



To Internet Protocol Suite (IPS) Subcommittee
Date January 5, 2016

From P. J. Prisaznuk
pjp@sae-itc.org
tel: 1-410-212-0913
Reference 16-999/SMA-928 lth

Subject Meeting Announcement
Internet Protocol Suite for Aeronautical Safety Services
Washington, DC

Chairmen Luc Emberger, Airbus
Greg Saccone, Boeing

Host RTCA

When February 23-25, 2016
Tuesday and Wednesday from 0900 to 1700
Thursday from 0900 to 1300
RTCA Special Committee leadership is encouraged to attend.

Where RTCA, Inc.
1150 18th St. NW, Suite 910
Washington, DC 20036

Point of Contact:

Hal Moses, RTCA
hmoses@rtca.org
tel: +1 202-833-9339
website: www.rtca.org

Hotels There is a good selection of hotels available near the RTCA meeting site. For more information visit:
<http://www.rtca.org/content.asp?pl=139&sl=49&contentid=168>

Instructions Please notify ARINC Industry Activities of your intention to attend by registering online at: <http://www.aviation-ia.com/events/>

The meeting is open to all interested parties. Those wishing to speak at the meeting should have their comments prepared in writing, either in the form of a presentation or a white paper and should contact Paul Prisaznuk. The agenda will be finalized one week before the meeting.

Activity Scope

The AEEC Executive Committee formed the IPS Subcommittee to develop an industry roadmap for defining an Internet Protocol Suite for Aeronautical Safety Services, including airborne, ground-based and space-based communication systems, coordinating with aviation Standards Development Organizations (SDOs), Air Navigation Service Providers (ANSPs), and others with an interest. This activity is authorized by APIM 15-004 (attached to this meeting announcement).

Meeting Objectives

The IPS Subcommittee will develop standards in two steps. Step 1 is the IPS roadmap definition. This activity will take place in 2015-2017. Step 2 is expected to produce a detailed protocol standard thereafter. Topics for the first meeting are as follows:

- Definition of long-term needs for IPS for aeronautical safety services
- Transition phase during which ACARS, ATN/OSI, and IPS will co-exist
- Accommodation of legacy aircraft equipped with ACARS, ATN/OSI, and new production aircraft with IPS
- General Air/Ground end to end architecture
- Ground Gateway to accommodate Legacy and New Production aircraft
- Airborne architecture including security, multi-link, and other technical and operational considerations
- Support of AOC and ATS applications
- Assessment of plans to develop ARINC, ICAO, RTCA, and EUROCAE standards

The goal of the meeting is to identify inputs for inclusion in **ARINC Project Paper 658: Roadmap for the Development of Internet Protocol Suite for Aeronautical Safety Services.**

Travel Information

Washington Dulles Airport (IAD) to RTCA (30mi/50km)

For those driving from IAD, follow signs to the Dulles Access Road heading east to Washington, DC. Exit the Access Road onto I-66 East Washington. Cross the Roosevelt Bridge and stay in the center lanes – follow signs for Constitution Avenue. Turn left on 18th Street, and proceed across L Street. The RTCA office is located on the left at 1150 18th Street. There are several parking garages nearby.

Washington Reagan National Airport (DCA) to RTCA (6mi/10km)

Those arriving at National Airport should use the Washington Metrorail. The Yellow Line is available from National Airport to Gallery Place/Chinatown. At Gallery Place/Chinatown, change to the Red Line to Shady Grove and exit at Farragut North. The closest metro stop to RTCA is Farragut North on the Red Line.

Directions (continued)

Exit the Farragut North metro station onto L Street heading west (left). Continue on L Street to 18th Street. Make a right onto 18th Street and RTCA is on the left side of the street at 1150 18th Street. RTCA is located on the 9th floor.

The Blue Line to Addison Road and Largo Town Center also runs from National Airport. If you take the Blue Line, exit at Farragut West (Blue and Orange Lines) and follow 18th Street heading north (left). Continue to 1150 18th Street.

For those driving from DCA, follow signs to the George Washington Parkway North and the Arlington Memorial Bridge. Cross the bridge to the Lincoln Memorial and follow signs to Constitution Avenue. Turn left on 18th Street, and proceed across L Street. The RTCA office is located on the left at 1150 18th Street. There are several parking garages nearby.

cc

AGCS, AeroMACS, DLK, NIS, SAI

Attachment 1

ARINC Project Initiation/Modification (APIM)

- 1.0 Name of Proposed Project** **APIM 15-004**
ARINC Project Paper xxx: *Internet Protocol Suite (IPS) for Aeronautical Safety Services - Development Plan (working title)*
- 1.1 Name of Originator and/or Organization**
Boeing
- 2.0 Subcommittee Assignment and Project Support**
- 2.1 Suggested AEEC Group and Chairman**
Group: Internet Protocol Suite (IPS) for Aeronautical Safety Services Subcommittee
Chairman: For step 1, Airbus and Boeing have agreed to co-chair.
- 2.2 Support for the activity**
Airlines: AAL, DLH, HAL, SWA, UAL, UPS, USAF
Airframe Manufacturers: Boeing, Airbus
Suppliers: Airtel ATN GE Aviation, Honeywell, Rockwell Collins, Thales
Others: ARINC (RC-IMS), EUROCONTROL, FAA, SITA, Inmarsat, Iridium, Panasonic
- 2.3 Commitment for Drafting and Meeting Participation**
Airlines:
Airframe Manufacturers: Boeing, Airbus
Suppliers: Airtel ATN, GE Aviation, Honeywell, Rockwell Collins, Thales
Others: ARINC (RC-IMS), FAA, SITA, Inmarsat, Panasonic
- 2.4 Recommended Coordination with other groups**
DLUF, DLK, NIS, SAI
- 3.0 Project Scope**
- 3.1 Description**
The Existing ACARS network and Aeronautical Telecommunication Network (ATN) infrastructure for aeronautical safety services is aviation-unique. Modern, off-the-shelf, efficient, and robust network infrastructure common to both air traffic services (ATS) and aeronautical operational communications (AOC) safety service applications is needed.

