworks are considered by ATNP WG2 to be critical to satisfying the overall service operational requirements.

ATSC Traffic Class	Maximum One Way ATN Mobile Subnetwork Transit Delay at 95% Probability (seconds)	Maximum Latency, at 95% probability, in Issuing a Leave Event (in seconds)
A	reserved	reserved
B	3.0	27.0
C	5.7	43.2
D	10	81
E	14.5	108
F	23.5	162
G	46.5	300
H	96.5	600

RECOMMENDATION

The working groups of the AMCP are invited to submit any comments on the proposed changes to the ATN SARPs and Doc 9705 to the ATNP secretary no later than 24 November 1999 so that they can be considered by the ATNP Working Group of the Whole meeting being held shortly thereafter.