



ICAO

*International Civil Aviation Organization*THE FIFTEENTH MEETING OF THE COMMON
AERONAUTICAL VIRTUAL PRIVATE
NETWORK OPERATIONS GROUP (CRV OG/15)*Mumbai, India, 15-19 June 2026*

Agenda Item 8: CRV Operational Performance Report
– CRV Bandwidth Utilization Rate

A FORMULA TO COMPUTE THE BANDWIDTH REQUIRED FOR SURVEILLANCE DATA SHARING

(Presented by Secretariat on behalf of Hong Kong China)

SUMMARY

The paper presents a formula based on analysis to compute the bandwidth required for surveillance data sharing for the Meeting review.

1. INTRODUCTION

1.1 The Thirteenth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/13) was held from 5 to 8 March 2025, in Wellington, New Zealand. The Meeting was attended by 74 participants from 26 Member States/Administrations, 3 International Organizations and 2 telecommunication providers. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

<https://www.icao.int/APAC/meetingdocs?fid=593>

1.2 During the CRV OG/13 Meeting, Hong Kong China presented a study on the bandwidth used for the ADS-B data transmitted over the SWIM/CRV environment and analyzed outcomes in [WP/22](#) which resulted into **Action Item 13-23** to work on deriving a formula based on analysis to compute the bandwidth required for surveillance data sharing and suggest it to the CRV OG Ad-hoc Expert Group to incorporate it into the CRV OG Operations Manual.

1.3 This paper shares the latest updates about this action item.

2. DISCUSSION

2.1 The CRV OG/13 Meeting noted that during various CRV OG Meetings, there was a recognized need to review and analyze the bandwidth usage of CRV in each State/Administration. Such analysis was crucial to proactive planning of upgrades and to accommodating future applications, ensuring necessary actions are taken in a timely manner.

2.2 It was further noted that since bandwidth in CRV is considered a crucial resource, especially for States/Administrations with higher bandwidth demand due to a higher number of applications and States that are geographically remote and understandably have higher bandwidth costs. This study offered insights into the bandwidth requirements of surveillance data on SWIM so that CRV

experts could consider incorporating them into the tendering process for improved support of new applications.

2.3 The CRV OG/13 Meeting appreciated the study done by Hong Kong China and agreed that it is beneficial to the Meeting and that the formula used to calculate bandwidth would be helpful for CRV Users to evaluate the bandwidth requirements for ADS-B data. Hong Kong China agreed to work on deriving a formula, based on analysis, to compute the bandwidth required for surveillance data sharing and to present it to the CRV OG Ad-hoc Expert Group for potential incorporation into the CRV OG Operations Manual.

2.4 The CRV OG Ad-hoc Expert Group meetings were held quarterly to follow up on this action item. In the Seventeenth Ad-hoc Expert Group Meeting, which was held on 27 January 2026 via Microsoft Teams VTC, Hong Kong China presented the formula.

2.5 Hong Kong China informed that, based on the study conducted under the Surveillance Study Group (SURSG) in 2024 and reported in [WP/22 of CRV OG/13](#), the maximum message size for an AMQP transmission containing a single ADS-B target with its associated Flight Plan information was determined to be 1,200 bytes, including network overheads.

2.6 Therefore, the required bandwidth for transmitting such ADS-B data was derived as follows:

$$\text{[Bandwidth Required]} = (1,200 \text{ bytes} \times \text{[Number of Targets in Interest]}) / (\text{[Data Reception Interval (seconds)]})$$

e.g.,

$$\text{Number of Targets of Interest} = 300$$

$$\text{Data Reception Interval (seconds)} = 2$$

$$\text{Bandwidth required} = (1,200 \text{ bytes} \times 300) \div 2 \text{ seconds}$$

$$\text{Bandwidth required} = 0.18 \text{ megabytes per second (i.e. 1.44 megabits per second)}$$

2.7 The formula needs further review by the CRV OG/15 Meeting. If the proposed formula is agreed upon, the Meeting may consider incorporating it into the CRV OG Operations Manual.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

- a) note the information contained in this paper;
- b) review the formula described in this paper;
- c) consider the necessity to incorporate the formula into the CRV OG Operations Manual; and
- d) discuss any relevant matter as appropriate