Note: The ITU Radio Regulations define “safety service” as any “radiocommunication service used... for the safeguarding of human life and property” and ICAO Annex 10 refines that

Mandate/regulatory requirement yes no

Program and date: No mandate

Is the activity defining/changing an infrastructure standard? yes no

Specify: IPS is envisioned to eventually replace ACARS and ATN in the long term

When is the ARINC Standard required? 2019

What is driving this date? Pull from airlines due to their needs/wants to prepare for the future with modern, efficient, and robust data communications network infrastructure for safety services that leverages the increasing availability of IP links to their airplanes (e.g., Inmarsat SwiftBroadband, Iridium Certus, AeroMACS). Additionally, the normal long lead time for development of aviation specifications means that key areas need to start being investigated and developed now to meet longer term targets in the mid-2020s.

Are 18 months (min) available for standardization work? yes no

If NO, please specify solution: Not applicable

Are Patent(s) involved? yes no

If YES please describe, identify patent holder: Not applicable

3.3 Issues to be worked

Issues to be worked in Step 1 include an assessment and the definition of a plan to develop standards (ICAO, EUROCAE, RTCA, ARINC) addressing the following:

- Definition of long-term needs for IPS for aeronautical safety services
- Transition phase during which ACARS, ATN/OSI, and IPS will co-exist
- Accommodation of legacy aircraft equipped with ACARS, ATN/OSI, and new production aircraft with IPS
- General Air/Ground end to end architecture
- Ground Gateway to accommodate Legacy and New Production aircraft
- Airborne architecture including security
- Support of AOC and ATS applications
- Technical definition:
 - IPS Profile
 - Security studies and coordination with other relevant groups (network or application level, technology choices, etc.)
 - Addressing schemes and address allocations
 - Technology investigation (e.g., IPv4, IPv6, compression, etc.)
 - Handling interfaces that have embedded IP (e.g., ARINC 781) versus interfaces that do not have embedded IP (e.g., VDL Mode 2)

- Mobility and routing trade studies and selection (AERO, Mobile IP, etc.)
- Performance investigation
- Transport layer protocol choices (TCP and/or UDP)
- Functionality allocation
- Dialog service interfaces
- System management requirements

Step 2 includes the definition of the appropriate ARINC Standards as identified by Step 1.

4.0 Benefits

4.1 Basic benefits

Operational enhancements? yes no

For equipment standards:

a. Is this a hardware characteristic? yes no

b. Is this a software characteristic? yes no

c. Interchangeable interface definition? yes no

d. Interchangeable function definition? yes no

If not fully interchangeable, please explain: Not applicable

Is this a software interface and protocol standard? yes no

Specify: IPS will provide a third set of network protocols (in addition to ACARS and ATN)

Product offered by more than one supplier yes no

Identify: TBD

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Airline benefits are expected to accrue in the form of greater data communications performance compared to ACARS and ATN. IPS will be designed to support both ATS and AOC applications, provide backward compatibility with traditional ACARS ATS (e.g., FANS) and AOC (e.g., ARINC 702A flight plans) applications, and use both line-of-sight and beyond-line-of-sight subnetworks, all of which will further increase its effectiveness and applicability. IPS will support a wide range of future applications and enable a transition to high-speed links for safety services.

4.2.2 Benefits for Airframe Manufacturers

It is expected that airframe manufacturers' benefits will accrue in the form of moving towards future datalink technologies providing more bandwidth and

capabilities. IPS protocols (IP, TCP, and UDP) have been exhaustively tested in the commercial domain and are widely available for adaptation for aeronautical use.

4.2.3 Benefits for Avionics Equipment Suppliers

Avionics equipment supplier benefits will accrue in the form of moving towards future datalink technologies providing more bandwidth and capabilities. IPS protocols (IP, TCP, and UDP) have been exhaustively tested in the commercial domain and are widely available for adaptation for aeronautical use.

5.0 Documents to be Produced and Date of Expected Result

ARINC Report “Standardization Roadmap for IPS Aeronautical Safety Services”, in April 2017.

ARINC Project Paper 8XX, *IPS for Aeronautical Safety Services (working title)*, in late 2018 or early 2019.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Step 1: ARINC Report Standardization Roadmap for IPS, (Develop plan and work program, identify deliverables pertaining to IPS)	5	10	Sept 2015	April 2017
Step 2: ARINC Project Paper 8XX, Internet Protocol Suite (IPS) for Aeronautical Safety Services	TBD	TBD	April 2017	April 2019

6.0 Comments

6.1 Authorization for Step 1

When voted, the APIM will authorize the activity proposed for Step 1. A revision to this APIM shall be prepared to authorize the activities of Step 2, considering the results of Step 1.

6.2 Expiration Date for the APIM

April 2017