International Civil Aviation Organization

Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11)

Bangkok, Thailand, 19 – 22 March 2024

Agenda Item 3:   Review the report of the Twelfth Meeting of Common aeRonautical VPN Operations Group (CRV OG/12)

OUTCOMES OF THE TWELFTH MEETING OF COMMON AERONAUTICAL VIRTUAL PRIVATE NETWORK OPERATIONS GROUP (CRV OG/12)

(Presented by the Secretariat)

SUMMARY

This paper presents the discussions and relevant outcomes on Twelfth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/12) for meeting review.

1.   INTRODUCTION

1.1   The Twelfth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/12) was held from 23 to 26 January 2024 in Denarau Island, Fiji. The Meeting was attended by 66 participants from 18 Member States/Administrations and 1 telecommunication provider. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2024-CRV-Seminar-and-CRV-OG-12.aspx

1.2   This paper summarized relevant information and updates with the highlight on the outcomes of CRV OG/12 to be reviewed by this Meeting, the Twenty Eighth meeting of Communications, Navigation, and Surveillance Sub Group (CNS SG/28) of APANPIRG, and the Thirty Fifth meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/35).

2.   DISCUSSION

2.1   The summary of the discussion in the Meeting is given in the following paragraphs.

Review of Relevant Meetings - Sec (WP/02)

2.2   The CRV OG/12 Meeting reviewed the relevant information and updates with the highlight on the reviewed outcomes of the CRV OG/11, ACSICG/10, SWIM TF/7, SWIM TF/8, SURSG/3, and relevant discussions of other Meetings, including the CNS SG/27 and the

APANPIRG/34.

2.3   The CRV OG/12 Meeting requested that States/Administrations exchanging IWXXM data and/or FIXM data on CRV share their experience with bandwidth utilization to understand potential bandwidth requirements. Singapore informed that bandwidth utilization is not high based on their experience of sharing IWXXM data on CRV Package A, 2 Mbps. Hong Kong China reported that their bandwidth utilization for IWXXM data is also moderate. The CRV OG/12 Meeting agreed that PCCWG will provide quarterly bandwidth utilization reports to the CRV OG Ad-hoc expert group as a periodic update. The CRV OG Ad-hoc expert group will continue to analyze the data and in case of any observations, they will be brought to the attention of the CRV OG meeting.

58th APAC DGCA Conference Action Items on CRV – Sec (WP/03)

2.4   The CRV OG/12 Meeting noted the Air Navigation (ANS) related Action Items of the 58th Conference of Directors General of Civil Aviation Asia and Pacific Regions (DGCA/58) held in Dhaka, Bangladesh from 15 to 19 October 2023. The Meeting noted that the Conference formulated 51 Action Items and one action item, 58/23, related to CRV. By action item 58/23, the Conference urged States/Administrations to implement CRV by December 2023 and encouraged Pacific States to work with their partner States to facilitate CRV connectivity. The Meeting was suggested to review and take proper action on the Action Items related to CRV/Air Navigation derived from the DGCA/58 and identify Air Navigation issues, if any, that need to be brought to the attention of the DGCA/59 in 2024.

Outcomes of CRV Seminar for the Pacific States - Sec (WP/25)

2.5   The CRV OG/12 Meeting reviewed the outcomes of the CRV Seminar for the Pacific States held on 22 *January 2024* on Denarau Island, Fiji. The Seminar was attended by 46 participants from 15 States/Administrations and 1 telecommunication provider. A total of **Four (4)** presentations and **One (1)** Information Paper were delivered by CRV experts from New Zealand, Fiji, PCCWG, Tonga, and ICAO also presented Information Papers on current connections, servers, issues and desired enhancements, and GANP ASBU implementations respectively. The seminar report, presentations, and other resources can be accessed by the following link: https://www.icao.int/APAC/Meetings/Pages/2024-CRV-Seminar-and-CRV-OG-12.aspx.

2.6   In the Seminar, PCCWG shared the list of Pacific Islands and PASNET project details. PCCWG presented the price for CRV packages for all Pacific Islands and shared their new offer and technical equipment details to encourage Pacific States to join CRV.

2.7   The CRV OG/12 Meeting noted that, in the new offer, there is a monthly cost reduction of about 50% and in three tiers, the cost will be reduced further based on the number of sites committed to joining CRV and signing service orders before 30 April 2024. PCCWG informed that they require an additional 6-7 months for CRV circuit installation as different sites have different requirements such as import licenses or other regulations to comply.

2.8   The CRV OG/12 Meeting discussed whether the proposed deadline to share the decision with PCCWG and sign the service order before 30 April 2024 is acceptable and achievable by the Pacific States. Cook Island, Samoa, and Tonga shared their strong intention to join CRV and that they should be able to sign service orders with PCCWG before **30 April 2024**. Additionally, ICAO has deployed a PSIDS Liaison officer who can support Pacific States throughout the CRV implementation process.

ICAO ATN/AMHS Guidance Document Tree – Sec (WP/04)

2.9   The CRV OG/12 Meeting noted the progress on the update of the ICAO ATN/AMHS Guidance Document Tree. The CRV OG/12 Meeting was informed that the ICAO Secretariat had taken necessary action to update the ATN Documentation Tree on the ICAO APAC Regional Implementation

Projects webpage. However, after coordination with the ICAO APAC IT team, it was found that the ICAO IT team can only change the name and version of existing documents in the Tree but cannot add/remove any branches from the Tree. To take necessary action to upload the Tree on the ICAO webpage, the ICAO IT team is working on alternatives with HQ and finding a placeholder to upload the Tree for member states' access.

2.10   The CRV OG/12 Meeting reviewed the Tree and observed that additional improvements are needed under the CRV documents section. The CRV OG/12 Meeting acknowledged the need to maintain and update the Tree in a timely manner as it provides guidance and reference to Member States for applicable documents prepared by ACSICG/CRV OG/ICAO and understand the relationship among them. The CRV OG/12 Meeting shared the concern of keeping the link to some documents provided in the Tree on the public portal because some documents, such as CRV routing policy/address, contain sensitive information. The CRV OG/12 Meeting agreed that the CRV OG Ad-hoc Expert group would review and present the revised Tree to the next CRV OG meeting for review and endorsement. The CRV OG/12 Meeting advised sharing the Tree with ACSICG for further review and modifications for AMHS and other relevant AFS sections. Additionally, it was suggested to keep the Tree on the ICAO Secure portal or New Zealand hosted CRV portal.

CRV New Service Implementation Process - USA (WP/13)

2.11   The CRV OG/12 Meeting noted the process for members with CRV services in operation and plans to add more connections/services to other new or existing CRV users. USA informed that as an action item owner for the task resulting from the CRV OG Ad-Hoc Expert Group, USA prepared the list of processes based on its experience in implementing new services with Indonesia and Papua New Guinea. USA added that the process will be incorporated into the CRV Operations Manual after agreement on the process. Furthermore, it was recommended that users coordinate with PCCW Global technical staff during the testing and cutover of the new service. The CRV OG/12 Meeting discussed and reviewed the process for implementing new services in CRV for AMHS and VoIP services, incorporating them in the CRV OG Operations Manual, and developing the process for new service connections in CRV.

2.12   The CRV OG/12 Meeting mentioned that WP/15 and WP/13 complement each other. The difference is that WP/13 describes the process for existing CRV users. The CRV OG/12 Meeting suggested that the CRV OG Ad-hoc Expert group develop **the process for testing new SWIM services** following the procedure mentioned in **Appendix A**. Singapore suggested incorporating standard compression methods while adding the process into the CRV OG Operations Manual's design section along with additional guidance for VoIP compression, such as recommended standards by CRV OG.

Outcomes of Ad-hoc Group Meetings – New Zealand (WP/14)

2.13   The CRV OG/12 Meeting noted the outcomes of the CRV OG Ad-Hoc Expert Group discussions. The CRV OG/12 Meeting noted three Ad-hoc virtual meetings were held between CRV OG/11 and CRV OG/12 via Microsoft TEAMS. In addition, the Ad-hoc group also met with SWIM TF TLs quarterly. It was informed that the outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings, CRV OG Ad-hoc Governance Group, and other significant outcomes are being discussed by various papers under fifteen agenda items in CRV OG/12 Meeting. The CRV OG/12 Meeting noted the work of the Ad Hoc Expert Group continues to be extremely valuable, appreciated the ongoing contribution, and invited participation to the Ad-hoc group meetings.

