Program Executive Office
Command, Control, Communications, Computers and Intelligence (PEO C4I)

Inmarsat Integration with Advanced Digital Networking System (ADNS)

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Automated Digital Networking System (ADNS)

**ADNS IS THE WIDE AREA NETWORK FOR THE U.S. NAVY.**

Deployed Mobile Networking for SHIPS | SUBMARINES | AIRCRAFT

**ENCLAVE INDEPENDENT**
SIPR | NIPR | SCI networks | CENTRIXS

**RF PATH INDEPENDENT**
SATCOM | LOS

The ADNS Program ties together hardware, software, links and services to provide a mobile Wide Area Network (WAN)
- Network Routing Configurations/Architecture
- Security posture (to conform with DOD requirements)
- RF comms paths
- Terrestrial Entry Points (NCTAMS)
- LAN interfaces (platform dependent)
Dynamic networking architecture connects ships, submarines, aircraft. Applications provide capability to warfighters. Those applications function over the network.
Within current coverage area
Lab Facilities

- Building 33
  - Airborne Networking Lab
- Building 40
  - Gig-EF
- Building 660
  - ADNS lab
P-3 AIP ADNS (HFIP/INMARSAT)

Capabilities / CONOPS

**SIPRNET** access for P-3 via Navy CVN, Ships, TSC ashore & INMARSAT SATCOM to NCTAMS

- Chat
- Email
- Imagery exchange
- Web browsing

Facilitates dynamic maritime patrol, information sharing between aircraft & rear nodes: CAOC, CVN, MHQ/MOC, TSC/MOCC) and ground units.

Timeline / Accomplishments

- 2005: HFIP connectivity tested in Trident Warrior 05
- 2006: ADNS development of multi-link network connectivity
- 2007-08: INMARSAT Swift Broad Band development for wide bandwidth SATCOM connection

SATCOM connection enabled through NCTAMS
Goals and Objectives

- Develop a Fault-Tolerant All-IP Black Core Ciphertext Airborne Network Architecture.
- Employ HAIPE Complaint INE Devices
- Provide World-Wide Airborne Network Connectivity
Requirements

- Utilize Swift Broadband
  - Operational analysis suggests that SBB allows significant savings over SW64
- Enable class of service control
- Utilizes HAIPE devices
- Utilize ADNS as WAN architecture
- Secure RADIUS server

SSC San Diego…on Point and at the Center of C4ISR
Network Components

EMS AMT-50
EMS HSD-400
EMS CNX-300
KG-175D
Cisco 3270

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Initial Design

P-3C Aircraft Network (SSC-SD CTS Lab)
- Aircraft Workstation
- Plain Text Network
  - PT Router MAR 3270
- Cipher Text Network
  - CT Router MAR 3250
  - HSD-400 Terminal

Inmarsat Space Network

Shore ADNS & Fleet Infrastructure (SSC-SD ADNS Lab)
- Fleet Router Cisco 3745
  - IP Services
- Policy Switch Catalyst 6506
- Airborne Router Cisco 3845

Inmarsat Ground Network
- CT Router Cisco 3845
  - RADIUS Server

GRE Tunnels
RF Network
IPSec Tunnel
Design Considerations

Capabilities

• End-to-End connectivity between aircraft and shore classified networks
• Interoperable with shore ADNS networks
• Standard ADNS QoS policy enforcement

Limitations

• Requires GRE tunnels for Air-to-Ground routing
  – Cipher Text GRE tunnel
  – Plain Text GRE tunnel
• GRE tunnel overhead reduces available bandwidth
• No streaming class of service selection

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Terrestrial Connection

- Utilizing leased lines for connection between Navy WAN and Inmarsat MeetMe point
- Utilization of T-1 circuits vs. IP transport network
Leveraging Infrastructure

- SSC-San Diego is investigating future opportunities to utilize the SWBB connectivity to the ADNS WAN
- Improved connectivity supports future applications, sensors, and services
Summary

- Providing P-3AIP a SWBB capability over existing ADNS infrastructure
- Designing a cipher-text solution
- Working through accreditation issues
- Aircraft installation Sept 08

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