



ICAO

International Civil Aviation Organization

**Thirteenth Meeting of the Common aeRonautical
Virtual Private Network Operations Group (CRV
OG/13)**

Wellington, New Zealand, 05-08 March 2025

Agenda Item 4: CRV OG Reference documents

OUTCOMES OF CRV AD-HOC EXPERTS AND SWIM TASKFORCE TEAM LEADERS MEETINGS

(Presented by New Zealand)

SUMMARY

This paper presents a summary of the outcomes of the APAC CRV Ad-Hoc Experts and SWIM Taskforce Team Leaders meetings

1. INTRODUCTION

- 1.1 Three Ad-Hoc Experts and SWIM Taskforce Team Leaders meetings were held between CRV OG/12 on 23 -26 Jan 2024 and CRV OG/13 on 5 -8 Mar 2025 via Microsoft TEAMS VTC.
- 1.2 A total of 3 meetings were conducted during this period. This paper summarized key outcomes of the meeting under key agenda items.

2. DISCUSSION

2.1 Agenda Item 2: CRV OG and SWIM TF Working together

7 March 2024

- CRV OG/12 key outcomes for SWIM TF
- Workshop on “CRV requirements for SWIM Services”
- SWIM over CRV Demonstration
- The ICAO Secretariat shared key outcomes of the CRV OG12 Meeting.
- The meeting noted that CRV OG is tracking bandwidth utilization for all Member States and indicated that 2 Mbps seems to be sufficient to transmit IWXXM data.
- The requirements for SWIM vendors to provide SWIM services over CRV, the process of testing SWIM services on CRV, adding new services to CRV, and the process of joining CRV by third parties are in progress at CRV OG.
- PCCWG has provided an estimate of higher bandwidth cost. Therefore, action items 8-7 of SWIM TF/8 for CRV OG can be considered completed. It will be proposed to the SWIM TF/9 meeting. **ACTION ITEM 5-1**

- **CRV data requirements for the SWIM workshop** will be organized from **17-19 September 2024** in **Guam, USA**. All states/administrations will be invited to the workshop, and a maximum of 2 participants from each state/administration will be asked.
- A joint trial and demonstration event is planned for **28-29 May 2024** in Hong Kong, China.
- Dr Amo shared updates about the preparation for the joint event.

12 June 2024

- Outcomes of SWIM over CRV Demonstration
- SWIM TF/9 key outcomes for CRV OG
- Workshop on “CRV requirements for SWIM Services”

Dr Amo shared key outcomes of the SWIM over the CRV demonstration. She informed that S3TIG demonstrated different scenarios including ATFM scenarios for regional ATFM improvement using SWIM Technical Infrastructure and SWIM information services and FF-ICE R1 on Pseudo CRV. It was informed that the demonstration went very well and no issues were observed with the performance of Pseudo CRV.

The meeting noted that Singapore and Hong Kong China are compiling lessons learned from the joint event. Hong Kong China informed that they are collecting surveillance data shared by all the data contributors on the pseudo-CRV. They can let CRV OG know the bandwidth used for surveillance data, which is the most bandwidth consumable data.

CRV OG Co-Chair Asia informed that Pseudo CRV attributes are the same as CRV package D of operational CRV being used by States.

The meeting noted that in the joint event, Hong Kong China subscribed to 20 Mbps while other participating States subscribed to 2 Mbps.

It was noted that CRV circuits do not have any bandwidth restrictions. However, the last mile connection can impose some limits on enhancing the bandwidth of CRV circuits as the last mile connection is provided by a third-party service provider of respective States/Administrations on a contractual basis to PCCWG.

Dr Amo shared key outcomes of the SWIM TF/9 meeting. Xiaodong shared relevant content of the draft APAC SWIM TI profile for CRV OG experts' reference and feedback.

The meeting noted other key outcomes, including the request for guidance by SWIM TF/9 from CNS SG28 for the group responsible for information security provisions in the APAC region.

CRV data requirements for the SWIM workshop will be organized from **17-19 September 2024** in **Guam, USA**. To prepare for the workshop, CRV OG Co-Chair Asia suggested SWIM TF TLs provide additional technical specifications shared through the form created by the CRV OG experts.

It was informed that the shared form was discussed among the Task Force task leads. The SWIM TF discussed the consideration of the bandwidth and the latency, but the determination of Jitter was difficult. CRV OG Co-Chair (Asia informed that Jitter is equivalent to frame delay in digital messages.

It was discussed that frame delay will depend on the safety criticality of the message, which is still under discussion. Therefore, providing information about this parameter may be difficult.

CRV OG Co-Chair Asia informed about a free tool which can be used to estimate these parameters. CRV OG Co-Chair Asia will share further guidance on the tool. **ACTION ITEM 6-1**

12 November 2024

- Outcomes of Workshop on “CRV requirements for SWIM Services”- 17-20 September 2024
- Outcomes of SWIM Working Session- 6-8 November 2024

Dr Amo shared key outcomes of the *Workshop on CRV requirements for SWIM Services*.