Adding A New Service to CRV - New Zealand (WP/15)

2.14   The CRV OG/12 Meeting discussed the steps required to add a new service to the CRV Network. Reference was shared from *Section 5.1.1 – Requirements*, *Section 5.1.2 - Criteria*, *Section 6.5 - Service Validation and Testing Management, and Section 6.4 - Release and Deployment Management* of the CRV OG Operations Manual. The CRV OG/12 Meeting noted that *Section 6.4 - Release and*

Deployment Management needs to be modified to cover how to bring services into operation. The Meeting noted that *Section 5.1.2 Criteria* to add a new service was written from the point of view of adding parties external to the ANSP, it must be modified to include other services like SWIM. The first draft of the procedure prepared by the CRV OG Ad-hoc Expert group was presented to the CRV OG/12 Meeting to review the process of adding a new service to the CRV Network. The CRV OG/12 Meeting deliberated the process and observed that the process required further modifications. The following modifications/additions were suggested by the CRV OG/12 Meeting to improve the drafted process further:

> 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.

2.15   The CRV OG/12 Meeting requested that the CRV OG Ad-hoc Expert group modify the process provided in **Appendix B** to incorporate various discussions and suggestions shared during the CRV OG/12 Meeting in the abovementioned section.

CRV OG Operations Manual Status - New Zealand (WP/16)

2.16   New Zealand presented the status of the current draft of the CRV OG Operations Manual. The updates on the Service Design Section and Definition Section were explained in detail. The CRV OG/12 Meeting agreed to publish the CRV OG Operations Manual v1.3 (CRV OG OM v1.3) and adopted the **Decision CRV OG/12/01** - *Publish the updated APAC CRV Operations Manual*.

2.17   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 Implementation Plan – IP Address Block Allocated to CRV Users – Singapore (WP/17)

2.18   Singapore updated the latest status of the Internet Protocol (IP) address block allocated to CRV Users -Industry. The CRV OG/12 Meeting recalled that the CRV OG/8 meeting agreed to use one vacant /19 IP address block from the Asia Pacific region IPv4 addressing scheme to allocate IP addresses to CRV Users - Industries. Each CRV User - Industry can be assigned 254, 510, 764 or 1022 usable network addresses depending on its technical specifications. To date, two (2) CRV Users - Industries are providing services over the CRV, i.e., AIREON LLC and PCCW Global. Each CRV User-Industry was allocated one /24 (i.e., 254 usable network addresses) IP address block. Hence, there are thirty available /24 IP address blocks that CRV OG can assign to CRV Users.

2.19   To better manage and forecast if the existing IP address blocks are sufficient, the CRV OG/12 Meeting was requested to update CRV OG if there are new CRV Users - Industries intending to provide services over the CRV that need to be assigned IP address blocks. The CRV OG/12 Meeting also requested that all Air Navigation Service Providers (ANSPs) monitor and inform if the allocated IP address block is sufficient. The CRV OG/12 Meeting noted that as of today, no additional industries

have requested to join CRV and there are no issues with the number of IP addresses in any ANSP.

National and Local CRV Points of Contacts - New Zealand (WP/18)

2.20   The CRV OG/12 Meeting discussed the National and Local Points of contact. The CRV OG/12 Meeting was clarified that the national point of contact should be one from ANSPs, which could potentially increase the workload for national contact. It means that the CRV Operations Group meetings should be attended by the National CRV Point of Contact who represents their organization and the State and all CRV users for that State, including CRV User - Industry.

2.21   Singapore suggested modifying the local and national point of contact responsibilities mentioned in CRV OG OM to accommodate the new CRV user's definition. Accordingly, the CRV Implementation plan may need further modifications to accommodate new CRV users definition. The CRV OG/12 Meeting requested that the CRV OG Ad-hoc Expert group incorporate this task into their agenda items.

Outcomes of Ad-Hoc Governance Meetings - New Zealand (WP/20)

2.22   New Zealand presented outcomes of the CRV OG Ad Hoc Governance meetings, held twice since its creation from the 2023 CRV Governance Workshop held in ICAO APAC Office, Bangkok on 31 January 2023. The CRV OG/12 Meeting noted that in the last two meetings, the Ad Hoc Governance group had adopted its Terms of Reference, discussed the Governance Models of REDDIG II and New PENS to understand other regional network's governance models, and resolved the problem, a problem Statement is being drafted.

Outcomes of Third Ad-Hoc Governance Meetings

2.23   The third Meeting of the CRV OG Ad-hoc governance group was conducted on 24 January 2024. The CRV OG/12 Meeting observed that after the second Ad-hoc Governance meeting, States/Administrations were requested to share a list of daily, weekly, monthly, annual, or any other periodic tasks related to CRV performed in their States/Administrations. In response, only five States/Administrations shared their responses. Based on the response analysis, the problem statement has been revised. However, information from other States/Administrations must be taken into consideration for further analysis.

2.24   The CRV OG/12 Meeting requested that all States/Administrations that have not submitted the response should submit the response on priority. It was agreed that ICAO Secretariat will share the information requested and templates with all CRV National and local Points of contact along with CRV OG/12 participants before **2 February 2024,** which has been completed. All States/Administrations already utilizing CRV will submit the list of tasks in the requested template to the ICAO Secretariat before **31 March 2024**. The fourth Meeting of CRV OG Ad-hoc governance group will be conducted on **3 May 2024** from 0800-1000 AM Bangkok time. The latest draft of the problem statement is provided in **Appendix C**.

Number of Subscribers to the New Zealand Hosted CRV Portal - New Zealand (WP/19)

2.25   New Zealand shared information about the New Zealand hosted CRV Portal access. During the CRV OG/12 Meeting, it was informed that on June 2023, there were 115 subscribers to the CRV Portal, significantly more than the current members of the CRV OG. An email was sent to all subscribers in June 2023 requesting a maximum of two nominations, and after the response, 47 subscribers were removed from the portal. The CRV OG/12 Meeting noted future access to the portal would be limited to **three per State** for **the National CRV Point of Contact, the Nominated deputy to the National CRV Point of Contact, and the person responsible for updating the Asia-Pac Telecommunication Infrastructure Routing Plan**.

2.26   The CRV OG/12 Meeting requested that the States/Administration share information about the latest CRV focal point to access the portal to CRV OG Co-chairs/ICAO Secretariat in a timely manner. It was agreed that ICAO Secretariat will share the list of users having access to the CRV portal with all States/Administrations before **2 February 2024** for updates. All States/Administration will share the **updated list of a maximum of three users** to get access to the portal before **29 February 2024**. Both tasks have been completed.

Update the APAC CRV Implementation Table - Sec (WP/10)

2.27   The latest updates presented on the planning and implementation status of CRV were as follows:

- **Under Operation**

Australia, Bhutan, China, Hong Kong China, Fiji, India, Indonesia, Japan, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Philippines, PNG, Republic of Korea, Singapore, Thailand, the USA and Vietnam.

- **Under Provisioning**

Cambodia, French Polynesia, Macau China, New Caledonia, Myanmar, Sri Lanka,

- **Hot Prospects in 2024**

Bangladesh, Brunei, Lao PDR, and Maldives

- **Not joined yet**

Afghanistan, DPRK, Kiribati, Marshal Islands, Micronesia, Nauru, Palau, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu, Vanuatu, Russia, ICAO MID States

2.28   The CRV OG/12 Meeting reviewed and updated the APAC CRV Implementation Table. The updated CRV Implementation Table is provided in **Appendix D** of this paper.

CRV contract management

2.29   Due to the confidentiality of the CRV contract management process, the report under agenda item 7 is published on the ICAO APAC CRV Secure portal under the CRV group.

CRV Network Yearly Service Review 2023 - PCCWG (Presentation/02)

2.30   PCCWG shared the Latest CRV Updates and CRV Network Yearly Service Review for 2023. The CRV OG/12 Meeting was informed about the 2023 Ticket Summary by Ticket Type and their overview. PCCWG informed that there are 72 circuits in 39 cities with different CRV Packages, A, B+, C+, C, D+, and D. There are two service providers in the CRV network and 12 circuits are under implementation. It was further informed that 4 Member States are joining CRV in 2024: Bangladesh, Brunei, Lao PDR, and Maldives.

Monitoring and Analyzing CRV Network Traffic in Hong Kong, China (WP/21)

2.31   Hong Kong, China introduced the CRV network traffic capturing equipment deployed in Hong Kong, China, and presented the insights and analysis derived from the captured network traffic. Based on the CRV network traffic captured between 8 and 14 January 2024 in Hong Kong China, there is no immediate need to upgrade bandwidth capacity, assuming no significant changes in bandwidth usage patterns in the near future. Hong Kong, China, informed that they will maintain the capturing equipment to monitor CRV network traffic and conduct further analysis, mainly as more high-volume applications are gradually brought into CRV.

2.32   The CRV OG/12 Meeting noted that in WP/27, the bandwidth utilization report shared by PCCWG is an average bandwidth, which is not accurate in analyzing the sufficiency of CRV bandwidth contracted by each Member State. PCCWG informed that their platform cannot share information about peak bandwidth. The CRV OG/12 Meeting agreed that the initiative by Hong Kong China is excellent for understanding and analyzing CRV network traffic. The CRV OG/12 Meeting encouraged other States/Administrations using CRV to conduct such experiments and share their experience in conducting similar CRV network traffic monitoring and analysis.

Bandwidth Extension of CRV to Meet Future Requirements - PCCWG (WP/23)

2.33   PCCWG shared that various States/Administrations raised concerns to PCCWG on bandwidth capacity limitation to match future SWIM applications that might consume large amounts of data in SWIM TF meetings. The SWIM TF meeting has requested that CRV OG consider deliberating the possibility of enhancing CRV bandwidth and the associated cost optimization to support operational SWIM implementation over CRV. PCCWG shared that bandwidth up to 2M has been quoted in the tender in 2015 to suit the initial requirement to build the CRV network. Other than the 2M options mentioned in the PCCWG price book, more pricing and bandwidth options can be provided for States/Administrations' consideration on request. As a rule of thumb, PCCWG presented the following diagram, clarifying the bandwidth upgrade cost concept.
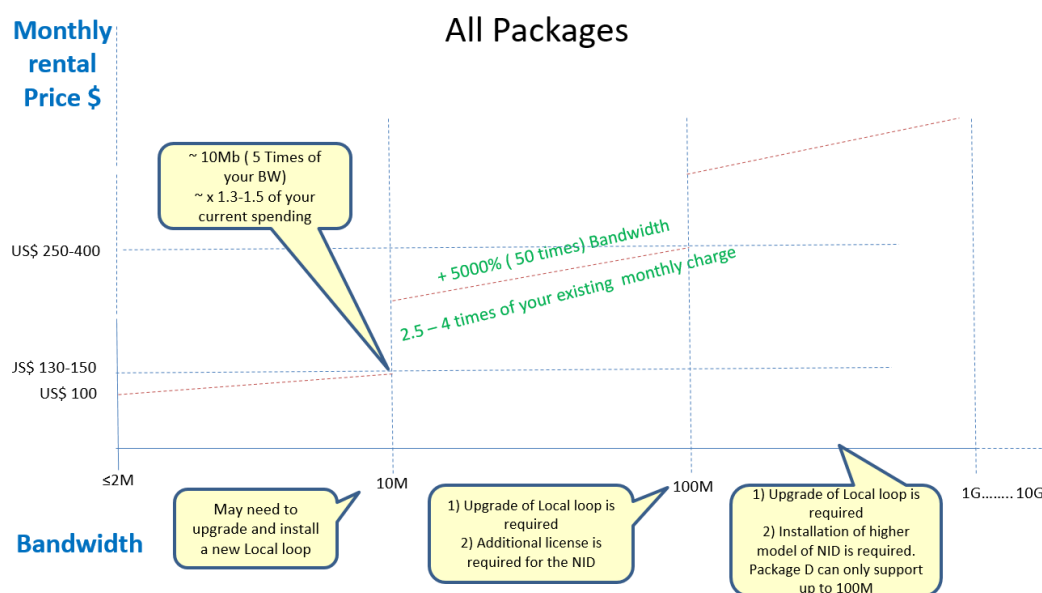
2.34   The CRV OG/12 Meeting requested that Member States/Administrations review the CRV bandwidth requirement and estimate the cost based on the conceptual diagram provided in the figure. States/Administrations may contact PCCWG directly for further commercial discussion as needed.

CRV Bandwidth Utilization Rate – PCCWG (WP/27)

2.35   PCCWG presented the bandwidth utilization of each Member State/Administration in 2023. 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 CRV OG/12 Meeting reviewed the monthly traffic report and it was observed that the average utilization rate cannot share peak bandwidth utilization. Member States/Administrations were requested to make additional efforts to measure and monitor CRV network performance and share it with CRV OG regularly.

Progress of CRV Implementation by APAC Member States

2.36   Australia, Hong Kong China, Indonesia, Japan, Pakistan, the Republic of Korea, and Sri Lanka presented the CRV implementation status through different Papers.

Outcomes of Joint CRV OG Experts and SWIM TF TLS Meetings – New Zealand (WP/22)

2.37   New Zealand presented an update on the meetings between the CRV OG Experts and the SWIM Taskforce Team Leads. The joint CRV OG experts and SWIM TF TLS meetings occurred three times in 2023, on 22 February, 23 June, and 5 October 2023 via TEAMs. The outcomes of the discussions regarding the SWIM principally over CRV, PCCWG Console Connect Aviation Platform, CRV OG and SWIM TF Working Together, and CRV Governance were introduced. The CRV OG/12 Meeting requested more States/Administrations to contribute to the CRV OG Ad-hoc Governance/Experts Group.

2.38   The CRV OG/12 Meeting also discussed the Enterprise Messaging Service hierarchy architecture being used in the joint event.

The collection of CRV Requirements- New Zealand (WP/25)

2.39   The CRV OG/12 Meeting conferred the expectations of SWIM TF from CRV OG regarding CRV network requirements for providing SWIM services over CRV. The new CRV contract management process also needs CRV requirements to accommodate other future services. The CRV Operations Manual has specific parameters for the CRV network performance, such as bandwidth, latency, jitter, packet loss, QoS and connectivity. To ensure new services and applications provide the CRV OG with sufficient information to decide on any potential changes to the CRV Network, CRV OG needs the application owner to give details. Due to SWIM TF and CRV OG's dependency on each other's information, the discussion is not progressing well.

2.40   To further progress the discussion, CRV OG/12 Meeting developed the first draft of a form, provided to describe the parameters that the CRV Network performs under, validation from the application or service owner that these parameters are acceptable or not and if not acceptable, the application or service owner is to provide in detail what is required.

2.41   The CRV OG/12 Meeting agreed that first draft of the form will be sent to the Ad Hoc Expert Design Group before **31 January 2024** for comment and feedback, which has been completed. The ICAO Secretariat also shared the draft form with the SWIM Task Force Task Leads for filling in the form and for comment and feedback. CRV OG Ad-hoc Expert Group will review the duly filled form in the 3 May 2024 Meeting.

2.42   Based on the information shared in the form and outcomes of the joint event (trial/demo), **"CRV data requirements for SWIM Workshop"** is planned to be hosted by the USA in late August/September 2024. The workshop was recommended to be attended by CRV OG Experts and SWIM TF Task Leads. The workshop objectives would be to review the outcomes of the joint event, analyze CRV performance and other crucial information to finalize the list of requirements and other technical specifications for the new CRV contract management process. The ICAO Secretariat will share the exact date, venue, and detailed agenda information about the workshop as soon as it is finalized.

2.43   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.

MPLS/IP Based Inter-Regional Connection – Sec (WP/05)

2.44   The CRV OG/12 Meeting noted the current discussion status for the potential interconnection of CRV and REDDIG II and CRV and New PENS.

2.45   The CRV OG/12 Meeting recalled the efforts made for CRV and REDDIG II Interconnection and noted that the ICAO APAC Office has requested PCCW Global contact Cirion Technologies to discuss the interconnection proposal. However, despite several coordination in 2023, no concert technical proposal is ready to work further for CRV and REDDIG II interconnection.

2.46   After analysis of the issues, it seems that in the current CRV/REDDIG II contract, no clause requires PCCW Global/Cirion Technologies to establish interconnection with different regional networks. It was essential to include a requirement in the new service contracting processes to establish interconnections with other ICAO regional networks. Furthermore, the CRV and New PENS interconnection status was the same as shared in CRV OG/11 by WP/12. ICAO Secretariat is coordinating with Eurocontrol for further way forward. However, there were no progress and no outcomes to share. Further discussion of this WP is recorded under WP/06.

Regional IP Network Interconnection Discussion – PCCWG (WP/06)

2.47   PCCWG highlighted the status of the interconnection discussion between the CRV Network provider (PCCW Global) and the REDDIG II Network provider (Cirion, previously Lumen). PCCWG updated that they have offered the other high-level interconnection diagram to Cirion for comment, which is still awaiting Cirion's feedback. As such, the CRV OG/12 Meeting was requested to provide assistance to proceed further.

2.48   The CRV OG/12 Meeting agreed that based on the situation's urgency, States/Administrations of the APAC region needed interconnection with the SAM region may join REDDIG II or implement a dedicated line based on cost-benefit analysis. Similarly, in case of the need to interconnect with European States, New PENS can be joined by the interested States. PCCWG informed that they could support connection to CRV if other regions' States/Administrations wish to join CRV under CRV OG instructions/guidance. Concurrently, the CRV OG/12 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. During the new CRV contract management process, CRV OG will incorporate the clause of interconnection with other regional networks into the contract document.

2.49   The CRV OG/12 Meeting suggested that the CRV OG Ad-hoc Expert group prepare use cases for regional interconnection of CRV and 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.

Updates on CRV Pioneer States' Remaining Contribution to the ICAO Managed Service Agreement (MSA) – Sec (WP/07)

2.50   The paper shared information about the recent development of using the balance fund of the MSA. The CRV OG/12 Meeting was informed that to follow up on Conclusion ACSICG/10/02 (CRV OG/11/03) – *Selection of Security Review Options 2 and 5 and Develop a ToR,* for utilization of remaining money from CRV Project, the draft ToR was prepared by the CRV OG Ad-hoc Expert Group, which was reviewed by the ACSICG/10 Meeting and endorsed as Conclusion ACSICG/10/03 – *Adoption of ToR for CRV Security Review using Options 2 and/or 5.* Based on the adopted ToR, CRV OG Ad-hoc Expert Group invited quotations from different vendors to prepare cost estimates for the work. Further information about the cost estimate and way forward was shared by CRV OG Co-Chair (Asia) by WP/08.

Cyber Security Review Update – New Zealand (WP/08)

2.51   CRV OG Co-chair (Asia) presented an update on the proposed Cyber Security Review. The CRV OG/12 Meeting noted that the two cybersecurity organizations specializing in cybersecurity, namely Aura Cyber Security Consultant - IT Risk Assessment - New Zealand and ZX Security Full Spectrum Security Services - ZX Security, had provided quotations. The CRV OG/12 Meeting discussed the way forward for generating two work orders for two tasks to Aura and ZX Security and requested the ICAO Secretariat to suggest the process to transfer money to Aura and ZX Security for assigned tasks if agreed to be appointed by the Meeting in the future.

2.52   ICAO Secretariat informed that it has coordinated with ICAO HQ CDI to share the formal process to transfer the 16 pioneer States' money to the third-party supplier. However, this could be seen as a way to use funds from an ICAO project to solo-source, thus circumventing ICAO regulations on procuring goods and services. ICAO CDI cannot proceed this way, and the funds must agree with ICAO provisions, as described in the MSA/Project Document. ICAO CDI suggested that as it is a Regional project, the best way to do this would be for the CRV OG to take the resolution to close the project, conclude that all objectives have been reached within this project, and advise the project management of ICAO APAC Regional Office. Then, the ICAO APAC Regional Office can request ICAO CDI to proceed to the closure of the project and will transfer the remaining funds requested to each contributor.

2.53   The CRV OG/12 Meeting acknowledged the significance of CRV's security assessment task, an APAC regional network. However, the process would be very complicated if ICAO CDI carried out the project. CRV OG is already working on a new CRV contractual process, which is a very extensive and exhaustive process and requires significant effort, time, and contributions. Given that the timeline to utilize the remaining funds is five years, from December 2022 to December 2027, the CRV OG/12 Meeting suggested not using MSA's remaining money for security assessment work. As the security assessment of CRV is essential and crucial for determining the security and trust of the APAC regional network, the CRV OG/12 Meeting agreed to incorporate this task in the new CRV contract management process.

Japan Concept of Firewall Installation (WP/09)

2.54   Japan presented the concept of introducing firewalls to systems connected to the CRV in Japan and supported discussions on future mandatory firewalls. Japan introduced the overview of the system in Japan for connecting the CRV to the CRV NID. Japan summarized that a uniform firewall mandate could be excessive, as it would be required even for systems that each Member State/Administration considers less necessary to have a firewall in place.

Review ToR and Action Items - Sec (WP/24)

2.55   The CRV OG/12 Meeting reviewed the ToR of CRV OG and further updated the Action Items for CRV OG, which are provided in **Appendix E** and **Appendix F** of this paper. The revised ToR is presented to the Meeting for adoption by following draft decision:

Draft Decision ACSICG/11/xx – Revised CRV OG Terms of Reference		
What: That, the revised CRV OG Terms of Reference (ToR) as shown in **Appendix E** be adopted.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical	
Why: To align with the scope of work changes as more States/Administrations joined CRV.	Follow-up:	☐Required

When: 22-Mar-24	Status:	To be adopted by ACSICG
Who: ☐Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: ACSICG		

Future of Face-To-Face Meetings - New Zealand (WP/26)

2.56   The paper presented a discussion on the future of face-to-face meetings of the CRV. The CRV OG/12 Meeting noted that since the organizations continue to face budgetary pressure post-pandemic and the need to reduce greenhouse gas emissions, attending the annual face-to-face meetings for some CRV OG key members has become difficult. The CRV OG/12 Meeting acknowledged the concern about the limited budget and the need to reduce carbon footprint. However, the CRV OG/12 Meeting agreed that the work done by CRV OG is essential and provides benefits to all States/Administrations. CRV OG has already created many ad-hoc groups that work only through virtual meetings. In such circumstances, it is imperative to do at least one annual in-person Meeting so critical matters requiring detailed deliberations can be resolved and the decision-making process can be easier. The CRV OG/12 Meeting agreed to continue to meet in person at least once a year.

Date and Venue for the Next Meeting

2.57   The CRV OG/12 Meeting agreed to organize the next CRV OG Meeting as an **In-Person** Meeting to further progress tasks listed in the Terms of Reference, tentatively from **10-14 February 2025**. It was advised that if any State/Administration is interested in hosting the Meeting, they should inform the ICAO secretariat at least 4-6 months before. The dates and venue of the Meeting will be shared with APAC Member States after finalization.

3.   **ACTION BY THE MEETING**

3.1   The Meeting is invited to:

   a)   review the outcome of the CRV OG/12 and take any necessary follow-up actions;

   b)   adopt the draft decision mentioned in section 2.55; and

   c)   discuss any matters as appropriate.

CRV Implementing new service for existing CRV users or between existing users and new users.

AMHS service:

1. Develop a bi-lateral Memorandum of Understanding (MoU) or Letter of Agreement (LoA)
2. Both users coordinate with PCCW Global to establish a GRE tunnel (if none exists)
3. Ensure bandwidth is sufficient (64kbps)
4. Provide PCCW Global with each user's AMHS IP address subnet(s), to be advertised through the GRE tunnel (private IPv4 addresses have been assigned by ICAO to each ANSP)
5. Ensure a connection between Customer Edge (CE) routers (e.g., ping test)
6. Ensure connection between AMHS test applications (e.g., MTA connection test)
7. Perform AMHS testing (refer to AMHS ICD and EUR test procedures for more information)
8. Establish a connection between AMHS operational applications using configurations developed in test and reroute traffic to new connection (ensuring a potential fallback plan).
9. Accept the new service if the AMHS service has performed satisfactorily for 24 hours
10. PCCW should update respective SEPs
11. Inform ICAO, ACSICG and CRV OG of new routing to be recorded in various documents (e.g., Telecommunication Infrastructure Routing, etc.)
12. Report new AMHS routing to Air Traffic Service Message Handling System Addressing Center (AMC)

   Note: Steps 5, 6, 8, 10 require PCCW Global online support personnel

VoIP service:

1. Develop a bi-lateral Memorandum of Understanding (MoU) or Letter of Agreement (LoA)
2. Both users coordinate with PCCW Global to establish GRE tunnel (if none exists)
3. Ensure bandwidth is sufficient (112 kbps per channel without compression)
4. Coordinate with PCCW Global of each user's VoIP IP address subnet(s)
5. Coordinate with PCCW Global for each user's respective VoIP dial plan
6. Either implement your own VoIP to legacy voice signal conversion or PCCW Global to provide this service
7. Ensure a connection between Customer Edge (CE) routers (e.g., ping test)
8. Perform VoIP application-application testing
9. Accept the new voice service if it has performed satisfactorily for 24 hours
10. PCCW should update respective SEPs
11. Inform ICAO, ACSICG and CRV OG of new routing to be recorded in various documents (e.g. Telecommunication Infrastructure Routing, etc.)

