

AMHS : Do we need the system?



**Federal Aviation
Administration**





Objectives

Background

Moving Forward

Evolution



Objectives

- The AMHS has been adopted by ICAO and States have implemented the system globally. Still, there is a question lingering if AMHS is really needed.
- The Internet Protocol (IP) used widely in world wide web service has instant messaging and email service creating a solution to use these services in place of AMHS. After all, these web based services can carry a higher capacity of data with minimum cost to the users.
- In addition, existing AFTN continues to perform as expected. Some states even replaced the underline network of AFTN to TCP/IP to take advantage of the commercial TCP/IP router.



Background

- ❑ Creation of ATN: In the 1990s, ICAO established the ATN Panel to develop a seamless global network to support existing ground to ground service and the newly designed Control to Pilot Data Link Communication (CPDLC). The ATN SARP was published.
- ❑ Creation of AMHS: AFTN which is based on ASCII code was very slow in processing messages due to slow processing capability. Its limited data transfer rate of 9.6 Kbps also handicapped efforts to carry additional messages. The AMHS was developed, based on X.400, with additional modification for ATC use.
- ❑ Creation of Internet Protocol (IP) for AMHS: The ICAO developed ICAO Doc. 9880 in 2007 to address the use of TCP/IP network . AMHS was further modified to include TCP/IP interface.



Moving Forward

- ❖ Caribbean and South American Region has adopted and implemented the AMHS using TCP/IP interface (RFC1006 as specified in ICAO Doc. 9880)
- ❖ Asia/Pacific Region has adopted and implemented AMHS using ATN interface as specified in ICAO Doc. 9705. However, many States have dual stacks AMHS to support both ATN and TCP/IP. The ICAO Regional Office has issued a State Letter requesting BBIS States to support dual stacks beginning 2011.



Moving Forward (Cont'd)

- ❖ European Region has adopted and implemented AMHS using TCP/IP interface (RFC1006 as specified in ICAO Doc. 9880 and use NAT-PT between States)
- ❖ The CPDLC, also known as VDL, is still in the procurement process and is not anticipated to be in operation for at least a few years.
- ❖ The use of internet protocol based service and public internet service also has been adopted by the ICAO for such services as AMC and WIFFS.



Evolution

- In order to implement a new system/service in a global ATC environment, States have to coordinate through ICAO to develop implementation related documents before system/service can be operated across borders. These activities are necessary but is a time consuming process. Based on history, it took ATN Panel roughly 5 years to publish a SARPs and ICAO Regional Offices another 5 years to develop related documents. States would then need more time to procure and implement the system.
- In order to integrate IP based service into existing ATN service would require backward compatibility and solutions to many other implementation issues such as interface requirement, addressing scheme, security, etc..



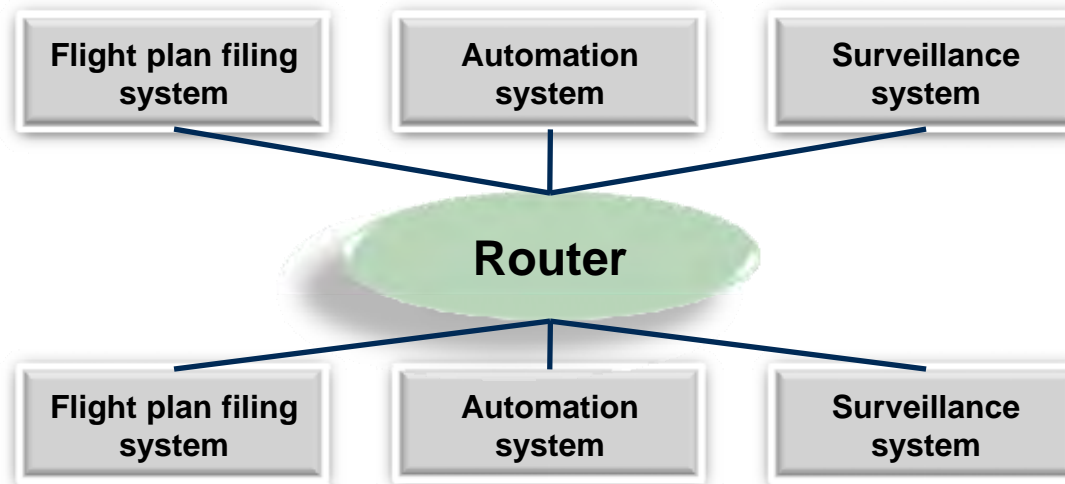
Evolution (Cont'd)

- ICAO regions should continue to implement their current plans. The VDL service should be able to share existing ground to ground network in either ATN or TCP/IP. The internet based service should continue to implement its service without concern with backward compatibility.
- A common gateway should be considered in the future to support different network protocols and applications. This approach will allow States to implement/upgrade their systems with minimum coordination and expense.



Do we need AMHS ?

- Engineering response: No, but States must implement TCP/IP interface capability to their flight plan filing system, automation system, and surveillance system as shown below



Do we need AMHS ?

- Operational response: Yes, States need to plan to implement TCP/IP interface capability to their flight plan filing system, automation system, and surveillance system. Tracking and monitoring of messages will continue to be a concern for day to day operation. Either AMHS functions are distributed to each application or concentrated as in an AMHS/AFTN environment, whose operation requires to resolving identity and delivering of missing and unknown messages in a timely manner.

