International Civil Aviation Organization
North American, Central American and Caribbean Office
Special Eastern Caribbean Communication, Navigation and Surveillance Meeting (S-E/CAR CNS)
(Port of Spain, Trinidad and Tobago, 20 to 22 October 2004)

Agenda Item 2: Communication Developments
2.3 Development of ground-ground communications

THE USE OF X.25 SERVICE IN THE NATIONAL AIRSPACE SYSTEM (NAS)

(Presented by the United States)

Summary
This paper presents FAA's efforts to modernize its telecommunication infrastructure through a comprehensive program that took into account all the current and future requirements to support ATS efficiently and in a cost effective manner

1. Background

1.1 Presently, the Federal Aviation Administration (FAA) provides X.25 data services in the National Airspace System (NAS) through the National Data Interchange Network (NADIN II). NADIN II is a nationwide X.25 packet switched network in the continental United States. This Network is integrated with the NADIN Message Switched Network (MSN), the FAA equivalent to the Aeronautical Fixed Telecommunications Network (AFTN) used by many International Civil Aviation Agencies.

2. Discussion

2.1 The FAA is modernizing their entire telecommunications network through the FAA Telecommunications Infrastructure (FTI) program. FTI was awarded in July 2002 and is in the early stages of long transition process that migrates over 20,000 NAS services to the new network infrastructure. Part of the services planned to transition to FTI are NADIN II X.25 services. The FTI network provides a broad range of telecommunication services, but the heart of the data network is based on IP technology. The long-term strategy of FTI is to evolve all voice and data services into a converged network architecture based on IP protocol.

2.2 X.25 services will continue to be offered for the next few years, but the X.25 network will be consolidated into a smaller number of X.25 nodes. Additionally, major X.25 service users are in the process of making IP interfaces available to other users that are capable of using IP. Over time, a gradual migration to IP is envisioned as users modernize and upgrade their own communications capabilities. Migration to IP provides many technical and cost benefits compared to X.25 legacy technology.

2.3 It is a concern of the FAA that X.25 technology is becoming obsolete. It has become increasingly difficult for the FAA and other X.25 users to operate and maintain their existing X.25 networks and equipment. As more and more X.25 suppliers vanish from the marketplace, the operations and maintenance costs increase higher and higher.

2.4 To mitigate the obsolescence risk, the FTI program office will encourage users to evolve to IP technology. Many will do this on their own, as they will want to stay abreast with current trends, technology, and benefits. The FAA has taken the initiative to make more FAA owned and leased end user systems capable of providing services via a native IP interface.

2.5 The FAA has already begun this process with large X.25 end user systems such as the Weather Message Switching Center Replacement (WMSCR) and NADIN I. The FAA is working to make an IP service available to other end systems and users of WMSCR and NADIN I who can only use X.25 to gain access today. A gradual migration away from X.25 to IP is envisioned over the next 3 years.

2.6 Looking beyond three years, the pace of the migration from X.25 to IP is expected to increase. In five years the FAA expects their X.25 network services to shrink even more, and plans further consolidation in the number of X.25 network nodes in the FTI architecture.

2.7 All new and emerging NAS systems are using IP as their native network architecture protocol. Coupled with the planned migrations, the FAA foresees a complete elimination of X.25 service support in the future.

2.8 The migration from X.25 to IP is a natural evolution that occurs in many technological arenas. Although the evolution can be difficult and strain resources in some cases, it is prudent for any new or emerging system or network service to consider the current environment as well as the evolutionary developments that are likely to occur. In some instances, support for legacy systems and services may be required temporarily to support gradual evolution. But the capability to support existing or future technologies should also be considered because the consequences can be costly.

2.9 IP technology is an existing and well-proven technology with widespread acceptance that will keep it around for the foreseeable future. To provide a new network service today without IP capability in this environment is risky from both a technology and cost perspective. Legacy systems may also need to be supported for some time, but the alternative to migrate to IP should be a mandatory requirement for any new system or network initiative.

3. Conclusion

3.1 The Members of the meeting are invited to take note and discuss the information presented in this paper.

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