REPORT OF

THE FIFTEENTH MEETING OF THE COMMON AERONAUTICAL VIRTUAL PRIVATE NETWORK OPERATIONS GROUP (CRV OG/15)

Mumbai, India
15-19 June 2026

The views expressed in this Report should be taken as those of CRV OG/15 Meeting and not of the Organization.

Approved by the Meeting
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MEETING OVERVIEW

1. Introduction

1.1 The Fifteenth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/15) was held *from 15 to 19 June 2026* in Mumbai, India.

2. Attendance

2.1 The Meeting was attended by **60** participants from **17** Member States/Administrations, **1** International Organisation and **1** industry partner, namely Australia, Fiji, India, Indonesia, Japan, Malaysia, New Zealand, Papua New Guinea, Philippines, Russian Federation, Republic of Korea, Singapore, Sri Lanka, Thailand, Tonga, United States, Viet Nam, ICAO and PCCW Global. The List of participants is provided in **Attachment 1**.

3. Opening of the Meeting

3.1 Shri Samir Kumar Sinha, Secretary, Ministry of Civil Aviation, India, inaugurated the ICAO APAC CRV OG/15 Meeting and emphasised the importance of the Meeting in facilitating regional coordination on issues relating to the present CRV service provisions and the finalisation of the terms and conditions of the CRV-II framework. He noted that the Meeting would provide a valuable forum for deliberation and collaboration among participating States and organisations from the Asia-Pacific region.

3.2 Shri Vipin Kumar, Chairman, Airports Authority of India, delivered the opening remarks, while Shri M. Suresh, Member (ANS), Airports Authority of India, welcomed the participants and expressed appreciation to the Ministry of Civil Aviation and ICAO APAC Office for their support in organising the Meeting in India. Shri Bharat Bhushan, Joint Director General, Directorate General of Civil Aviation, India, was also present during the inaugural session.

3.3 Dr Soniya Nibhani, Regional Officer ANS (CNS), ICAO APAC Office, provided introductory remarks to set the tone for the deliberations, and Mr Vaughan Hickford and Mr Kelepi Dainaki, Co-Chairs of the CRV Operations Group, also addressed the Meeting.

4. Officers and Secretariat

4.1 Mr Vaughan Hickford, Manager Enterprise Architecture & Networks, Airways New Zealand, and Mr Kelepi Dainaki, General Manager, Asset and Infrastructure, Fiji Airport Limited, Co-Chair (Pacific), co-chaired the Meeting.

4.2 Dr Soniya Nibhani, Regional Officer ANS (CNS) Implementation, acted as the Secretary of the Meeting with the support of Ms Xu Jian, Associate Programme Officer (CNS) Implementation and Ms Varapan Meefuengsart, the Programme Assistant from ICAO Asia and Pacific Regional Office.

5. Organisation, working arrangement, language and documentation

5.1 The CRV OG/15 met as a single body during the Meeting. The working language for the Meeting was English, including all documentation and this report. The Meeting considered **Thirty-nine (39)** Working Papers, **Nine (9)** Information Papers, and **Four (4)** Presentations under its fifteen agenda items. A List of Working Papers, Information Papers, and other resources is provided in Attachment 2.

6. Draft Conclusions, Draft Decisions and Decisions of CRV OG– Definition

6.1 CRV OG recorded its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

Draft Conclusions deal with matters that, according to APANPIRG's terms of reference, require the attention of States or action by the ICAO in accordance with established procedures;

Draft Decisions deal with the matters of concern only to APANPIRG and its contributory bodies; and

Decisions of the CRV OG that relate solely to matters dealing with the internal working arrangements of the CRV OG.

7. List of Conclusions/Decisions from CRV OG/15

	Reference Number		Title of (Draft) Conclusions/Decisions
1.	**Draft Conclusion CRV OG/15/01**	-	Sub-Regional Maintenance Window for CRV Network
2.	**Conclusion CRV OG/15/02**	-	Standard Operating Procedure (SOP) for contracting Space-Based ADS-B services over CRV- Philippines perspective
3.	**Conclusion CRV OG/15/03**	-	The CRV Overview Diagram
4.	**Conclusion CRV OG/15/04**	-	Guidance Material for using the Residual bandwidth of the Operational CRV and template for sharing CRV Bandwidth Results of SWIM Testing for SWIM TF

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REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of the Agenda

Adoption of Agenda - Sec (WP/01)

1.1 The provisional agenda presented in **WP/01** was adopted as the agenda for the Meeting.

Agenda Item 2: Review of Outcomes of Relevant Meetings

Review of Relevant Meetings – Sec (WP/02)

2.1. This paper summarised key outcomes from relevant ICAO Asia/Pacific Meetings held in 2025, particularly APANPIRG/36 and CNS SG/29. It was noted that the CNS SG/29 Meeting adopted five (5) conclusions and six (6) decisions. In addition, based on the outcome of discussions on various agenda items, the CNS SG/29 Meeting developed three (3) Draft Conclusions and one (1) draft Decision for consideration by the APANPIRG/36, which were adopted by the APANPIRG/36 Meeting. The Meeting noted the Conclusions/Decisions adopted by the CNS SG/29 and the APANPIRG/36 and discussed the follow-up.

2.2. The Meeting requested updates from the CRV Service provider about the Middle East States, which are in contact with PCCWG for the CRV joining process. PCCWG was informed that, currently, only Oman has initiated contact with the CRV service provider, and discussions are ongoing.

Outcomes of SURICG/11 Meeting – Sec (WP/03)

2.3. The Eleventh Meeting of the Surveillance Implementation Coordination Group (SURICG/10) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from 25 – 27 March 2026, including the outcomes of the Fifth Meeting of the Surveillance Study Group (SURSG/5), which was held from 23 – 24 March 2026 in the ICAO APAC Regional Office, Bangkok, Thailand. The Meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetingdocs?fid=33637

2.4. It was noted that SURSG/SURICG has recommended ASTERIX and JSON for the use of surveillance information sharing in the APAC region. In addition, for the global surveillance data exchange format, it was suggested that the Surveillance Panel (SP) would be informed of regional developments through an information paper for their consideration and feedback.

2.5. The SURSG/5 Meeting reviewed and finalised *the Guidance Materials for the sharing of surveillance data in SWIM*. The finalised Guidance Material was endorsed by **Draft Conclusion SURICG/11/01** (SURSG/5/01) – *Guidance Materials for the sharing of surveillance data in SWIM* for CNS SG/30 adoption. As SWIM development in the region is ongoing, it was anticipated that future updates on the Guidance Material would be necessary, especially on any further required details of the surveillance information services. The Meeting was informed that SURICG has assumed this responsibility.

2.6. The Meeting reviewed the *Guidance Materials for the sharing of surveillance data in SWIM*. Several clarifications were requested for several paragraphs, including the SWIM Technical Infrastructure and the Surveillance Central Data Processor sections. As the key authors of this document and surveillance experts were not in the Meeting, the ICAO Secretariat was requested to coordinate with SURICG experts to arrange a Meeting of the CRV OG Ad-hoc Expert group and key authors of the document to obtain clarification. **ACTION ITEM 15-1**

Outcomes of ANSIA TF/1 Meeting – Sec (WP/04)

2.7. ICAO Secretariat presented the discussions and relevant outcomes of the First Meeting of the ANS Information Assurance Task Force (ANSIA TF/1), which was held from **28 to 30 January 2026** in the ICAO APAC Regional Office, Bangkok, Thailand. The Meeting report, working papers, information papers, and other resources can be accessed by this link.

2.8. It was noted that after Decision CNS SG/29/14 made by CNS SG/29 in 2025 for the creation of ANS Information Assurance Task Force (ANSIA TF), it was agreed that the ANSIA TF would prepare the draft Terms of Reference (ToR), its key deliverables, and plan in close coordination with CRV OG, ACSICG, SWIM TF, TFP Secretary and IMP Secretary. After CNS SG/29, with the collaborative efforts of ANSIA TF experts, the first draft of the ToR was finalised. The ANSIA TF/1 reviewed and modified the draft ToR, and the *Draft Decision ANSIA TF/1/1 – Adoption of Terms of Reference (ToR) of the ANS Information Assurance Task Force (ANSIA TF)* was endorsed by the ANSIA TF/1 for CNS SG/30 adoption.

2.9. The Meeting noted the following three work packages formulated by ANSIA TF/1 and their plan for the way forward:

1. Scoping the regional trust framework
2. Developing PKI and governance arrangements
3. Selecting use cases of regional interest

2.10. It was informed that each of these work packages needs a Statement of Work (SOW) to be elaborated with a scope statement, associated tasks, deliverables and proposed timelines. The Meeting noted the following volunteer States to participate in each work package of the ANSIA TF.

SN	Work Package (WP)	Volunteer States	Work Package Lead
1.	**WP01**- Scoping the regional trust framework	China, Fiji, India, Japan, Malaysia, Philippines, Singapore, Thailand, Tonga and the United States	Singapore
2.	**WP02-** Developing PKI and governance arrangements	Fiji, India, Japan, Philippines, Singapore, Thailand, Tonga and the United States	United States
3.	**WP03-** Selecting use cases of regional interest	Fiji, India, Japan, Philippines, Singapore, Thailand, Tonga, and the United States	India

Table 1- The Work Package of ANSIA TF

2.11. It was added that good progress has been made by **WP01, WP/02 and WP03, leading** to the drafting of the SOW for their work packages. All leads have shared the draft SOW with their work package contributors for review and feedback. The online Meeting of these experts was held on **14 May 2026**. The online Meeting reviewed and finalised the SOW, as well as outlined the next steps to advance the assigned WP.

2.12. The Meeting encouraged States/Administrations to review their Certificate Policy (CP) and an organisation's Information Security Management System (ISMS), and to map them against ICAO global references, as suggested by the ANSIA TF.

Outcomes of ACSICG/13 Meeting – Sec (WP/05)

2.13. The paper summarised relevant information and updates on the outcomes of the ATN Workshop and the Thirteenth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/13) held at Nadi, Fiji, from 20 to 24 April 2026. The Meeting report, working papers, information papers, and other resources can be accessed by the following link:
https://www.icao.int/APAC/Meetingdocs?fid=42491

2.14. It was noted that APAC AMHS to SWIM transition Correspondence Group (ATSCG) had compiled risks and issues associated with prolonged mixed AMHS–SWIM operations and recommended the minimum safeguards intended to support regional coordination, service continuity, and interoperability during the transition period, while recognising that States retain responsibility for national implementation and safety assessments.

2.15. The ACSICG/13 Meeting discussed the significance of the information shared on minimum safeguards and added that these safeguards are essential to maintaining business continuity during the migration from AMHS to SWIM. Accordingly, the ACSICG/13 Meeting endorsed the **Draft Conclusion ACSICG/13/01** - *Adoption of Minimum Safeguards for AMHS–SWIM Transition* for adoption at APANPIRG/37 through CNS SG/30. The Meeting noted the phase-based AMHS–SWIM mixed-mode transition model for the Asia/Pacific Region.

2.16. Russia shared further updates on the progress of AMHS implementation between Japan and Russia. It was informed that the tests for transition to interaction under AMHS procedures between the COM Centres UUUU and RJJJ will be completed soon. Russia added that in preparation for the transition to real AMHS traffic exchange, the routing tables between the COM Centres of Russia (UUUU and UHHH) and the COM Centres of the ICAO APAC region were reviewed. As a result, asymmetric routing was identified. It was reminded that, according to the ATS Messaging Management Manual (2.1.5.1.4.1), it is important to ensure symmetric routing of AMHS messages. For this purpose, Russia requested the ability to modify the routing tables. It was added that the issue has been shared with the ICAO APAC Office and the APAC AMC coordinator. As the issue fell under ACSICG's purview and the ACSICG Co-Chairs were attending the CRV OG/15 Meeting, the CRV OG Co-Chairs requested that ACSICG look into the matter and support Russia in resolving it. **ACTION ITEM 15-2**

2.17. Russia shared concerns about the delay in ongoing AMHS implementation efforts between Russia and Japan and requested that efforts be accelerated to complete the trial of the Russia-Japan AMHS interconnection. The issue was further discussed during the breakout session with Japan, Russia, the ACSICG Co-Chairs, and the ICAO Secretariat.

2.18. In response to the role of ANSIA TF in the Communication system cybersecurity and information security issue, and why ACSICG and CRV OG are also discussing cybersecurity matters after the formation of ANSIA TF, it was clarified that ACSICG and CRV OG are directly concerned with the implementation and operation of regional aeronautical communications services and infrastructure. As these services increasingly rely on IP-based networks, internet connectivity, SWIM-related exchanges and future ATN/IPS arrangements, cybersecurity is no longer a separate issue. It becomes part of how we implement and operate these systems safely and interoperably.

2.19. It was clarified that, in this context, ANSIA TF is relevant because it was created under CNS SG to focus specifically on ANS information assurance in the APAC Region, particularly on the development of a regional trust framework and an interoperable PKI to support secure cross-border information exchange. Its work was intended to complement, not replace, the implementation work under ACSICG, CRV OG and SWIM TF. For example, WP12 of ACSICG/13 addresses the more immediate operational and practical cybersecurity considerations for Internet-based communications, while ANSIA TF is addressing the broader regional foundation for trusted and secure information exchange. The two are linked, and together they show that cybersecurity is becoming an integral part of modernising regional communications.

Outcomes of SWIM TF/11 – Sec (WP/06)

2.20. The paper presented the relevant outcomes of the Eleventh Meeting of the System Wide Information Management Task Force (SWIM TF/11) held in Bangkok, Thailand, from 25 to 29 May 2026. The Meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetingdocs?fid=60144#block-icao-page-title

2.21. It was informed that the SWIM TF/11 Meeting acknowledged the need for interconnection among different regional IP networks to support global SWIM implementation and requested additional information on CRV updates as well as the establishment and upgrade plans of other regional networks, particularly with regard to ensuring interoperability and interconnection among these networks.

2.22. The SWIM TF/11 Meeting was presented with "**APAC SWIM Hierarchical Architecture Test Plan",** drafted by SIPG Task 2**.** The SWIM TF/11 Meeting encouraged more States/Administrations to consider participating in the SIPG Task 2 activities and to provide feedback on the Test Plan.

2.23. At the SWIM TF/11 Meeting, Japan presented potential options for establishing an evaluation environment within APAC SWIM. It was recognised that there may be a future need to transition from the regional SWIM testing environment from CRV to the Internet. The SWIM TF/11 Meeting therefore requested Japan to further explore feasible approaches for transitioning the testing environment from CRV-based connectivity to Internet-based connectivity.

2.24. The Meeting noted the information on SWIM indicators finalised at the SWIM TF/11. Information about the SWIM TF restructuring was also shared with the Meeting.

2.25. It was also noted that the SWIM hierarchical architecture Technical Infrastructure for the APAC region proposed using message header routing at the application layer rather than the network layer, while one of the main purposes of the CRV was to support the SWIM environment. **ACTION ITEM 15-3**

2.26. In response to the SWIM TF/11 Meeting request to the ICAO APAC Office to encourage India to re-engage in SWIM TF Meetings and to share its implementation status, with a view to ensuring the benefits of harmonised and timely SWIM implementation across the APAC region, India shared the detailed information. India acknowledged the concerns expressed regarding India's absence from SWIM TF Meetings in recent years and the importance of harmonised implementation across APAC States/Administrations.

2.27. India shared its commitment to the objectives of SWIM and recognised the value of regional collaboration. India appreciated the encouragement from the Meeting and ensured to take steps to re-engage actively in upcoming SWIM TF sessions. It was recalled that in past, India had successfully developed and validated a Proof-of-Concept (PoC) SWIM platform to establish a roadmap for implementing ICAO SWIM concepts within the Indian Air Navigation System. The PoC implementation included:

- SWIM Technical Infrastructure.
- Digital NOTAM services based on AIXM.
- Flight Information Exchange services based on FIXM.
- Meteorological Information Exchange services based on IWXXM.
- SWIM Gateway integration with existing AMHS and AFTN systems.
- Hybrid operational applications supporting both digital and legacy messaging formats

2.28. India added that, building upon the successful PoC implementation, India has initiated a comprehensive Annual Maintenance and Enhancement Program to upgrade the SWIM platform to SWIM Version 2.0 and prepare for future operational deployment across the Indian ATM environment as a pilot project. SWIM Version 2.0 includes the following key upgrades:

- FF-ICE/R1 Implementation
- ADS-B data exchange using ASTERIX CAT-21.
- Implementation of SWIM Registry and Service Management to strengthen SWIM governance and service discoverability.

2.29. The Meeting noted that the upgraded SWIM platform will support integration with PAN-India AMHS infrastructure, Digital ATIS systems, Air Traffic Management Automation Systems, FF-ICE-compliant systems, Regional and international SWIM implementations, and other ICAO-compliant information exchange systems. India added that, in addition to the above upgrades, it is also tendering for a new operational-ready SWIM system with Gateway EMS at Delhi and Mumbai, in a DC-DR architecture, and Edge EMS at Delhi, Mumbai, Chennai, and Kolkata. India shared its commitment to contribute once again to the collective progress of SWIM in the APAC region.

Outcomes of SIPG WS/3 – Sec (WP/07)

2.30. The paper presented the relevant outcomes of the Third Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/3), held from **01 to 05 June 2026** in the ICAO Asia Pacific Regional Office, Bangkok, Thailand. The Working Session report, working papers, presentations, and other resources can be accessed by the following link:
https://www.icao.int/APAC/Meetingdocs?fid=60143#block-icao-page-title

2.31. Eleven action items were assigned to the SIPG as a result of the discussion in the SWIM TF/11 Meeting, emphasising the necessity for the SIPG to conclude on the Request-Reply Message Exchange Patterns (R-R MEP), the Application Programming Interface (API) gateway architecture, and most importantly, the SWIM routing mechanism.

2.32. The Working Session was reminded that the FF-ICE ad-hoc group has an expectation of having the SWIM Technical Infrastructure (SWIM TI) available to do FF-ICE R1 operational trials in April 2030. It was suggested that, in order for the FF-ICE Ad-hoc Group to achieve the expected timeline, the FF-ICE Ad-hoc Group was encouraged to consider conducting the test with SIPG starting in April 2027.

2.33. In response to a question about CRV OG not yet receiving the expected documents agreed in the joint Meeting of CRV and SWIM Experts from SIPG members utilising operational CRV for SIPG testing before testing is initiated, it was clarified that SIPG members are consolidating the documents to send to the CRV OG Co-Chairs for further review. It was also noted that only ping testing is currently being conducted. It was agreed that CRV OG will wait for further responses from SIPG. **Action Item 15-4**

2.34. The Meeting discussed message header-based and topic-based routing to understand the differences and other relevant details. The ICAO Secretariat clarified some details and informed that SIPG Experts will be able to provide further details**.** It will be incorporated into the agenda items of the joint Meeting of CRV and SWIM Experts. **Action Item 15-5**

Agenda Item 3: CRV OG Reference documents

- CRV OG Operations Manual
- CRV Implementation Plan
- Outcomes of Ad-hoc expert Strategy, Design, Transition and Operations Groups
- Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings
- New Zealand hosted CRV Portal

Outcomes of CRV Ad-Hoc Experts Group Meetings – Sec (WP/08)

3.1. The paper summarised the outcomes of the CRV OG Ad-Hoc Expert Group discussions. The Meeting noted four Ad-hoc virtual Meetings were conducted on 12 June 2025, 9 October 2025, 27 Jan 2026 and 12 May 2026 via Microsoft Teams. It was informed that the outcomes of the CRV OG Ad-hoc Experts Group are being discussed in various papers at this Meeting. The Meeting noted the work of the Ad Hoc Expert Group continues to be extremely valuable, appreciated the ongoing contribution, and invited participation in the Ad Hoc Group Meetings.

Outcomes of Joint CRV OG Ad-Hoc Expert and SWIM TF TLs Meetings – Sec (WP/09)

3.2. The paper presented outcomes of Joint CRV OG Ad hoc Expert Group and SWIM TF TLs Meetings after the CRV OG/15 Meeting held in 2025-2026. It was informed that a total of four (4) Joint Meetings of the CRV OG expert Ad-hoc group and SWIM TF TLs were conducted on 13 March 2025, 1-5 September 2025, 20 November 2025 and 5 February 2026. Out of three Meetings, the 1-5 September Meeting was an in-person Meeting, which was named the *ICAO APAC CRV-SWIM Experts Workshop: Reviewing of CRV II Specifications and ICAO APAC SWIM Architecture*. The Meeting was informed that key outcomes of the *ICAO APAC CRV-SWIM Experts Workshop: Reviewing of CRV II Specifications and ICAO APAC SWIM Architecture* would be reviewed in WP/28.

Outcomes of the discussion on SWIM sandbox needs – Sec (WP/10)

3.3. The paper presented information on outcomes of the discussion on SWIM sandbox needs agreed upon during the joint Meeting of SWIM and CRV experts in September 2025. It was recalled that during the Joint Meeting of CRV OG Experts and SWIM TF Task Leads on 12 November 2024, SWIM TF informed the CRV OG that it 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 was added that this sandbox will help States understand the benefits of SWIM. In the same Meeting, the CRV OG Co-chair (Asia) informed that Airways New Zealand has completed virtualisation work in their corporate operational and secure monitoring spaces, and, with Airways New Zealand's support, the CRV OG Co-chair (Asia) can host the sandbox if detailed requirements are shared. SWIM TF Co-Chair agreed to share a list of the functionalities expected from the SWIM sandbox.

3.4. The Meeting was informed that in the In-Person Workshop of CRV OG Ad-hoc Expert Group and SWIM TF Task Leads in September 2025, the draft requirements and functionalities document for the Regional SWIM Sandbox was presented to the Workshop. To help States meet the APAC SWIM implementation timeline, it was proposed to establish a regional SWIM Sandbox. After sharing details of expected functions and specifications, the Workshop noted that the proposed scope of the Sandbox aligns more closely with the demonstration phase of software development, whereas a sandbox typically refers to the development and/or pre-production phase. Therefore, it was suggested to rename the **Regional SWIM Sandbox** to a name better reflecting its intended role, such as the **Regional SWIM Development Environment**.

3.5. The Workshop also discussed network options, either CRV or the Internet, for establishing the regional SWIM sandbox. It was concluded that the Internet would be the preferred option, as it offers better accessibility for users.

3.6. It was recommended that SWIM TF continue discussions on the draft document and on the phased development of such a SWIM development/test tool/environment. Meanwhile, States/Administrations were encouraged to use existing platforms, such as the USA-hosted FAA SWIFT Portal, to gain initial hands-on experience with SWIM. SWIM TF will share further technical details with the CRV OG Co-Chair (Asia) if support is needed for hosting the SWIM Sandbox.

Initial Draft for APAC Sub-Regional Maintenance Window for CRV Network – India (WP/11)

3.7. India presented a draft for the APAC Sub-Regional Maintenance Window for the CRV Network to be adopted and further incorporated in the CRV Operational Manual. It was recalled that during the CRV OG/13 Meeting, Sri Lanka informed that the CRV circuit for Sri Lanka was interrupted by two major service failures, which highlighted the need for clearly coordinated maintenance windows between States and Service Provider PCCW Global to minimise operational impact and avoid disruptions to Air Traffic Services. It was agreed at the CRV OG/13 Meeting that the concept of standardised sub-regional maintenance windows within the APAC Region may be formulated, and that further study is required due to differing operational environments among APAC States. The matter was proposed for further examination by the CRV OG Ad-hoc Expert Group, including harmonised maintenance procedures, notification timelines and recommended maintenance window.

3.8. The initial draft of the APAC Sub-regional maintenance window for the CRV network, prepared by India, was first presented in the CRV OG Ad-hoc Expert Group during the online Meeting held in January 2026. It was agreed to circulate the document to Member States for comments and preferred maintenance window timings. Feedback and suggestions received from Member States were incorporated into the revised draft, and further discussed during the CRV OG Ad-hoc Expert Group in May 2026. The revised draft was reviewed for additional comments from Member States and PCCW Global. Based on comments received from Member States and PCCWG, the draft APAC sub-regional maintenance window document for the CRV network was discussed and endorsed by the CRV OG Ad-hoc Expert Group, and then presented to the CRV OG/15 for adoption.

3.9. Regarding the suggestion that planned maintenance shall not be scheduled on major regional holidays of States and declared blackout periods, it was discussed how the CRV Service Provider will obtain information on such periods and holidays for each APAC State/Administration. The suggestion was that the CRV Service Provider can coordinate with the APAC States/Administrations to get this information. However, it was argued that this may be a challenging task for the CRV Service provider. It was suggested that another better option may be to assign a subregional lead for each proposed subregion to compile this information.

3.10. The Meeting appreciated India for drafting the document and agreed that, firstly, all APAC States/Administrations should provide information about their preferred maintenance window. **ACTION ITEM 15-6**

3.11. The CRV OG/15 Meeting reviewed the proposed “APAC Sub-Regional Maintenance Window for the CRV Network” to be followed by CRV Service Provider and APAC Member States/Administrations, and endorsed the document with the following draft conclusion.

<table>
<tr><td colspan="3">Draft Conclusion CRV OG/15/01 - Sub-Regional Maintenance Window for CRV Network.</td></tr>
<tr><td colspan="2">What: The Sub-Regional Maintenance Window for the CRV Network for the APAC Region, provided in Appendix A, be adopted.</td><td>Expected impact:
☐Political / Global
☐Inter-regional
☐Economic
☐Environmental
☒Ops/Technical</td></tr>
<tr><td>Why: Enhance and encourage continuity of regional ATS communication services during planned and emergency maintenance activities of the CRV network carried out by the Service Provider.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 19-June-26</td><td colspan="2">Status: To be adopted by subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: CRV OG</td></tr>
</table>

3.12. It was noted that this document needs to be adopted by the CNS SG Meeting and endorsed by ACSICG. Therefore, the CRV OG/16 Meeting will have another opportunity to review and modify the document before submitting it for endorsement by the ACSICG/14 Meeting and adoption by the CNS SG/31 Meeting in 2027.

SOP for contracting Space-based ADS-B services over CRV – Philippines (WP/18)

3.13. The Philippines presented the Standard Operating Procedure (SOP) for contracting Space-Based ADS-B services over CRV. It was recalled that the CRV OG/13 Meeting requested documentation on the process to follow if they want to utilise CRV for space-based ADS-B data transmission. Aireon suggested that the Philippines initially draft the document based on their recent experience of contracting space-based ADS-B services over CRV. Aireon would provide additional steps to the process, including coordination between Aireon and the CRV service provider.

3.14. The Meeting noted this SOP for contracting and implementing Space-Based ADS-B services over the CRV, presents the practical implementation scenario for establishing connectivity between a Space-Based ADS-B data provider and an ANSP data consumer. The implementation activities described herein were based on and shall be conducted in accordance with the CRV Operations Group (CRV OG) Manual, the approved CRV Implementation Plan, and the applicable System Engineering Plan (SEP).

3.15. The CRV OG/15 Meeting reviewed the proposed SOP for contracting and implementing Space-Based ADS-B services over the CRV and noted that the document mainly shares the Philippines' perspective. There was a need to tailor this SOP to convert it into a standard procedure applicable to any APAC States/Administrations. It was agreed that the Philippines and CRV OG Co-Chair (Asia) will lead this task; however, feedback can be provided by other APAC States/Administrations that have contracted space-based ADS-B. **ACTION ITEM 15-7**

3.16. The Meeting agreed to adopt this document as a guidance document for APAC States/Administrations by the following conclusion.

Conclusion CRV OG/15/02 - Standard Operating Procedure (SOP) for contracting Space-Based ADS-B services over CRV- Philippines perspective	
What: The proposed Standard Operating Procedures (SOP) in **Appendix B** for contracting and implementing Space-Based ADS-B services over the CRV be adopted.	Expected impact: ☐Political / Global ☐Inter-regional ☐Economic ☐Environmental ☒Ops/Technical
Why: To guide States/Administrations that want to utilise CRV for space-based ADS-B data transmission.	Follow-up: ☐Required from States
When: 19-June-26	Status: Adopted by CRV OG
Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: CRV OG	

3.17. In response to a question about the number of Aireon space-based ADS-B service delivery points (SDPs) in PNG, PNG shared that it has 2 SDPs.

3.18. It was noted that the Philippines and PNG are both utilising CRV for space-based ADS-B; however, Aireon has provided a dedicated, secure link for India to deliver space-based ADS-B services until SDPs in Mumbai. It was anticipated that, if this link were CRV, there might be a low monthly cost. India was requested to conduct an internal analysis and to share its analysis outcomes and experience in future CRV OG Meetings. **ACTION ITEM 15-8** It was agreed that this analysis could provide more information on utilising space-based ADS-B over CRV and would be useful for future space-based ADS-B subscribers.

Review of Outcomes and action items from the ICAO APAC CRV-SWIM Experts workshop: Reviewing of CRV II specifications and ICAO APAC SWIM Architecture in September 2025 – Sec (WP/28)

3.19. The paper presented the key outcomes of the ICAO APAC CRV-SWIM experts Workshop: Reviewing of CRV II Specifications and ICAO APAC SWIM Architecture, held in Bangkok, Thailand, from 01-05 September 2025. Detailed information on the Meeting proceedings is available in the Report of the Meeting. The Meeting was informed that action items resulting from this workshop were also presented to the SWIM TF/11 Meeting, and the SWIM TF Meeting has revised and incorporated the action items assigned to SWIM TF in their action items list. The Meeting reviewed all pending action items from the workshop items assigned to CRV OG, and it was agreed that all actions assigned to CRV OG were completed.

CRV OG Operations Manual Updates – New Zealand (WP/32)

3.20. New Zealand presented the status of the current Draft of the CRV Operations Manual. It was recalled that the current version of the CRV OG Operations Manual was published as version 1.4 following adoption by the CRV OG/13 Meeting, under Decision CRV OG/13/02. It was agreed that from the CRV OG/13 Meeting held from 5-8 March 2025 in Wellington, New Zealand, to date, much progress has been achieved by the CRV OG Ad-hoc Expert Groups. These progresses have been in the form of various new documents, clauses and revised terms and conditions. All of these works are being consolidated by the CRV OG Ad-hoc Expert group.

3.21. As much of this content needed approval at the CRV OG/15 Meeting, and a significant amount of content needed to be updated into the current version of the manual after their adoption by the CRV OG/15 Meeting, it was proposed to retain the current version of the manual. It was noted that in future versions, the content to be updated includes, but is not limited to, Bandwidth calculations, the SOP for joining the Space-Based ADS-B Implementation, and Procedures and Test procedures for using residual CRV Bandwidth. **ACTION ITEM 15-9** It was agreed that, currently, these adopted documents will be provided as separate documents in the Operations Manual Current Version folder.

3.22. The Meeting was informed that the CRV OG Operations Manual will be updated to incorporate all agreed changes after the CRV OG/15 Meeting and will be presented to CRV OG/16 for adoption. **ACTION ITEM 15-10**

CRV Overview Diagram – New Zealand (WP/17)

3.23. This paper presented the CRV Overview Diagram, which resulted from discussions on updating the Com Chart in the AMC managed by Eurocontrol to reflect CRV information. The diagram addressed the limitation of the Com Chart, which showed only physical point-to-point connections, whereas CRV connections are logical. It attempted to illustrate these logical connections from a Com Centre point of view, while also considering voice implementations.

3.24. The Meeting noted that the diagram is currently available in the CRV Portal, the CRV Overview diagram.vsd and that future updates may include SWIM Gateway EMS and sub-services; there may be a future limitation in that the logical connections overwhelm the diagram.

3.25. The Meeting reviewed and modified the CRV Overview Diagram and adopted the draft conclusion.

<table>
<tr><td colspan="3">Conclusion CRV OG/15/03 - CRV Overview Diagram</td></tr>
<tr><td colspan="2">What: Adopt and maintain a CRV Overview Diagram with a view to maintaining a level of detail to assist with CRV implementation understanding.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: There has been a request for an interconnection diagram for CRV from the SWIM TF to understand the current logical connection while designing APAC SWIM Technical Infrastructure. In addition, this information is useful for States/Administrations to identify current CRV users and their interconnections.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 19-Jun-26</td><td colspan="2">Status: Adopted by CRV OG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3.26. It was noted that the CRV Overview diagram has been updated to include information on all CRV States/Administrations. It was suggested that all CRV focal points review and verify the information in the CRV Overview diagram and update it as needed. **ACTION ITEM 15-11** If any CRV focal points face issues updating the diagram, they can request assistance from the CRV OG Co-Chair (Asia).

3.27. In response to a question about how to get information about updates to the CRV Overview diagram made by any State/Administration, it was suggested to utilise the SharePoint notification feature, which sends a notification to all users whenever a document is changed. CRV OG Co-Chair (Asia) will activate notification for any edits made in the CRV Overview diagram. **ACTION ITEM 15-12**

New Zealand hosted CRV Portal – New Zealand (WP/37)

3.28. New Zealand shared information about the CRV Portal. It was informed that New Zealand hosts the CRV Portal, which provides a common platform for compiling all necessary information related to CRV, including the Operations Manual, Transition Plan and Common Package for all CRV Users. Having this portal provides the flexibility to update the various documents and to provide access to them under the control of the CRV Operations Group.

3.29. It was added that access to the portal is limited to three per State for the following users:

a. National CRV Point of Contact
b. Nominated deputy to the National CRV Point of Contact
c. Person responsible for updating the AsiaPac Telecommunication Infrastructure Routing Plan.

3.30. The Meeting was informed that a Teams function associated with the portal is currently unused. This could provide the opportunity for channels, chat and posting.

3.31. The Meeting discussed the portal's functions and governance, along with proposed improvements to utilise it more effectively to provide better visibility of activities within the CRV OG.

3.32. It was also noted that security enhancements have been completed by implementing multifactor authorisation for the portal; all CRV focal points that need access to the portal must link their mobile devices to receive an authorisation code. In case of any issues or changes to the mobile device or mobile number, the associated information can be updated. In case of any issues with access, it was suggested to contact the portal administrator, Mr Vaughan Hickford, CRV OG Co-Chair (Asia).

3.33. Regarding concerns about the future management of the CRV Portal hosted by Airways New Zealand, if New Zealand is unable to manage the portal, it was informed that it may be hosted by another State/Administration, and all portal documents can be moved.

Agenda Item 4: CRV Governance

Way forward for CRV Governance – New Zealand (WP/12)

4.1. This paper presented discussions on the CRV Governance and Operating Model currently implemented in CRV and options to be considered for improving transparency and participation.

4.2. The Meeting noted that the current informality of CRV OG enables flexibility and achieves outcomes relatively quickly. Governance appears to be working well; items of work are reported to the Operations Group, then to ACISCG, followed by CNS SG and ultimately to APANPIRG if needed.

4.3. The Meeting noted the current way of working is predominantly through the Ad Hoc Experts Group. It was recalled that the intention of the CRV OG Ah-hoc Expert Group was to progress the sections of the Operations Manual of Strategy, Design, Transition and Operation. It was intended that each group would have a leader who could present outcomes to the CRV OG; however, the Co-Chairs and Secretariat are leading this group. It was noted that the CRV OG Ad hoc experts also collaborate with the SWIM TF Task leads, as the upcoming implementation of SWIM will introduce

new CRV requirements, including cloud connectivity, cross-regional networking, and standardised security, bringing unresolved cost allocation questions between shared funding and user-paid models.

4.4. The Meeting discussed the possibility of implementing a lifted level of formality without compromising the existing flexibility that enables CRV delivery. The following actions were proposed for consideration:

i. Centralise Ad Hoc Meeting artefacts in the APAC CRV Portal
ii. Centralise Action Items in the APAC CRV Portal
iii. Implement the National and Local Points of contact as list items in the APAC CRV portal (reduces the number or republishing of this document)
iv. Implement leads for the Ad Hoc groups that are not the Co-Chairs
v. Implement more admins on the APAC CRV Portal

4.5. Additionally, the Meeting discussed the shared cost model for the basic functionality of the CRV and future enhancements. It was informed that the current combined MRC is USD 223,551, as follows:

Item	Cost
Monthly price for Managed NID	878, 968, 1068, 1144, 1208, 1106, 918, 1148, 1138, 1312
Package	Varies based on BW, location and package

4.6. The Meeting discussed how proposed models could be standardised to provide a base level of consistency, similar to what REDDIG does, as well as the impact and how this would translate into other services and functions, such as security and NNI.

4.7. Following detailed deliberations, the Meeting agreed that the CRV OG Ad-hoc Expert Group should be transformed into a formal body in order to enhance its authority and decision-making capacity. It was noted that ad hoc groups are typically established for a limited duration; however, the CRV OG Ad-hoc Expert Group has been active for over five years and is expected to continue its work to meet the ongoing requirements and responsibilities of the CRV OG. These tasks cannot be effectively accomplished through Meetings held only once per year. Accordingly, it was agreed that the **CRV OG Ad-hoc Expert Group** will be converted into a formal entity, to be known as the **Technical Control Board,** which will support and provide expert advice to the CRV OG on all CRV-related matters.

4.8. The Meeting drafted the Terms of Reference of the Technical Control Board, provided in **Appendix C**, and requested the CRV OG Ad-hoc Expert Group to further review the draft ToR and present a polished version to the CRV OG/16 Meeting for endorsement. **ACTION ITEM 15-13**

4.9. It was suggested that further modifications to CRV governance be discussed in the CRV OG Ad-hoc Expert Group and present the finalised revised CRV governance proposal to the CRV OG/16 Meeting for consideration. **ACTION ITEM 15-14**

4.10. The Meeting noted that the following table has not been updated after more members joined the CRV OG Ad-hoc Expert Group. The Meeting requested all CRV OG Ad-hoc Expert Group members to share their nominations for their preferred groups. The Meeting modified the list of States volunteered for Strategy, Design, Transition and Operation. The finalised table was as follows:

SN	Expert Group Name	Volunteered Member	Group leader
1	Service Strategy	India, Singapore, United States	New Zealand/Fiji
2	Service Design	Hong Kong China, Singapore, United States	New Zealand/Fiji
3	Service Transition	China, Singapore	New Zealand/Fiji
4	Service Operations	Australia, China, India, Singapore	New Zealand/Fiji

Table 2- CRV OG Ad-hoc Expert Group Members

4.11. The Meeting noted the importance of CRV expertise and recognised that developing such expertise requires time. It was also agreed that strong governance contributes to building trust and transparency, thereby attracting new members. In this context, States/Administrations were encouraged to train additional experts to ensure the smooth and efficient operation of CRV activities in the region.

4.12. It was further suggested that the names of key members of the CRV OG Ad-hoc Expert Group should be compiled and made available for reference by States. The ICAO Secretariat will prepare this list and upload it to the ICAO APAC CRV Secure Portal, as well as to the CRV Portal hosted by New Zealand. **ACTION ITEM 15-15**

Agenda Item 5: CRV contract management

5.1. Due to the confidentiality of the CRV contract management process, the report under this agenda is published on the ICAO APAC CRV Secure portal under the CRV group.

Agenda Item 6: Regional SWIM Technical Infrastructure over CRV

- Guidance on using the Residual Bandwidth of the (Operational) CRV for New Services Testing
- Other matters

Guidance Material on using the Residual Bandwidth of the operational CRV for testing SWIM/New Services – Sec (WP/15)

6.1. The paper presented draft Guidance Material on using the Residual Bandwidth of the Operational CRV for New Services/SWIM services Testing, prepared during the joint Meeting of SWIM and CRV experts in September 2025, for Meeting adoption.

6.2. It was reminded that in the workshop, the definition of residual bandwidth of CRV was shared as follows:

The CRV residual bandwidth is the bandwidth allocated under operational CRV with Service quality marked through DSCP markings and QoS of 'DF'.

6.3. It was added that based on this definition, the residual bandwidth will be calculated by States/Administrations by looking into their System Engineering Plan about the bandwidth allocation made under DSCP 'DF'. Therefore, even if there is spare bandwidth allocation within other DSCP markings such as 'EF' or 'AF21', it will not be counted under residual bandwidth. It was informed that States/Administrations have the option to re-tag their bandwidth with the support of the CRV services provider under 'DF', if they wish to do so, to increase bandwidth allocation under 'DF' to facilitate SWIM testing.

6.4. CRV Service provider clarified that States/Administrations should note that 'DF' bandwidth may already be allocated by them for other applications. In such a case, other applications will share bandwidth along with SWIM testing services. It was also mentioned that Package D assigned only one class, which is "DF".

6.5. The Meeting recalled in the ICAO APAC CRV-SWIM Experts Workshop: Reviewing of CRV II Specifications and ICAO APAC SWIM Architecture, held from **1 – 5 September 2025**, a table was developed to record the required information on SWIM tests over the residual bandwidth of operational CRV, especially the CRV bandwidth allocated/used for these tests, named "**Template for sharing CRV Bandwidth Results of SWIM Testing**". The Workshop also reviewed the **Guidance on using the (Residual) bandwidth of the Operational CRV**, and agreed to recommend the amended version for further adoption by CRV OG/15 in 2026.

6.6. Both documents were further revised and modified by the Meeting. The following decision was proposed to adopt both documents, which were adopted by the Meeting:

<table>
<tr><td colspan="3">Conclusion CRV OG/15/04 – Guidance Material for using the Residual bandwidth of the Operational CRV and template for sharing CRV Bandwidth Results of SWIM Testing for SWIM TF</td></tr>
<tr><td colspan="2">What: The Guidance Material for using the Residual bandwidth of the Operational CRV and template for sharing CRV Bandwidth Results of SWIM Testing for SWIM TF, provided in Appendix D and Appendix E, be adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: SWIM TF has requested to provide Guidance Material for using the Residual bandwidth of the Operational CRV and a template for sharing CRV Bandwidth Results of SWIM Testing, for testing being conducted by SIPG under SWIM TF.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 19-Jun-26</td><td colspan="2">Status: Adopted by CRV OG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: CRV OG</td></tr>
</table>

6.7. In response to a question about what a State/Administration should do in case there is no residual bandwidth in operational CRV, and they want to participate in SIPG activities, it was informed that a similar question was asked in SIPG WS/3. It was noted that one option may be to upgrade the CRV package to a higher bandwidth plan or subscribe to another CRV package. As shared in SIPG WS/3, States can join the SIPG work via the Internet and connect as an Internet-based Edge EMS to another State's Edge EMS, which is then connected to a Gateway EMS on the CRV.

Agenda Item 7: Review and update the APAC CRV Implementation Table and Telecommunication Infrastructure Table

Review and update the APAC CRV Implementation Table – Sec (WP/16)

7.1. The latest updates presented on the planning and implementation status of CRV were:

- **Under Operation**
  Australia, Bhutan, Cambodia, China, Cook Islands, Hong Kong China, Fiji, French Polynesia, India, Indonesia, Japan, Macau China, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Caledonia, New Zealand,

Niue, Pakistan, Philippines, PNG, Republic of Korea, Singapore, Sri Lanka, Thailand, Tonga, USA and Vietnam

- **Under Provisioning**
  Solomon Islands

- **Not joined yet**
  Afghanistan, Bangladesh, DPRK, Kiribati, Nauru, Timor Leste, Vanuatu, Russia, ICAO MID States

Currently not joining
Marshal Islands, Micronesia, Palau, Tuvalu

7.2. The Meeting reviewed and updated the Telecommunication Infrastructure Table on the New Zealand-hosted CRV portal.

Update of CRV National and Local Focal Points – Sec (WP/27)

7.3. This paper shared information about CRV's National and local points of contact (PoC) roles and responsibilities. The Meeting requested that States/Administrations update National and local PoC information in the event of any changes.

7.4. The updated list of national and local points of contact will be uploaded to the ICAO APAC CRV Secure portal under the CRV OG/15 folder.

Agenda Item 8: CRV Operational Performance Report

- CRV operational issues/matters
- CRV Bandwidth Utilisation Rate
- Other matters

CRV Operational Performance Report – PCCWG (SP/01)

8.1. PCCW Global presented the CRV Operational Performance Report, which analysed the reliability and overall performance of the CRV network in 2025. The Meeting was informed that the CRV network consists of 75 circuits in 43 cities with different CRV packages. 2 service providers in the CRV network, 5 circuits are under implementation. Additionally, 8 member states are joining CRV in 2026, including Bangladesh, Brunei, Kiribati, Laos PDR, Oman, Samoa, Tuvalu, and Tonga. The Meeting noted the service inventory and site availability details, which highlighted high service reliability across various administrations. It also took note of ongoing contract negotiations with prospective member states. PCCW Global provided a ticket overview and details for 2025, including various incidents, operational requests, and planned maintenance.