   Note: Steps 5, 6, 7, 8 require PCCW Global online support personnel

New System Connection:

1. To be developed during CRV OG/12 meeting

Criteria to add a new service.

a. Considerations

    i.   Connecting a Service Provider / Service Consumer (SPSC) to the CRV can be initiated by any party that identifies a need for an SPSC to connect to it. The following should be considered by the SPSC and the CRV-Member state.

    ii.   The SPSC should be referred to CRV SERVICE PROVIDER to enable an initial discussion with them to assess the feasibility of connecting to the CRV. During this discussion the SPSC should clarify:

        a. Interfaces

        b. Data transfer rates

        c. DSCP marking

        d. Bandwidth

        e. Jitter

        f. Latency

        g. Packet Loss

        h. Connections

            i.   One to One
            ii. One to Many
            iii. Many to Many
            iv. Any to Any
            v. Unicast or Multicast

    iii.   It is recommended that Service Providers use public ip addressing for the delivery their services.

    iv.   It is recommended that Service Consumers are provided with a 10.x.x.x ip addressing from the CRV Member State where the CRV SERVICE PROVIDER NID is installed.

    v.   SPSCs will NOT be a member of the CRV Operations Group (OG). The OG may establish a CRV user group that could facilitate discussion on the use of the CRV by SPSCs.

vi.   SPSCs will need to adhere to the Common Regional VPN (CRV): System Design Document (SDD). Substantive changes to the SDD MUST be endorsed by the CRV OG.

vii.   CRV member states should consider ICAO Doc 9855 AN/459 Guidelines on the Use of the Public Internet for Aeronautical Applications as guidance when they are the Primary sponsor.

viii.   The CRV OG is NOT responsible for the accreditation/certification/validation of a Service Provider but must ensure that all reasonable steps have been taken to ensure that the Service Provider has sufficient systems and process in place to provide their service over the CRV.

ix.   Service Consumers and CRV members SHOULD ensure that when obtaining a Service from a Service Provider that the service meets their operational service requirements.
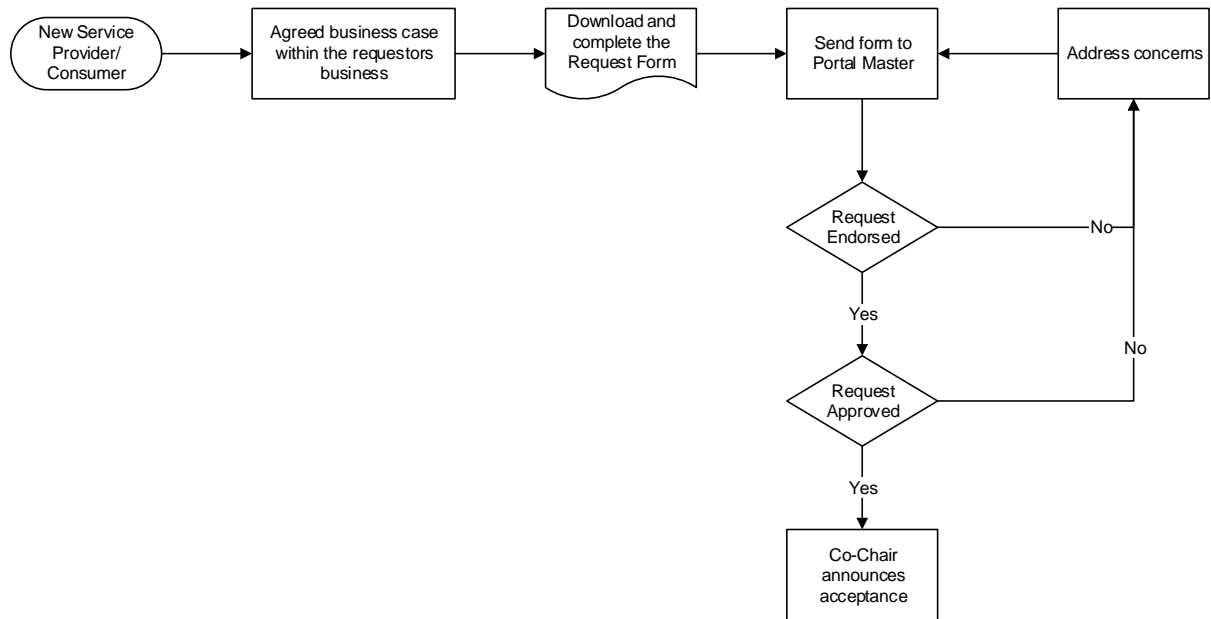
b. Process

1. Procedure.

   i.   The information required in the connection request, should be presented in English and in a clear and logical format. The following process will be used for an SPSC to obtain approval connect to the CRV:

   ii. Provide a business justification including Benefits Realization for joining the CRV

   iii. For a Service Provider:

       a. Provide a documentation using Section 2.3 ACCREDITATION OF AN IASP in ICAO Doc 9855 AN/459 as a guide including a cyber-security plan.

   iv. For a Service Consumer; at a minimum, provide a CRV connection plan and cyber-security plan on how they will shield the CRV from their organisation.

   v.   Obtain a Primary CRV member state to sponsor their connection to the CRV.

   vi. Obtain business justification from Primary Sponsor to support their request.

   vii. Obtain a Secondary CRV member state to sponsor their connection to the CRV based on the information above.

   viii. The information provided above, will be provided to the CRV OG via the APAC CRV portal.

ix. CRV OG members will be notified and have 25 business days to review and address any concerns that they may have with the request.

x. After the 25 days, if the majority of reviews by CRV OG members are endorsed, the CRV OG chairs will review the request.

xi. For the request to be approved, both CRV OG C-Chairs need to approve the request.

xii. A Document/Certificate will be provided to the primary sponsor that can used to verify that the SPSC is approved to connect the CRV.

xiii. The on boarding of Service Provider / Service Consumer will be supported by the Airways New Zealand provided APAC CRV SharePoint portal. There will be word forms to facilitate the information and these forms will be migrated to an automated SharePoint Workflow as soon as practical.

Service Provider / Service Consumer will be required to undertake the following:

Provide a business justification including Benefits Realisation for joining the CRV

Provide a High-Level System Design oh how their Service could potentially connect to the CRV.

Service Providers to use Public IP Addressing

Service Consumers to use the ICAO allocated IP addresses

Interfaces

Data transfer rates

DSCP marking

Problem Statement

Background
The CRV Network was created out of the need to replace legacy point to point half circuits between states with cost-effective telecommunications IP network connectivity with the aim to achieve ICAO current and future strategies of GANP ASBUs: B0-FICE, B0-NOPS, VoIP and B1-SWIM modules.

The initial focus was on the implementation of the network through a tender process managed by TCB and the CRV Taskforce, then implementation and migration of service via the CRV Operations Group. Some thought was given to the future, mostly ADS-B and Flow Management Data. SWIM was only a vague concept.

Associated documentation was created as part of the Tender or Implementation phases and held in an accessible portal maintained by Airways New Zealand.
Some focus is given to maintaining these documents but is challenging due to CRV OG members also having day jobs with their parent ANSPs.

To aid progress of the documentation four Ad Hoc Expert groups have been stood up representing Strategy, Design, Transition and Operations. The intention was for these groups to meet independently regularly to produce updates to the documentation between CRV OG meetings.
We also meet with other groups such as the SWIM TF regularly.

The Problem
1. The advancement of the CRV is based on the input of a core group of CRV OG members.
2. The list of tasks is increasing the more the network is operated. This requires more effort and faster turnaround on making decisions to make changes to the CRV network configuration and associated documentation.
    a. IP Address management
    b. Incident Management
    c. Testing
    d. Security improvements
    e. Security Review
    f. Operations Manual
    g. Implementation Plan
    h. Common Package update
    i. Portal hosting – change?
    j. Overview drawing updates
    k. Implementation Plan updates
    l. IPV6?
    m. Memberships
    n. TOR update?
    o. Future services – IPVHF, Space Comms and ADSB
    p. Better monitoring

q. Interconnects
3. We meet once per year to discuss, agree and endorse changes. This is slow.
4. The four Ad Hoc Expert Subgroups have not met separately but met each time as a group for expediency.
5. CRV II is coming soon.
6. Information and documentation need to be accessible by all.
7. As more ANSPs and other organisations join we need to have a RASCI to define our roles, responsibilities and expectations.
    a. OG Members
    b. Co-Chairs
    c. National Contacts
    d. Local Contacts
    e. Service Provider
    f. User- State
    g. User Industry
    h. ICAO Secretariat
    i. ICAO Regional Office
    j. ICAO TCB
8. Budgets are constrained.
9. Sustainability needs to be considered.
10. Some states are not engaging with CRV.
11. Unknown routine activities

We need to change, to allow groups to act autonomously with ownership of actions, make decisions, and regular reporting without having to wait for an annual meeting to make the decisions and reliance on specific members.

The CRV OG uses the Co-Chairs and Secretariat as the points of contacts which can often create confusion from other taskforces and groups regarding who they should be talking to provide potential solutions.

Current State
1. One Meeting per year with the full OG and the Service Provider.
2. Ad Hoc experts four times per year.
3. SWIM TF four times per year.
4. Ad Hoc Governance group four times per year.

Proposed State
1. One Meeting per year with the full OG and the Service Provider.
2. Experts four times per year.
3. Operations twelve times per year.
4. Other TF four times per year.
5. Governance group four times per year.
6. Service Provider four times per year.

List of daily tasks:

List of Weekly Tasks:

List of Monthly Tasks:

Other Routine Tasks and its frequency:

Future Tasks:

UPDATED APAC CRV IMPLEMENTATION TABLE

Please review the following table and share updated information in track mode by email at vmeefuengsart@icao.int and snibhani@icao.int

CRV focal points of States/Administrations are requested to also update the <u>telecommunication infrastructure table on the CRV Portal</u> *(please click at the link to update the table)* hosted by Airways New Zealand.

