International Civil Aviation Organization

THE SIXTH MEETING OF AERONAUTCAL TELECOMMUNICATION NETWORK (ATN) IMPLEMENTATION CO-ORDINATION GROUP OF APANPIRG (ATNICG/6)

Seoul, Republic of Korea, 16 - 20 May 2011

Agenda Item 5: Internet Protocol Suites Transition

VOICE OVER INTERNET PROTOCOL (VoIP) DEVELOPMENT

(Presented by USA)

SUMMARY

This paper conveys the on-going activities of the use of Voice over Internet Protocol (VoIP) that is specified in EUROCAR Working Group 67 documents. Some of the EUROCARE/67 specifications are referred in ICAO Doc. 9896 Internet Protocol Suites (IPS). The Federal Aviation Administration (FAA) is coordinating the use of VoIP based on Session Initiation Protocol (SIP) with EUROCAE WG 67 members. Civil Aviation Bureau of Japan (JCAB) is also participating in this effort. The FAA is planning to host an industry day in Crystal City, Virginia to evaluate the industry input and demonstration from 16-25 May 2011. The FAA also establishes a test platform to evaluate the compatibility of VoIP in supporting legacy voice switching equipment.

1. INTRODUCTION

1.1 The Aeronautical Communication Panel (ACP) Working Group I/13 met in Asia/Pacific Regional Office, 27-28 May 2011. At this meeting, ACP WG I reported the reference of EUROCAE/67 specification

1.2 To develop EUROCAE Documents (ED), EUROCAE organises Working Groups (WGs) where members provide experts working on a voluntary basis. In general the WG members come from the association membership but others may be accepted under specific conditions regarding the organisation they are belonging to and their particular expertise.

1.3 EUROCAE council started Working Group 67 and it has been tasked to develop ED documents related to VoIP for ATM. This group analyses the situation regarding operational and technical Air-Ground (A/G) and Ground-Ground (G/G) ATM voice system requirements in the new context of voice and data convergence into one multi-media network using the capability of Voice over Internet Protocol (VoIP) technology.

1.4 Four Sub-group (SG1 to SG4) has developed a technical specification of an IP Voice ATM system for G/G ATM communications and for the G/G segment of A/G communications.

ED-136 (SG1): VoIP ATM System Operational and Technical Requirements – This document defines both Telephone and Radio interface requirements

ED-137 (SG2): Interoperability Standards for VoIP ATM Components – This document is defined in 4 parts.

Part 1: Radio: Radio Interoperability defines Audio, SIP signalling and management procedures to be employed between VCS and Remote Radios in order to achieve complete radio functionality over a private ATS- IP network.

Part 2: Telephone: Telephone Interoperability defines Audio and SIP-SIP signalling procedures, SIP –ATS-QSIG gateway signalling procedures, SIP-ATS MFC-R2 gateway signalling procedures, SIP – ATS No.5 gateway signalling procedures in order to achieve complete telephone functionality over a private ATS-IP network.

Part 3: Recording: Recording Interoperability proposes a profile standard for the use of RTSP to establish, terminate and modify recording sessions of the Ground Telephone Service and the Radio Service in an Air Traffic Services Ground Voice Network (AGVN).

Part 4: Supervision: Supervision System Interoperability defines a centralized system capable to perform supervision and monitoring tasks of several components involved in the Voice Communications System for Air Traffic Services.

ED-138 (SG3): Network Requirements and Performances for VoIP ATM Systems. This document specifies the technical requirements and capabilities of network services - including IP Addressing and Security - that are to provide the necessary high levels of availability, integrity, performance and Quality of Service (QoS) for VoIP in ATM applications.

Part 1: Network Specification

Part 2: Network Design Guideline

ED-139 (SG4): Qualification tests for VoIP ATM Components and Systems. This document has the scope of providing a high level summary of the qualification tests to be performed on the developed VoIP Ground Telephone and Radio SIP interfaces within a VCS, Radio or Interworking Gateway product developed according to the published EUROCAE **ED-137 Interoperability Standards for VoIP ATM Components** and satisfying the published EUROCAE **ED-136 VoIP ATM System Operational and Technical Requirements.** This document also has the scope of providing a high level summary of the qualification tests to be performed on the ATS-IP WAN network infrastructure according to the published EUROCAE **ED-138 Network Requirements and Performances for VoIP ATM Systems**.

1.5 ED-138 Network Requirements and Performances for VoIP ATM Systems and ED-139 Qualification tests for VoIP ATM Components and Systems will be documented to Guidance Material to support the implementation of the IP network.

2. DISCUSSION

2.1 The EUROCONTROL and FAA have jointly coordinating the replacement of their voice switching equipment with VoIP based equipment. A planned proof of concept test will take place after Industry day scheduled from 16-25 May 2011.

2.2 ICAO has specified the use of VoIP standard based on EUROCAE WG 67.

2.3 The planned use of SIP as a standard to replace existing variety of analog based supervisory signaling will result in simpler transition of the voice switching equipment. This is due to existing analog based supervisory signals can be converted to SIP for transmission and processing.

2.4 The use of VoIP technology based on SIP will address the incompatibility of various voice/data multiplexer using proprietary standard that required States to use a same platform.

2.5 The ICAO adoption of VoIP technology to support Air Traffic Service (ATS) voice needs to consider the following issues to ensure a smooth transition in the future:

a) Configuration control: This process need to be established to ensure the member States of ICAO can provide the feedback for future update and modification. In current situation, only European Commission has authority to approve update/modification of all EUROCAE Documents;

b) Obtain IPV6 address assignment: this process is complicated for a single State to obtain an ICAO Global prefix address as recommended by ICAO;

c) Control of SIP addresses: Regional and global Proxy SIP servers;

d) Security: Certified by common provider approach;

e) Separation of ATC network with other network is not addressed;

f) The policy to connect under public internet is not addressed; and

g) Asia/Pacific has limited participation in EUROCAE WG 67 to address its unique network requirement

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

a) Note the development of VoIP by EUROCAE WG 67; and

b) Consider a recommendation to APANPIRG for active participation to address the regional network requirement to both ICAO ACP and EUROCAE WG 67.

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