



# Next Generation Data Link Applications

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- **Next generation applications using VDL Mode 2 provides the opportunity for process improvement and lower costs of operation**
  - ARINC has seen a rise in the number of applications implemented using data link every year
  - Certain applications have been considered by airlines but then ruled out due to technology constraints
    - VDLM2 and advances in avionics alleviate these concerns
    - EFB's provide a cost effective means of additional GUI's and graphics in the aircraft

# How to Transport the Next Generation Applications?

- **Obviously POA at 2400 baud is not feasible**
- **VDLM2 at 31.5 kbps is a viable technological solution**
  - Proven technology:
    - ARINC's AOA service operational since Nov 2000
    - ARINC's ATN/VDLM2 service operational since Sep 2002
    - Numerous avionic implementations
    - Many airlines now operating AOA and ATN aircraft
      - >260 VDL aircraft operational
        - >500 VDL aircraft anticipated by the end of the year
      - >500,000 messages per month
- **But...which network protocol to use?**
  - IP/VDLM2
  - ATN/VDLM2
  - ACARS over AVLIC

- **ARINC began investigating IP/VDLM2 in 2001**
  - Studied under contract to NASA's Glenn Research Center
    - Provided input to MIT's Lincoln Laboratory "Internet over the VDL-2 Subnetwork – the VDL-2/IP Aviation Datalink System " paper
  - Studied determined that IP/VDLM2 was feasible
  - Study suggests that a standardization for implementation is required
    - Specifications would need to be generated
    - Technology base would need to be established
      - (i.e., IP SNDCE, IPv4 vs. IPv6, etc.)
    - Avionics and ground system development required
- **ARINC is ready to support IP/VDLM2 when standardized requirements are established**

- **ARINC has fielded an ATN/VDLM2 network that supports ATN communication in the US and Europe**
  - ARINC is also studying the feasibility of new bit oriented applications over this ATN network
    - ATN investment has already been made by ARINC, avionics/aircraft manufacturers, and several airlines
      - Some development required for new applications
    - Technology has been in operation since 2002 with excellent results
    - New applications can be developed to standards set forth in ARINC 637
    - ARINC has flight demonstrated video and voice via ATN/VDL Mode 2
  - An IP/ATN gateway is also a possibility

- **ARINC has fielded an AOA network that supports ACARS communication throughout the US and Europe**
  - Not the most efficient solution
    - ACARS constrained by character oriented protocol
  - However, AOA is sufficient for some next generation applications
    - 10 times the bandwidth of POA
    - Data compression can increase efficiency
    - EFB's could connect to CMU's like other peripheral systems
    - End to end solution could be implemented fairly quickly

# What's Next?

- **ARINC would welcome feedback:**
  - On the network options
  - On thoughts regarding next generation applications
- **Higher bandwidth link provides the capability for much higher data transmission, and therefore more operational integration of this data**
- **How can we help ?**

**For questions or additional information please contact:  
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