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
1	**Afghanistan**					
2	**Australia***	Fiji New Zealand USA PNG Singapore	Contract in May2018 and service readiness in 3Q 2018	AFTN, ADS-B, AMHS, Voice With: <u>Completed:</u> **Fiji** March,2019 (AMHS June 2019/AIDC, Voice completed April) **New Zealand,** February, 2019 (AMHS June 2019, AFTN May 2019/AIDC), March, 2019 (Voice April 2019 completed) **Singapore** Dec, 2020 (AMHS/AIDC); **PNG** June 2021 (AFTN) Oct 2021 (Voice) **USA** March 2019 (AFTN)	Staged approach	Termination of current COM contract

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
				March 2019 (Voice) In Progress: **Indonesia** Jan 2024 (AMHS), Voice and ADS-B pending. Pending: **South Africa TBC** (AMHS/AIDC, Voice);		
3	**Bangladesh**					
4	**Bhutan**	Thailand (Bangkok)	Contract signed on Oct 2019. CRV installed successfully in Dec 2021. CRV P2P Test between Paro-Bangkok completed. CRV P2P Test between Paro-Mumbai completed on Jan 2023	AMHS first. Voice and ADS-B – to be decided.	Staged Approach	Dependent on India for full utilization of CRV network.

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
			CRV cutover between Paro-Mumbai is scheduled on March 2023			
5	**Brunei Darussalam**					
6	**Cambodia**		As early as convenient, dependent on neighbouring countries			Internal decision making
7	**China***	Hong Kong China Japan Republic of Korea	Contract signed on 21 June 2020.	Applications targeted: Data(AMHS) With: Hong Kong 3Q2020; Japan 4Q2020; Thailand TBD; India 2022. Republic of Korea 4Q2022 Mongolia 4Q2022 ATFM test with Japan and ROK at Sep 2020 over CRV ADP exchange with Mongolia 4Q2022	Staged approach	

SN	State/ Administration (with* is BBIS; marked in blue-not yet join CRV/ no updates	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
8	**Hong Kong, China***	Philippines China Japan Thailand Vietnam	Contract signed on 6 April 2018. Connection was installed successfully in June 2018.	**With Manila** CRV-Voice put into operation in August 2018 CRV-AMHS put into operation in May 2019 **With Fukuoka** CRV-AMHS put into operation in September 2020 **With Beijing** CRV - AMHS POT in March and operation in April 2021 **With Bangkok** CRV-AMHS put into operation in August 2022 **With Hochiminh** Subject to Hochiminh's readiness	Staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV in a harmonized manner, etc.
9	**Macau China**		December 2022	To be confirmed	Staged approach	Migration from X.25 to IPS
10	**Cook Islands**					
11	**Democratic People's Republic of Korea**		Contract in 3Q2018 and service readiness in 4Q2018	AFTN and VoIP		

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
12	**Fiji***	Australia New Zealand USA	Contract in May 2018 and service readiness in 3Q 2018.	Data (AMHS) and VoIP With: Australia ATS voice April 2019 completed, AMHS completed in July 2019, NZ ATS voice completed April 2019 and USA ATS voice completed in March 2019 and AMHS completed in April 2019.	Staged approach	CBA, safety case
13	**France:** **-New Caledonia** **-French Polynesia**	Fiji New-Zealand	Q3/2023 Q3/2023	ATS Voice, AMHS AFTN/AMHS with NZ.	Staged approach	Depends on an agreement with peer States on adding a layer of encryption (PSK) over CRV

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
14	India*	The GRE tunnels has been setup between: Mumbai–Bangkok, Mumbai- Singapore. Mumbai–Beijing and Mumbai-Paro. Mumbai-Kathmandu GRE Tunnel under tests Note: AMHS trails between Mumbai-Bangkok over CRV has been carried out successfully. AMHS trails between Mumbai-Singapore, Mumbai - Bhutan over CRV are presently in progress.	Contract for CRV implementation with M/s PCCW in India Signed on 15th March, 2022. CRV Circuit has been delivered in Dec, 2022. CRV Cutover: End of 1Q2023	AFTN/AMHS, , ATS Voice & ADS-B	Staged approach	Note: On successful trial Operation with BBIS/BIS States, the CRV Cutover will be planned.

SN	State/ Administrat ion (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administra tions connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
15	Indonesia		Contract in 1Q2022 and service readiness in 2023.	Australia 2024 (voice & data) Malaysia 2024 (voice) Papua New Guinea 2024 (voice) Philippine 2024 (voice) Singapore 2024 (voice & data) USA 2024 (voice)		
16	Japan*	Hong Kong China USA Singapore China RoK Philippines	Contract signed in Nov.2017	1) AMHS with China Hong Kong China RoK Singapore TaipeiACC USA 2) AIDC with RoK(planned 1Q 2024） Taipei USA 3) VoIP with RoK Philippines TaipeiACC USA	Staged approach	
17	Kiribati					

SN	State/ Administrat ion (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administra tions connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
18	**Lao PDR**					
19	**Malaysia**	Thailand Singapore Indonesia India	Contract signed between CAAM and PCCWG in Sept 2022. CRV service readiness started in Nov 2021.	**Thailand** 1) Network connectivity testing (AMHS/AIDC) – Oct 2022 2) Completed cut over & migration (AMHS /AIDC) – Jan 2023 3) Voice & ADS-B (testing, migration-TBD **Singapore** 1) Network connectivity testing (AMHS/AIDC) – May 2022 2) Estimate cut over & migration (AMHS/AIDC) – Q1/2023 3) Voice & ADS-B (testing, migration-TBD **India** 1) Estimate network connectivity testing (AMHS/AIDC) – Q1/ 2023 2) Estimate cut over & migration (AMHS/AIDC) – Q1/2023 3) Voice & ADS-B (testing, migration-TBD **Indonesia**	Staged approach	

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administra tions connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
				1) Estimate network connectivity testing (AMHS/AIDC) – Q2/2023 2) Estimate cut over & migration (AMHS/AIDC) – Q2/2023 3) Voice & ADS-B (testing, migration-TBD		
20	**Maldives**					
21	**Marshall Islands**					
22	**Micronesia (Federated States of)**					
23	**Mongolia**	CAAM and PCCWG made ICMP package test in 2021.	Contract in 1Q2022 and service readiness in 4Q2022	AFTN, ADS-B, AMHS, Voice With: **China** Dec, 2022(AMHS), (ADP) TBD Voice, ADS-B, AFTN **Russia** TBD (AFTN, ADS-B, AMHS, Voice)	staged approach	Negotiations with neighbouring countries and stakeholders on CRVs and its use are critical to implementation.

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
24	**Myanmar**	China , India, Thailand, Laos, Bangladesh.	Contract will be signed after discussed with PCCW Global. Implementation was targeted in Q4/2023 depends on PCCW's proposal quotation. Already sent to high level questionnaire form V 2.1 in June 2021 and V 2.2 again to PCCWG in Feb 2023 to join the CRV implementation.	AFTN/AMHS, AIDC, ADS-B and Voice	Staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV network to be harmonized regionally.
25	**Nauru**					
26	**Nepal**		SO signed with PCCW	AFTN/AMHS	Staged Approach	BBIS-state India joining the CRV network, as most traffic is routed through it

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
27	**New Zealand**	Australia USA Fiji French Polynesia Chile	Contract signed in July 2018 and service implemented December 2018	Australia Voice Completed March 2019 and AMHS June 2019 Completed USA Voice Completed March 2019 and AMHS March 2019 Completed Fiji Voice Completed April 2019 French Polynesia AMHS and Voice Chile AMHS (SAM regional network REDDIG)	Awaiting French Polynesia joining. Awaiting outcome of inter-regional network connectivity discussion. For Chile	CBA attractive if all counterparts join in.
28	**Pakistan**	China India	Duly Signed Service Order Form Submitted on 23rd Jan 2023 for Finalization / Execution of the Contract. As per timeline given by PCCW Global the CRV will be implemented by August / Sept 2023	AMHS /AFTN / VOICE	In progress	Package-D is opted to establish link between China and India. Connectivity with other neighbouring regions / FIRs i.e. Tehran, Kuwait, Kabul & Muscat could be migrated on CRV only if the states join CRV.
29	**Palau**					

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies

30	**Papua New Guinea**	Australia USA-Oakland USA-Aireon		Australia:
				  AFTN June 2021,
				  Voice Oct 2021
				USA-Oakland
				  Voice November 2021
				USA-Aireon
				  Space based ADSB-July 2021
					Staged approach	Completed

31	**Philippines**	Hong Kong China Taipe Singapore USA Japan Indonesia Malaysia Vietnam	Contract signed in March 2018 and service readiness in 2Q2018	Completed:
				With **HONG KONG**
				  AIDC - 2Q2019
				  AMHS - 2Q2019
				  VOICE - 3Q2018
				
				With **TAIPE**
				  AIDC - 2Q2019
				  AMHS - 2Q2019
				  VOICE - 1Q2019
				
				With **SINGAPORE**
				  AIDC – 4Q2019
				  AMHS – 4Q2020
				  VOICE – 1Q2020
				
				With **USA (Oakland)**
				  AMHS - 2Q2021
				  AIDC - 4Q2022
				  VOICE - 4Q2019
					staged approach	Success transition to the New ATM center in 4Q2018
						
						Dependencies:
						AIDC with Kota Kinabalu implementation via BBIS Singapore
						
						AIDC with Makassar implemented via BBIS Singapore

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
				With **JAPAN** VOICE - 1Q2022 AIDC - Planned 2024 With **INDONESIA (Makassar)** AIDC - 4Q2019 via BBIS VOICE - 4Q2023 Test done With **MALAYSIA (Kota Kinabalu)** **AIDC -** 4Q2023 Test done via BBIS **VOICE -** 2024 With **VIETNAM (Ho Chi Minh)** AMHS - 2024 AIDC - 2024 VOICE - 2024		

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
32	**Republic of Korea**	Japan China	Contract signed for AMHS in 3Q 2019 and service readiness in 4Q 2022 Contract signed for voice, AIDC in 1Q 2021 and service readiness in 1Q 2021	Completed: **With Japan** Voice – Sep 2023 AMHS - December 2022 **With China** AMHS – November 2022 Planned: **With Japan** AIDC – Feb 2024 **With China** AIDC – 2024	staged approach	AMHS POT in 4Q and operation from 4Q 2022
33	**Samoa**					

SN	State/ Administration (with* is BBIS; marked in blue-not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
34	**Singapore***	Australia Japan Philippines Thailand	Contract signed in May 2019 and service readiness in Dec 2019	Data (AMHS over IP) with: Australia Dec 2020 (completed); Japan Nov 2020 (completed); Philippines Dec 2020 (completed); Thailand Sep 2022 (completed); India Q1 2023 (in progress, testing completed); and Malaysia Q1 2023 (in progress, testing completed). Voice with: Philippines Mar 2020 (completed).	Staged approach	
35	**Solomon Islands**					
36	**Sri Lanka**	Planned: Australia India Indonesia Maldives Singapore	Nov-Dec 2022	Q1 2023 - AMHS with Singapore TBD - AMHS connectivity with Mumbai, and Male. TBD - Direct Speech facilities with Chennai, Trivandrum, Mumbai, Male, Jakarta, Melbourne, Singapore.	Phased Approach	Package D is planned based on CBA conducted. Comparison of performance of Package D and existing IPLC circuit.

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates)	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
37	Thailand	Bhutan Hong Kong, China Singapore China Malaysia India	1. Contract in 3Q2021 Status: Completed 2. Service readiness in 2Q2022 **Status: Completed**	Data first Then voice, subject to safety case: **Bhutan** in July 2022 **Hong Kong, China** in August 2022 **Singapore** in September 2022 **China** AMHS POT in July 2022 and operation will be performed after sign TMC. **Malaysia** in January 2023 **India** in February 2023 **Cambodia and Vietnam** Subject to States' readiness	Staged approach	
38	Timor Leste					
39	Tonga					
40	Tuvalu					

SN	State/ Administration (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administrations connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
41	United States*	Australia Fiji Japan Philippines New Zealand Indonesia	Contract in January 2018	1) AMHS with Australia Fiji Japan Philippines New Zealand 2) AIDC with Fiji Japan New Zealand 3) VoIP with Fiji Japan Philippines New Zealand Papua New Guinea (direct planned 2021) Indonesia (2024) Russia (when join CRV)	Staged approach	

SN	State/ Administrat ion (with* is BBIS; marked in blue- not yet join CRV/ no updates	States /Administra tions connected	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
42	**Vanuatu**					
43	**Vietnam**	Hong Kong, China Singapore Philippines	Contract signed in M 4Q/2022, Service readiness in May -2023	AFTN/AMHS connectivity with Hong Kong Voice and AFTN/AMHS with Singapore Voice and AFTN/AMHS with Philippines PCCW is installing equipments and clearing lines But has not yet completed it. Planning: **AFTN/AMHS connectivity with Thailand, China, Cambodia**	staged approach	

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**Common aeRonautical Virtual Private Network (VPN) Operations Group (OG) of
Asia/Pacific Air Navigation Planning and
Implementation Regional Group (APANPIRG) (APANPIRG CRV OG)**

TERMS OF REFERENCE

1.   Background

The establishment of APANPIRG CRV OG was proposed during the deliberations of the CRV Task Force (TF) as a dedicated group to provide oversight of the CRV operations and the performance of the CRV Service Provider. The APANPIRG CRV OG is formally established by APANPIRG Decision 27/33.

2.   Terms of Reference

The Common aeRonautical Virtual Private Network (VPN) Operations Group (OG) will provide oversight of the function and performance of the CRV and the performance of the Service Provider. The following are the activities to be performed:

a)   Oversee the implementation of the CRV post Contract Award;

b)   ~~Manage issues arising from the transition with CRV TF, if any;~~

c)   Co-ordinate and standardize the establishment or upgrade of CRV services as required;

d)   Co-ordinate activities with other regions' ICAO CRV OGs, if any, to make sure that decision making and communication with CRV Service Provider is consistent and timely;

e)   Oversee the performance of the CRV Service Provider, including customer service;

f)   Oversee the performance of the CRV network;

g)   Oversee the escalation and solving by the CRV Service Provider of issues associated with the provision of the CRV, including safety and security related issues;

h)   Assist with the resolution of issues associated with the provision of the CRV among the CRV Users as required, including safety and security related issues;

i)   Assist with the migration of Aeronautical Fixed Services (AFS) onto the CRV, in line with the GANP and ICAO APAC seamless ~~ATM~~ ANS plan;

j)   Maintain CRV OG documentation associated with the function, performance and management of the CRV, including the CRV OG Operations Manual, a list of CRV users and a record of variations to the common tender package;

k)   Accept deliverables from the CRV Service Provider on behalf of the CRV Users as required;

l)   Promote the use of CRV;

m)   Undertake continuous service improvements review to ensure CRV meets future needs; and

n)   Perform any other activity as required by CRV operations.

3.   Reporting

The CRV OG will report to Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) through ACSICG and CNS SG.

4.   Participation

The CRV OG will include all APAC Member States/Administrations, and any other organization as needed. Member States and/or inter-regional entry/exit Administrations in other ICAO regions may also be invited or request to participate in the activities of CRV OG.

5.   Conduct of the work

It is anticipated that the CRV OG will conduct its work primarily by Web Conferences, teleconferences and other electronic means of communications. Face to Face meetings of CRV OG may be required on an annual basis.

The ICAO APAC Regional Office will provide secretariat support for the CRV OG.

6.   Rapporteur

There will be two Co-Chairpersons of the CRV OG, one primarily responsible for Asia coordination and the other for Pacific coordination.

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Updated Subject/tasks List

Reference	Who	What	Due date	Status	Completed on	Result
1-1	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	The revised Annex 1 had been developed in CNS SG/21 report but no concrete proposal.	Close as it will be covered in 4-4 (CRV OG/9)
1-2	All member States	All States to complete their CBA and send to ICAO APAC Office	28-Apr-17	close	CRV OG/6	CBA by DSNA, Jordon, UAE, Behrain, Saudi, Egypt, Bhutan, New Caledonia, Myanmar, Fiji, Malaysia
1-3	Terence Palmer, Australia	Australia to include provisions in the CRV-OG operating manual for a small implementation team	1-Dec-17	close	CRV OG/7	
2-1	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	CRV OG/7	CRV Operating Manual
2-2	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	1-Apr-18	
2-3	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	CRV OG/3	
2-4	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	CRV OG/3	CRV Operating Manual
2-5	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	1-Apr-18	CRV Implementation Plan
2-6	USA/Hong Kong China/New Zealand/Secretariat	to propose a way forward regarding the MSA	1-Dec-17	close		
4-1	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	on-going	
4-2	ICAO Secretariat	conduct CRV OG/6 and SWIM TF currently for joint development SWIM Architecture based on construciton of CRV	8-May-19	close		
4-3	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 contract.	1-Dec-18	close	CRV OG/7	
4-4	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	opted the conclusion for	Depend on final fund decision from poineer MS.
4-5	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	CRV OG/5	

