



# ICAO

*International Civil Aviation Organization*

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

*Mumbai, India, 15-19 June 2026*

### Agenda Item 3:

CRV OG Reference documents

- Outcomes of Ad-hoc expert Strategy, Design, Transition and Operations Groups

## OUTCOMES OF CRV AD-HOC EXPERTS GROUP MEETINGS

(Presented by the Secretariat)

### SUMMARY

This paper presents a summary of the outcomes of the APAC CRV Ad-Hoc Experts Group meetings held in 2025-2026.

## 1. INTRODUCTION

1.1 CRV Workshop for PSIDS was held from 3-4 March 2025 and the Thirteenth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/13) was held from 5 to 8 March 2025, in Wellington, New Zealand. The Meeting was attended by 74 participants from 26 Member States/Administrations, 3 International Organizations and 2 telecommunication providers. The meeting report, working papers, information papers, and other resources can be accessed by the following link:

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

1.2 This paper presents a summary of the outcomes of the APAC CRV Ad-Hoc Experts Group meetings held in 2025-2026 after CRV OG/13.

## 2. DISCUSSION

2.1 A total of **four (4)** Ad-hoc expert group meetings were conducted on **12 June 2025, 9 October 2025, 27 Jan 2026 and 12 May 2026**. The MoM of Ad-hoc experts group Meetings conducted using Microsoft Teams is provided in **Appendix A, Appendix B, Appendix C and Appendix D**.

2.2 The following were the key topics for discussion at the Ad Hoc Experts meeting:

### 1. Operations Manual Updates

- Service Strategy
  - CRV Sub-regional Maintenance Window
- Service Transition
  - Guidance on testing new services/SWIM services and transitioning into operations
  - Guidance for using the residual bandwidth of CRV for testing/trial
- Service Operation

○ Network Visibility

The final deliverables from these discussions will be presented in WP/11 and WP/12.

2. CRV-II Contract actions

- Draft CRV II baseline Terms and Conditions
- CRV documents after CRV II contract decision

The final deliverables from these discussions will be presented in WP/13 and WP/14.

3. Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings

The final deliverables from these discussions will be presented in WP/10.

4. CRV Governance

The final deliverables from these discussions will be presented in WP/12.

5. CRV in AFI, EUR and MID Region/ CRV and REDDIG II/New

- The REDDIG III contract is still in progress.
- To further discuss the benefits of interregional connectivity, all States utilising CRV and having interregional connections were requested to share their use cases for interregional interconnection before 20 October 2025. Upon receipt of responses from the relevant States and Administrations, the Secretary consolidated the replies and presented the results in WP/16.
- For the MID region, a discussion is going on currently to join CRV and New PENS, both by different States in the MID region.

6. Implementation of the cloud within the CRV network and integration of it with another cloud network

The final deliverables from these discussions will be presented in WP/20.

7. Pacific Updates

The final deliverables from these discussions will be presented in WP/21.

**3. ACTION BY THE MEETING**

3.1 The Meeting is invited to:

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

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Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 June 2025, Video Tele-Conference (VTC)

**Minutes of the Meeting of Fifteenth Ad Hoc Meeting: 12 June 2025 08:00 AM-10:00 AM  
BKK time**

**Meeting Date:** 06/12/2025 08:00 AM

**Location:** Microsoft Teams Meeting

**Notes:**

The Meeting was chaired by Mr. Vaughan Hickford, Manager Enterprise Architecture and Networks, Airways New Zealand, Co-Chair (Asia). Ms. Soniya Nibhani, Regional Officer ANS (CNS) Implementation, ICAO Asia and Pacific Regional Office, acted as the meeting secretary.

**Adoption of agenda:**

- ✓ The provisional agenda circulated earlier was adopted by the Meeting.

**Agenda Item 1: Welcome & Opening Remarks**

- ✓ CRV OG Co-Chair (Asia) welcomed all delegates and shared opening remarks.

