



International Civil Aviation Organization

**AMHS/SWIM SEMINAR AND THE SEVENTH MEETING OF
AERONAUTICAL TELECOMMUNICATION NETWORK
(ATN) IMPLEMENTATION CO-ORDINATION GROUP OF
APANPIRG (ATNICG/7)**



Chiang Mai, Thailand, 5 – 9 March 2012

Agenda Item: 4 Internet Protocol Suites Transition

VOICE OVER INTERNET PROTOCOL (VoIP) DEVELOPMENT

(Presented by the USA)

SUMMARY

This paper conveys the VoIP functional characteristics specified in ICAO Doc. 9896ATN Internet Protocol Suite and EUROCAE Working Group 67 documents. The ICAO Documents specifies the VoIP service and implementation using a common network provider. However, there is a need to utilize the VoIP for States without a common network provider or within a network domain.

1. INTRODUCTION

1.1 The Aeronautical Communication Panel (ACP) has adopted the reference of EUROCAE/67 specification to the ICAO Doc 9896.

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**.

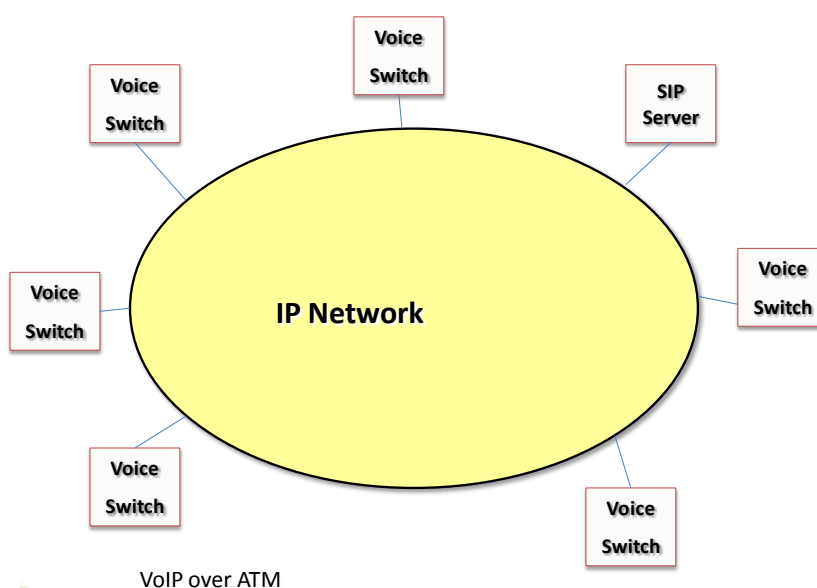
1.5 ED-138 Network Requirements and Performances for VoIP ATM Systems and ED-139 Qualification tests for VoIP ATM Components and Systems will be documented to Guidance Material to support the implementation of the IP network.

2. DISCUSSION

2.1 The 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.

2.2 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.

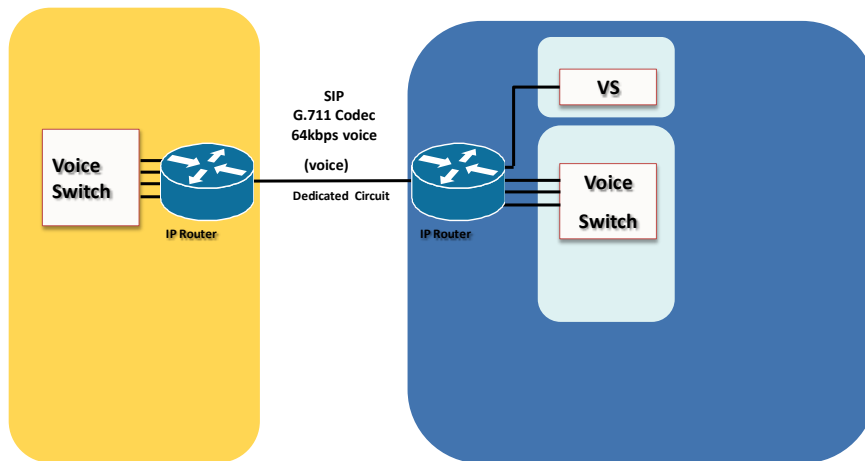
2.3 The ED-136 VoIP ATM System Operational and Technical Requirements specify the VoIP service based on a common network. This means the users are assigned an IP address and the service providers will program dial plan at the SIP server.



2.4 The current voice service is ordered using a dedicate circuit and/or voice/data multiplexer to combine many voice and data channels together into a single circuit. The voice/data multiplexer standard is industry propriety. This means it requires the users have to use identical multiplexer. Due to this restriction, the industry has moved to VoIP.

2.5 The Asia/Pacific region does not have a common network such as Pan European Network Service (PENS) or Federal Aviation Administration Telecommunication Infrastructures (FTI) for North American region, or MEVA for Caribbean region or REDDIG for South American region.

2.6 The VoIP can be used on dedicated circuit using IP router with SIP interface that can support more than one voice channels depending on bandwidth of the circuit.



3. ACTION TAKEN BY THE MEETING

3.1 The meeting is invited to:

- a) note the development of VoIP by EUROCAE WG 67; and
- b) note the use of VoIP over a dedicated circuit