Reference	Who	What	Due date	Status	Completed on	Result
4-6	New Zealand	Finalize the draft CRV Operations Manual	Apr.19	close	CRV OG/7	**Conclusion CNS SG/24/4 -** Publishing of CRV operational manual to provide the information and directions required for CRV OG performance and CRV operations
4-7	USA	Develop a WP on AMHS over IPS protocol only for BBIS	1-Jun-18	close	CRV OG/5	
5-1	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	SWIM TF/3	**SWIM TF/3: (7-10 May 2019)** **WP/06** - APAC Regional SWIM Implementation Options ; **WP/20** - Network Capability and Security of CRV in Carrying SWIM Data; and **WP/05** - SWIM-Enabled MET Information Services Developed by Hong Kong China;
5-2	ICAO RO	Disribute a State Letter to inform States of POC result	15-Mar-19	close	6-Mar-19	**State Letter: Ref.: T 8/2.10 – AP025/19 (CNS), 6 March 2019,** Subject: Notification of successful result of the CRV Proof of Concept Testing and Urging earlier implementation of CRV in APAC Region
7-1	China, Nepal, PCCWG	Study on use of existing VSAT infrastructure linking with CRV	Jan-22	close		
7-2	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		No intercoonection with PASNET is possible. Close in CRV OG12
7-3	Australia and New Zealand	Polishing drafft First CRV Operations Manual	May-20	close		**Conclusion CNS SG/24/4 -** Publishing of CRV operational manual to provide the information and directions required for CRV OG performance and CRV operations
7-4	PCCWG & USA,Australia	maintain APAC dial plan and posted on CRV OG portal	Jan-22	close		
7-5	AFSSP WG	encourging member states of CRV to participate	20-Jan-22	close		State Letter Ref.: T 8/2.10: AP018/20 (CNS) Subject: 2020 APAC Aeronautical Fixed Service Safety and Protection Planning Working Group Meeting (AFSSP WG 2020), 16 January 2020.
7-6	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)	Open	Modifed in CRV OG12	HK is conducting POC with PCCWG in terms of concept for sharing surveillance data (CRV OG/9)

Reference	Who	What	Due date	Status	Completed on	Result
7-7	Australia and PCCWG	High level concept for inter-regional MPLS/IP connection	21-Apr-20	close		**WP/09:** MPLS/IP BASED INTER-REGIONAL CONNECTION, ICAO Sec **WP/11:** HIGH LEVEL NETWORK OPTIONS TO REDDIG, PCCWG
7-8	PCCWG & Australia, Fiji	Charging structure for an ANSP service provider on surveillance	20-Mar	close		IP/11 presented in OG/9 with solution
7-9	ICAO RO, Australia and USA	State letter to States to remind joining CRV	Mar-20	close		Ref.: T 8/2.10 - AP041 /20 (CNS) Subject: Reminder for implementation of Common aeRonautical VPN (CRV) in APAC Region by 2020, 2 March 2020
8-1	Co chairs, ICAO RO, USA, PCCW	CRV webinar	20-Jul-21	close	20-Jul-21	The webinar was conducted successfully on 20 July 2021
8-2	ICAO RO, USA, HKCAD	Timeframe for CRV supporting SWIM	Jan-22	close		Ad-hoc group created in CRV OG/9 for this task. Under action item 9-8
8-3	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		

Reference	Who	What	Due date	Status	Completed on	Result
8-4	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	SL Ref.: T 8/2.10 – AP007/22(CNS) dated 12 January 2022 Subject: - To remind the target year of CRV Implementation by 31 December, 2022 in APAC Region and CRV Implementation for small Pacific Island and small ANSP in the region using CRV Solution, PCCWG SLA Package D	CRV webinar requested to extend the date by one year due to panedemic
8-5	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)	on going	Ongoing. Technical Proposal finalized in CRV OG8 meeting was NA due to takeover of Lumen by Cirion Technologies	
8-6	Fiji, PCCW	submit a paper to ACSICG/8	21-Jun-21	close	Done in ACSICG/8	IP/06: PRESENTATION OF PCCW NETWORK BASED IWXXM TRANSLATION AND EXCHANGE SERVICE
8-7	USA, co chairs, PCCW, ICAO RO, concerned parties (ad hoc)	Cyber threats protection for CRV	Jan-22	close	Need to review this action item in CRV OG/11 CRV OG11: Closed it now and Reopene once concret information from ICAO is available.	ICAO Requirements proposed in WP/32 of CNS SG/25: a) ICAO needs to provide an IPv6 dedicated address block b) ICAO needs to propose a Name Space and field a DNS c) ICAO needs to deliver IATF recommendations for security including a Trust Framework for Digital Identities For the moment being there is no requirement from the TF to use a dedicated block of IPv6 addresses or a fully qualified DNS. Analysis and studies are ongoing but there is no decision for the moment being. The Trust Framework Study Group has been "upgraded" to the Trust Framework Panel and matters concerning the trust framework will be under its purview (AN Min. 220-16 refers). The ANC has already reviewed draft job cards (AN Min. 221-7 refers). In the interim, development work continues on the digital identity certificate policy, as well as the development of guidance materials for an information security framework and this work will be transferred to the panel at its first meeting. Provisions related to information security as part of the new draft PANS-IM were recently discussed in the ANC in the 221st session and will be sent in a State Letter shortly (AN Min. 221-6 refers). These provisions are only applicable to SWIM for the moment being.

Reference	Who	What	Due date	Status	Completed on	Result
9-1	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	on going		
9-2	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		Done
9-3	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	New T&C was adopted in CRV OG11	Due date extended in CRV OG/10. Meeting scheduled on 31 March 2022 WP/03 presented to OG/10 Next Steering Group meeting on **14 July 2022** Meeting done and T&C is reday-16 Dec 2022
9-4	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		State letter Ref.: T 8/2.10 – AP026/22(CNS) 01 February 2022 Subject: - Request to share the intention to join CRV and its Tentative Timelines
9-5	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		Meeting held on 31 March 2022. WP/02 presented to OG/10
9-6	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		PCCWG agreed to consider all states on same price who will sign contract in 2022 and installation till 31 december 2023. Reply to Sri Lanka is being prepared- Updates on 14 March 2022 Sri Lanka confirmed reception of reply on 18 April 2022 by email from Mr. Vidura.
9-7	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	SWIM TF/6	Done Propose to close
9-8	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	Add it into next ad-hoc expert group meeting on 10 March 2022	Added into 10 March 2022 meeting and infromed to all member states of ad-hoc group. Propose to close
9-9	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	Final terms and defintions were adopted in CRV OG11	Propsoal sent for meeting from 30 May-3 June for choices by members on 21 March 2022 Final Meeting date is 2 June 2022
9-10	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	WP/14 presented by New Zealand in CRV OG11	
9-11	New Zealand	Prepare the Terms of Reference (ToR) of Security and safety assessment of CRV	CRV OG/11	close	Replaced by AI 11-8	
11-1	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	22-23 May 2023 CRV OG Ad-hoc Governance Group organised	ToR need to be discussed in CRV OG Ad-hoc group meeting on 20 April 2023
11-2	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	2/24/2023	APAC State Letter Ref.: AP034/23 (CNS) - Publication of ICAO APAC CRV OG Operations Manual v1.2 and ICAO APAC CRV Implementation Plan v2.2 dated 24 Feb 2023
11-3	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	Open		Added into agenda item for 20 April 2023 Meeting

Reference	Who	What	Due date	Status	Completed on	Result
11-4	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	2/24/2023	APAC State Letter Ref.: AP034/23 (CNS) - Publication of ICAO APAC CRV OG Operations Manual v1.2 and ICAO APAC CRV Implementation Plan v2.2 dated 24 Feb 2023
11-5	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		
11-6	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	Open		
11-7	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	on going		Table finalized on 17 March 2023
11-8	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		Email shared with CRV local POC on 17 March 2023
11-9	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	Done in ACSICG/8	
Seminar 12-1	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	Open		
12-1	PCCWG	PCCWG will provide quarterly bandwidth utilization reports to the CRV OG Ad-hoc expert group as a periodic update	CRV OG/13	on going		
12-2	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	Open		
12-3	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	Open		
12-4	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	Open		
12-5	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	Open		

Reference	Who	What	Due date	Status	Completed on	Result
12-6	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	Open		
12-7	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	Open		
12-8	ICAO Secretariat	ICAO Secretariat will share the information requested and templates of daily, weekely, 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	Open		
12-9	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	Open		
12-10	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	Open		
12-11	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	Open		
12-12	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	Open		
12-13						
12-14						
12-15						
12-16						
12-17						
12-18						
12-19	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	Open		
12-20	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	Open		
12-21	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	Open		
12-22	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	Open		
12-23	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	Open		
12-24	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	Open		
12-25	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	Open		
12-26	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	Open		
12-27	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	Open		
12-28	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	Open		