**Agenda Item 2: SWIM TF/10 and SIPG WS/2 key outcomes for CRV OG**

- ✓ ICAO Secretariat shared key outcomes of SWIM TF/10 and SIPG WS/2.
- ✓ The Meeting discussed the Option 1 diagram and noted that there are ambiguities. The diagram shows that AMHS is inside the CRV, and the CRV and the internet are connected. However, the EMS will be inside the organization's network, and there is going to be a connection to the CRV and the internet. The network will determine which way the message is going to be routed based on the routing criteria for that message. It was informed that as per SWIM TF/10, IPsec and API would be used for the connection.
- ✓ It was noted that the number of GEMS is still under discussion. Also, GEMS organizations will need to implement routers or VPN concentrators to facilitate multiple IPsec connections within their organization. Most routers have a limit on how many IPsec VPNs they can manage at any one time, which will involve cost.
- ✓ It was noted that Gateway EMSs had problems with latency and packet loss due to the way they were operating. However, the end-to-end latency is unknown. It was agreed that more data is required. Most of the time, latency is fixed and based on physics, so it is not possible to reduce latency beyond a value. Also, CRV meets the required latency criteria. To understand the issue, Thailand needs to provide more details on the setup of measurements. **ACTION ITEM 15-1**

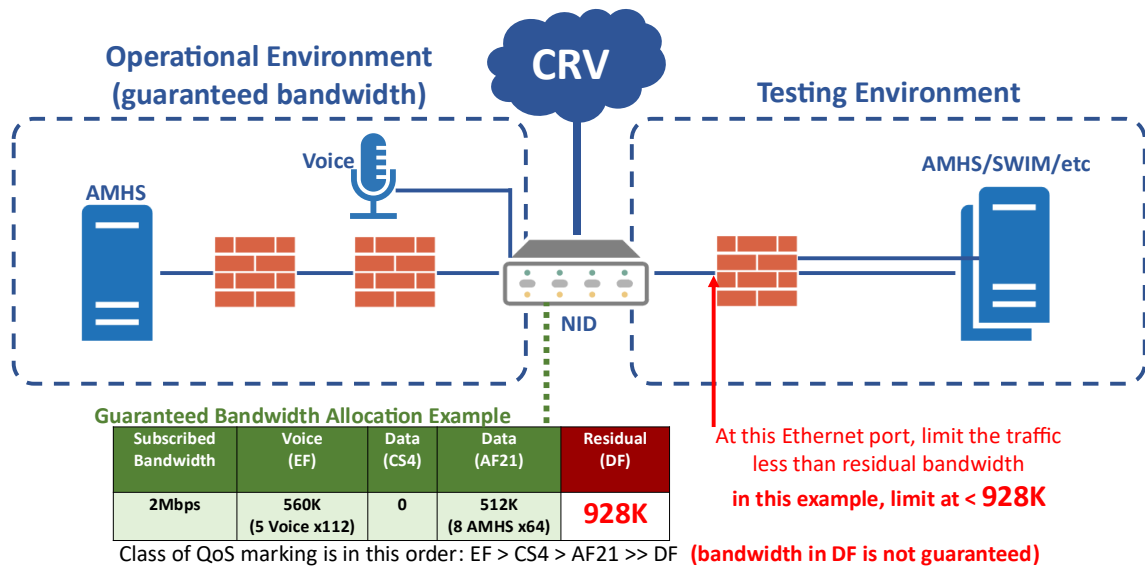
**Agenda Item 3: CRV OM updates**

- Service Strategy
  - ~~Dispute resolution support~~
- Service Design
  - ~~Change to Jitter SLA for Data~~
  - ~~Package D does not support analog voice.~~
- Service Transition
  - Guidance on testing new services/SWIM services and transitioning into operations

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 June 2025, Video Tele-Conference (VTC)

- Using the residual bandwidth of CRV for testing/trial
- Service Operation
- Network Visibility

- ✓ No updates on service strategy and design.
- ✓ For service transition, a discussion was held to test new services and use residual bandwidth.
- ✓ Hong Kong China explained how Hong Kong China used residual bandwidth for testing using the following diagram, which initiated intensive discussions.



- ✓ The minimum bandwidth required for testing, the need for an agreement for checking residual bandwidth with peer States and an agreement for maximum utilization of bandwidth were discussed. How Hong Kong China and Singapore agreed on the necessary terms for using CRV was discussed. It was agreed that Singapore would work further on finding the necessary information in coordination with Hong Kong China, its SWIM team, and PCCWG to draft the necessary content to be included in the guidance material for utilizing residual bandwidth of operational CRV for SWIM testing. **ACTION ITEM 15-2**
- ✓ The Meeting noted that during the joint event, all demonstrations were done on pseudo-CRV.