8.2. The Meeting noted that some information provided in the table was not accurate, such as Sri Lanka Site Availability in the month of November was 98.33%, not 99.86%. CRV Service provider will revalidate the figure, confirm with Sri Lanka and update the figure in the report. **ACTION ITEM 15-29**

8.3. It was also noted that, for some States, Site Availability may be displayed as 100% where basic connectivity remains available. However, this metric does not account for periods of network degradation or partial loss of GRE tunnel connectivity. This was one of the considerations behind the SLA proposal presented by Singapore in WP/31 of CRV OG/15. The CRV Service Provider acknowledged the point and will include this consideration in its internal review of the proposal. **ACTION ITEM 15-30**

8.4. It was observed that some of the GRE tunnel loss issues were faced by Member States due to a configuration error. The Meeting suggested sharing details of the PCCWG quality assurance process for configuration, as several errors have been reported due to configuration issues. CRV Service Provider was requested to follow up on the quality assurance process around the delivery of the configuration creation and implementation across the region. **ACTION ITEM 15-31** It was noted that the CRV Service Provider has reviewed all cases internally across teams, including technical support at the project management interface, to improve the process before implementation.

8.5. Fiji shared the issue of one-way voice communication, which persists, but does not affect availability. A similar issue was faced by PNG with one-way voice routing. CRV Service Provider was suggested to investigate this issue and provide feedback. **ACTION ITEM 15-32**

8.6. For Incident - issue pertaining to another member state, it was suggested that States share information about planned or unplanned maintenance and fault occurrence with their peer States so that the number of tickets can be reduced.

Analysis of APAC CRV Bandwidth Utilisation – PCCWG(SP/02)

8.7. The paper presented the bandwidth utilisation of each member State in 2025, providing a comprehensive understanding of how network bandwidth is utilised within the organisation. PCCWG informed that the reporting tool captured and recorded the average traffic value from the NID interface at 5-minute intervals and averaged the collected data to generate the monthly traffic report. The Meeting reviewed the monthly traffic report, and it was observed that the average utilisation rate cannot share peak bandwidth utilisation. Member States/Administrations were requested to make additional efforts to measure and monitor CRV network performance and to regularly share the results with the CRV OG.

8.8. On the request to provide an update on the request to explore a way to capture peak bandwidth, the CRV service provider informed that the work is ongoing and further progress will be shared in the next Meeting. **ACTION ITEM 15-33**

8.9. India observed that the bandwidth information presented for their subscribed package was 1 Mbps, while India has upgraded their package to 2 Mbps. PCCWG clarified that the report was produced based on information in the first half of 2025. It was suggested that future updates provide details of all packages in separate rows if multiple packages were subscribed to in a year. **ACTION ITEM 15-34**

8.10. Indonesia requested to correct information about the dedicated Bandwidth for the Voice Channel to 1152 Kbps.

8.11. It was noted that under the CRV Implementation plan, there was a CRV Implementation document that needs to be updated by the CRV Service Provider, in collaboration with the CRV OG Co-Chairs, to reflect the latest information on the CRV package and other details of CRV Users. **ACTION ITEM 15-35**

8.12. In response to a question about computing bandwidth for multiple voice channels, it was clarified that, in an ideal situation, the projected bandwidth equals the number of voice channels multiplied by 112 kbps. However, States/Administrations can conduct a safety case to estimate the maximum number of active channels over time and the maximum utilised bandwidth in voice channels. It was also suggested that AIDC may reduce the number of voice channels, and it may be prudent to implement AIDC based on operational needs.

Incident Summary in 2025 – PCCWG (WP/03)

8.13. PCCW Global presented the four major incidents summary in 2025, including Thailand Fibre Optic Circuit Incidents, Sri Lanka Colombo CRV Circuit incident, Cambodia CRV Service

Disruptions and the Republic of Korea (ROK) CRV Service Disruptions.

8.14. ROK shared its appreciation for PCCWG's efforts to create opportunities to optimise traffic classification at ROK sites and for traffic fine-tuning initiatives. However, it suggested that advance notification for such improvements would be appreciated.

8.15. The Meeting noted that the Cambodia CRV Service Disruptions provide a lesson to consider physical diversity while implementing CRV.

8.16. It was noted that Thailand Fibre Optic Circuit Incidents teach the importance of ensuring physical diversity among multiple local telecom service providers.

8.17. Sri Lanka appreciated the efforts made by PCCWG in resolving the issue; however, it was informed that the service desk repeatedly requests the same details when coordinating the resolution of lodged complaints. It was suggested that PCCWG improve internal processes to log the complainant's information so the complainant does not need to reshare event details.

8.18. The Meeting was requested to use the emergency telephone number to lodge an emergency issue and receive feedback, as a telephone call is quicker than an email response.

8.19. It was also suggested to follow the escalation matrix provided in the CRV documents.

A formula to compute the bandwidth required for surveillance data sharing – Secretariat on behalf of Hong Kong China (WP/19)

8.20. The paper presented a formula based on analysis to compute the bandwidth required for surveillance data sharing. It was recalled that 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.

8.21. The Meeting was informed in the Seventeenth Ad-hoc Expert Group Meeting held on 27 January 2026 via Microsoft Teams VTC, Hong Kong China presented the formula 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.

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

[Bandwidth Required] = (1,200 bytes × [Number of Targets in Interest]) / ([Data Reception Interval (seconds)])

e.g.,
Number of Targets of Interest = 300
Data Reception Interval (seconds) = 2
Bandwidth required = (1,200 bytes x 300) ÷ 2 seconds
Bandwidth required = 0.18 megabytes per second (i.e. 1.44 megabits per second)

8.23. The Meeting reviewed the formula and agreed to incorporate the formula into the CRV OG Operations Manual in the service design section. **ACTION ITEM 15-36**

Implementation of the cloud within the CRV network and integration of it with another cloud network – CRV OG Co-Chair (Asia) (WP/20)

8.24. This paper presented options for connecting the CRV network to cloud providers to support the potential adoption of cloud connectivity by ANSPs and Service Providers. It was recalled that during the CRV OG/13 Meeting, Singapore presented on a CAAS SWIM-CRV Cloud Platform use case. It was noted that with cloud-based infrastructure options available across the region, aviation organisations continue to assess and adopt fit-for-purpose solutions such as SaaS, PaaS or IaaS in commercial or government-delivered clouds. The benefits and challenges of cloud adoption were shared in the Meeting.

8.25. The Meeting was informed that there appeared to be **two options available for CRV connectivity** to cloud services: one is **Direct Peering,** in which PCCWG would create a provider peering to the cloud provider and manage traffic from the current CRV network to the cloud-based services. This would not support GRE tunnels, which will require configuration changes to the peering interface in CRV to manage traffic. There are security considerations required here that require further exploration with PCCWG.

8.26. The second option is **Direct Connect,** in which a CRV NID would be installed in the cloud provider's premises. This would support GRE tunnels and would be treated as another CRV site with the associated billing. Security would be the responsibility of the User implementing this option. It was added that there is a risk with this option in that cloud providers may restrict the installation of the NID or, in a future change, require the use of their products, such as Direct Peering.

8.27. The Meeting noted that, with either option, the user needs to consider the cost-benefit of requiring a CRV cloud connection. If this becomes a regional requirement, a cost-sharing model would need to be considered. PCCWG's Console Connect could also be considered an option, but PCCWG needs to provide more details. It was recommended that work be carried out with PCCWG to consider and develop suitable connectivity options for cloud connectivity.

8.28. The Meeting agreed that as SWIM implementation progresses, many States may find it difficult to manage their on-premises equipment, as SWIM traffic will be based on subscriber counts that could grow exponentially. Therefore, it is important to integrate CRV with the cloud network.

8.29. The Meeting discussed whether it is within the roles and responsibilities of the CRV OG to determine cloud service providers for SWIM services in the APAC region. It was also deliberated whether SWIM TF should discuss and select cloud service providers for the APAC Region, or whether this should be done at the individual or group level.

8.30. The Meeting noted that, while the cloud requirements arise from SWIM implementation, CRV OG is also involved as the required connectivity is provided through CRV. It was proposed that the two solutions presented in this paper be discussed at the joint Meeting of the CRV OG Ad-hoc Expert Group and the SWIM TF Task Leads. It was also noted that further discussion would be needed regarding security controls and data sovereignty. **ACTION ITEM 15-37**

8.31. The proposal to provide cloud services at the sub-regional level may also be considered.

8.32. The CRV service provider explained that, for direct peering, a demarcation point is required. While the NID can support GRE tunnel connections, it still needs to be hosted at a physical location or data centre. However, cloud providers do not generally offer space to accommodate external NIDs. One possible solution is for PCCWG to identify an alternative data centre or host the router within a Member State. Another option is to utilise Console Connect, which operates independently of the CRV network and already supports multi-cloud connectivity. As Console Connect is not part of the CRV network, it would also allow participation from other entities, such as airports or non-State members. It was noted that further discussion is needed to determine which States will adopt cloud solutions and who will be responsible for their management. These matters require further deliberation. It was agreed that PCCWG will discuss and propose various solutions for the different use cases and present them at the next CRV OG Meeting. **ACTION ITEM 15-38**

8.33. It was suggested that, along with this discussion initiated with the CRV Service provider, it also be considered for inclusion in the CRV III RFP. **ACTION ITEM 15-39**

Agenda Item 9: States/Administrations CRV Implementation

Inordinate Delay in Provisioning of Second CRV Node at Delhi by PCCW Global – India (WP/30)

9.1. India reported an inordinate delay experienced during the implementation of the second CRV node at Delhi for DR AMHS operations by PCCW Global. The Meeting was informed that India placed a purchase order with PCCWG on 1 July 2025 for the provision of a second CRV node (2 Mbps, Package C) at Delhi to enhance redundancy and operational reliability of the CRV network services for aeronautical communications through DR AMHS operations. PCCWG acknowledged and accepted the purchase order on 7 July 2025 for the implementation of the second CRV node in Delhi, engaged M/S Airtel as the local service partner, and communicated a tentative Service Provision Guarantee date of 28 November 2025 for the delivery of the node. However, despite continuous follow-up by AAI and repeated coordination with PCCWG via email and WhatsApp, the implementation of the second CRV node in Delhi has experienced a significant delay, extending well beyond the committed Service Provision Guarantee date.

9.2. The Meeting was informed that this delay in the provision of the CRV node at Delhi was caused by a combination of factors, including inadequate planning, poor initial site validation, delayed submission of OFC laying permission requests to the Airport Operator, and the need for a more robust follow-up mechanism. Excessive dependence on the local service provider (Airtel), without ensuring accountability and commitment, further aggravated the delay. Moreover, PCCWG did not provide a firm Service Provision Guarantee date for the delivery of the CRV node in Delhi, as stipulated in the terms and conditions of the CRV service contract. PCCW Global acknowledged the delay and has since strengthened its internal governance, monitoring, and escalation processes with local partners to better ensure timely delivery in accordance.

9.3. The Meeting was informed that due to the delay in provisioning of the second CRV node at Delhi for DR AMHS operation, a lot of operational difficulties were faced in commissioning of PAN India AMHS, as DC-DR switch over testing was pending due to the non-availability of the second CRV node at Delhi. Following the intervention by the ICAO APAC office and the CRV OG Co-Chair, the second CRV node was delivered on 15 May 2026 by PCCWG, after a delay of about six months, for the DR AMHS operation at Delhi.

9.4. The Meeting noted the implementation challenges and delays experienced in provisioning of the second CRV node at Delhi. The Meeting discussed measures for PCCWG to strengthen coordination and escalation mechanisms with its local partner and to establish effective governance, monitoring, and reporting mechanisms to ensure timely CRV service delivery in accordance with the committed SPG dates for Member States.

9.5. The Meeting noted that, following the signing of the purchase order, a tentative Service Provision Guarantee date for node delivery is typically provided. However, a query was raised regarding penalties in cases where vendors are unable to meet the committed timeline. The CRV OG Co-Chair and India will review the relevant CRV documentation to identify the applicable provisions and share the information with the Meeting. **ACTION ITEM 15-40**

9.6. After detailed deliberation on the root cause of the issue and what could have been done differently, it was noted that at the time of commitment of service provision date by the CRV service provider, PCCWG did not have information that fibre laying work could not be conducted by their local partner. Also, after coordination with the major telecom service provider, it was noted that only Airtel was willing to complete this task. It was also noted that a site inspection was conducted in advance.

PCCWG was requested to review and, if needed, propose modifications to the high-level questionnaire to strengthen the document and ensure that all required information is provided to support the provision of services. **ACTION ITEM 15-41**

PSIDS updates for CRV joining – Fiji (WP/21)

9.7. This paper presented the update on the PSIDS CRV Implementation to date and the challenges faced with alternative solutions for PSIDS that cannot implement CRV. The table below summarised the CRV implementation of the PSIDS that consists of 13 ICAO-accredited PSIDS and one non-accredited PSIDS:

SN	PSIDS Name	CRV Package	Implementation Status	Alternative Solution for Joining CRV	Remarks
1	Cook Islands	D	Implemented December 2025	N/A	Service supported TBD
2	Federated States of Micronesia	Not Implementing	Not Implementing	Secured VPN connection over the Internet to the United States	Low traffic flight movement against the high cost of implementing CRV
3	Fiji	B+ (1Mbps)	Implemented 2019	N/A	Support Voice and AMHS services
4	Kiribati	D+	In Progress	N/A	Work in progress with Fiji support to implement CRV in Q4 2026
5	Nauru	D+	In progress	N/A	Prospect for 2026 (PCWWG)
6	Niue	D	Implemented January 2026	N/A	Service supported TBD
7	Palau	Not Implementing	Not Implementing	Secured VPN connection over the Internet to the United States	Low traffic flight movement against the high cost of implementing CRV
8	Papua New Guinea	C (2 x 640Kbps)	Implemented 2021	N/A	Support Voice, AMHS & Aireon Space ADS-B services
9	Marshall Island	Not Implementing	Not Implementing	Secured VPN connection over the Internet to the United States	Low traffic flight movement against the high cost of implementing CRV
10	Samoa	D+	In progress	N/A	Prospect 2026 (PCCWG)
11	Solomon Islands	D+	In progress	N/A	Under provisioning (PCWWG)
12	Tonga	D	Implemented May 2026	N/A	Service supported TBD
13	Tuvalu	Not Implementing	Not Implementing	Secured VPN connection over the Internet to Fiji	Low traffic flight movement against the high cost of implementing CRV
14	Vanuatu	D+	In progress	N/A	Work in progress with Fiji support to

					implement CRV in Q4 2026

Table 3-PSIDS updates for CRV joining

9.8. On the suggestion of CRV OG to study and provide guidelines for PSIDS on an alternative CRV joining solution to support SWIM, the Meeting recalled the CRV promotional offer for PSIDS shared in the past, which costs approximately USD2000 per month for Package D subscription. It was also noted that many PSIDS are joining CRV or are in the process of joining.

9.9. The need for understanding a reasonable cost for PSIDS, which has constraints of low traffic flight movement against the high cost of implementing CRV, was discussed in the Meeting. It was added that if a reasonable cost for such PSIDS can be estimated, the CRV OG Ad-hoc Expert group can work with the CRV Service Provider to identify another potential solution to support them. **ACTION ITEM 15-42**

9.10. The definition of low traffic was also raised in the Meeting for which a particular State may decide not to join CRV. As most PSIDS CRV-joining support is the responsibility of their partner States, it was suggested that PSIDS partner States discuss these questions and identify proposed solutions.

9.11. As most PSIDS not joining CRV fall under the responsibility of the United States, the Meeting requested that the United States provide information on traffic movements in the Federated States of Micronesia, Palau and the Marshall Islands to help understand and determine the definition of low traffic. **ACTION ITEM 15-43** Fiji will take similar action for Tuvalu. **ACTION ITEM 15-44**

9.12. It was also agreed that partner States, which informed ICAO that PSIDS under their responsibility will not join CRV, will share their plans to support such PSIDS in meeting the future SWIM/FF-ICE/sunset date of the FPL2012 requirements. **ACTION ITEM 15-45**

CRV joining with proposed solutions – Russia (WP/22)

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9.13. Russia presented a proposal to consider an option of using the resources of a Russian telecommunication provider, TTK, to ensure connectivity of the Russian Federation communication centres to CRV for obtaining support from the CRV OG and the ICAO Asia-Pacific Office

9.14. Russia informed that at the end of 2021, PCCW Global Limited completed the development of technical solutions to connect Moscow and Khabarovsk COM centres to CRV to ensure transition to AMHS exchange with the APAC region COM centres (Japan and China), and in December 2021, an official technical proposal was submitted to the State ATM Corporation. The connection diagram for Russian COM centres, presented by PCCW Global Limited (Fig.1), was approved by the Russian Federation, and the parties began addressing the contract conclusion. However, the process was suspended due to restrictions on the use of Cisco equipment in the COM centres of Moscow and Khabarovsk.

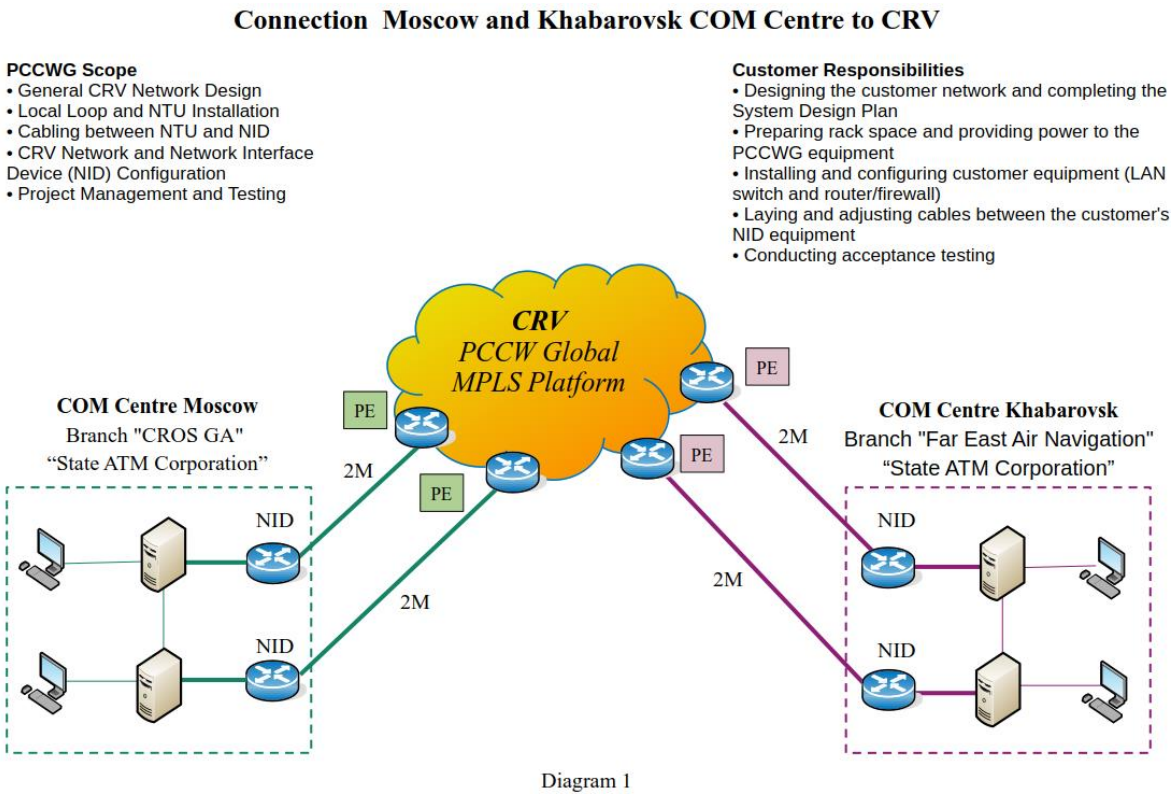

Figure 1- Initial Proposal in 2021 for Russia joining CRV

9.15. It was informed that the search for alternative connection options was complicated by the fact that the use of equipment other than Cisco was deemed unacceptable for PCCW Global Limited. In 2025, the Russian telecommunications service provider TTK, which has prior experience in cooperating with PCCW Global Limited, offered its assistance in providing the required connectivity. The proposed solution for connecting the Russian COM centres to the CRV was illustrated in Figure 2. It was clarified that under this arrangement, PCCW Global was able to configure the network equipment installed in the Russian COM centres (CE or NID) in the same manner as depicted in Figure 1. However, any such arrangement would be subject to comprehensive compliance review and internal due diligence by PCCW Global to ensure alignment with applicable laws, regulations, and company policies. Payments for the services could be made between TTK and PCCW Global, on the one hand, and between TTK and the State ATM Corporation, on the other. Consequently, the standard service contract may require minor adjustments to accommodate this solution. It was noted that establishing an interaction with PCCW Global will enable an early switch to AMHS exchange via CRV and the later transmission of various types of information, including data and voice.

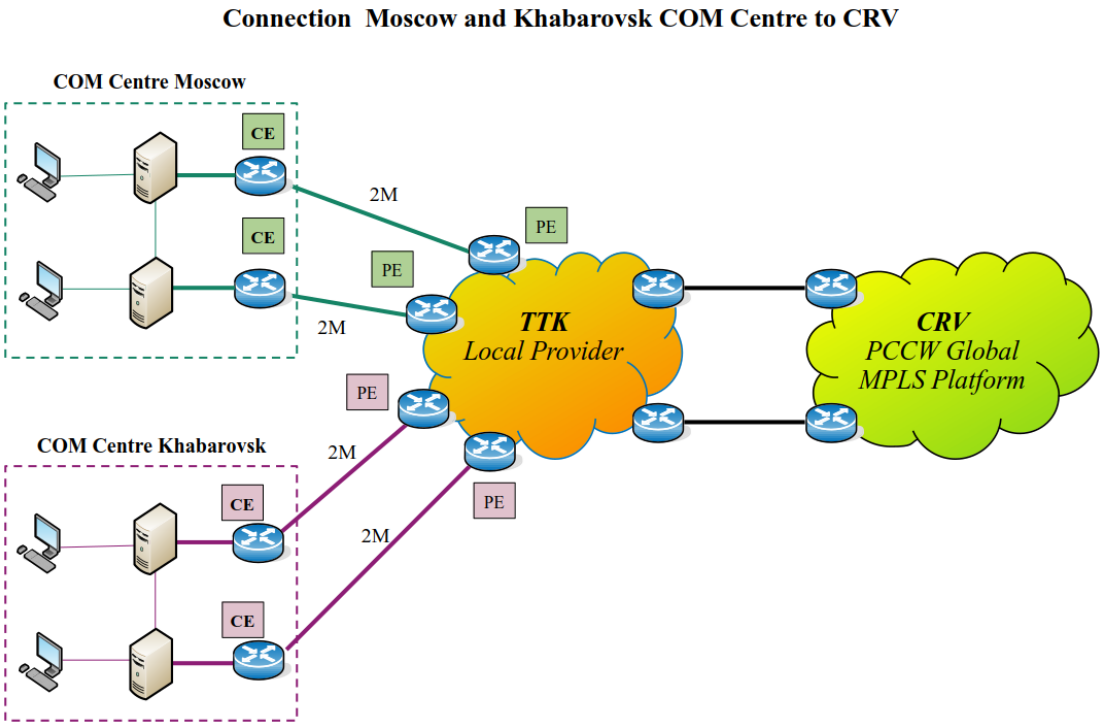

Figure 2-The proposed solution for connecting the Russian COM centres to the CRV

9.16. The Matter was further discussed in breakout sessions among interested Member States and the CRV Service provider, and two technical options for the resolution of the identified issue and way forward were agreed upon in the Meeting. The finalised solution has been uploaded to the ICAO APAC CRV Secure Portal and to the CRV Portal hosted by New Zealand.