All action items of the workshop were reviewed, and updates on action items for which CRV OG was responsible were shared by CRV OG Co-Chair (Asia). The Meeting noted that action item 1-5 of the workshop is closed, while other action items are in progress.

It was discussed that the COM chart shows the interconnection of various ANSPs in the APAC region. However, it does not reflect which type of network it is using. It was recalled that the ATN Infrastructure table on the CRV portal contains CRV interconnection information. ICAO Secretariat shared that the AMC COM chart has information about New PENS. The ICAO Secretariat will coordinate with AMC to check if CRV network information can be added to the AMC portal. **ACTION ITEM 7-1** In addition, it was suggested to download svg file of the COM chart from the AMC portal and try to generate an editable COM chart. Singapore will support generating editable COM charts. **ACTION ITEM 7-2**. Details will be presented in WP/33.

Dr Amo summarized key outcomes and lessons learned from the SWIM working session. CRV experts shared information about how CRV experts provided CRV implementation support to implement CRV during the initial phases of the project.

The Meeting discussed that each SWIM-capable State has its own SWIM Testbed. SWIM TF is interested in developing or purchasing a SWIM Sandbox tool for APAC States/Administration, which can be used to test SWIM in a lab environment. It will help States understand the benefits of SWIM. However, the funding and process required for tool acquisition required further discussion.

CRV OG Co-chair Asia said they have done virtualization work in their corporate operational and secure monitoring spaces. They can host the sandbox if detailed requirements can be shared. Dr Amo will send a list of the functionalities expected from the SWIM sandbox. **ACTION ITEM 7-3**

2.2 Agenda Item 3: Regional SWIM Establishment SWIM Implementation Pioneer Working Group

It was noted that the in-person SIPG Meeting is planned from 14-17 January 2025 at the ICAO APAC Office, Bangkok, Thailand. Prioritization of SWIM messages over CRV is one key agenda for discussion.

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- SWIM Implementation Pioneer Working Group
- Third-Party SWIM TI Service Provision over CRV, e.g., PCCW Console Connect Aviation Platform
- CRV Security assessment

SIPG is tasked with creating an initial/prototype APAC SWIM architecture on pseudo CRV for the joint demonstration hosted by Hong Kong China. Two-tiered architecture is being used which has a central core of interconnected EMS. EMS Gateways will be interconnected with each other and these gateways will be connected to edge EMS. Today, we have IP connectivity among all four gateway EMS, but the Gateway EMS, Hong Kong cannot perform message exchange with other gateways. The gateway EMS consists of Hong Kong, China, China, Singapore and Thailand. ROK and China, as well as Malaysia and Singapore, are connected for messages exchange. Connection and message exchange between Japan with Hong Kong China, and India with Thailand are in progress. In addition, the edge-to-edge test among Malaysia to Singapore, China to Korea, and vice versa are in process.

For security concerns shared by SWIM TF on connecting the PCCWG Console Connect Platform (CCP) with the CRV network, there was a plan for a desktop exercise and potential penetration test for CRV security assessment. CRV OG12 considered quotations for security assessment and discussed the process for the work order. However, as ICAO TCB cannot release the money to a third party, this task is canceled for the future. In the case of a new tender document for CRV, penetration testing will be added to the tender document.

12 June 2024

- SWIM Implementation Pioneer Working Group

Dr Amo shared updates on SIPG work. It was informed that SIPG will continue to work for another year. Pseudo CRV may be discontinued soon, so SIPG is exploring other options to continue the current test.

The meeting noted that three options are being considered: 1. Pseudo CRV extension by PCCWG, 2. use of residual bandwidth of operational CRV, or 3. move current SWIM TI on the internet. If the use of residual bandwidth of the operational CRV option is selected, SWIM TF TLs will need the help and support of CRV OG experts. The third option required a massive amount of work from SIPG members. Some SIPG members cannot move to the internet due to State security requirements. Further discussion would be done in a monthly meeting on 27 June 2024. CRV OG Co-Chair Asia will provide some ideas for utilizing the residual bandwidth option. **ACTION ITEM 6-2**

It was noted that the in-person SIPG Meeting is planned from 14-17 January 2025 at the ICAO APAC Office, Bangkok, Thailand. Prioritization of SWIM messages over CRV is one key agenda for discussion.

It was noted that the SIPG meeting is a technical interchange meeting, and only planned working papers will be used to moderate discussion. Therefore, no working paper submission is asked for by the states.

2.3 Agenda Item 4: CRV Governance

CRV OG Co-chair (Asia) provided updates on ongoing discussion in CRV OG Ad-hoc Governance Group

It was informed that the next Meeting of CRV OG Ad-hoc Governance Group will be scheduled in February 2025.

2.4 **Agenda Item 5: Next Meeting Date and Any Other Business**

The Meeting agreed to have the next Meeting on any day from *10-14 March 2025*. ICAO Secretariat will share a doodle for finalizing the dates. **ACTION ITEM 7-4**. The next meeting is scheduled on 13 March 2025.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) review the outcomes of the meeting;
- c) consider joining expert group; and
- d) discuss any relevant matter as appropriate