#### Agenda Item 4

#### CRV-II

- CRV-II RFI
  - CRV II RFI Scoring Table
  - Outcomes of Pre-RFI RFI Survey  
Pre-RFI and Post-RFI Survey Scoring Table
- ✓ It was informed that no further questions were asked by the vendor. However, there is a request for an extension of the submission of RFI till 15 July. The Meeting agreed that it had already

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 June 2025, Video Tele-Conference (VTC)

been decided in CRV OG/13 that no extension would be provided. Therefore, the ICAO Secretary will inform ICAO HQ to update this information on UNGM. **ACTION ITEM 15-3**

- ✓ It was agreed that all received responses to CRV II RFI would be uploaded to the secure portal rather than sending them by email to States/Administrations.
- ✓ It was noted that the post-RFI survey was finalized at the last Meeting, and no further changes are required. The post-RFI survey will be shared with States in the first week of July. **ACTION ITEM 15-4**
- ✓ Vaughan will share a comparison sheet of pre-RFI and post-RFI scoring shared in the last Meeting. **ACTION ITEM 15-5**
- ✓ The RFI evaluation sheet of 2015 for CRV-I was discussed. It was agreed that Vaughan would modify it further for CRV II and share it to add it to the State Letter to be sent in the first week of July, along with sharing responses to CRV II RFI. **ACTION ITEM 15-6**
- ✓ The ICAO Secretary will share the CRV RFI evaluation sheet with Vaughan. **ACTION ITEM 15-7**
- ✓ A pre-meeting to prepare for CRV OG/14 will be conducted on **26 October 2025**. Therefore, it was requested that all members of the ad-hoc group reach Tokyo in advance to attend the Meeting on 26 October, tentatively planned from 1000 AM. **ACTION ITEM 15-8**
- ✓ It was agreed that only qualified vendors would be invited to present during CRV OG/14 in Tokyo. The ICAO Secretariat will inform all vendors of that information. **ACTION ITEM 15-9**

<b>1 April 2025</b>	Public RFI issuance for all telecommunication Service Providers
<b>30 April 2025</b>	Deadline for a formal letter of acceptance/ expressions of interest in replying to the RFI by Service Providers
<b>1 April 2025 – 31 May 2025</b>	Questions/answer period
<b>30 June 2025</b>	Deadline to receive RFI responses
<b>15 August 2025</b>	Deadline for sending out the presentation for the 27 October 2025 session to the CRV OG
<b>27 October 2025</b>	Presentation of responses to CRV OG (duration of slot will be fairly allocated), questions and answers

**Agenda Item 5:** Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings.

- ✓ The key outcomes of the joint Meeting held on 13 March 2025 were shared. It was noted that most action items are closed.
- ✓ Vaughan shared the CIS hardening guidelines with David. WP/17 for CNS SG/29 is ready. No information about the functionality of the sandbox is received.

**Agenda Item 6 CRV Governance**

- ✓ The ICAO Secretary has received the cost of the CRV network for various APAC States/Administrations. It will be presented at the next Meeting. **ACTION ITEM 15-10**
- ✓ A meeting with REDDIG II will be scheduled in July 2025 for Q4 2025. **ACTION ITEM 15-11**

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 June 2025, Video Tele-Conference (VTC)

**Agenda Item 7: CRV in AFI and MID Region/ CRV and REDDIG II/New PENS interconnection**

- Meeting with REDDIG-II in Q4 2025

✓ A meeting with REDDIG II will be scheduled in July 2025 for Q4 2025. **ACTION ITEM 15-11**

**Agenda Item 8: Implementation of the cloud within the CRV network and integration of it with another cloud network**

✓ Vaughan will share further updates at the next Meeting.

**Agenda Item 9: Pacific Updates**

✓ This was the latest status:



**ICAO-member PSIDS**

1. Cook Islands – Signed agreement- Oct 2025 (implementation expectation)
2. Fiji- Joined
3. Kiribati – Under Discussion
4. Marshall Islands- Not joining (FAA will control it from Oakland center)
5. Federated States of Micronesia- Not joining (FAA will control it from Oakland center)
6. Nauru- ??
7. Palau-Not joining (FAA will control it from Oakland center)
8. Papua New Guinea- Joined
9. Samoa – Survey submitted
10. Solomon Island – High level questionnaire in progress
11. Tonga – Survey submitted
12. Tuvalu – Under Discussion
13. Vanuatu - Under Discussion

**Non- ICAO-member PSIDS**

1. Niue – Survey submitted

**Agenda Item 10: Any Other Business**

- Cost of CRV from APAC States/Administrations
- Analysis of various incidents in all APAC States/Administrations that have severely impacted SLA- **PCCWG**
- SOP for contracting space-based ADS-B services over CRV- **Philippines**
- A document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network- **PCCWG**
- ATN/AHMS Guidance Tree

