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AERONAUTICAL TELECOMMUNICATION NETWORK PANEL

WORKING GROUP 2

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ARINC Validation Tools

Information Paper

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SUMMARY

This document provides a high level description of the ATN validation activities at ARINC and presents an overview of the ARINC systems to be used for the validation of CNS/ATM-1 Package SARPs.

1. Introduction

ARINC will support the ATN validation activities through its participation in the AVPAC/DUTCH Initiative and the North Atlantic Unified Trials. To facilitate the validation of the CNS/ATM-1 Package SARPs, ARINC has established an ATN laboratory in its Annapolis facilities. The ATN Lab is interconnected with the ARINC Packet network (APN) and the Globalink satellite service. Other members of the ICAO ATN Panel will be able to access the ATN Lab for interoperability testing via the existing APN connection. If necessary, other modes of connectivity can also be entertained.

2. Description of Tools

The configuration of the ATN laboratory is presented below:

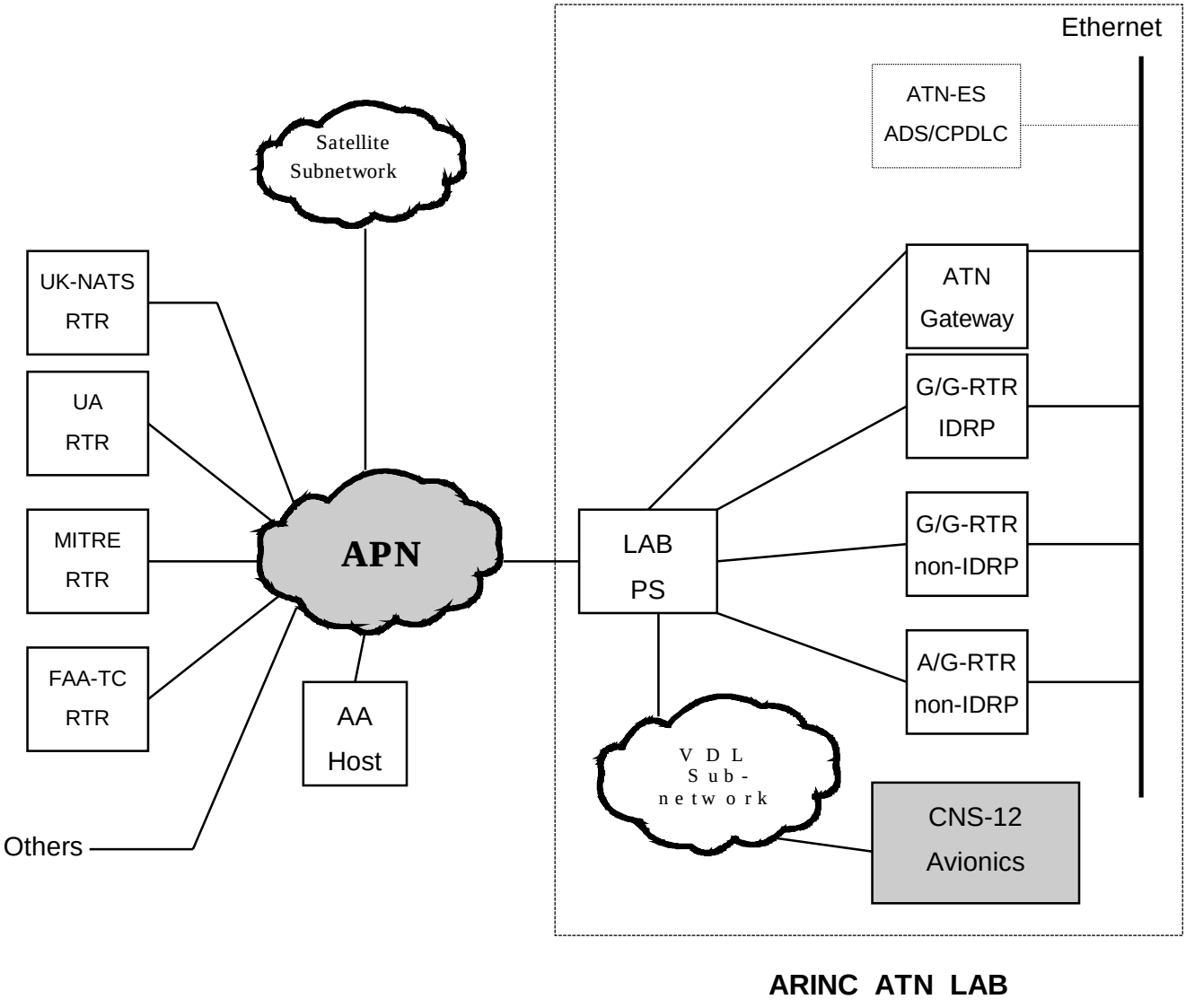

Figure 1: ARINC ATN Validation System Architecture

The components included in the dashed box labelled “ARINC ATN Lab” are prototype systems or COTS products developed and/or procured by ARINC for ATN validation and interoperability testing. The remaining systems, such as the APN or the satellite subnetwork, are part of ARINC’s operational service. ARINC ATN Lab is presently interconnected with American Airlines, United Airlines, MITRE, FAA-TC, and UK NATS facilities.

