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Agenda Item 3: Aeronautical Fixed Service

DELIVERY OF AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) TRAFFIC TO PACIFIC ISLAND STATES VIA THE INTERNET

(Presented by United States)

SUMMARY

This information paper summarizes plans to provide the Federated States of Micronesia, Republic of Palau, and Marshall Islands connectivity to the AFTN by accessing the United States of America (USA) Federal Aviation Administration (FAA) developed Aeronautical Information System Replacement (AISR) through the public Internet.

1. Background

1.1 The USA FAA is responsible for providing aviation-related services to three Pacific Island States which include the Federated States of Micronesia, Republic of Palau, and Marshall Islands. This responsibility is detailed in a Compact of Free Association agreement between the governments of three Pacific Island States and the USA. As part of this agreement, the USA FAA provides the three States with connectivity to the AFTN.

1.2 Plans to transition access to the AFTN in these 3 States from direct dedicated commercial leased lines to web-based AISR were developed for two primary reasons. These reasons are summarized below:

1) The three States have very low AFTN traffic requirements with most locations only exchanging a few messages per day. A more economical and equally reliable access to the AFTN could be provided using the Internet.

2) A significant reduction in the configuration management of infrastructure required to support access to AFTN is realized. AISR users require only a workstation (minimum Intel 486 or equivalent processor), modem, printer, operating system, approved browser software, and access to the Internet. No AFTN specific application software is required to be loaded on the workstation, nor are the maintenance of dedicated direct circuits required.

2. Discussion

2.1 System Architecture (see figure 1)

Internet access to the AISR servers is provided through a Cisco router to a NOKIA Internet Access Point (IAP) firewall to an IAP Demilitarized Zone (DMZ) web server. The IAP DMZ web servers receive the authorized international user request. The IAP DMZ web server then sends the request through a second firewall to the related application (weather, NOTAM or flight related data) server on the secure LAN. The application server processes the request and returns the requested data to the IAP DMZ web server. The IAP DMZ web server then sends the response to the authorized international user.

2.2 Internet Service Provider (ISP) Service Requirements

The minimum recommended bandwidth for use of the AISR is 56kbps. The service has been operated at lower speeds but due to the use of the Graphical User Interface (GUI) the exchange of data at lower speeds is greatly reduced and packet time outs occur.

2.3 Security

The AISR Program Office has implemented several items to mitigate the risk of unauthorized users gaining access to the AISR equipment. These risk mitigating items include: installing dual firewalls, using Public Key Infrastructure (PKI) certificates, establishing DMZ web servers, using 256-bit encryption and secure socket connections, and issuing user identifications and passwords to authenticate the user's login. The PKI certificate issued to the international user is valid for one year and must be used on the workstation that requested the certificate. The AISR user must re-apply for a PKI certificate after one year since it will not be reissued automatically. When the AISR workstation connects to the AISR web servers, the workstation automatically transmits the PKI certificate for verification by the system and, if valid, establishes the secure connection. The AISR web server then sends the log-in web page to the workstation requesting the user identification and password. Once the AISR server receives the user identification and password, the system authenticates it and if valid, allows access to the web server on the Internet Access Point (IAP) in the DMZ network. After the PKI certificate, user identification, and password are validated and accepted, the user will be able to perform the tasks associated with their user role.

2.4 Graphical User Interface (GUI)

The AISR uses a GUI to provide a web-enabled means for exchanging, collecting, and distributing weather, flight data, NOTAM, and pilot report messages and other operational information to air traffic facilities. The GUI template is designed to look like the paper forms historically used for these reports with the data fields titled the same and in the same order and location on the page.

2.5 Planned End User Hardware Platform

Workstation
- Pentium – 4.2 GHZ Microprocessor
- 512 RAM
- 40 GB hard drive
- CD Rom drive
- 3.5" Floppy drive
- US Robotics PCI 56KBPS V.92 Internal

Printer
- Okidata 320 Dot Matrix

2.6 Planned End User Software Platform

Operating System

MicroSoft XP Pro

Browser

Internet Explorer 6.5, or
Netscape 7.0

2.7 Implementation timeframe

Currently user locations are conducting proof-of-concept testing. This testing is designed to gauge the reliability of ISP service to each facility accessing the AISR via the public internet. Proof-of-concept testing is also intended to insure users are comfortable and confident in their ability to use the AISR service for accessing the AFTN. Final operational implementation is expected to take place during the 4th QTR of 2004.

3. Conclusion

The meeting is invited to review and comment on a USA proposal to use the public internet as a means for providing access to the AFTN for 3 Pacific Island States.

AISR System Architecture
Figure 1