CRV OG/15  
Appendix A to WP/08

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 June 2025, Video Tele-Conference (VTC)

- ~~CRV Security Assessment to be included in future scope of work~~
  - ~~The mandate of firewall deferred~~
  - Any Other Matters
- ✓ The ATN/AHMS guidance tree is still being updated.
  - ✓ SOP for contracting space-based ADS-B services over the CRV document will be shared separately to share feedback by 30 June 2025. **ACTION ITEM 15-12**
  - ✓ The revised document will be shared with Aireon for their feedback. **ACTION ITEM 15-13**

**Agenda Item 11: Next Meeting Dates**

1. The next Meeting will be organized on 9 October 2025 at 0800 AM Bangkok time. ICAO Secretariat will share meeting link. **ACTION ITEM 15-14**

CRV OG/15  
Appendix B to WP/08

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
9 Oct 2025, Video Tele-Conference (VTC)

**Minutes of the Meeting of Sixteenth Ad Hoc Meeting: 9 Oct 2025 08:00 AM-10:00 AM  
BKK time**

**Meeting Date:** 09/10/2025 08:00 AM

**Location:** Microsoft Teams Meeting

**Attendance:**

SN	Name	State	Email
1.	Ben Gilbert	Australia	ben.gilbert@AirservicesAustralia.com
2.	Brenda Buwu	Australia	Brenda.Buwu@AirservicesAustralia.com
3.	Huang Zheng	China	huangzheng@catc.net.cn
4.	Wallace Ng, HKCAD	Hong Kong China	<a href="mailto:wkwn@cad.gov.hk">wkwn@cad.gov.hk</a>
5.	Simon Lau	Hong Kong China	
6.	Gene HKCAD	Hong Kong China	<a href="mailto:gwhkwok@cad.gov.hk">gwhkwok@cad.gov.hk</a>
7.	Didier Yvetot	France	didier.yvetot@aviation-civile.gouv.fr
8.	Benoit Reder	France	benoit.reder@aviation-civile.gouv.fr
9.	Ajay Kumar	India	ajaykumarcom@AAI.AERO
10.	Fumio Tagawa	Japan	tagawa-f213@jrnsa.or.jp
11.	牧 俊太	Japan	maki-s46yc@mlit.go.jp
12.	Hickford, Vaughan	New Zealand	vaughan.hickford@airways.co.nz
13.	Li Ying GOH	Singapore	GOH_Li_Ying@caas.gov.sg
14.	Augustine Lau	Singapore	augustine_lau@caas.gov.sg
15.	Jatuporn Nootapong	Thailand	jatuporn.no@aerothai.co.th
16.	Geeranuch Worapornbenjakul	Thailand	geeranuch.wo@aerothai.co.th
17.	Gategunya Santisiripat	Thailand	gategunya.sa@aerothai.co.th
18.	Tran, Hoang (FAA)	USA	Hoang.Tran@faa.gov
19.	Bouttaphanh Vet (FAA)	USA	vet.bouttaphanh@faa.gov
20.	Turner Will CRT (FAA)	USA	will.ctr.turner@faa.gov
21.	Nibhani, Soniya	ICAO	SNibhani@icao.int
22.	Zhang De	ICAO	dzhang@icao.int
23.	Xu Jian	ICAO	jixu@icao.int

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
9 Oct 2025, Video Tele-Conference (VTC)

**Notes:**

- ✓ The Meeting was chaired by Mr. Vaughan Hickford, Manager Enterprise Architecture. Ms. Soniya Nibhani, Regional Officer ANS (CNS) Implementation and Ms. Jian Xu, Associate Programme Officer, (CNS) Implementation, ICAO Asia and Pacific Regional Office, acted as meeting secretaries.

**Adoption of agenda:**

- ✓ The provisional agenda circulated earlier was adopted by the Meeting.

**Agenda Item 1: Opening by CRV OG Chairs**

- ✓ CRV OG Co-Chair (Asia) welcomed all delegates and shared opening remarks.

**Agenda Item 2: CRV OM updates**

- Service Strategy
    - ~~Dispute resolution support~~
  - Service Design
    - ~~Change to Jitter SLA for Data~~
    - ~~Package D does not support analog voice.~~
  - Service Transition
    - Guidance on testing new services/SWIM services and transitioning into operations
    - Using the residual bandwidth of CRV for testing/trial - **adoption in CRV OG15**
  - Service Operation
    - Network Visibility
- ✓ No updates on service strategy and design.
  - ✓ Updates about service transition and service operation combined with Agenda Item 4.