The VDL subnetwork and the CNS-12 avionics are under development with a target completion date in August 1996. The VDL systems will comply with the ICAO VDL SARPs for Mode-2 operating at 31.5 Kbps using D8PSK modulation. The ATN internetworking capabilities will be added by 4Q96.

The ATN-ES shown in the above configuration supports ARINC 745 compliant ADS messages and CPDLC applications as per RTCA DO-219. The end-system is currently operational and complies with FANS-1 requirements. ARINC plans to integrate the end-system with the ATN Lab and upgrade the ES to support CNS/ATM-1 Package specifications for sub-volume IV. The final availability of the upgraded system has not been defined yet.

A high level description of the systems to be used by ARINC for the validation of the CNS/ATM-1 Package SARPs is provided in Attachment A.

Attachment A: Description of Validation Tools used by ARINC

Tool Identification		
Name	ATN Air/Ground Router: ARINC	
Full Name	ATN Air/Ground Router: ARINC	
Category	PROTOTYPE IMPLEMENTATION	
Description	.The ARINC air/ground ATN router is a BIS that supports both the satellite and the VDL subnetwork interfaces on the air/ground side and X.25 WAN interfaces on the terrestrial side. In addition, it also supports 8802.3 LAN interface.	
Contact Point and/or Supplier	Aloke Roy, ARINC Phone # 410-266-2336; Fax # 410-266-4499 email: ar@arinc.com	
Tool Version and Date	Version 1.0d; November 1995	
Supporting Hardware	SUN SPARC5	
Supporting Operating System and/or Software	SUN OS, version 4.1.1; SUNNET OSI; SUNLINK x.25	
CNS/ATM-1 SARPs Scope		
ATN Systems	☐ End System ☐ Intra-domain Intermediate System ☐ Ground-ground BIS ☒ Air-ground BIS ☐ Airborne BIS	
Protocols	☐ ISO 8073 ☐ ISO 8602 ☒ ISO 8473 ☒ ISO 9542 ☐ ISO 10747 ☒ ISO 8802 SNDCF ☒ ISO 8208 SNDCF ☒ ISO 8208 Mobile SNDCF ☒ Other: ISO 10589, Air/ground VDL and Satellite SNDCFs	
CNS/ATM-1 Specifics	☒ ATN Addressing ☐ ATN Routing Policy ☒ Air-Ground Route Initiation ☒ ATN Priority ☐ ATN Security	
Connectivity Information		
Type	**Connector Type and Number**	**Notes**
ISO 8802-3 LAN	Thinnet; One	

Tool Identification		
Name	ATN Ground/Ground Router: ARINC	
Full Name	ATN TBS2000 Ground/Ground Router: ARINC	
Category	PROTOTYPE IMPLEMENTATION	
Description	.The ARINC ground/ground ATN router is a BIS that provides IDRP routing. It supports X.25 WAN and 8802.3 LAN interfaces.	
Contact Point and/or Supplier	Aloke Roy, ARINC Phone # 410-266-2336; Fax # 410-266-4499 email: ar@arinc.com	
Tool Version and Date		
Supporting Hardware	Telebit TBS 2000	
Supporting Operating System and/or Software	Telebit Proprietary	
CNS/ATM-1 SARPs Scope		
ATN Systems	☐ End System ☐ Intra-domain Intermediate System ☒ Ground-ground BIS ☐ Air-ground BIS ☐ Airborne BIS	
Protocols	☐ ISO 8073 ☐ ISO 8602 ☒ ISO 8473 ☒ ISO 9542 ☒ ISO 10747 ☒ ISO 8802 SNDCF ☒ ISO 8208 SNDCF ☐ ISO 8208 Mobile SNDCF ☐ Other	
CNS/ATM-1 Specifics	☒ ATN Addressing ☒ ATN Routing Policy ☐ Air-Ground Route Initiation ☒ ATN Priority ☐ ATN Security	
Connectivity Information		
Type	**Connector Type and Number**	**Notes**
ISO 8802-3 LAN	Thinnet; One	
X.25	EIA-530; Five	Speed up to 19.2 Kbps

Tool Identification		
Name	ATN Ground/Ground Router: ARINC	
Full Name	ATN HP Ground/Ground Router: ARINC	
Category	PROTOTYPE IMPLEMENTATION	
Description	.The ARINC HP supports Merit IDRP. It has one 8802.3 LAN interface and one X.25 WAN interface.	
Contact Point and/or Supplier	Aloke Roy, ARINC Phone # 410-266-2336; Fax # 410-266-4499 email: ar@arinc.com	
Tool Version and Date		
Supporting Hardware	HP Series 9000/720	
Supporting Operating System and/or Software	HP-UX	
CNS/ATM-1 SARPs Scope		
ATN Systems	☐ End System ☐ Intra-domain Intermediate System ☒ Ground-ground BIS ☐ Air-ground BIS ☐ Airborne BIS	
Protocols	☐ ISO 8073 ☐ ISO 8602 ☒ ISO 8473 ☒ ISO 9542 ☒ ISO 10747 ☒ ISO 8802 SNDCF ☒ ISO 8208 SNDCF ☐ ISO 8208 Mobile SNDCF ☐ Other	
CNS/ATM-1 Specifics	☒ ATN Addressing ☐ ATN Routing Policy ☐ Air-Ground Route Initiation ☒ ATN Priority ☐ ATN Security	
Connectivity Information		
Type	**Connector Type and Number**	**Notes**
ISO 8802-3 LAN	Thinnet; One	
X.25	RS-232; One	Speed up to 19.2 Kbps

Tool Identification		
Name	ATN Avionics: ARINC	
Full Name	ATN CNS-12 Avionics: ARINC	
Category	PROTOTYPE IMPLEMENTATION	
Description	The CNS-12 avionics will be a static airborne router interfacing with the VDL air/ground subnetwork. The initial implementation will only support ARINC 745 compliant ADS application. Position data will be determined based on integrated GPS receiver.	
Contact Point and/or Supplier	Aloke Roy, ARINC Phone # 410-266-2336; Fax # 410-266-4499 email: ar@arinc.com	
Tool Version and Date	Version 1.0. Planned availability: June, 1996	
Supporting Hardware	Motorola Family of processors	
Supporting Operating System and/or Software	pSOS+ real-time OS	
CNS/ATM-1 SARPs Scope		
ATN Systems	⌫ End System ⍁ Intra-domain Intermediate System ⍁ Ground-ground BIS ⍁ Air-ground BIS ⌫ Airborne BIS	
Protocols	⌫ ISO 8073 ⍁ ISO 8602 ⌫ ISO 8473 ⌫ ISO 9542 ⌫ ISO 10747, availability: 12/96 ⍁ ISO 8802 SNDCF ⌫ ISO 8208 SNDCF ⌫ ISO 8208 Mobile SNDCF ⌫ Other: Air/ground VDL and Satellite SNDCFs	
CNS/ATM-1 Specifics	⌫ ATN Addressing ⌫ ATN Routing Policy ⌫ Air-Ground Route Initiation ⌫ ATN Priority ⍁ ATN Security	
Connectivity Information		
Type	**Connector Type and Number**	**Notes**
VDL Subnetwork	Integrated D8PSK radio	VDL-Mode 2

Tool Identification		
Name	ATN Gateway: ARINC	
Full Name	ATN Gateway: ARINC	
Category	PROTOTYPE IMPLEMENTATION	
Description	.The ARINC ATN Gateway is designed and developed for user hosts with standard WAN or LAN interfaces to interwork with the ATN network. It supports X.25 WAN and 8802.3 LAN interfaces.	
Contact Point and/or Supplier	Aloke Roy, ARINC Phone # 410-266-2336; Fax # 410-266-4499 email: ar@arinc.com	
Tool Version and Date		
Supporting Hardware	SUN SPARC5	
Supporting Operating System and/or Software	SUN OS 4.1.1, SUNNET OSI, SUNLINK X.25	
CNS/ATM-1 SARPs Scope		
ATN Systems	⌫ End System ⍁ Intra-domain Intermediate System ⍁ Ground-ground BIS ⍁ Air-ground BIS ⍁ Airborne BIS	
Protocols	⌫ ISO 8073 ⍁ ISO 8602 ⌫ ISO 8473 ⌫ ISO 9542 ⍁ ISO 10747 ⌫ ISO 8802 SNDCF ⌫ ISO 8208 SNDCF ⍁ ISO 8208 Mobile SNDCF ⍁ Other	
CNS/ATM-1 Specifics	⌫ ATN Addressing ⍁ ATN Routing Policy ⍁ Air-Ground Route Initiation ⌫ ATN Priority ⍁ ATN Security	
Connectivity Information		
Type	**Connector Type and Number**	**Notes**
ISO 8802-3 LAN	Thinnet; One	
X.25	RS-232; Two	Speed up to 19.2 Kbps