CRV Implementation in Malaysia (IP/03)

9.17. Malaysia presented the status of CRV implementation between Malaysia and neighbouring CRV States. It was informed that the official commencement date for CRV services in Malaysia started in November 2021 and the CRV Contract Agreement between PCCWG and CAAM on behalf of the Government of Malaysia was signed in Sept 2022. It was reported that Malaysia currently subscribes to package A with 2Mbps, which connects both CRV routers located in the Kuala Lumpur Air Traffic Control Centre (KLATCC) to the CRV network. Various connections showing the status of CRV Implementation between Kuala Lumpur Air Traffic Control Centre (KLATCC) and neighbouring CRV States were shared with the Meeting. Lastly, Malaysia shared its experience with CRV operations. The Meeting was informed that Malaysia's AMHS and Voice services migration to the CRV network is substantially complete, with overall progress estimated at 90%, and is expected to be fully complete by the end of 2026. The successful implementation of CRV was greatly supported by the technical assistance of the PCCWG representatives and the strong cooperation demonstrated by neighbouring CRV States.

9.18. The Meeting noted that Malaysia has also implemented Space-based ADS-B over CRV and invited them to contribute to the preparation of SOP for contracting Space-based ADS-B services over CRV. Malaysia agreed to the request. **ACTION ITEM 15-46**

9.19. In response to a question, Malaysia informed that currently they are not using space-based ADS-B data for separation purposes; however, in future, it may be done after the establishment of a compliance policy to use space-based ADS-B data for separation purposes. It was also clarified that Malaysia is paying per aircraft, like India.

Implementation status of PAN India AMHS – India (IP/05)

9.20. This paper presented an update by India on the implementation status of the new Pan-India AMHS at Mumbai (VABB) and New Delhi (VIDP), and the current international AMHS connectivity of India with BBIS and BIS States. It was informed that India has implemented a new Pan-India AMHS to replace the legacy AMHS commissioned in 2011 at Mumbai, featuring a fully redundant dual-site architecture with a Data Centre (DC) in Mumbai and a Disaster Recovery (DR) site in New Delhi, covering 80+ airports under a single centralised platform. The system supports AFTN/AMHS messaging, IWXXM exchange via FTBP, FIXM-based flight data exchange, AIXM 5.1-compliant Digital NOTAM, and web-based and mobile flight plan submission with online payment, deployed with cyber-security protection. Site Acceptance Test (SAT) was completed in February 2025 and System Reliability and Stability Test (SRST) in March 2026, with DC-to-DR switchover achieved within approximately 8 minutes, and operational commissioning planned for Q2 2026. India currently maintains 10 international AMHS connections.

9.21. The Meeting noted all existing connections still operate on the legacy AMHS, with staged migration to the new Pan-India AMHS to be coordinated bilaterally with each correspondent State. The Meeting also noted the need to coordinate with Eurocontrol to obtain consent to utilise the European Directory Services (EDS) for the new AMHS in India.

9.22. ACSICG Co-Chair and ICAO Secretariat informed that AMHS with FTBP does not align with the FF-ICE and FIXM concepts, which are based on SWIM. Furthermore, no plan has been communicated to transfer AIXM to AMHS.

9.23. It was noted that currently, none of the States represented at the CRV OG/15 Meeting was connected to Eurocontrol for EDS. India requested support from the ICAO Secretariat to connect with the appropriate focal point at Eurocontrol for EDS. The ICAO Secretariat will coordinate with Eurocontrol and support India for this interconnection for the new AMHS if feasible. **ACTION ITEM 15-47**

FAA IWXXM via AMHS Testing Update – United States (IP/06)

9.24. The paper presented the ongoing effort by the FAA to conduct IWXXM testing over AMHS to progress towards operational dissemination of OPMET data. The Meeting was informed that the United States FAA Technical Centre is conducting interoperability testing of IWXXM with Cuba. In its test environment, the FAA has deployed an AMHS-to-SWIM Gateway (ASG) that supports the exchange of weather information in XML format over the AMHS. It was informed that the United States and Cuba have successfully conducted interoperability tests, phases I through III, which have validated the exchange of IWXXM traffic. Phase IV testing is planned for the near future to support the transition to operational dissemination of OPMET data.

9.25. ACSICG Co-Chair shared that in the SWIM environment, the exchange of MET messages should be based on Publish/Subscribe (PUB/SUB) or Request/Reply (REQ/REP) mechanisms, whereas in the AMHS environment, messages are routed based on the originator and recipient addresses. The United States was requested to explain how its AMHS/SWIM gateway performs routing across these two environments at the upcoming AMHS to SWIM Transition Coordination Group (ATSCG) planned for **19 August 2026 from 0800-0930 AM BKK time**. **ACTION ITEM 15-48** The United States was also requested to provide the email addresses of participants who will provide clarifications at the ATSCG Meeting so that the ICAO Secretariat can share the Meeting invite. **ACTION ITEM 15-49**

Current Status of CRV Implementation in Indonesia (IP/07)

9.26. The paper provided updated information on the current status of CRV implementation in Indonesia. The Meeting was informed that Indonesia extended its CRV service contract with PCCW

in December 2025. The renewed contract is valid until 31 December 2028, subscribing to a Connection Package-C with 3 Mbps bandwidth at two sites. The first connection was established in the first quarter of 2023. Key implementation activities include finalising bilateral agreements, establishing connections, conducting trial operations, and monitoring performance. In 2026, Indonesia carried out the modernisation of ATM system facilities, including the Voice Communication System (VCS) and the implementation of a new AMHS for Jakarta and Ujung Pandang. These systems are scheduled to become operational by mid-June 2026. As of June 2026, several applications, including AMHS, are operational, while the new AMHS is operational, and voice testing is ongoing with various neighbouring States. Based on the target timeline, Indonesia appreciated an initial discussion with the concerned parties to review related matters and align the implementation schedule.

9.27. Indonesia requested PCCWG support in relocating CRV equipment from Jakarta's old building to the new building and shared concerns that they did not wish to encounter the issues India faced with long service lead times. PCCWG assured full support and a minimum time for completion of this task.

9.28. In response to Indonesia's experience downgrading packages from 3M to 2M, Indonesia shared that their process was smooth and that they completed it within one month.

9.29. Indonesia clarified that the price difference between the 2M and 3M packages is not significant.

CRV Implementation Status in India (IP/08)

9.30. The paper provided information on the implementation and the CRV Network in India. The Meeting was informed that India operates a legacy AMHS in Mumbai, linked to various APAC States, and has installed a new Pan-India AMHS with a Data Centre in Mumbai and a Disaster Recovery (DR) site in New Delhi. India executed a CRV service contract with PCCW Global in March 2022 under Package B+ (initially 1 Mbps, upgraded to 2 Mbps in May 2025), which has been operational since December 2022, and a second CRV node at New Delhi under Package C (2 Mbps) was completed in May 2026 for seamless failover.

9.31. It was informed that to date, 7 AMHS circuits (64 Kbps each to Bangkok, Paro, Singapore, Kathmandu, Beijing, Karachi, and Colombo) and 9 voice circuits (112 Kbps each to Karachi, Kuala Lumpur, Colombo, Lahore, Yangon, and Jakarta) have been migrated onto CRV, occupying a total bandwidth of 1,456 Kbps, with performance reported as satisfactory.

9.32. Pending migrations awaiting counterpart readiness include voice circuits to Colombo and Male, AMHS and voice to Muscat, and AMHS to Dhaka. India urged Dhaka & Male, having AMHS/AFTN/Voice connectivity with India, to migrate to the CRV network at the earliest. MID region states, particularly Oman, were also urged to join the CRV network to establish Inter-Regional CRV connectivity with India.

Sr. No	CRV Network with States	Bandwidth	Services		Rem
1	Chennai-Colombo	112Kbps		Voice	Coordination with Colombo is in progress
2	Chennai-Male	112Kbps		Voice	These links shall be implemented on the CRV Network once the counterpart states are ready
3	Mumbai-Muscat	64Kbps	AMHS		
4	Mumbai-Muscat	112Kbps		Voice	

5	Mumbai-Dhaka	64Kbps	AMHS		

Table 4- CRV Site under progress in India

9.33. The Meeting noted that Bangladesh is still in the process of joining CRV. Therefore, the Mumbai-Dhaka connection is not completed; however, the Maldives is already on CRV. It was noted that there are difficulties in coordination with Male for the Chennai-Male connection. The ICAO Secretariat will provide support to India for establishing contact with the Maldives. **ACTION ITEM 15-50**

Agenda Item 10: MPLS/IP based inter-regional connection

Use cases for interregional connection – Sec (WP/23)

10.1. This paper presented use cases for interregional connections compiled by the ICAO APAC Office for Meeting information and discussion on further action. It was recalled that in the Sixteenth Meeting of the CRV OG Ad-hoc Expert group, held online on 9 October 2025, the Ad-hoc group initiated an action to compile use cases of interregional connectivity. All States with connections outside the APAC region were requested to submit relevant information to the ICAO Secretariat. This compilation was expected to provide valuable insights into the potential additional benefits that can be realised through enhanced interregional connectivity.

10.2. Following the action, the ICAO APAC Office has collected detailed information shared by different States/Administrations. Based on details shared by different States/Administrations, key use cases include AFTN, AMHS, Voice, Data and enhanced diversity.

10.3. The Meeting discussed the use of compiled use cases to support interregional connectivity and supplemented additional (missing) details in the use case compilation table. The finalised table is provided in **Appendix F.**

MPLS/IP based inter-regional connection – Sec (WP/24)

10.4. This paper provided an update on the discussion on the potential interconnection of CRV and REDDIG III, and CRV and New PENS. It was recalled that the past discussion included the final technical proposal from 2022 for the interconnection of CRV and REDDIG II, along with various business models for the way forward, discussed at past ACSICG Meetings. It also requests that APAC member states deliberate on the way forward for interconnecting the CRV with other regional networks, such as REDDIG II/New PENS.

10.5. About CRV and REDDIG interconnection, the Meeting was informed that it is expected to conduct a joint workshop for CRV and REDDIG experts in Q4 of 2026, if funding is received, to discuss the way forward for the interconnection of both networks and to further work on CRV governance. While previous technical proposals have been developed and reviewed, there is currently no agreed or validated technical solution for the interconnection of CRV and REDDIG III. Further progress is expected once the REDDIG III service provider is established and the corresponding technical and governance framework is defined. This situation has directly influenced the timing of interconnection discussions, as any future implementation must be aligned with the architecture, contractual framework, and operational model of REDDIG III.

10.6. The Meeting noted that the proposal produced by PCCWG is still valid and will create a baseline for further discussion with the new service provider of REDDIG III. It was requested that as soon as the REDDIG III service provider is finalised, the information be shared with the CRV OG Ad-hoc Expert group and the CRV Service provider. **ACTION ITEM 15-51**

10.7. The process for initiating contact between both service providers to conduct detailed

technical discussions on the interconnection proposal should commence at the earliest opportunity. This will allow further examination of the previously agreed solution, as well as the evaluation of additional potential technical options for interconnecting the two networks. The ICAO Secretariat will facilitate and initiate coordination to establish communication between the respective regional IP network service providers. **ACTION ITEM 15-52**

10.8. The Meeting discussed the need for and importance of an in-person workshop involving CRV and REDDIG III experts to further deliberate on the interregional interconnection, as well as other areas of mutual interest. It was recognised that face-to-face Meetings provide significant value by facilitating more effective discussions, including interactive whiteboard sessions, comprehensive evaluation of the advantages and disadvantages of proposed options, and improved understanding of complex technical matters. As APAC SWIM implementation timelines are 2024-2030, the Meeting stressed the importance of organising the proposed workshop at the earliest opportunity in order to make timely progress on this outstanding issue. **ACTION ITEM 15-53**

10.9. About CRV and New PENS, the Meeting noted that the coordination is ongoing through AST TF and EASPG. It was recalled that the Sixth Meeting of the AFS to SWIM Transition Task Force (AST TF/06), held in the ICAO EUR/NAT Office in Paris, France, from 5 to 7 May 2025, discussed follow-up on EASPG Conclusion 3/15 – Coordination on the Interregional AFS Gateways. Some initial actions were taken in response to the EASPG Conclusion 3/15; however, this action could not be completed at the time. Eurocontrol stated that its position remains as before. The role and responsibilities of the interregional AFS coordination team must first be defined, and then Eurocontrol will decide accordingly. The AST TF/06 Meeting agreed that the OG would define the terms of reference for the interregional AFS coordination team before establishing it.

10.10. The Meeting was informed that the Seventh Meeting of the EUR AFS to SWIM Transition Task Force (AST TF/07), held from 21 to 24 April 2026, reviewed the draft Terms of Reference (ToR) for an interregional AFS gateway team. The key contents of ToR address operational problems in the AFS network, including routing loops, asymmetric routing, address inconsistencies, message loss and coordination difficulties with COM Centres outside the EUR/NAT Regions. In addition, the Meeting received a proposal to establish a list of Regional AMC focal points to improve coordination and address AMC issues worldwide. Both proposals were submitted to the parent group of the AST TF (EASPG PCG) for discussion and decision. Once the proposals are approved, the ICAO EUR/NAT Office will contact other ICAO Regional Offices regarding them.

10.11. The Meeting discussed the cost-sharing model and business case for interconnecting CRV with other regional networks.

10.12. The Meeting agreed that, with the implementation of SWIM, FF-ICE R/1, and Trajectory-based Operations (TBO), traditional point-to-point connectivity models will no longer be adequate. It was noted that, following SWIM implementation, GEMS in the APAC region may need to establish connectivity with EMS in other regions. Consequently, the currently limited interregional connections are likely to expand, with an increasing number of APAC States requiring interconnection with other regions. In this context, the Meeting emphasised that the interconnection of all regional IP networks would be essential for effectively supporting global SWIM operations.

10.13. The Meeting noted the importance of ensuring both geographical and regional redundancy when developing technical proposals for interregional connectivity. This approach would enhance network resilience, reliability, and operational continuity across interconnected regional IP networks.

10.14. The Meeting also deliberated on the way forward for the interconnection between CRV and REDDIG III and CRV and New PENS, taking into account technical feasibility, governance frameworks, cost-sharing models, and alignment with ongoing regional network modernisation processes.

10.15. The Meeting noted that while progress has been made in discussions on the interconnection between CRV and REDDIG III, EUROCONTROL has expressed reservations regarding further engagement due to the absence of a clear business case. It was reiterated that, although interregional connectivity may not demonstrate immediate business value, it represents a critical enabler for future advancements aligned with SWIM, FF-ICE, and Trajectory-based Operations (TBO). The Meeting emphasised that the value of such interconnections should not be assessed solely in terms of cost, but also in terms of enabling seamless integration, enhancing interoperability, and ensuring the safe and efficient delivery of flight operations at a global level. The Meeting requested ICAO support in engaging the higher authorities of both regions to progress on this matter. **ACTION ITEM 15-54**

10.16. The Meeting further suggested that other APAC States/Administrations engage with their European counterparts to encourage dialogue and advocate for EUROCONTROL's support of this APAC initiative, highlighting its long-term strategic importance for global interoperability and aviation system modernisation. **ACTION ITEM 15-55**

10.17. The United States shared its experience, noting the significant value derived from subscribing to both REDDIG and CRV networks, particularly in terms of enhanced connectivity, redundancy, and operational flexibility.

10.18. The Meeting further agreed that, in the event of limited interest from EUROCONTROL in pursuing the interconnection between CRV and New PENS, an alternative option could be the deployment of CRV nodes within Europe. The Ad-hoc Group and PCCWG were tasked with further examining this option and presenting a detailed assessment, including estimated costs, at the next Meeting. **ACTION ITEM 15-56**

REDDIG III Governance Model, Need for Inter-Regional Connectivity and Possible Establishment of a Reddig Node in New Zealand – ICAO SAM RO (WP/34)

10.19. The paper presented the governance, operational and financial framework of REDDIG III, as well as opportunities for inter-regional connectivity between the SAM and APAC Regions. It also described the possible establishment of a REDDIG III node in New Zealand as a complementary initiative aimed at strengthening interoperability, resilience and technical cooperation between both regions.

10.20. The Meeting was informed of the benefits and opportunities of interconnection between CRV and REDDIG III. It was proposed to continue coordination among the ICAO APAC and SAM Regional Office, participating States/Administrations, ANSPs and telecommunications service providers in order to:

a) Assess technical architectures for a possible CRV–REDDIG interconnection;

b) Identify operational services that could benefit from such interconnection;

c) Evaluate associated governance and funding aspects;

d) Develop a phased implementation roadmap;

e) Identify future interoperability opportunities with other regional aeronautical networks.

10.21. It was also highlighted that the proposal is not intended to replace or modify the existing capabilities of the CRV network, but rather to explore mechanisms that could facilitate future CNS/ATM services, including AMHS, AIDC, ATS Voice, surveillance and SWIM applications.

10.22. The Meeting noted the REDDIG III governance and operational experience as a

reference for future regional cooperation initiatives. It was agreed to conduct additional technical and operational studies on technical cooperation between CRV and REDDIG III, as well as continued coordination between the ICAO APAC and SAM Regional Offices regarding the possible establishment of a REDDIG III node in New Zealand.

10.23. The Meeting noted that the proposed initiative is complementary to existing regional infrastructures and is intended to strengthen interoperability, resilience and technical cooperation between the APAC and SAM Regions.

10.24. It was informed that, within the framework of coordination between the ICAO APAC and SAM Regional Offices, as well as discussions held among REDDIG participating States and CRV Operations Group members, **the possibility of establishing a REDDIG III node in Auckland, New Zealand**, has been identified as an initiative aimed at progressively strengthening operational connectivity between both regions and gaining practical experience in inter-regional connectivity while studies and analyses related to future connectivity between the CRV and REDDIG networks continue to advance. This initiative has generated increasing interest among several South American States, as well as Panama and the Central American States (CENAMER), which recognise its potential **to improve CNS/ATM service exchange, enhance the resilience of trans-Pacific aeronautical communications and facilitate future operational cooperation** initiatives between the APAC and SAM Regions.

10.25. The initiative represented an opportunity to further strengthen connectivity and the **resilience of aeronautical services between the APAC and SAM Regions by leveraging existing and future infrastructures**. REDDIG currently maintains operational nodes in Salt Lake City, Atlanta and Johannesburg, as well as its interconnection with the FAA, while the CRV infrastructure provides connectivity towards Australia and New Zealand. In this context, the evolution to REDDIG III envisaged the incorporation of a node in Auckland, further expanding the geographical reach of the network and creating new opportunities for diversified and redundant communication routes between ICAO regions.

10.26. Considering that REDDIG III is currently undergoing the procurement process **for its 2026–2031 operational period**, with implementation expected to commence during the last quarter of 2026, it was informed that participating States of the SAM Region have expressed preliminary interest in exploring mechanisms that would facilitate the initial establishment of this node within the framework of the REDDIG Regional Project, subject to approval by the relevant governance bodies. This approach would allow a gradual evaluation of the operational benefits of the initiative and provide practical experience in inter-regional connectivity before considering permanent cooperation and funding arrangements.

10.27. Several REDDIG participating States have preliminarily expressed their willingness to consider that the initial costs **associated with the establishment of the REDDIG III node in New Zealand be absorbed within the framework of the REDDIG Regional Project**, subject to approval by the RCC and participating States. This approach aimed to facilitate the implementation of the initiative, demonstrate its operational benefits and allow future funding and sustainability arrangements to be jointly assessed by the APAC and SAM Regions.

10.28. It was added that preliminary technical studies indicated that this connectivity could be implemented **using existing MPLS infrastructures and service-provider interconnections** while preserving the operational and governance autonomy of each regional network. It was added to recognise that the proposed initiative is complementary to existing regional infrastructures and is intended to strengthen interoperability, resilience and technical cooperation between the APAC and SAM Regions.

10.29. New Zealand informed that their preference is to do an NNI connection between CRV and REDDIG III. It was reported that CRV was designed to reduce the number of nodes. However,

until the process of NNI connection between CRV and REDDIG III is in progress, they can consider this proposal.

10.30. The Meeting acknowledged the strong support provided by the ICAO SAM Secretariat and REDDIG experts to the APAC region in terms of knowledge sharing, information exchange, and collaborative efforts. The importance of sustaining such cooperation between the two regions was emphasised. It was further noted that, drawing on the example of REDDIG III, in which SAM States bear the cost of additional nodes, the APAC region could benefit from adopting similar best practices and lessons learned.

10.31. The Meeting also noted that REDDIG III has incorporated advanced technologies such as cloud-based architecture and Software-Defined Wide Area Network (SD-WAN), which are being considered by CRV for its future network development. It was suggested that the APAC region draw on the experiences of REDDIG III and integrate these best practices into the design and implementation of the future CRV network.

10.32. For the question about the responsibility of the monthly charges of the REDDIG node in New Zealand, it was informed that, as per the ICAO SAM office at this stage, it is envisaged that the recurring costs associated with the New Zealand node would be absorbed by the SAM Regional Project, subject to approval by the RCC and participating States. It was clarified that the intention is for the Project to cover these costs initially, at least during the first year of operation, in order to facilitate the implementation and evaluation of the initiative. Future funding arrangements would be reviewed based on operational experience, achieved benefits, and the outcome of discussions between the APAC and SAM Regions.

10.33. It was added that the New Zealand node is envisaged as an initial measure to facilitate and accelerate cooperation between the APAC and SAM Regions, enabling the acquisition of operational experience and the evaluation of the potential benefits of a future interconnection between CRV and REDDIG. Should such an interconnection be established in the future, both Regions could jointly assess the need to maintain the node, adapt its role, or adopt other technical and operational arrangements that may be considered more appropriate.

10.34. New Zealand stated that it has discussed initiating work on the proposal internally. Progress on the proposal is estimated to be achieved by Q4 of 2026. ICAO Secretariat will support the coordination with the ICAO SAM office to further progress on this task and provide the required support. **ACTION ITEM 15-57**

Agenda Item 11: Using the rest of the CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA)

Updates on Using the Rest of CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA) – Sec (WP/25)

11.1. ICAO Secretariat shared information about the recent development of using the balance fund of the MSA. The Meeting was informed that there **is no decision on the way forward** for using the remaining funds. At the CRV OG/14 Meeting (27-31 October 2025), the CRV II contract management process was completed, and the CRV contract was extended until 2033 currently. The current project is expiring on **29 February 2028**. There was a need for a decision to utilise the remaining funds before the proposed timelines. If the Meeting anticipates using the remaining funds after February 2028, it was necessary to initiate the process to extend the project with a new proposed plan and dates. Alternatively, the Meeting may consider initiating the refund process to all 16 pioneer States, if there is no plan to utilise the remaining funds in the near future.

11.2. The Meeting noted that CRV OG/15 has already agreed to conduct CRV III RFP. Therefore, one potential option is to utilise this fund to conduct CRV III RFP with the support of ICAO

CDI. As the ICAO Secretary and CRV OG Co-Chairs will initiate discussions with ICAO CDI in 2026, there may be further updates in the CRV OG/16 Meeting. It was suggested that, while discussing with ICAO CDI, the estimated funds be finalised. If the estimated budget exceeds the remaining funds, CRV OG/16 will discuss the option of collecting the shortfall. **ACTION ITEM 15-58**

11.3. It was also suggested that ProDoc be updated to incorporate the task related to CRV III RFP with the support of ICAO CDI within the CRV OG Ad-hoc Expert group and present the revised ProDoc to MSA at the next year's CRV OG Meeting. **ACTION ITEM 15-59**

Agenda Item 12: Cyber-safety/security and resilience

Additional Guidelines for ICAO Doc 9855 in the context of CRV Internet-Based Connectivity – Singapore (WP/35)

12.1. Singapore presented the use of public Internet-based connectivity for inter-State aeronautical communication, including Internet-based CRV connectivity using Internet Protocol Security (IPSec) over Authority-provided Internet links. It was informed that while such configurations provide flexibility where a dedicated aeronautical communication infrastructure is not available, they introduce cybersecurity and resilience considerations. This paper provided additional guidance based on the principles of Confidentiality, Integrity and Availability (CIA), supported by Public Key Infrastructure (PKI), to strengthen the security and trust of Internet-based aeronautical communications.

12.2. It was informed that ICAO Doc 9855 provides guidance on the use of the public Internet for aeronautical applications, recognising both its benefits and associated risks. In the APAC region, Internet-based connectivity is increasingly used to support inter-State coordination, including through CRV implementations where dedicated access is unavailable. One such implementation is CRV Package D, which enables connectivity to the CRV network using IPSec tunnels over Authority-provided Internet links, without reliance on dedicated terrestrial or satellite access. States can connect to the CRV network via Internet-based IPSec tunnels using locally provisioned Internet access. While this approach improves accessibility and flexibility, it introduces additional dependencies on public Internet infrastructure, including exposure to varying performance, security risks, and external service providers.

12.3. The requirements of CIA while using internet was explained to the Meeting. It was added that, given the reliance on public Internet infrastructure, cross-border coordination is essential to ensure a timely response to incidents affecting inter-State communications. The Meeting discussed and reviewed the proposal for requirements for public Internet-based connectivity for interstate aeronautical communication. The procedure to validate the secure network configuration was explained at the Meeting.

Update on Cyber-Safety/Security and Resilience – New Zealand (WP/36)

12.4. New Zealand presented details on implementing resilient CRV network connectivity. It was noted that several packages have been created to provide resilience in CRV. Whilst PCCWG is responsible for circuit and NID installations, CRV Users can nominate their preferred last-mile services and ask PCCWG to verify service diversity during provisioning. Leveraging account relationships for resilience was encouraged.

12.5. The Meeting noted that an overview drawing is located in the CRV portal - CRV-PCCW Overall Diagram.pptx to check on what Points of Presence (PoP) are available. It was informed that for internal networks with single circuit/NID installations, users can leverage internal LAN/WAN diversity and resilience for failover capability.

12.6. For Business-to-Business connections (B2B), it was clarified that they are internet-based connections that use IPSEC VPN technology to secure the end-to-end connection, outside of

CRV and not provided by PCCWG. Usually implemented with agreement between peering users, B2B can provide limited functionality in the event of a failure. It was noted that Australia and the United States are using B2B as a redundant option to CRV. It was highlighted that the implementation of resiliency in the last mile is for each CRV User to determine, usually based on risk to service and cost-benefit.

12.7. The Meeting was requested to do an internal assessment of using CRV for several years and propose if there are more packages that can be designed to enhance the resilience.

CANSO Cyber Security Assessment of CRV – New Zealand (WP/37)

12.8. This paper shared the assessment done by New Zealand for the CRV OG using the CANSO Standard of Excellence in Cyber Security. It was recalled that the CANSO Standard of Excellence in Cyber Security, endorsed by ACSICG/12 for adoption of CNS SG/29, was adopted by CNS SG/29. The agreed maturity level for CRV was Level C – Managed.

12.9. The Meeting discussed the CANSO cybersecurity assessment and its application to CRV from the CRV OG perspective. It was recognised that the CRV OG Ad-hoc Expert group needs to discuss how to conduct a cybersecurity assessment of the CRV on behalf of CRV OG, using the CANSO Standard of Excellence in Cyber Security. It was suggested that further updates on outcomes of the discussion be shared with the CRV OG/16 Meeting. **ACTION ITEM 15-60**

12.10. The Meeting also requested the CRV service provider to conduct the assessment and provide updates accordingly. It was clarified that the outcomes of the assessment are not required to be shared. Instead, the CRV service provider is expected to confirm that the assessment has been carried out and that all identified gaps are being appropriately addressed. **ACTION ITEM 15-61**

Agenda Item 13: Review ToR and update Action Items of CRV OG

Review of CRV OG ToR and Action Items – Sec (WP/29)

13.1. The Meeting reviewed the ToR of CRV OG and further updated the Action Items for CRV OG. There were no updates in the ToR of CRV OG. The list of action items is provided in **Appendix G** of this report.

Agenda Item 14: Next Meetings and Any Other Business

Organisation of SWIM Training cum Workshop in August 2026 – Sec (IP/02)

14.1. The Meeting was informed that the ICAO APAC Office is organising the ICAO Asia/Pacific SWIM Training cum Workshop from 25-27 August 2026 in Hanoi, Viet Nam, generously hosted by the Viet Nam Air Traffic Management Corporation (VATM) in response to DGCA/60 Conference Action Item 60/20, requesting that ICAO organise SWIM-related seminars and workshops to support States in this area. The Meeting was informed that State Letter Ref.: T 8/5.3 – AP064/26 (CNS) dated 12 May 2026 has been issued. More information about this event will be published on the event website at: https://www.icao.int/APAC/Meetingdocs?fid=94781

14.2. The Meeting was requested to take this opportunity and consider planning a delegation composed of regulators and service providers' personnel involved in SWIM implementation to attend the event.

Organisation of First ICAO global Communications, Navigation, Surveillance, and Spectrum Symposium (CNSS 2026) – Sec (IP/04)

14.3. The Meeting was informed that ICAO will convene the First ICAO Global Communications, Navigation, Surveillance, and Spectrum Symposium (CNSS 2026) in Kotor, Montenegro, from 12 to 15 October 2026. It was noted that ICAO HQ has issued State Letter Ref.: TC12/46.3 – 26/42 dated 30 April 2026, sharing information about this event. More information about this event will be published on the event website at: First ICAO Communications, Navigation, Surveillance, and Spectrum Symposium, an Air Navigation World Event (ANW|CNSS 2026). The Meeting was requested to attend the symposium.

Date and Venue for the Next Meeting

14.4. The next Meeting will be held in **the first week of March 2027**. Any States/Administrations interested in hosting the Meeting may contact the ICAO APAC Office to discuss hosting at least 4 months in advance of the Meeting. The exact dates and venue will be communicated to the Member States in due course.

Closing of the Meeting

14.5. The Meeting appreciated the services of Mr Kelepi Dainaki to the APAC Region as CRV OG Co-Chair (Pacific) and shared a token of appreciation for his services.

14.6. CRV OG Co-Chair (Asia) and ICAO Secretariat thanked all participants for their active participation in the Meeting and valuable contributions to the work program of the CRV OG.

APAC Sub-Regional Maintenance Window for CRV Network

1. **Purpose:**

The purpose of this document/policy is to define standardized maintenance windows for the CRV Network within the APAC region to be implemented at a sub-regional level, in order to ensure the following:

- Network stability and availability of the CRV Network,
- Minimize disruption on AFTN/AMHS operation and associated ATS Communication Services for supporting consistent operational execution of CRV Network.
- Support coordinated and expected execution of maintenance activities of CRV Network across APAC Member States.
- Improve regional coordination between Member States, CRV Service Provider and their associated telecommunication vendor.
- To promote continuity of regional ATS communication services during planned or emergency maintenance activities of the CRV network.

2. **Scope:**

This maintenance window document/policy applies to:

- All planned/scheduled maintenance & preventive maintenance activities carried by the CRV service provider and their associated telecommunication vendors in Member States that may disrupt the CRV Network operation within the APAC region.
- CRV service provider and associated telecommunications vendors supporting CRV network infrastructure in the concerned Member State.
- Technology refreshment activities, including the replacement/upgradation of NID equipment and installation of software patches or firmware upgradation by the service provider.
- Configuration changes, Circuit migration activities and implementation of cyber security related activities.
- All Member States connected to the CRV Network within the APAC region.

  Note: This policy does not restrict emergency maintenance activities required to restore CRV Network operation and mitigation of critical faults in network.

3. **Objectives:**

Description	Requirement
To Minimize AFTN/AMHS and associated ATS Communication Services disruptions.	Maintenance activity shall be scheduled during periods of lowest expected traffic.
Align maintenance activities within regional off-peak usage hours.	APAC maintenance windows shall be defined by sub-region.
Establish predictable and repeatable maintenance schedules.	Maintenance windows shall follow fixed, recurring & planned schedules.
Improve coordination with the service provider and Member States in APAC region.	Any maintenance activity requires prior coordination & notification by CRV service provider & Member States.
Support compliance with change management and SLA commitments.	Emergency or exceptional changes may occur outside defined windows

4. APAC Sub-Regions:

The APAC region shall be divided into the following sub-regions for maintenance activity scheduling purposes:

Sub-Region	Countries / Territories
East Asia	China, Hong Kong China, Macao China, Japan, South Korea, and Mongolia.
Southeast Asia (SEA)	Singapore, Malaysia, Thailand, Indonesia, Philippines, Vietnam, Cambodia, Laos, Myanmar (Burma),
South Asia	India, Sri Lanka, Bangladesh, Nepal, Bhutan, Pakistan, Afghanistan, Maldives
USA and Pacific Member States/Islands	USA, Australia, New Zealand, Papua New Guinea, Fiji, French Polynesia, New Caledonia, Solomon Islands, Melanesia, Micronesia, Polynesia, like Kiribati, Samoa, Tonga, Vanuatu, Marshall Islands, Palau, Tuvalu, Nauru, Cook Islands, and Niue, etc.
Note: Maintenance notice email relevant to the CRV circuit shall be forwarded to the concerned CRV National/Local Focal Points of Member States.	

5. Standard Maintenance Window:

Sub-Region	Countries / Territories	Preferred Maintenance Window Time
East Asia	China	
	HongKong-China	
	Macau-China	
	Japan	Any day between [3am-7am Local Time] /[18:00–22:00 (UTC)].
	South Korea	
	Mongolia	
Southeast Asia (SEA)	Singapore	[Day to be fixed] [Time to Be Fixed] (Local Time/UTC)
	Malaysia	
	Thailand	
	Indonesia	
	Philippines	
	Vietnam	
	Cambodia	
	Laos	
	Myanmar (Burma),	
South Asia	India	[Any weekdays] [11:30 am-3:30pm (Local Time)]/ [6am-10am (UTC)]
	Sri Lanka	
	Bangladesh	Yet to Join CRV Network
	Nepal	
	Bhutan	
	Pakistan	
	Afghanistan	
	Maldives	Yet to Join CRV Network

USA & Pacific Member States/island	USA	Atlanta: [Any day] [11pm – 3am] (Local Time)/ [3am-7am (UTC)], Salt Lake City: [Any day] [1am – 5am] (Local Time)/ [7am-11am (UTC)], Oakland: [Any day] [10am – 2pm] (Local Time)/ [5pm-9pm (UTC)],
	Australia	[Any day] [12:00am – 4am] (Local Time)/ [1400pm-1800pm (UTC)],
	New Zealand	
	Papua New Guinea (PNG)	[Any day] [09:00 pm-11:00 pm (Local Time)]/ [11:00 am-13:00 pm (UTC)]
	Fiji	
	French Polynesia	
	New Caledonia	
	Vanuatu	[Any day] [00:00 am-04:00 am (Local Time)]/ [13:00 pm-17:00 pm (UTC)]
	Cook Islands	[Any day] [00:00 am-04:00 am (Local Time)]/ [10:00 pm-14:00 pm (UTC)]
	Solomon Islands, Melanesia, Micronesia, Polynesia, like Kiribati, Samoa, Tonga, Marshall Islands, Palau, Tuvalu, Nauru, and Niue, etc.	Yet to Join CRV Network
Note: If Preferred Maintenance Windows time of Member State is not defined here, same may be adjusted in line with the operational requirements and mutual agreement with participating States & CRV Service Provider during any planned maintenance.		

6. Maintenance Classifications:

Planned Maintenance	Emergency Maintenance
• Must be executed within the defined maintenance window • Subject to standard change approval processes • Coordinated with affected states in advance. • Include risk assessment and impact analysis.	• May be executed outside the defined maintenance window. • Requires immediate notification to affected states. • Requires immediate escalation and post-implementation review (PIR)

Note:

1. All planned maintenance activities impacting CRV Network Operations in the APAC Region shall be mutually agreed by Member states and CRV service provider unless emergency condition applies.
2. Planned maintenance shall not be scheduled on the following occasions:

- During Financial month-end or year-end, major regional holidays of states and declared blackout periods.
- Avoid peak operational periods of Air Traffics Services.
- Avoid simultaneous maintenance of primary and backup CRV circuits.
- Avoid AIRAC Cycle periods.

7. Impact and Duration:

- Maximum allowable service disruption per circuit: ≤ 4 hours, unless explicitly approved by the affected Member State.
- The maintenance activity shall be carried out in such a way that it does not interfere with normal operation, performance, or user experience, whenever technically feasible.
- The maintenance activity causes no downtime**,** no service interruption and no dropped connections to the Member State, whenever it is technically and commercially feasible.
- Any unexpected outage or degradation of CRV Services shall be immediately escalated and communicated to affected Member States.

8. Notification and Communication:

Maintenance Type	Minimum Notification	Communication Must Include the following
Standard Planned	10 calendar days	• Scope and affected services • Expected impact and duration • Start and end time of maintenance activity (UTC and local time) • Rollback plan • Corporate Helpdesk Number • Support and escalation matrix [Refer CRV customer support service plan and escalation management]
High-Risk / Major	14-21 calendar days	
Emergency*	As soon as possible	
Note: A Reminder Notification shall also be communicated by CRV Service Provider 24 HRS prior to any planned/scheduled maintenance.		

***Notification for emergency maintenance activity shall include the following information;**

Emergency Incident Update	Technical Details
Incident update must be communicated by the service provider in the following format: Type : Unplanned outage Reference ticket : XXXXXX Service : CRV Services Location : XXXXX Affected States : XXXXX Impact to service : Low/Moderate/High First notification issued at: XXXXXX Start Time : DD-MM-YYYY Time in UTC/Local Time Current Status :	Details must include the following information: 1. Reason for Outage, 2. Actions Taken, 3. Next Step, 4. Corporate Helpdesk Number, 5. Support and escalation matrix

Estimated Time to restore:	

9. Responsibilities:

Service Providers & telecommunications vendors supporting the CRV network infrastructure of Member States	**User Member States**
• Comply with defined maintenance windows and execute maintenance in accordance with this policy. • Provide timely notifications and post-maintenance reports, • Ensure and provide sufficient technical coordination during maintenance activity, • Maintain escalation support availability during maintenance activity	• Review and approve maintenance window, • Govern emergency maintenance escalation, • Support regional coordination with affected Member States. • Sufficient participation must be ensuring in incident escalation and restoration of services during maintenance

10. Statements:

- All planned maintenance activities impacting CRV Network Operations in the APAC Region shall be executed within the defined sub-regional maintenance windows unless an approved exception by participating Member States or an emergency condition applies.
- While CRV Service Provider strives to align maintenance activities with the defined CRV sub-regional windows, scheduling must holistically cater to the operational requirements and maintenance windows of all Member States. CRV Service Provider is endeavoring to minimize any potential impact on CRV operations through proactive coordination.
- Any non-Compliance with this policy shall be documented and reviewed by stakeholders.

- Maintenance Window Policy shall be reviewed annually or deemed necessary at any stage.
- The CRV Service Provider shall maintain records of all planned and emergency maintenance activities for operational review purposes.
- Any amendment to this policy shall be coordinated among all the Member States and the CRV Service provider.

----------End---------

Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

SPACE-BASED ADS B IMPLEMENTATION PROCEDURES
- CAA Philippines Perspective -

OUTLINE

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VI. Installation and Verification
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VII. Surveillance Tuning Process
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    vii2. Tuning and Performance Report
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IX. Operation
    ix1.Live ATM Operations
    ix2. Maintenance
    ix3. Service Level Agreement
    ix2. Acceptance

I. Background

The Philippine FIR has comprehensive existing surveillance, with the exception of areas of the Northern West corner of the FIR and Eastern FIR. Currently, these areas are outside surveillance coverage and present challenges in the provision of terrestrial surveillance.

The Northern FIR is within the busy West Philippine Sea (WPS) routes where CAAP and neighboring Air Navigation Service Providers (ANSP) are cooperating to improve efficiency along this backbone route in Asia Pacific

To improve the surveillance coverage and promote safe and efficient air traffic management in the Philippine FIR, support the ICAO ANS seamless plan, and realize the commitments made under the 2018 Beijing Declaration, the Philippines, with the current CNS/ATM system will implement Space-Based ADS B surveillance in the North-West to cover the oceanic area.

II. Requirements

Relevant documents and requirements are necessary to proceed the project.

ii1. Industry

Under Philippine laws, a Contractor must have a valid PhilGeps registration. This registration provides opportunity for Contractors to bid or participate in government procurement ensuring fair and transparent bidding process. The procurement of the SBA was conducted through alternative methods of procurement by direct contracting with a Philippine registered and sole SBA provider in the region. A Notice-to-Proceed is issued informing the Contractor that works shall be started in accordance with the contract within 7 days from its receipt.

Reference(s): *RA9497*

ii2. Documents

Below are the technical baseline documents to implement the Space-Based ADS B project.

ii3.1 Equipment Manual

The Space-Based ADS B service provider shall submit a design and installation manual.

ii3.2 Interface Control Documents

The Space-Based ADS B service provider shall submit an interface control document.

Ii3.3 Method of Working Plan

The Space-Based ADS B service provider shall provide a Method of Working Plan document related to the design and installation manual.

III. Coordination

Referring to the procurement processes to the extent of contract awarding and Notice to Proceed, the following is considered of the project:

iii1. Space-Based ADS B Service Provider (Principal)

A series of discussions online and/or face to face about the project proposal.

Regular meetings to clearly identify the technical requirements and the target timelines to complete the project.

iii2. Principal Local Partner

To ease communication on behalf of the contractor to assess unseen requirements.

iii3. CRV Service Provider

As part of the network integration process for connectivity over CRV, correspondence with the CRV service provider through email to discuss requirements as required in the CRV system engineering plan.

iii4. Telecom MPLS Provider

Recommend a local service provider for one communication channel to ensure diversity of leased line connections.

Iii5. Other Considerations

Data on the equipage of aircrafts is necessary to determine present capability of local airlines in operating in an ADS-B based surveillance environment. Experiences of other States with regard to implementing SBA is also considered. Issues and concerns of air traffic service should be well factored-in in drafting the requirements of the project. Early coordination with the Regulator on the issuance of the necessary mandate is also important.

IV. Safety Consideration

To identify risks associated with the project.

iv1. Risk Assessment

Formulate a safety risk assessment to identify c**hanges** that might have operational impact prior to the project implementation.

V. Network Connection

A reliable connection to transport space-based data stream up to the service delivery equipment.

v1. Internet

An interim connection, a firewall with VPN and security, is configured to deliver space-based ADS B non-surveillance data streams from the provider.

v2. Leased

Another communication channel to deliver Space-Based ADS B data streams through MPLS technology.

v3. CRV

Standard aeronautical telecommunication network of all member states in the Asia/Pacific International Civil Aviation Organization. The network is managed by CRV-OG.

v3.1 Governance

Guidance for connectivity over CRV to use the CRV network to transport data from external partners as agreed by CRV-OG.

Reference(s): *CRV-OG Operation Manual page 22, CRV OG/11 WP/05 6.7*

v3.2 IP Address Allocation

Identify the IP range to use for a particular service, assign it and establish end-to-end connectivity from the Space-Based Service Provider up to the client Surveillance Data Processor.

Reference(s): *CRV IP Implementation Plan ver1*

v3.3 CRV Service Provider Agreement

Allow the CRV service provider to open a tunnel as requested with additional technical parameters according to the system engineering plan document.

Reference(s): *CRV System Engineering Plan (SEP)*

VI. Installation and Verification

A baseline requirement for consuming space-based ADS B data prior to utilization in ATM operations.

vi1. Equipment Installation

Space-Based ADS B service providers shall install their end point equipment based on contract and design plan.

vi2. Data Stream Verification

Capturing Space-Based data streams to verify asterix parameters in preparation for the tuning process. This phase of space-based ADS B data recording is by way of an interim Internet VPN connection receiving data from the service provider, while the final phase is on the output of SDP right after the equipment is installed.

vi3. Track Display Validation

Configuring parameters for space-based ADS B data on an ADS B monitoring platform to validate display tracks.

VII. Surveillance Tuning Process

Standard process by the ATM vendor for integrating new surveillance feeds into a multi-sensor tracking system.

vii1. Data Stream Recording

Records Space-Based ADS B data and sends it to the ATM vendor for the tuning process as part of software support services.

vii2. Tuning and Performance Report

This is the assessment submitted by the ATM provider to validate the Space-Based ADS B data if it is stable, accurate and passes by their standard tuning process.

VIII. Test and Integration

For further assessment and safety considerations, these stages are adopted to analyze track display.

viii1. Test and Evaluation System
A configurable ATM system resource running in the same software version as the operational system to process and display surveillance tracks.

viii2. EVAL Platform
A mini-configurable platform running on the same software version as the operational system to process and display surveillance tracks.

viii3. Aerion SDP Test Validation
Standard process in preparation for commissioning to validate the integrity of the output of the Surveillance Data Processor (SDP).

viii4. ATMS Operation
The final stage of integration is when all requirements are verified and passed for live operations.

IX. System Operations

Live situational awareness of Space-Based ADS B data for the Air Traffic Controller.

ix1.Live ATM Operations
Integrated into a multi-sensor tracking system and put into operational state for situational awareness pending issuance and effectivity of mandate by the Regulatory.

ix2. Trainings
Technical training for maintenance and operator provided onsite and e-Learning.

ix3. Maintenance
To sustain operational requirements for surveillance availability.

Ix4. Service Level Agreement
Contractual obligation to support 24/7 service.

Ix5. Acceptance
Commissioning process to formally accept the completion of deliverable requirements of the project.

Acronym

ADS B	- Automatic Dependent Surveillance Broadcast
ADS C	- Automatic Dependent Surveillance Contract
ATMAS	- Air Traffic Management System Automation Software
AMHS	- Aeronautical ATS Message Handling System
Bandwidth	- Capacity of Network Connection
CRV	- Common Aeronautical Virtual Private Network
EMS	- Enterprise Messaging System
EEMS	- Edge Enterprise Messaging System
GEMS	- Gateway Enterprise Messaging System
ICD	- Interface Control Document
IP	- Internet Protocol
IPv4	- Internet Protocol version 4
IPv6	- Internet Protocol version 6
MOWP	- Method of Working Plan
MoC	- Management of Change
MPLS	- Multi Protocol Layer 2 Switching
MSTS	- Multi Sensor Tracking System
SDP	- Surveillance Data Processor
Space-Based ADS B	- Also known as Satellite-Based ADS B
SRA	- Safety Risk Assesmemt
SRM	- Safety Risk Management
SWIM	- System Wide Information Management System
S3TIG	- SWIM Surveillance Sharing Technical Implementation Group

Terms of Reference for the APAC CRV Operations Group Technical Control Board

1. Background

The establishment of Common aeRonautical Virtual Private Network (VPN) Operations Group (CRV OG) Ad Hoc Group was to progress the sections of the Operations Manual of Strategy, Design, Transition and Operation. It was intended that each group would have a leader who could present outcomes to the CRV OG.

The Ad Hoc Group is updating the Operations Manual and is becoming more involved in actions beyond the manual and is essentially a permanent group.

This ToR reflects this work and renames the Ad Hoc Group as the Technical Control Board (TCB).

2. Terms of Reference

The CRV OG TCB will provide the regular execution of activities regarding the function and performance of the CRV and the performance of the Service Provider. The following are the activities to be performed:

2.1 Service Review

Review Service Provider services on a regular basis. The aim of this is to improve service quality where necessary, and to identify more economical ways of providing a service where possible.

2.2 Process Evaluation

Evaluate processes on a regular basis. This includes identifying areas where the targeted process metrics are not reached, and holding regular bench markings, audits, maturity assessments and reviews.

2.3 Continue Service Improvement (CSI) Initiatives

Define specific initiatives aimed at improving services and processes, based on the results of service reviews and process evaluations. The resulting initiatives are either internal initiatives pursued by the service provider on his own behalf, or initiatives which require the User's and Service Provider's cooperation.

2.4 Monitoring CSI Initiatives

Verify if improvement initiatives are proceeding according to plan, and to introduce corrective measures where necessary.

2.5 Other duties

Perform any other activity as required by CRV OG.

3. Reporting

The CRV OG TCB will report to the CRV OG.

4. Participation

The CRV OG TCB will include volunteers from the CRV OG, and any other organization as needed.

Membership will be documented in a form of a table in the CRV Operations Manual and contact details published on the CRV OG Portal.

5. Conduct of the work

It is anticipated that the CRV OG TCB will conduct its work through planned quarterly meetings, primarily by Web Conferences, teleconferences and other electronic means of communications. The ICAO APAC Regional Office will provide secretariat support for the CRV OG.

6. Rapporteur

The two Co-Chairpersons of the CRV OG will chair the CRV OG TCB.

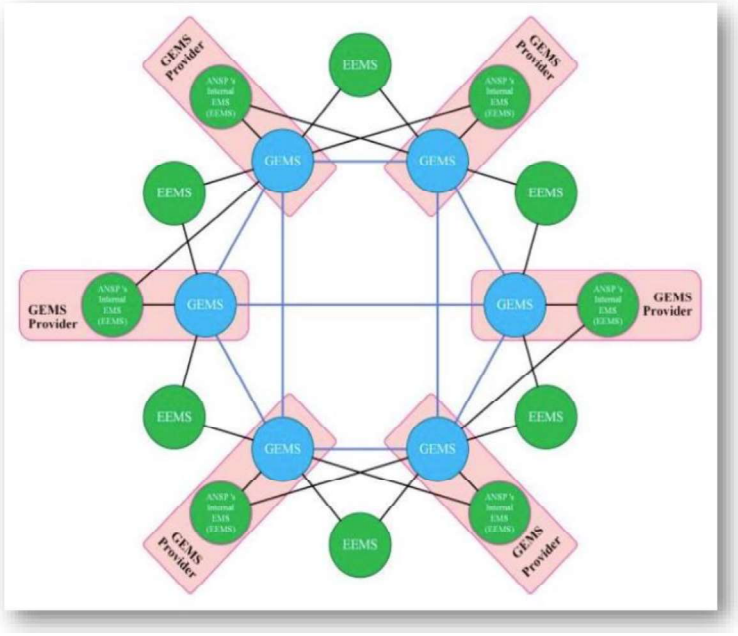
Proposed updated table of volunteer states

Function Name	**Volunteered Member**
Service Strategy	Fiji, India, New Zealand, Singapore, USA
Service Design	Hong Kong China, Fiji, New Zealand, Singapore, USA
Service Transition	China, Fiji, New Zealand, Singapore
Service Operations	Australia, China, Fiji, India, New Zealand, Singapore

Allocation to a function is required for Japan, Thailand, the Philippines and Papua New Guinea.

Test item	Test Objectives	Services tested	Bandwidth allocation	Additonal LAN port used Y/N		Test results (BW)		Peering		CRV OG Notified	Test start	Test Finish
				State 1	State 2	Expected	Actual	Primary State	State 2	dd/mm/yyyy		
SWIM TI	Validation of GEMS to GEMS SWIM TI services.	IDAM PKI/Cert SDS Topic/msg properties	200Kbps	N	N	35Kbps	48Kbps	Thailand	Singapore	9/4/2025	10/4/2025	12/31/2026

Administration	City	Data Bandwidth (Kbps)(DF/CS0)
Aireon LLC	Washington	10000
Aireon LLC	Chandler	10000
Australia	Brisbane	0
Australia	Melbourne	0
Bhutan	Bhutan	872
Cambodia	Phnom Penh	348
China	Beijing	2232
French Polynesia	FAA'A	2000
Fiji	Nadi	296
Hong Kong, China	Hong Kong#1	928
Hong Kong, China	Hong Kong#2	928
India	Mumbai	16
Indonesia	Jakarta	56
Indonesia	Makassar	56
Japan	Tokyo	1488
Japan	Fukuoka	768
Japan	Fukuoka	552
Japan	Kobe	552
Japan	Tokyo	776
Japan	Kobe	104
Japan	Kobe	216
Japan	Fukuoka	104
Japan	Fukuoka	104
Japan	Fukuoka	104
Japan	Kobe	552
Macau, China	Macau	1424
Malaysia	Sepang	440
Maldives	Hulhule	256
Mongolia	Ulaanbaatar	2000
Myanmar	Yangon	168
Nepal	Kathmandu	0
New Caledonia	Tontouta	2000
New Zealand	Auckland	56
New Zealand	Christchurch	56
Pakistan	Karachi	1000
Papua New Guinea	Port Moresby	64
Papua New Guinea	Port Moresby	64
Philippines	Pasay	172
Republic of Korea	Seoul	1872
Republic of Korea	Incheon	616
Republic of Korea	Daegu	504
Singapore	Loyang	176
Singapore	Changi	288
Sri Lanka	Colombo	256
Thailand	Bangkok	424
Taiwan	Taoyuan	2336
Taiwan	Kaohsiung	2336
USA	Oakland	0
USA	Atlanta	1680
USA	Salt Lake	1680
Vietnam	Ho Chi Minh City	96



To develop a regional SWIM technical infrastructure prototype over CRV and the Internet

Gateway EMS
Australia (tentative)
China
Fiji
Hong Kong China
India
Japan
Republic of Korea
Singapore
Thailand
USA

CRVOG		
User	**Name**	**Email Address**

SIPG		
State	**Name**	**Email Address**

Guidance on using the Residual Bandwidth of the (Operational) CRV for New Services Testing

This document provides guidance on using the residual bandwidth of the operational CRV for SWIM testing purposes.

1. General Guidelines

The following guidelines are recommended to be followed while deciding the use of residual bandwidth of CRV for any testing purpose.

1.1. Availability of Residual Bandwidth

The allocation of bandwidth for testing should follow these principles:

- **Base Determination:**
  Each CRV User wishing to participate in testing will need to determine if they have any residual bandwidth available. If sufficient bandwidth is available for testing, as agreed with participating users, testing can proceed. If there is not sufficient bandwidth, the User will need to consider an upgrade to participate in the testing.
- **Individual Agreements:**
  With the base for each user determined, participating CRV Users should establish their specific bilateral testing bandwidth based on their respective circuit capacities and operational requirements. It should be noted that this may mean that the bandwidth capacities for each user might be different when used in the testing.
- **Safety Buffer:**
  Each CRV User should maintain a bandwidth reserve of their total capacity to accommodate operational requirements.

Example:

If the lowest circuit residual capacity in the network is 512Kbps and applying the safety buffer of 30% (for example), the maximum bandwidth available for testing network-wide would be limited to approximately 358Kbps (70% of 512Kbps). Participating CRV Users should establish their bilateral testing arrangements within this maximum limit.

1.2. Network Configuration Overview

Before proceeding with SWIM testing, CRV Users should ensure one of the following traffic control methods is implemented:

Recommended Approach:

- Implement an additional LAN port on the PCCW Global Customer Edge (CE) router.
- Internal network traffic segregation is implemented by using separate sets of physical or virtualised hardware for testing.
- On the CE router, all test traffic is prioritized as 'DF'.

Alternative Approaches if an additional LAN port on the CE router cannot able to be used:

- Server-end rate limiting or Layer 3 network device rate limiting is properly configured.
- Internal network traffic segregation is implemented via VLAN configuration.

- Rate limiting is configured on the test VLAN network gateway to restrict SWIM test traffic to the agreed residual bandwidth.
- On the CE router, all test traffic is prioritized as 'DF'.

1.3. Risk analysis

After ensuring the availability of bandwidth to conduct required testing, it is suggested to do a risk assessment along with getting necessary internal approval for the testing**.**

1.4. Operational Traffic Priority

Operational traffic must always take precedence over testing activities. Testing must not negatively impact the performance of primary operational services.

1.5. Monitoring

Users should actively monitor resource usage during testing. If any issues arise, especially those affecting operational traffic, testing must be stopped immediately.

1.6. Documentation

All testing activities should be thoroughly documented. Documentation should include:

- Bandwidth allocation (guaranteed for operations and residual for testing)
- Test items and objectives
- Test results, especially those pertaining to service bandwidth
- Peering States/Administrations
- Services tested (e.g., FIXM message on SWIM)

Details required by CRV OG:

1.7. Agreement with Peering States/Administrations

All participating parties should agree on the test setup, conduct tests as planned, and jointly review and confirm results.

1.8. Notification to CRV OG

Users must notify the CRV OG prior to utilizing residual bandwidth for testing purposes.

2. Network Configuration Options

2.1. Network Configuration Options

To implement SWIM testing using CRV residual bandwidth, States/Administrations have the following configuration options:

- **<u>Option A: Additional LAN Port Configuration (Recommended)</u>**

Implement an additional LAN port on the PCCW Global Customer Edge (CE) router. This approach ensures complete separation of SWIM test traffic from operational CRV traffic at the network edge and provides the most robust protection for operational services. This physical separation at the CE router level prevents any potential impact of test traffic on operational services. However, this option requires separate sets of hardware dedicated to testing.

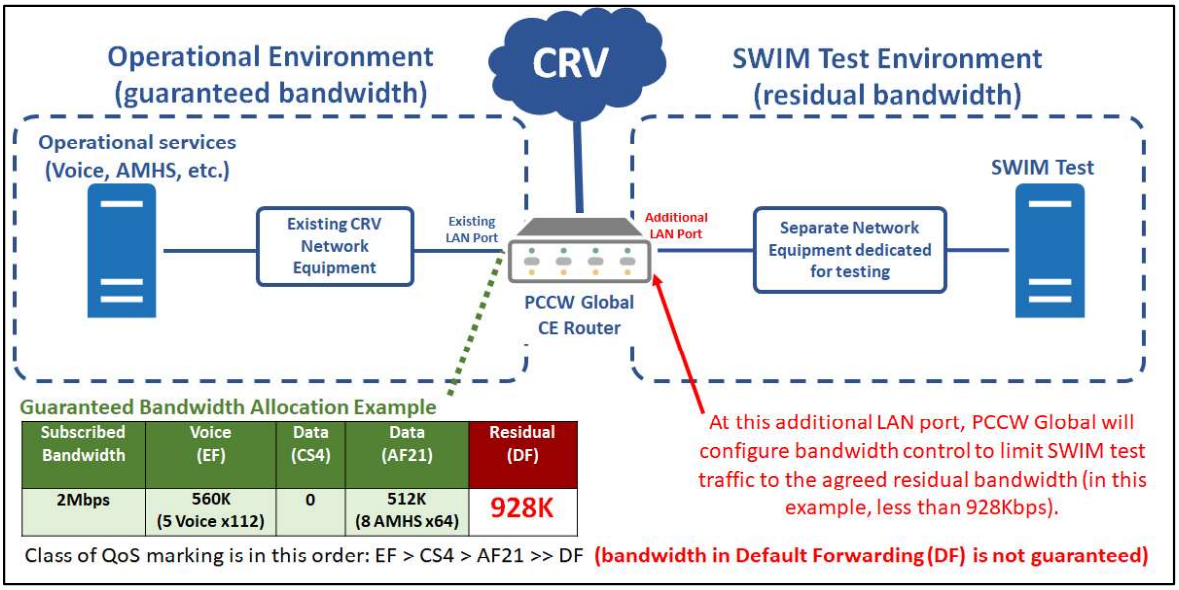


Diagram 1: Option A - Additional LAN Port Configuration with Dedicated Hardware

- **Option B: Alternative Traffic Control Methods**

For States/Administrations that choose not to implement or unable to have an additional LAN port on the CE router and do not have separate sets of hardware for testing, alternative traffic control methods can be implemented using existing hardware:

➢ **Option B1: Server-End Rate Limiting**

Apply rate limiting directly on the test server to control outbound traffic. Configure the server's network interface or application layer to enforce the agreed bandwidth limits for testing activities. This method provides granular control at the application level and ensures test traffic cannot exceed predetermined thresholds.

➢ **Option B2: Layer 3 Network Device Rate Limiting**

Implement rate limiting on the Layer 3 network devices where the test server network gateway is located. Configure these network devices to enforce bandwidth restrictions on traffic originating from the test server VLAN. This approach provides network-level control and can be managed centrally through existing network infrastructure.

- **Important Considerations for Alternative Methods:**

When using alternative traffic control methods (Option B1 or B2), States/Administrations must ensure that:

- Rate-limiting configurations are thoroughly tested before commencing SWIM testing.
- Monitoring systems are in place to verify that bandwidth limits are being enforced.
- Emergency procedures are established to immediately halt test traffic if operational services are impacted.
- VLAN segregation is implemented to separate test traffic from operational traffic within the existing network infrastructure.

2.2. Internal Network Traffic Segregation Requirements

- **For Option A (Additional LAN Port Configuration):**

This approach requires dedicated hardware for SWIM testing to maintain complete physical separation from operational systems.

- **For Option B (Alternative Traffic Control Methods):**

When using existing infrastructure, both Option B1 and B2 require VLAN segregation to separate test traffic from operational traffic within the existing network infrastructure. The implementation differs as follows:

- **For Option B1 (Server-End Rate Limiting):**
  - Implement VLAN segregation to isolate test traffic.
  - Apply rate limiting at the server level (application or network interface).
  - VLAN configuration provides traffic separation while server-based controls manage bandwidth.
- **For Option B2 (Layer 3 Network Device Rate Limiting):**
  - Implement VLAN segregation to isolate test traffic.
  - Apply rate-limiting controls at the network gateway level for the test VLAN.
  - VLAN configuration combined with gateway-level rate limiting provides both traffic separation and bandwidth control.

2.3. CRV GRE Tunnel Traffic Segregation

States/Administrations must ensure proper traffic segregation at the CRV GRE tunnel level through:

Updating the PCCW Global System Engineering Plan (SEP) document to include:

- QoS configuration requirements for SWIM test traffic on CRV GRE tunnel using 'DF'.
- Bandwidth allocation details specifying the residual bandwidth for SWIM testing.
- 'DF' Test traffic marking and prioritization to ensure production traffic takes precedence.

Coordinating with PCCW Global to implement:

- 'DF' QoS configurations on the CRV GRE tunnel to segregate SWIM test traffic.
- Bandwidth controls to restrict SWIM test traffic to the agreed residual bandwidth.
- DF Test traffic prioritization to protect existing production traffic.

States/Administrations should ensure these configurations are properly documented and implemented before commencing SWIM testing to prevent any impact on existing operational services.

3. Documentation

3.1. All testing activities should be thoroughly documented to ensure traceability and future reference. Comprehensive documentation supports effective communication among stakeholders and facilitates troubleshooting. The documentation should include, at a minimum, the following elements:

- Network Configuration
  Document that an additional LAN port has been implemented. If one has not, it is assumed that the alternative traffic control method (Option B1 or B2) has been implemented. Update the PCCW Global SEP document with GRE tunnel QoS configurations.

- Bandwidth Allocation
  Clearly specify the bandwidth reserved for operational services and the residual bandwidth allocated for testing. Include details on how the bandwidth was measured and any changes made during the testing period.

- Test Items and Objectives
  List all test scenarios conducted, along with their specific objectives. Describe what each test aims to validate, such as verifying bandwidth controls, ensuring QoS marking, or confirming interoperability between systems.

- Test Results
  Record the outcomes of all tests, including relevant metrics, observed behaviours, and any issues encountered.
  CRV Users should capture logs, screenshots, graphs, or packet captures (such as from Wireshark) as supporting evidence.

- Peering States/Administrations
  Document all organizations, States, or Administrations involved in the testing process. Include contact information for key personnel and a summary of each participant's role.

- Services Tested
  Provide a detailed list of the services evaluated during testing, such as specific data exchanges (e.g., FIXM messages over SWIM). Mention protocols, message types

For CRV-specific test understanding, the CRV Bandwidth Results of SWIM Testing document will be used to capture these details.

4. Agreement with Peering States/Administrations

4.1. Agree on Test Connectivity Between Peering States

Before testing, all participating States/Administrations should agree on the test connectivity setup. This includes:

- Confirming the selected network configuration approach (additional LAN port or alternative traffic control method)
- For alternative methods, confirming rate-limiting configurations and monitoring procedures
- Confirming GRE tunnel QoS configurations implemented by PCCW Global is DF.
- Agreeing on network parameters and interface points

This ensures a common understanding of the test environment and traffic segregation approach.

4.2. Conduct Testing According to Test Documentation

Perform tests using the established connections, following the agreed test plan and documented procedures. Ensure all test items are covered, and results are accurately recorded for analysis.

4.3. Confirm and Document Test Outcomes with Peering States

After testing, review the results together with all peering states. Reach an agreement on the outcomes, document any issues or follow-up actions, and ensure all parties formally acknowledge the findings.

5. Notification to CRV OG

5.1. Prior to initiating any SWIM testing or commissioning activities using the residual bandwidth of the operational CRV, all participating States/Administrations should notify the CRV OG. The notification should include:

- Detailed information about planned testing, including schedule and participating parties
- Specific services to be tested
- Updated PCCW Global SEP document status
- Bandwidth allocation for SWIM testing

5.2. The notification should also advise the CRV OG and all relevant peering States/Administrations that testing and/or commissioning activities will be taking place. This ensures that all stakeholders are aware of ongoing changes and can coordinate accordingly to safeguard operational traffic and network stability.

5.3. Upon completion of testing and/or commissioning, a summary of the activities undertaken, results achieved, and any observed issues or incidents should be submitted to the CRV OG and all relevant peering States/Administrations for record and further review, including:

- Results achieved
- Any observed issues or incidents
- Confirmation that traffic separation was maintained throughout testing
- Verification that production traffic was not impacted

USE CASES TO SUPPORT INTERREGIONAL CONNECTIVITY COMPILATION TABLE

SN	States/Administrations	Connected States/Region	Use Cases
1.	Afghanistan	Iran	
2.	Australia	South Africa	AMHS connection
		United States	AMHS and voice
3.	China	Russia (Khabarovsk)	AMHS message (exchange by LLD) and Voice
		Kuwait	The relevant connectivity requirements are confirming
4.	Hong Kong China	No interregional connection	
5.	Fiji	United States	AMHS, AIDC and voice
6.	India	Oman in the Mid Region	AMHS DATA and Voice
		Nairobi (Kenya)	AMHS
7.	Japan	Russia Federation	AFTN and Voice
		United States	AMHS and voice
8.	Marshall Islands	United States	AFTN/MET
9.	Micronesia Federated State of	United States	AFTN/MET
10.	New Zealand	Chile	AMHS
		United States	AMHS and voice
11.	Pakistan	Kuwait	AMHS
		Iran	AFTN
		Oman	AFTN
12.	Singapore	London	AMHS DATA
		Bahrain	AMHS DATA
13.	Thailand	Italy	AMHS DATA
14.	United States	MEVA (we're a major hub for the Caribbean region).	AMHS, Voice, Enhance diversity and resilience
		REDDIG to Lima but is not a member of REDDIG.	
		Portugal and the UK, with a separate IP network, are not a part of PENS.	

Who	What	Due date	Status
ICAO RO	After inclusion by ICAO TCB of the revised budget and procurement clauses, ICAO Regional Office to send an ICAO State letter to all Pioneer States in order to propose the draft of revised annex 1 for acceptance. **CRV OG/6 made Decision OG/6/3 to develop SOW for the concrete proposal.**	20 February 2017 1/22/2022	close
All member States	All States to complete their CBA and send to IC	28-Apr-17	close
Terence Palmer, Australia	Australia to include provisions in the CRV-OG operating manual for a small implementation team	1-Dec-17	close
Vaughan Hickford, New Zealand:	to develop the flowchart to manage change requests to the common provisions and establish agreements between counterparts on CRV and integrate those flowcharts in the CRV Operating Manual	7-Jul-17	close
Tom Beschler, USA	to share the 10 key points of the validation of the pioneer implementation once they are agreed on	30-May-17	close
all points of contact for the review of engineering	to submit their comments to husnaeen@icao.int at their earliest convenience but no later than 7 July 2017	7-Jul-17	close
Vaughan Hickford, New Zealand:	to review the procedure to establish a contract with PCCW Global, Ltd and present it as a flowchart to be included in the CRV operating manual	30-May-17	close
Augustine Lau, Singapore:	to include the updated CRV Implementation schedule into the v0.5 of the implementation plan and circulate the v0.5 to all participants for acceptance	30-Aug-17	close
USA/Hong Kong China/New Zealand/Secretariat	to propose a way forward regarding the MSA	1-Dec-17	close
All member States	Complete contract with PCCW Global by no later than 12/2020	12/31/2021 Dec 2022 (in CRV OG/9) CRV OG12	Open
ICAO Secretariat	Conduct CRV OG/6 and SWIM TF currently for joint development SWIM Architecture based on construciton of CRV	8-May-19	close
PCCW Global & Member States	PCCW Global to reissue an updated (a)-1 Terms and Conditions on starting and ending dates of initial contract. States to note the changes and take necessary action in the	1-Dec-18	close
CRV OG co-chair (Asia) and & poineer CRV member States	To investigate use the MSA funds to undertake the independent satety assessment and seek approval from Pioneer States	1/1/2022 CRV OG/11 (in CRV OG/9)	close
New Zealand	further develop and maintain an addional CRV portal for use by the APAC CRV members and provide access procedure to those members that wish to access the portal.	Apr.19	close

Who	What	Due date	Status
New Zealand	Finalize the draft CRV Operations Manual	Apr.19	close
USA	Develop a WP on AMHS over IPS protocol only for BBIS	1-Jun-18	close
Australia, Hong Kong China and Japan	Prepare a working paper for SWIM TF/3 meeting on the CRV suport for SWIM	30-Apr-19	close
ICAO RO	Disribute a State Letter to inform States of POC result	15-Mar-19	close
China, Nepal, PCCWG	Study on use of existing VSAT infrastructure linking with CRV	Jan-22	close
PCCW Global & New Zealand	Pacific solution on inter-connection with PASNET, Feasiblity for interconnection	5/1/2022 Dec 2022 (CRV OG/9) CRV OG12 (decided in CRV OG/11)	close
Australia and New Zealand	Polishing draftt First CRV Operations Manual	May-20	close
PCCWG & USA,Australia	maintain APAC dial plan and posted on CRV OG portal	Jan-22	close
AFSSP WG	encourging member states of CRV to participate	20-Jan-22	close
Hong Kong China	SWIM demonstration over ~~mini~~ Pseudo CRV by HK, Singapore and Thailand	1/1/2022 CRV OG/11 (CRV OG/9) CRV OG12 (in CRV OG11)	close
Australia and PCCWG	High level concept for inter-regional MPLS/IP co	21-Apr-20	close

Who	What	Due date	Status
PCCWG & Australia, Fiji	Charging structure for an ANSP service provider on surveillance	20-Mar	close
ICAO RO, Australia and USA	State letter to States to remind joining CRV	Mar-20	close
Co chairs, ICAO RO, USA, PCCW	CRV webinar	20-Jul-21	close
ICAO RO, USA, HKCAD	Timeframe for CRV supporting SWIM	Jan-22	close
Bhutan, Hong Kong China, Singapore, India, Thailand, USA, Co-chairs, ICAO RO, concerned parties	Use CRV to support AMHS traffic for Bhutan	6/21/2021 June 2022 (CRV OG/9)	close
ICAO RO, PCCW, co-chairs	State Letter to inform States about the additional charges may apply to new users with billing start date later than 31 December 2022.	Jan-22	close
Co-Chairs, ICAO RO, Singapore, USA	Continue the feasibility study on inter-regional connection to support business case analysis	1/1/2022 CRV OG/11 (in CRV OG/9) CRV OG12 (in CRV OG/11)	Open
Fiji, PCCW	submit a paper to ACSICG/8	21-Jun-21	close

Who	What	Due date	Status
USA, co chairs, PCCW, ICAO RO, concerned parties (ad hoc)	Cyber threats protection for CRV	Jan-22	close
All member States	The Member States would take some time to take reference of the ATN/AHMS Guidance Tree to review it and to provide the suggestion for modification in the ATN/AHMS Guidance Tree along with locating the position to add different CRV reference documentation.	CRV OG/11	Open
ICAO Secretariat	ICAO Implementation Plan will be continued to upload on ICAO APAC e-documents portal. However, the information contained under Table-1, Table-2 and Appendix A and B would not be provided on the public portal. Under Table-1, Table-2 and Appendix A and B, a message would be added to refer to ICAO APAC CRV Secure portal or CRV Portal hosted by New Zealand to get required information along with the instructions needed	Jan-22	close
Fiji, India, Japan, Singapore, New Zealand, USA, ICAO Secretariat, and PCCWG	**ICAO CRV Steering Group** comprised of Fiji, India, Japan, Singapore, New Zealand, USA, and ICAO Secretariat would devise the terms and conditions for addition of new services, for upgrade/downgrade of packages along with addition of new sites by contracted states into their contract	CRV OG/10 CRV OG/11	close
ICAO Secretariat	ICAO APAC Office would send a State Letter to APAC Member States, who have not joined/not process to share their intention to join CRV and when they intend to do so.	Feb-22	close
Fiji, India, Japan, Singapore, New Zealand, USA, ICAO Secretariat, and PCCWG	**ICAO CRV Steering Group** will discuss and finalise the requirements of current CRV contract extension based on feedback received from Member States who would join CRV in next few years	Mar-22	close
PCCWG	PCCWG is considering the current situation and will provide an official response if there is any contractual and commercial impacts for member states who sign the contract in 2022 but the installation date exceeds the standard lead time in 4 weeks to Sri Lanka, CRV OG Chairs, and ICAO Secretariat.	Feb-22	close
ICAO Secretariat	In resposne to WP/18, ICAO Secretariat would present a paper to SWIM TF on behalf of CRV OG to informed about the relevant discussion in CRV OG.	May-22	close
CRV ad-hoc expert Strategy and Design group	CRV ad-hoc expert Strategy and Design group would join SWIM TF meetings to note important discussions related to CRV and to inform CRV OG about the relevant outcomes	CRV OG/11	close
CRV OG Chairs, ACSICG Chairs, SURSG Chairs, PCCWG, India, Singapore, and ICAO Secretariat.	A specialised meeting would be organised to discuss and devise a method for non-aviation service provider's joining process to CRV. WP/17 by PCCWG for Non-aviation providers joining CRV should be also considered to discuss in the specialised meeting, which was supported by Singapore.	CRV OG/11	close
APAC Member States	The meeting requested Member States to provide examples of activities under different categories provided in scope of supporting CRV Network as described in section 10.5 of draft report and scope of wor defined in revised MSA	CRV OG/11	close
New Zealand	Prepare the Terms of Reference (ToR) of Security and safety assessment of CRV	CRV OG/11	close
CRV OG Chairs, ACSICG Chairs, Australia, Japan, Jordan, Fiji, India, Hong Kong China, New Zealand, Singapore, Thailand, USA and ICAO Secretariat.	ICAO Secretariat will do necessary coordination with volunteered Member States for organising the CRV OG Ad-hoc Governance Group Meeting from 22-23 May 2023 and drafting the ToR	ACSICG/10	close

Who	What	Due date	Status
ICAO Secretariat, Co-Chair (Asia)	The latest version of CRV OG Operational Manual will be published on ICAO APAC e-docs under CNS, ICAO APAC CRV Secure portal, and on CRV portal hosted by Airways New Zealand	Feb-23	close
CRV OG Ad-hoc Expert Group	Nepal suggested to incorporate relevant guidance in the form of Process and Procedures into the CRV OG OM clarifying that Member States can request support of ICAO Secretariat and CRV OG for dispute resolution matters or other significant issues if arises. CRV OG Ad-hoc Expert Group will discuss the possibility of adding such provision and draft relevant clauses to add in CRV OG OM.	CRV OG/12 CRV OG13	close
ICAO Secretariat, Co-Chair (Asia)	The latest version of CRV OG Implementation Plan without restricted information will be published on ICAO APAC e-docs under CNS Section. The latest version of CRV OG Implementation Plan will be uploaded on the ICAO CRV Secure portal, and CRV portal hosted by Airways New Zealand	Feb-23	close
CRV OG Ad-hoc Expert Group	CRV OG Ad Hoc Expert Group will work on to modify relevant CRV documents and update the CRV OG Operations Manual to ensure that any changes within CRV consider modifications required to the ATN Documentation document tree	CRV OG/12 CRV OG/13	Open
ICAO Secretariat	The ICAO Secretariat will take necessary action to update ATN Documentation Tree on the ICAO APAC Regional Implementation Projects webpage with the proposed first snapshot of the Tree that would be modified in future as more modifications would be made by ACSICG/CRV OG Meetings	CRV OG/12 CRV OG/13	close
ACSICG Co-Chair, CRV OG Co-Chairs ICAO Secretariat	ATN Routing and Telecommunication table should be updated and shared with ACSICG/10 for updates.	ACSICG/10	close
CRV OG Co-Chairs ICAO Secretariat	Modified table will be shared with APAC Member States for updates using New Zealand hosted CRV portal. The table will be updated by ACSICG/10.	ACSICG/10	close
CRV OG Ad-hoc Expert Group	The Group will create ToR for security review of CRV for Option 2 and 5 presented in WP/14 in CRV OG11.	ACSICG/10	close
SWIM TF, ICAO Secretariat	A dialogue about bandwidth requirements for SWIM services for CRV were initiated. Considering that the basic principle of information exchange in SWIM is publish/subscribe, the meeting requested that the ICAO Secretariat share information about any discussion planned in SWIM TF on developing a ruleset to guide or instruct users about information should be subscribed to so systems and networks are not overloaded or crashed by excessive subscription. ICAO Secretariat informed that such discussion is not being done in SWIM TF. ICAO Secretariat will share information with SWIM TF for further information/action required on this matter	CRV OG/13	close
PCCWG	PCCWG will provide quarterly bandwidth utilization reports to the CRV OG Ad-hoc expert group as a periodic update	CRV OG/13 CRV OG/16	on going
CRV OG Ad-hoc Expert Group	The CRV OG Ad-hoc Expert group would review and present the revised Tree to the next CRV OG meeting for review and endorsement	CRV OG/13 CRV OG/15 CRV OG/16	Open
ACSICG Co-Chair, ICAO Secretariat	The Meeting advised sharing the Tree with ACSICG for further review and modifications for AMHS and other relevant AFS sections	CRV OG/13 CRV OG/15 CRV OG/16	Open
CRV OG Ad-hoc Expert Group, ICAO Secretariat	The CRV OG Ad-hoc Expert group develop the process for testing new SWIM services following the procedure mentioned in Appendix A to the CRV OG/12 report	CRV OG/13	close

Who	What	Due date	Status
CRV OG Ad-hoc Expert Group, ICAO Secretariat	The CRV OG Ad-hoc Expert group modify the process provided in Appendix B to incorporate various discussions and suggestions shared during the Meeting : 1. To assess the feasibility of a Service Provider / Service Consumer (SPSC) connecting to the CRV, the list of parameters provided in a(ii) of the process needs to be reviewed and amended to accommodate other potential required parameters. 2. A process and procedure to test a new service on the CRV network need to be drafted. 3. Further discussion is needed for the required class of SWIM services. 4. The feasibility of testing a new SWIM service first on the test GRE tunnel and after successful testing on the test GRE tunnel, its transfer over to the operational GRE tunnel needs further deliberations. 5. The number of GRE tunnels for each SWIM service may not be feasible. 6. Further discussion is required for IP assignments and their grouping. 7. Currently, in the System Design Document (SDD), the QoS of SWIM services is not mentioned, requiring further action.	CRV OG/13 CRV OG/15	close
ICAO Secretariat, CRV OG Co-chair (Asia)	The latest version of the CRV OG Operational Manual will be published on ICAO APAC e-docs under CNS, ICAO APAC CRV Secure portal, and on the CRV portal hosted by Airways New Zealand	CRV OG/13	close
CRV OG Ad-hoc Expert Group, ICAO Secretariat	Singapore suggested modifying the local and national point of contact responsibilities mentioned in CRV Imp Plan to accommodate the new CRV user's definition. Accordingly, the CRV Implementation plan may need further modifications to accommodate new CRV users definition. The Meeting requested that the CRV OG Ad-hoc Expert group incorporate this task into their agenda items	CRV OG/13	close
ICAO Secretariat	ICAO Secretariat will share the information requested and templates of daily, weekly, annual tasks of CRV with all CRV National and local Points of contact along with CRV OG/12 participants before 2 February 2024	2-Feb-24	close
States/Administrations	All States/Administrations already utilizing CRV will submit the list of tasks in the requested template to the ICAO Secretariat before 31 March 2024	31-Mar-24	close
ICAO Secretariat	ICAO Secretariat will share a doodle with all CRV OG Ad-hoc governance group experts to finalize the date for 24 April or 3 May 2024	2-Feb-24	close
ICAO Secretariat	ICAO Secretariat will share the list of users having access to the CRV portal with all States/Administrations before 2 February 2024 for updates	2-Feb-24	close
States/Administrations	All States/Administration will share the updated list of a maximum of three users to get access to the portal before 29 February 2024	29-Feb-24	close
States/Administrations	The first draft of the form will be sent to the Ad Hoc Expert Design Group before 31 January 2024 for comment and feedback (APX G)	31-Jan-24	close
SWIM TF, ICAO Secretariat	The ICAO Secretariat will share the draft form with the SWIM Task Force Task Leads for filling in the form and for comment and feedback.	1-Feb-24	close
CRV OG Ad-hoc Expert Group, ICAO Secretariat	CRV OG Ad-hoc Expert Group will review the duly filled form in the April 2024 Meeting	Apr-24	close

Who	What	Due date	Status
ICAO Secretariat	The ICAO Secretariat will share the exact date, venue, and detailed agenda information about the "CRV data requirements for SWIM Workshop" as soon as it is finalized	ASAP	close
ICAO Secretariat, Co-Chairs	CRV OG Co-Chair (Pacific) suggested sharing the Proof of Concept test document of CRV with SWIM TF to understand CRV's performance and capabilities by SWIM TF	1-Feb-24	close
ICAO Secretariat, Co-Chairs, PCCWG	The Meeting requested that the ICAO Secretariat and PCCWG continue their efforts to reach relevant parties to progress the work on CRV-REDDIG II and CRV-New PENS interconnection	CRV OG/13	close
CRV OG	During the new CRV contract management process, CRV OG will incorporate the clause of interconnection with other regional networks into the contract document	CRV OG/13	close
CRV OG Ad-hoc Expert Group, ICAO Secretariat	The CRV OG Ad-hoc Expert group prepare use cases for regional interconnection of CRV	CRV OG/13	close
CRV OG Ad-hoc Expert Group, ICAO Secretariat	Ad-hoc group continue to work to support and encourage MID states to work with PCCWG to join CRV, with the support of the ICAO APAC Secretariat and the ICAO MID office, to implement CRV in the MID region	CRV OG/13	close
CRV OG	As the security assessment of CRV is essential and crucial for determining the security and trust of the APAC regional network, the Meeting agreed to incorporate this task in the new CRV contract management process	CRV OG/13	close
Pakistan	Pakistan will coordinate with Oman focal points on communication matters and initiate discussion on implementing CRV in Oman and providing necessary support if required	CRV OG/15	close
ICAO Secretariat	China informed that it is planning for an AMHS connection with Kuwait and requested point of contact information on this matter. ICAO Secretariat will share information about the focal point from Kuwait with China	31-Mar-25	close
SWIM TF Task Leads, CRV OG Experts, ICAO Secretariat	The proposed options in SIPG WS/1 have flaws as there are misunderstandings about how SWIM EMS will be connected over CRV and the internet. It was agreed that there is a need for further discussion among CRV and SWIM experts to clarify the shortcomings of proposed options and make SWIM experts understand the integration of SWIM with CRV. This matter will be further discussed in CRV OG Ad-hoc Experts and SWIM TF Task Leads Online Meeting on 13 March 2025. If required, an in-person Meeting of SWIM and CRV experts will be arranged to finalize ICAO APAC SWIM architecture	CRV OG/15	close
ICAO Secretariat	CRV governance can be added to the agenda items of the CRV ad-hoc expert group. ICAO Secretariat will take necessary action to follow revised working arrangements	12-Jun-25	close
ICAO Secretariat	4.13 In response to drafting the procedure for adding SWIM services over CRV, it was informed that the procedure could be defined once the APAC SWIM architrave is finalized and other details required for SWIM implementation are available. The ICAO Secretariat will share this information with SWIM experts	SWIM TF/10	close
ICAO Secretariat	The ICAO Secretariat was requested to organize a Meeting with REDDIG network administration members to discuss and understand the current structure and governance model. The ICAO Secretariat will coordinate with the ICAO SAM Office to schedule an online Meeting in Q4 2025	Q4 2025	close
States/Administrations	5.5 The Meeting realized the need to know the total amount APAC States/Administrations pay for CRV contracts. It was agreed that CRV users would share their monthly CRV contract price with the ICAO Secretariat. It was stated that the ICAO Secretariat will share the total price for the region in a future forum or discussion. No individual data shared by each State will be disclosed with other States/Administrations	CRV OG/15	close

Who	What	Due date	Status
Hong Kong China	Hong Kong China would 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	CRV OG/15	close
PCCWG	The Meeting suggested that PCCW Global provide an analysis of various incidents in all APAC States/Administrations that have severely impacted SLA	Jun-25	close
CRV OG Ad-hoc Expert Group	9.18 Regarding the suggestion to define a maintenance window at the sub-regional level in the APAC region, it was agreed that more deliberations are needed. The discussion will be added to the CRV OG Ad-hoc Expert group discussion	CRV OG/15	close
CRV OG Ad-hoc Expert Group	There is a need to understand various options for this implementation and recommend a path with the support of cloud service providers such as Microsoft, AWS, Azure, etc. It was agreed that New Zealand will facilitate this discussion with the cloud service provider to progress on this matter.	CRV OG/15 CRV OG/16	Open
Philippines	Aireon suggested that the Philippines initially draft the document based on their recent experience of contracting space-based ADS-B services over CRV. Aireon will provide further addition to the process, adding coordination required between Aireon and the CRV service provider. The Philippines will draft the procedure and present it at the next CRV OG Ad-hoc Expert Group Meeting, which is planned for 12 June 2025	CRV OG/15	close
CRV OG Experts, SWIM TF TLs, ICAO Sec	CRV OG will discuss with SWIM TF the expected timelines for the setup and future plans to keep SIPG for further extension or offer for Pseudo CRV	Jun-25	close
CRV OG Experts, ICAO Sec	11.6 In response to a question about the procedure mentioned in the CRV OG Operations Manual on how to utilize CRV residual bandwidth for testing, the CRV OG Co-Chair (Asia) informed that currently, there is no procedure mentioned. However, as per his view, the procedure should be that States first conduct risk assessment, share outcomes of risk assessment with respective peer states if it can affect peer States, and inform peer states in advance when conducting the testing. It was agreed that the procedure would be incorporated into the CRV OG Operations Manual after discussion in the CRV OG Ad-hoc Expert Group	CRV OG/15	close
PCCWG	11.7 Japan shared a request with PCCW Global to prepare a document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network. It was agreed that this document would be beneficial for States. PCCW Global will draft the document and share it in the next CRV OG Ad-hoc Group meeting on 12 June 2025	12-Jun-25	close
ICAO Secretariat	There is a need for additional contributory bodies to support APAC States for the imperfection of various provisions arising from these documents for various areas of CNS. It was requested that the ICAO Secretariat share this concern with the ACSICG/12 meeting for further discussion	CNS SG/29	close
New Zealand	14.9 On the request of a meeting, New Zealand agreed to prepare a working paper to propose the need for dedicated contributory bodies to implement cybersecurity provisions arising from the Trust Framework Panel and Communication Panel for CNS SG/29 consideration. The meeting was informed that CNS SG/29 is planned for 16-20 June 2025	CNS SG/29	close
France	France by WP/35 shared that the standardization is available in the ICAO Doc 9880 to provide a high level of security for AMHS, and a PKI deployment is a prerequisite to deploying AMHS security to meet the ICAO standards. The meeting appreciated France for such vital information and requested that this information be shared with the ACSICG/12 Meeting	ACSCIG/12	close

Who	What	Due date	Status
ICAO Secretariat	If the **Draft Conclusion CRV OG/14/01 - Decision of CRV II Contract Management Process** is adopted by APANPIRG/36, a State Letter will be issued by the ICAO APAC Office sharing the final agreement on the CRV II contract management process with all States/Administrations.	31-Dec-25	close
ICAO Secretariat	The Meeting suggested that while sharing the State Letter about the final decision made by APANPIRG/36, a summary of the CRV II contract management process should be provided in an attachment to the State Letter, supporting the final decision made by APANPIRG/36.	31-Dec-25	close
ICAO Secretariat	ICAO Secretariat will issue a response to all three CRV II RFI vendors through ICAO CDI using the UNGM portal about the decision of CRV OG/14 if APANPIRG/36 adopts the decision.	31-Dec-25	close
CRV OG Experts	The Meeting agreed that it is prudent to inform PCCWG separately about the decision made by CRV OG/14 for the extension of the current contract with variations, with improved technical, legal, commercial and financial requirements. CRV OG will issue a letter to PCCWG after all bidders have been informed of the decision.	CRV OG/15	close
CRV OG Ad-hoc Expert Group	The CRV OG Ad-hoc Expert Group will be drafting baseline terms and conditions after the decision of contract extension is shared with APAC States/Administrations (if contract extension is agreed by APANPIRG/36).	ACSICG/13	close
the Ad-hoc Expert Group	the ACSICG/13 meeting planned for 20-24 April 2026, may be informed about the progress made for devising the baseline terms and conditions and propose a way forward by the Ad-hoc Expert Group.	ACSICG/13	close
CRV OG Experts	Once baseline terms are agreed by CRV OG/15 and adopted by CNS SG/30, CRV OG can initiate contact with the CRV Service Provider, sharing information about the baseline terms for extended negotiation.	CRV OG/16	Open
CRV OG Experts	it was agreed that CRV OG will finalize baseline terms and conditions in the CRV OG/16 meeting before 1 April 2027	CRV OG/16	Open
CRV OG Experts	The baseline terms and conditions will be presented to the ACSICG/14 and CNS SG/31 Meetings for their adoption	CNS SG/31	Open
ICAO Secretariat	ICAO will issue a State Letter sharing the revised Terms and Conditions of the CRV II contract.	CNS SG/31	Open
ICAO Secretariat	The ICAO Secretariat will share the proposed draft conclusion by email for CNS SG/29 endorsement as per the process discussed and established in the CNS SG/29 Meeting.	CNS SG/29	close
CRV OG Experts, ICAO Sec	The Meeting agreed on the suggestion to negotiate for an additional 2 years (along with 5-year extensions of the CRV contract) as an option to cover a transition period, based on future needs, for supporting the CRV III RFP process during the formulation of baseline terms and conditions for the CRV II Network. This will ensure the legal obligation of the CRV Service provider to provide services during the transition period after the CRV III RFP process, in case of need.	CRV OG/16	Open
CRV OG Experts, ICAO Sec	The meeting agreed that the CRV III RFP process will be initiated with a lead time of 4-5 years so that the CRV III network is ready to take over the CRV II from 1 January 2034	CRV OG/16	Open
CRV OG/14 delegates	It was agreed that CRV OG/14 delegates share their expected improvement in the CRV II network with the ICAO Secretariat by email before 20 January 2026.	20-Jan-26	close
CRV OG Ad-hoc Expert Group	The CRV OG Ad-hoc Expert Group will review all inputs in its next meeting on 27 January 2026.	27-Jan-26	close
CRV OG Ad-hoc Expert Group	The ad-hoc group will continue to work on draft baseline terms and conditions, which will be shared with all APAC States/Administrations by the middle of May 2026.	middle of May 2026	close
CRV OG Experts	CRV OG/15 will be planned in June 2026, which will endorse the baseline Terms and Conditions for the CRV II contract.	CRV OG/15	close

Who	What	Due date	Status
the CRV OG Ad-hoc Expert Group	It was noted that in case of any issue with the current CRV Network, States/Administrations raised the ticket, after which action is initiated by PCCWG. The Meeting agreed that PCCWG should monitor the CRV network of all States/Administrations 24X7 and proactively respond to the faults/issues rather than waiting for States/Administrations to raise the ticket. The matter will be further investigated and discussed by the CRV OG Ad-hoc Expert Group.	27-Jan-26	Open
SURICG Experts	The Meeting reviewed the Guidance Materials for the sharing of surveillance data in SWIM. Several clarifications were requested for several paragraphs, including the SWIM Technical Infrastructure and the Surveillance Central Data Processor sections. As the key authors of this document and surveillance experts were not in the Meeting, the ICAO Secretariat was requested to coordinate with SURICG experts to arrange a Meeting of the CRV OG Ad-hoc Expert group and key authors of the document to obtain clarification	18-Sep-26	Open
ACSICG Co-Chairs, ICAO Sec, Russia, Aerothai	Assymetric routing issues shared by Russia. As the issue fell under ACSICG's purview and the ACSICG Co-Chairs were attending the CRV OG/15 Meeting, the CRV OG Co-Chairs requested that ACSICG look into the matter and support Russia in resolving it	CRV OG/16	Open
Joint Meeting of CRV and SWIM	It was also noted that the SWIM hierarchical architecture Technical Infrastructure for the APAC region proposed using message header routing at the application layer rather than the network layer, while one of the main purposes of the CRV was to support the SWIM environment.	2-Jul-26	Open
SIPG	In response to a question about CRV OG not yet receiving the expected documents agreed in the joint Meeting of CRV and SWIM Experts from SIPG members utilising operational CRV for SIPG testing before testing is initiated, it was clarified that SIPG members are consolidating the documents to send to the CRV OG Co-Chairs for further review. It was also noted that only ping testing is currently being conducted. It was agreed that CRV OG will wait for further responses from SIPG	CRV OG/16	Open
SWIM TF TLs	The Meeting discussed message header-based and topic-based routing to understand the differences and other relevant details. The ICAO Secretariat clarified some details and informed that SIPG Experts will provide further details. It will be incorporated into the agenda items of the joint Meeting of CRV and SWIM Experts	2-Jul-26	Open
All APAC States/Administrations	The Meeting appreciated India for drafting the document APAC Sub-regional maintenance window for the CRV network and agreed that, firstly, all APAC States/Administrations should provide information about their preferred maintenance window.	CRV OG/16	Open
PHP, CRV OG Co-Chairs, ICAO Sec, all other states joined space based ADS-B	The CRV OG/15 Meeting reviewed the proposed SOP for contracting and implementing Space-Based ADS-B services over the CRV and noted that the document mainly shares the Philippines' perspective. There was a need to tailor this SOP to convert it into a standard procedure applicable to any APAC States/Administrations. It was agreed that the Philippines and CRV OG Co-Chair (Asia) will lead this task; however, feedback can be provided by other APAC States/Administrations that have contracted space-based ADS-B	CRV OG/16	Open
India	It was noted that the Philippines and PNG are both utilising CRV for space-based ADS-B; however, Aireon has provided a dedicated, secure link for India to deliver space-based ADS-B services until SDPs in Mumbai. It was anticipated that, if this link were CRV, there might be a low monthly cost. India was requested to conduct an internal analysis and to share its analysis outcomes and experience in future CRV OG Meetings	CRV OG/16	Open
CRV OG Ad-hoc Expert group	All adopted content in CRV OG/15 will be incorporated in CRV OG OM	CRV OG/16	Open

Who	What	Due date	Status
CRV OG Ad-hoc Expert group	The Meeting was informed that the CRV OG Operations Manual will be updated to incorporate all agreed changes after the CRV OG/15 Meeting and will be presented to CRV OG/16 for adoption	CRV OG/16	Open
CRV focal points	It was noted that the CRV Overview diagram has been updated to include information on all CRV States/Administrations. It was suggested that all CRV focal points review and verify the information in the CRV Overview diagram and update it as needed	CRV OG/16	Open
CRV OG co-chair (Asia)	In response to a question about how to get information about updates to the CRV Overview diagram made by any State/Administration, it was suggested to utilise the SharePoint notification feature, which sends a notification to all users whenever a document is changed. CRV OG Co-Chair (Asia) will activate notification for any edits made in the CRV Overview diagram	CRV OG/16	Open
CRV OG Ad-hoc Expert group	The Meeting drafted the Terms of Reference of the Technical Control Board, provided in Appendix C, and requested the CRV OG Ad-hoc Expert Group to further review the draft ToR and present a polished version to the CRV OG/16 Meeting for endorsement	CRV OG/16	Open
CRV OG Ad-hoc Expert group	It was suggested that further modifications to CRV governance be discussed in the CRV OG Ad-hoc Expert Group and present the finalised revised CRV governance proposal to the CRV OG/16 Meeting for consideration	CRV OG/16	Open
ICAO Sec	It was further suggested that the names of key members of the CRV OG Ad-hoc Expert Group should be compiled and made available for reference by States. The ICAO Secretariat will prepare this list and upload it to the ICAO APAC CRV Secure Portal, as well as to the CRV Portal hosted by New Zealand	CRV OG/16	Open
PCCWG	The Meeting noted that some information provided in the table was not accurate, such as Sri Lanka Site Availability in the month of November was 98.33%, not 99.86%. CRV Service provider will revalidate the figure, confirm with Sri Lanka and update the figure in the report	1-Sep-26	Open
PCCWG	It was also noted that, for some States, Site Availability may be displayed as 100% where basic connectivity remains available. However, this metric does not account for periods of network degradation or partial loss of GRE tunnel connectivity. This was one of the considerations behind the SLA proposal presented by Singapore in WP/31 of CRV OG/15. The CRV Service Provider acknowledged the point and will include this consideration in its internal review of the proposal	CRV OG/16	Open
PCCWG	It was observed that some of the GRE tunnel loss issues were faced by Member States due to a configuration error. The Meeting suggested sharing details of the PCCWG quality assurance process for configuration, as several errors have been reported due to configuration issues. CRV Service provider was requested to follow up on the quality assurance process around the delivery of the configuration	CRV OG/16	Open
PCCWG	Fiji shared the issue of one-way voice communication, which persists, but does not affect availability. A similar issue was faced by PNG with one-way voice routing. CRV Service provider was suggested to investigate this issue and provide feedback	1-Sep-26	Open
PCCWG	On the request to provide an update on the request to explore a way to capture peak bandwidth, the CRV service provider informed that the work is ongoing and further progress will be shared in the next meeting	CRV OG/16	Open
PCCWG	India observed that the bandwidth information presented for their subscribed package was 1 Mbps, while India has upgraded their package to 2 Mbps. PCCWG clarified that the report was produced based on information in the first half of 2025. It was suggested that future updates provide details of all packages in separate rows if multiple packages were subscribed to in a year	CRV OG/16	Open

Who	What	Due date	Status
PCCWG, CRV OG Co-Chair (Asia)	It was noted that under the CRV Implementation plan, there is a CRV Implementation document that needs to be updated by the CRV Service provider, in collaboration with the CRV OG Co-Chairs, to reflect the latest information on the CRV package and other details of CRV Users	CRV OG/16	Open
CRV OG Ad-hoc Expert Group	The Meeting reviewed the ADS-B formula and agreed to incorporate the formula into the CRV OG Operations Manual in the service design section	CRV OG/16	Open
	The Meeting noted that, while the cloud requirements arise from SWIM implementation, CRV OG is also involved as the required connectivity is provided through CRV. It was proposed that the two solutions presented in this paper be discussed at the joint Meeting of the CRV OG Ad-hoc Expert Group and the SWIM TF Task Leads. It was also noted that further discussion would be needed regarding security controls and data sovereignty	2-Jul-26	Open
PCCWG	The CRV service provider explained that, for direct peering, a demarcation point is required. While the NID can support GRE tunnel connections, it still needs to be hosted at a physical location or data centre. However, cloud providers do not generally offer space to accommodate external NIDs. One possible solution is for PCCWG to identify an alternative data centre or host the router within a Member State. Another option is to utilise Console Connect, which operates independently of the CRV network and already supports multi-cloud connectivity. As Console Connect is not part of the CRV network, it would also allow participation from other entities, such as airports or non-State members. It was noted that further discussion is needed to determine which States will adopt cloud solutions and who will be responsible for their management. These matters require further deliberation. It was agreed that PCCWG will discuss and propose various solutions for the different use cases and present them at the next CRV OG Meeting	CRV OG/16	Open
CRV OG Ad-hoc Expert Group	It was suggested that, along with cloud discussion initiated with the CRV Service provider, it also be considered for inclusion in the CRV III RFP	CRV OG/16	Open
CRV OG Co-Chair and India	The Meeting noted that, following the signing of the purchase order, a tentative Service Provision Guarantee date for node delivery is typically provided. However, a query was raised regarding penalties in cases where vendors are unable to meet the committed timeline. The CRV OG Co-Chair and India will review the relevant CRV documentation to identify the applicable provisions and share the information with the Meeting	CRV OG/16	Open
PCCWG	PCCWG was requested to review and, if needed, propose modifications to the high-level questionnaire to strengthen the document and ensure that all required information is provided to support the provision of services	CRV OG/16	Open
CRV OG Ad-hoc Expert Group	The need for understanding what would be a reasonable cost of such PSIDS, which has constraints of low traffic flight movement against the high cost of implementing CRV, was discussed in the meeting. It was added that if a reasonable cost for such PSIDS can be estimated, the CRV OG Ad-hoc Expert group can work with the CRV service provider to identify another potential solution to support them.	CRV OG/16	Open
United States	As most PSIDS not joining CRV fall under the responsibility of the United States, the Meeting requested that the United States provide information on traffic movements in the Federated States of Micronesia, Palau and the Marshall Islands to help understand and determine the definition of low traffic	CRV OG/16	Open
Fiji	Fiji will take similar action for Tuvalu	CRV OG/16	Open
Fiji, United States	It was also agreed that partner States that determine that PSIDS under their responsibility will not join CRV will share their plans to support such PSIDS in meeting the future SWIM/FF-ICE/sunset date of the FPL2012 requirements	CRV OG/16	Open

Who	What	Due date	Status
Malaysia	The Meeting noted that Malaysia has also implemented Space-based ADS-B over CRV and invited them to contribute to the preparation of SOP for contracting Space-based ADS-B services over CRV. Malaysia agreed to the request	CRV OG/16	Open
ICAO Sec, India	It was noted that currently, none of the States represented at the CRV OG/15 Meeting was connected to Eurocontrol for EDS. India requested support from the ICAO Secretariat to connect with the appropriate focal point at Eurocontrol for EDS. The ICAO Secretariat will coordinate with Eurocontrol and support India for this interconnection for the new AMHS if feasible	CRV OG/16	Open
United States	ACSICG Co-Chair shared that in the SWIM environment, the exchange of MET messages should be based on Publish/Subscribe (PUB/SUB) or Request/Reply (REQ/REP) mechanisms, whereas in the AMHS environment, messages are routed based on the originator and recipient addresses. The United States was requested to explain how its AMHS/SWIM gateway performs routing across these two environments at the upcoming AMHS to SWIM Transition Coordination Group (ATSCG) planned for 19 August 2026 from 0800-0930 AM BKK time	19-Aug-26	Open
United States	The United States was also requested to provide the email addresses of participants who will provide clarifications at the ATSCG Meeting so that the ICAO Secretariat can share the Meeting invite.	1-Jul-26	Open
ICAO Sec	The Meeting noted Bangladesh is still in the process of joining CRV. Therefore, the Mumbai-Dhaka connection is not completed; however, the Maldives is already on CRV. It was noted that there are difficulties in coordination with Male for Chennai-Male conneciton. ICAO Secretariat will provide support to India for establishing contact with the Maldives	31-Aug-26	Open
ICAO Sec	The Meeting noted that the proposal produced by PCCWG is still valid and will create a baseline for further discussion with the new service provider of REDDIG III. It was requested that as soon as the REDDIG III service provider is finalised, the information be shared with the CRV OG Ad-hoc Expert group and the CRV Service provider	1-Sep-26	Open
ICAO Sec	The process for initiating contact between both service providers to conduct detailed technical discussions on the interconnection proposal should commence at the earliest opportunity. This will allow further examination of the previously agreed solution, as well as the evaluation of additional potential technical options for interconnecting the two networks. The ICAO Secretariat will facilitate and initiate coordination to establish communication between the respective regional IP network service providers.	1-Sep-26	Open
ICAO Sec	The Meeting discussed the need for and importance of an in-person workshop involving CRV and REDDIG III experts to further deliberate on the interregional interconnection, as well as other areas of mutual interest. It was recognised that face-to-face meetings provide significant value by facilitating more effective discussions, including interactive whiteboard sessions, comprehensive evaluation of the advantages and disadvantages of proposed options, and improved understanding of complex technical matters. As APAC SWIM implementation timelines are 2024-2030, the Meeting stressed the importance of organising the proposed workshop at the earliest opportunity in order to make timely progress on this outstanding issue	CRV OG/16	Open
ICAO Sec	The Meeting emphasised that the value of such interconnections should not be assessed solely in terms of cost, but also in terms of enabling seamless integration, enhancing interoperability, and ensuring the safe and efficient delivery of flight operations at a global level. The Meeting requested ICAO support in engaging the higher authorities of both regions to progress on this matter		Open

Who	What	Due date	Status
All APAC States/Administrations connected to EUR	The Meeting further suggested that other APAC States/Administrations engage with their European counterparts to encourage dialogue and advocate for EUROCONTROL's support of this APAC initiative, highlighting its long-term strategic importance for global interoperability and aviation system modernisation		Open
PCCWG, CRV OG Ad-hoc Expert Group	The Meeting further agreed that, in the event of limited interest from EUROCONTROL in pursuing the interconnection between CRV and New PENS, an alternative option could be the deployment of CRV nodes within Europe. The PCCWG was tasked with further examining this option and presenting a detailed assessment, including estimated costs, at the next meeting		Open
New Zealand, ICAO Sec	New Zealand stated that it has discussed internally initiating work on the proposal. Progress on the proposal is estimated to be achieved by Q4 of 2026. ICAO Secretariat will support the coordination with the ICAO SAM office to further progress on this task and provide the required support		Open
ICAO Sec, CRV OG Co-Chairs	It was suggested that, while discussing with ICAO CDI, the estimated funds be finalised. If the estimated budget exceeds the remaining funds, CRV OG/16 will discuss the option of collecting the shortfall		Open
CRV OG Ad-hoc Expert Group, ICAO Secretariat, ICAO CDI	It was also suggested that ProDoc be updated to incorporate the task related to CRV III RFP with the support of ICAO CDI within the CRV OG Ad-hoc Expert group and present the revised ProDoc to MSA at the next year's CRV OG Meeting		Open
CRV OG Ad-hoc Expert Group, ICAO Secretariat	The Meeting discussed the CANSO cybersecurity assessment and its application to CRV from the CRV OG perspective. It was recognised that the CRV OG Ad-hoc Expert group needs to discuss how to conduct a cybersecurity assessment of the CRV on behalf of CRV OG, using the CANSO Standard of Excellence in Cyber Security. It was suggested that further updates on outcomes of the discussion be shared with the CRV OG/16 Meeting		Open
PCCWG	The Meeting also requested the CRV service provider to conduct the assessment and provide updates accordingly. It was clarified that the outcomes of the assessment are not required to be shared. Instead, the CRV service provider is expected to confirm that the assessment has been carried out and that all identified gaps are being appropriately addressed		Open

2026 Fifteenth Meeting of the Common aeRonautical Virtual Private Network Operations Goup (CRV OG/15)

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LIST OF WORKING/INFORMATION PAPERS

WP/IP/SP Number	Agenda	Subject	Presented by
		WORKING PAPERS	
WP/01	1	Provisional Agenda	Secretariat
WP/02	2	Review of Relevant Meetings	Secretariat
WP/03	2	Outcomes of SURICG/11	Secretariat
WP/04	2	Outcomes of the first Meeting of the ANS Information Assurance Task Force (ANSIA TF/1)	Secretariat
WP/05	2	Outcomes of the Thirteenth Meeting of the Aeronautical Communications Services Implementation Coordination Group (ACSICG/13)	Secretariat
WP/06	2	Outcomes of the Eleventh Meeting of System Wide Information Management Task Force (SWIM TF/11)	Secretariat
WP/07	2	Outcomes of the Third Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/3)	Secretariat
WP/08	3	Outcomes of CRV Ad-Hoc Experts Group Meetings	Secretariat
WP/09	3	Outcomes of Joint CRV OG Ad-Hoc Expert and SWIM TF TLs Meetings	Secretariat
WP/10	3	Outcomes of the discussion on SWIM sandbox needs	Secretariat
WP/11	3	Initial Draft for APAC Sub-Regional Maintenance Window for CRV Network	India
WP/12	4	Way forward for CRV Governance	New Zealand
WP/13	5	Updates on CRV II contract related Action Items	Secretariat
WP/14	5	Review of CRV Common Package Documents for CRV II	Australia
WP/15	6	Guidance Material on using the Residual Bandwidth of the operational CRV for testing SWIM/New Services	Secretariat

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WP/16	7	Review and update the APAC CRV Implementation Table	Secretariat
WP/17	3	CRV Overview Diagram	New Zealand
WP/18	3	SOP for contracting Space-based ADS-B services over CRV	Philippines
WP/19	8	A formula to compute the bandwidth required for surveillance data sharing	Secretariat on behalf of Hong Kong China
WP/20	8	Implementation of the cloud within the CRV network and integration of it with another cloud network	New Zealand
WP/21	9	PSIDS updates for CRV joining	Fiji
WP/22	9	CRV joining with proposed solutions	Russia
WP/23	10	Use cases for interregional connection	Secretariat
WP/24	10	MPLS/IP based inter-regional connection	Secretariat
WP/25	11	Updates on Using the Rest of CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA)	Secretariat
WP/26	5	Preparation for CRV III Contract	Secretariat
WP/27	7	Update of CRV National and Local Focal Points	Secretariat
WP/28	3	Review of Outcomes and action items from the ICAO APAC CRV-SWIM Experts workshop: Reviewing of CRV II specifications and ICAO APAC SWIM Architecture in September 2025	Secretariat
WP/29	13	Review of CRV OG ToR and Action Items	Secretariat
WP/30	9	Inordinate Delay in Provisioning of Second CRV Node at Delhi by PCCW Global	India
WP/31	5	Consideration of the Service Availability Framework in the CRV Service Level Agreement	Singapore
WP/32	3	CRV OG Operations Manual Updates	New Zealand
WP/33	5	Inclusion of New Signing Entity in Price Schedule Document of CRV Services Contract	India

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WP/34	10	REDDIG III Governance Model, need for inter-regional connectivity and possible establishment of a REDDIG Node in New Zealand	ICAO SAM Office
WP/35	12	Additional Guidelines for ICAO Doc 9855 in the context of CRV Internet-Based Connectivity	Singapore
WP/36	12	Update on cyber-safety/security and resilience	New Zealand
WP/37	3	New Zealand hosted CRV Portal	New Zealand
WP/38	12	CANSO Cyber Security Assessment of CRV	New Zealand
WP/39	5	CRV II contract process timeline	New Zealand
INFORMATION PAPERS			
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IP/02	14	Organization of SWIM training cum workshop	Secretariat
IP/03	9	CRV Implementation in Malaysia	Malaysia
IP/04	14	Organization of First ICAO Global Communications, Navigation, Surveillance, and Spectrum Symposium (CNSS 2026)	Secretariat
IP/05	9	Implementation status of PAN India AMHS	India
IP/06	9	FAA IWXXM via AMHS Testing Update	United States
IP/07	9	Current Status of CRV Implementation in Indonesia	Indonesia
IP/08	9	CRV Implementation Status in India	India
PRESENTATIONS			
SP/01	8	CRV Operational Performance Report	PCCWG
SP/02	8	Analysis of APAC CRV Bandwidth Utilization	PCCWG
SP/03	8	Analysis of various incidents in 2025-2026 all APAC States/Administrations that have severely impacted SLA	PCCWG

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