**Agenda Item 4: Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings**

- ✓ The Meeting recalled key outcomes of the joint Meeting held on 1-5 Sep 2025, especially definition of residual bandwidth, performance and usage of the internet, assumption on potential use of bandwidth, information required by CRV OG from SWIM, the guidance on using the (Residual) bandwidth of the Operational CRV, revised regional SWIM hierarchical architecture and three options on message routing in SWIM TI.
- ✓ The Meeting noted the need to incorporate the guidance on using the (Residual) bandwidth of the Operational CRV and the new table into the CRV OG Operations Manual for adoption at the CRV OG/15.

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
9 Oct 2025, Video Tele-Conference (VTC)

- ✓ It was noted that all three new proposed options on message routing in SWIM TF are being further discussed in the SWIM TF Meeting, as some security concerns have been shared by a few States.
- ✓ It was informed that, based on experience gained during the joint event conducted by S3TIG, data transmissions from SWIM TI operations alone amounted to only a few kbps. However, the S3TIG testing did not cover dynamic identity/access management, certificate management, or SDS testing. Additionally, the test only included message routing by message properties, without incorporating topic-based routing. Therefore, when all these factors are considered in the SIPG test to be conducted, the required bandwidth may reach approximately **50 kbps per EMS**. As more EMSs are interconnected, the total bandwidth requirements would increase proportionally. It was further emphasized that these bandwidth calculations apply only to data exchange for SWIM TI operations. When more SWIM information services and SWIM-enabled applications are tested, higher bandwidth will be required.

**Agenda Item 3**                      CRV-II

- CRV-II RFI
- CRV II RFI Scoring Table
- Pre-RFI and Post-RFI Survey Scoring Table

- ✓ It was noted that the CRV II RFI evaluation sheet and the post-RFI survey were shared with States on 9 July via SL T8/2.15 – AP094/25 (CNS). The ICAO Secretary informed that only 5 States provided a scoring table, and 1 responded to the post RFI survey.
- ✓ It was noted that the last date for submitting the scoring table is 10 October 2025, and the deadline for responses to the post-RFI survey is 17 October 2025. The ICAO Secretariat will remind all APAC States/Administrations that are utilizing CRV networks to submit responses to the survey and share the RFI scoring sheet in time. **ACTION ITEM 16-1 (Completed)**
- ✓ Vaughan clarified the scoring for some correlation questions on the scoring table. The scoring process will be further discussed in the pre-meeting in Tokyo on **26 October 2025**. **ACTION ITEM 16-2**

**Agenda Item 5**                      **CRV Governance**

- ✓ It was recalled that a meeting with REDDIG II is scheduled for **23 October 2025**.
- ✓ The ICAO Secretary presented the cost of the CRV network for various APAC States/Administrations.

**Action Item 13-7** Total cost= USD187,025 (18  
States/Administrations) per month= USD2,244,300 per year

CRV Users, but no data received:

Australia, Bhutan, Cambodia, French Polynesia, Mongolia, Nepal  
and the Republic of Korea

- ✓ Vaughan reminded the States that they have not yet submitted cost data, to provide feedback to the ICAO Secretary promptly before **23 October 2025**. **ACTION ITEM 16-3**

**Agenda Item 6: CRV in AFI and MID Region/ CRV and REDDIG II/New PENS interconnection**

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
9 Oct 2025, Video Tele-Conference (VTC)

- Meeting with REDDIG-II- 23 October 2025
  - ✓ Governance of REDDIG II
  - ✓ Way forward for CRV II and REDDIG III interconnection
  - Use cases for the regional interconnection of CRV
  - No updates from MID or AFI Region
- ✓ To further discuss the benefits of interregional connection, it was requested that all States utilizing CRV and **having interregional connection share the use cases** for the interregional interconnection before **20 October 2025. ACTION ITEM 16-4**

**Agenda Item 7: Implementation of the cloud within the CRV network and integration of it with another cloud network**

- ✓ It was noted that the work is still in progress. Vaughan suggested that members with expertise in cloud platforms can contribute to this task.

**Agenda Item 8: Pacific Updates**

- ✓ This was the latest status:

**ICAO-member PSIDS**

1. Cook Islands – Signed agreement- Oct 2025 (implementation expectation)
2. Fiji- Joined
3. Kiribati – Under Discussion (Not joining CRV)
4. Marshall Islands- Not joining (FAA will control it from Oakland center)
5. Federated States of Micronesia- Not joining (FAA will control it from Oakland center)
6. Nauru- ??
7. Palau-Not joining (FAA will control it from Oakland center)
8. Papua New Guinea- Joined
9. Samoa – Survey submitted
10. Solomon Island – High level questionnaire in progress
11. Tonga – Survey submitted
12. Tuvalu – Under Discussion Not joining CRV
13. Vanuatu - Under Discussion Not joining CRV

**Non- ICAO-member PSIDS**

1. Niue – SEP ongoing
- ✓ A question was raised about the different choices made by different States responsible for one or more PSIDS. For instance, the USA is using Starlink for PSIDS under their responsibilities, NZ and France are supporting joining CRV, etc. The reasons for the different approaches and the need for uniform approaches were discussed. It was informed that the choices are based on different factors, including cost, feasibility and other geographical and political factors. Therefore, States may choose what best suits their needs and PSIDS' needs.
- ✓ ICAO Secretary requested to share a high-level diagram that the responsible States are choosing to connect with their partner PSIDS for information and records.

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
9 Oct 2025, Video Tele-Conference (VTC)

**Agenda Item 9:** Any Other Business

- Cost of CRV from APAC States/Administrations
  - Analysis of various incidents in all APAC States/Administrations that have severely impacted SLA- **Completed**
  - SOP for contracting space-based ADS-B services over CRV- **Completed**
  - A document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network- **Completed**
  - Maintenance window at the sub-regional level in the APAC region
  - ATN/AHMS Guidance Tree- **deferred**
  - CRV Security Assessment- **to be included in future scope of work**
  - The mandate of firewall- **deferred**
  - Any Other Matters
- ✓ It was noted that **defining a maintenance window at the sub-regional level in the APAC region** is quite challenging. Vaughan requested volunteers to lead the discussion and propose suggestions on a regional or sub-regional maintenance window in CRV OG15. As no volunteer came forward, Vaughan will assign the task to a state participating in the Strategy group. An email will be shared separately. **ACTION ITEM 16-5**
- ✓ For the CRV security assessment, there will be further discussion in Tokyo, and it was agreed that the CRV Ad-hoc Group can work with ANSIA TF on the security assessment of the network.

**Agenda Item 10: Next Meeting Dates**

1. It was agreed that the CRV OG/15 Meeting will be organised from **09-13 Feb 2026** in Bangkok, Thailand.
2. The next ad-hoc meeting will be organized **during the week of 26 January 2026**. The ICAO Secretariat will set up a Doodle poll to determine the exact date of the meeting after ANSIA TF SL is issued, as ANSIA TF/1 is scheduled for the same week. **ACTION ITEM 16-6**

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
27 January 2026, Video Tele-Conference (VTC)

**Minutes of the Meeting of Seventeenth Ad Hoc Meeting: 27 Jan 2026, 08:00 AM-10:00 AM  
BKK time**

**Meeting Date:** 01/27/2026 08:00 AM

**Location:** Microsoft Teams Meeting

**Attendance:**

SN	Name	State	Email
1.	Ben Gilbert	Australia	<a href="mailto:ben.gilbert@AirservicesAustralia.com">ben.gilbert@AirservicesAustralia.com</a>
2.	Wallace Ng, HKCAD	Hong Kong China	<a href="mailto:wkwng@cad.gov.hk">wkwng@cad.gov.hk</a>
3.	Simon Lau	Hong Kong China	
4.	Benoit Reder	France	<a href="mailto:benoit.reder@aviation-civile.gouv.fr">benoit.reder@aviation-civile.gouv.fr</a>
5.	Ajay Kumar	India	<a href="mailto:ajaykumarcom@AAI.AERO">ajaykumarcom@AAI.AERO</a>
6.	Fumio Tagawa	Japan	<a href="mailto:tagawa-f213@jrnsa.or.jp">tagawa-f213@jrnsa.or.jp</a>
7.	俊太 牧	Japan	
8.	JRANSA 豊福 直人	Japan	<a href="mailto:jransa.msbs-002@jrnsaoffice.onmicrosoft.com">jrnsa.msbs-002@jrnsaoffice.onmicrosoft.com</a>
9.	Kelepi Dainaki	Fiji	<a href="mailto:KelepiD@fijiairports.com.fj">KelepiD@fijiairports.com.fj</a>
10.	Hickford, Vaughan	New Zealand	<a href="mailto:vaughan.hickford@airways.co.nz">vaughan.hickford@airways.co.nz</a>
11.	Li Ying GOH	Singapore	<a href="mailto:GOH_Li_Ying@caas.gov.sg">GOH_Li_Ying@caas.gov.sg</a>
12.	Alex Hong	Singapore	
13.	Jatuporn Nootapong	Thailand	<a href="mailto:jatuporn.no@aerothai.co.th">jatuporn.no@aerothai.co.th</a>
14.	Geeranuch Worapornbenjakul	Thailand	<a href="mailto:geeranuch.wo@aerothai.co.th">geeranuch.wo@aerothai.co.th</a>
15.	Gategunya Santisiripat	Thailand	<a href="mailto:gategunya.sa@aerothai.co.th">gategunya.sa@aerothai.co.th</a>
16.	Tran, Hoang (FAA)	USA	<a href="mailto:Hoang.Tran@faa.gov">Hoang.Tran@faa.gov</a>
17.	Nibhani, Soniya	ICAO	<a href="mailto:SNibhani@icao.int">SNibhani@icao.int</a>
18.	Zhang De	ICAO	<a href="mailto:dzhang@icao.int">dzhang@icao.int</a>
19.	Xu Jian	ICAO	<a href="mailto:jixu@icao.int">jixu@icao.int</a>

**Notes:**

1. The Meeting was chaired by Mr. Vaughan Hickford, Manager Enterprise Architecture, Airways NZ. Ms. Soniya Nibhani, Regional Officer ANS (CNS) Implementation, ICAO APAC Office, acted as the Meeting secretary. The presentation used for this Meeting is provided in **Appendix A**.

**Adoption of agenda:**

2. The provisional agenda circulated earlier was adopted by the Meeting.

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
27 January 2026, Video Tele-Conference (VTC)

**Agenda Item 1: Opening by CRV OG Chairs**

3. CRV OG Co-Chair (Asia) welcomed all delegates and shared opening remarks.

**Agenda Item 2: CRV OM updates**

- Service Strategy
    - CRV Sub-regional Maintenance Window- **India**
  - Service Design
    - ~~Change to Jitter SLA for Data~~
    - ~~Package D does not support analog voice.~~
  - Service Transition
    - Review of Guidance on testing new services/SWIM services and transitioning into operations
    - Review of Guidance for using the residual bandwidth of CRV for testing/trial- **adoption in CRV OG15**
  - Service Operation
    - Network Visibility
4. India presented “**Initial Draft for APAC Sub-Regional Maintenance Window for CRV Network,**” provided in **Appendix B**. The Meeting appreciated the document and agreed that the initial draft is well written and can be further refined based on members' feedback. The Meeting was requested to provide feedback on the document **proposing changes to the track mode** with India and the ICAO Secretary. **ACTION ITEM 17-1**
  5. India agreed to work further on filling out missing information for each sub-region by coordinating with them. **ACTION ITEM 17-2**
  6. Vaughan suggested utilizing the **CRV national focal point** from the CRV Implementation plan or the focal point posted on [the ICAO APAC CRV Secure portal](#). It was suggested to contact Vaughan or Soniya for any additional contact information.
  7. The Meeting recalled the document “*Guidance on using the Residual Bandwidth of the (Operational) CRV for New Services Testing*” and the *Excel sheet for SWIM testing over CRV* prepared during the joint Meeting of SWIM and CRV experts in September 2025.
  8. It was agreed that network visibility is a pending request from CRV users, which is expected to be incorporated in CRV II T&C.

**Agenda Item 3**

CRV-II

- CRV OG14/APANPIRG/36 Outcomes
  - CRV II Terms and Conditions
9. The Meeting noted updates from the APANPIRG/36 Meeting about the adoption of the proposed draft decision by the CRV OG/14 for the CRV II contract management process and the CRV OG/13 for using Package D+ for PSIDS and small ANSPs.
  10. The Meeting recalled the timelines for preparing baseline terms and conditions before CRV OG/15.
  11. The Meeting discussed feedback received from Thailand and the CRV OG/14 Meeting for additional expectations from CRV II. The following expectations were discussed in detail.
    - Web-based traffic monitoring system
    - Centralized incident and log management system
    - Automated alert and notification system for all cases
    - Standardized network status monitoring system

