

**ICAO***International Civil Aviation Organization***Seventh Meeting of the Surveillance Implementation Coordination Group (SURICG/7)**

Video Teleconference, 24 – 27 May 2022

Agenda Item 8

Update on surveillance activities and explore potential cooperation opportunity

Evaluation of Space Based ADS-B

(Presented by ICCAIA)

SUMMARY

This paper describes how low cost evaluation of Space based ADS-B at customer premises was supported.

1. INTRODUCTION

- 1.1 Space-based ADS-B provider, Aireon, has developed the capability to demonstrate and test integration of Space based ADS-B into customer ATC automation systems
- 1.2 This system has been used in PNG and a number of other States to allow ANSP staff to evaluate and become familiar with Space based ADS-B and its capabilities. This can also be useful to allow specialists to convince senior management of the benefits.

2. BACKGROUND

- 2.1 An operational Space based ADS-B
 - has performance monitoring systems installed at the customer premises to enable measurement, online monitoring and reporting of key performance parameters like latency, availability and update interval.
 - has a fully duplicated architecture including duplicated communication paths with high performance, security and availability
 - has a local maintenance display with system status and performance displays as well as a plan view of the traffic.

3. VPN INTERNET based evaluation system

- 3.1 To support ANSP decision making, the provider can provide a space based ADS-B service at a very low cost, for typically a 3 months period, using a VPN circuit over the internet.

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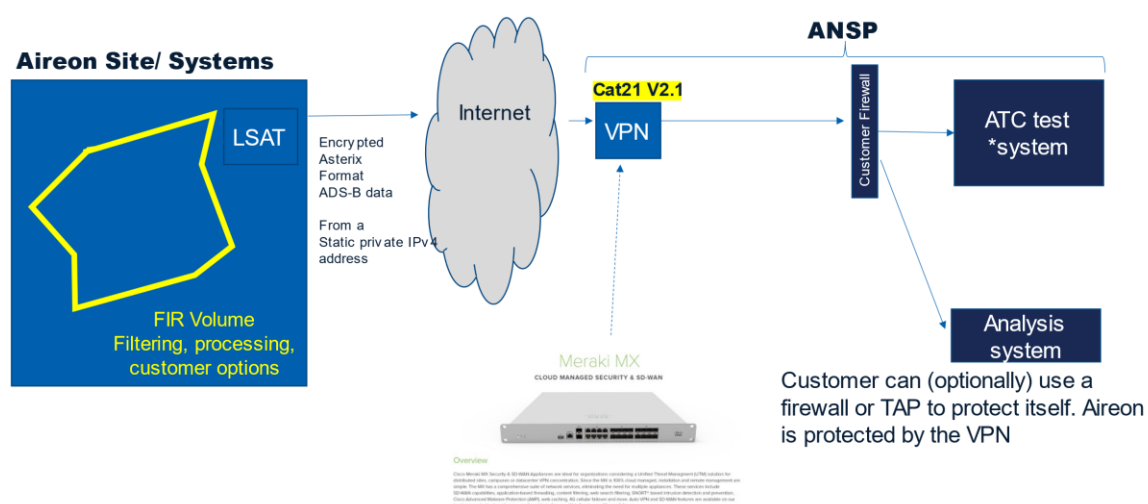
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3.2 This “evaluation” service provides the same Asterix data as an operational service with some limitations as follows :

- Performance depends on the quality of the internet, therefore there is no performance warranty including availability, update interval or latency.
- There is no performance recording or measurement
- There is no duplication
- There is no local maintenance display
- Typically Asterix Cat 21 version 2.1 is used

3.3 The architecture of the demonstration system is:

Aireon Space-based ADS-B : VPN service



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3.4 Despite these limitations, the output from the trial system can be used to :

- Assess ADS-B coverage and update interval (taking into account Internet limitations)
- Conduct initial integration to ATC automation test systems.
- Allow ANSPs to better assess the benefits of Space based ADS-B

This service is not allowed to be used for operational ATC, but can be connected to ATC automation test & evaluation systems.

3.5 Our experience with other customers is that

- The system is valuable to ANSPs allowing them to understand the ADS-B service and to understand / evaluate the system.
- The Probability of detection matches well with the operational system (with occasional drops)
- Typically the latency is quite good, but worse than the operational service.
- The demonstration system operates with a more variable latency and occasionally some packets are dropped depending on internet traffic by other Internet customers

3.6 To establish this temporary evaluation service the ANSP is required to sign a Memorandum of Understanding about the demonstration purpose, its use, and reporting on the evaluation result. Typically there is no need to visit site and we rely on ANSP capabilities to install the VPN, a customer firewall (if required) and to connect to a evaluation display system owned by the ANSP. The ANSP must provide the internet connection and define the coverage volume required.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate