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- Improved service management and customer coordination
  - Internet Improvement for the Pacific/Package D using direct internet access (DIA) as a minimum
  - PCCWG to take responsibility for the internet connection.
  - Move the SLA for Package D away from Best Efforts
  - Implement/improve the Vulnerability management and notification
  - Be more Proactive in incident management vs maintenance
  - Implement Pacific POP
  - Improved maintenance notifications/windows taking into account the operational risk for individual states and regions or sub-regions.
  - Implement Mitigation in the event of a primary or secondary circuit failure.
  - Regular Meetings between CRV OG and PCCWG.
  - Information sharing from ISPACG?
  - Pricing
    - Better transparency on the components that make up the pricing.
    - Price book that is annually reviewed and updated
  - Better visibility of the whole network.
  - New services
  - More open network to support SWIM
  - Security
  - Continuing to progress the conversation with PCCWG
  - Contract extension
  - Variation of the Legal, Technical, Commercial and Date.
  - 5years from 1 Jan 2029 to 31 December 2033 + 2yr extension option.
  - Better service credit management, move to proactive instead of the customer having to prove the issue.
  - Improved outage reporting. Treat everything as an outage and report on this.
  - SLA improvements
  - Ensure there is physical separation and path diversity
12. It was suggested to **add providing internet options using domestic DIA or satellite-based** and let CRV users choose preferred options. **ACTION ITEM 17-3**
13. Vaughan requested volunteers to work further on compiling these terms in a formal format and put them in a collaborative space. There is also a need to update various CRV documents to accommodate new terms and conditions, including service order, common package, packages, SEP, and SDD, etc. As no volunteer shared willingness, it was decided that Vaughan would reach out to different ad-hoc expert members to start working on the document and share guidelines. **ACTION ITEM 17-4**

**Agenda Item 4:** Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings

14. The Meeting recalled key outcomes of the last Meeting held on 20 November 2025 and noted that the next Meeting is planned on 5 February 2026.

**Agenda Item 5 CRV Governance**

15. The Meeting was informed about the outcomes of the key discussion of the Meeting with REDDIG II held on **23 October 2025**.
16. The following costs of the CRV network for various APAC States/Administrations were shared.

*Action Item 13-7 Total Cost= USD 223,551 (27 States/Administrations) per month*

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17. For the way forward for CRV governance, Vaughan will present a paper on this topic in CRV OG/15. **ACTION ITEM 17-5**

**Agenda Item 6** CRV in AFI and MID Region/ CRV and REDDIG II/New PENS interconnection

- Way forward for CRV II and REDDIG III interconnection  
Use cases for the regional interconnection of CRV

18. The Meeting noted that Oman and Yemen are in the process of joining CRV. However, there is no email from Oman to ICAO or to Vaughan; therefore, Vaughan will contact the PCCWG to obtain updates. **ACTION ITEM 17-6**
19. It was informed that the SAM region has agreed to restart the discussion on the interconnection of CRV and REDDIG III from April 2026 onwards once the final process of REDDIG III RFP is over.
20. The Meeting recalled that to further discuss the benefits of interregional connection, it was requested that all States utilizing CRV and having interregional connection share the use cases for the interregional interconnection before 20 October 2025. In response, the following reply has been received:

SN	States/Administrations	Connected States/Region	Use Cases
1.	Australia	South Africa	AMHS connection
2.	China	Russia (Khabarovsk)	AFTN message exchange
3.	Hong Kong China	No interregional connection	
4.	India	Oman in the Mid Region (Mumbai-Muscat) using a 2 Mbps leased line	AMHS DATA and Voice
5.	New Zealand	Chile	AMHS connectivity  Redundant connections to Auckland and Christchurch
6.	Singapore	London and Bahrain	AMHS DATA and Voice
7.	Thailand	Italy	AMHS
8.	USA		Enhance diversity and resilience

21. It was noted that some States having interregional connections are missing from the list. ICAO Sec will update the list. **ACTION ITEM 17-7**
22. It was agreed that after the CRV and REDDIG III connection, there would be a seamless connection with the SAM States.
23. Vaughan suggested that PCCWG should be proactive in interconnecting with New PENS and tried to approach them. **ACTION ITEM 17-8**

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**Agenda Item 7: Implementation of the cloud within the CRV network and integration of it with another cloud network**

24. It was recalled that Singapore raised the potential of the need for cloud in CRV OG13. Vaughan informed that the initial investigation indicates it may be possible to connect CRV to Amazon Web Services and Azure. It was noted that, according to the Amazon response, it is easier to connect, whereas with Azure, it is a bit more challenging. However, the challenge lies in the landing zone and in who configures and maintains its security and access. Typically, it is the customer. The customer in this instance might be CRV or SWIM, or an individual state. Therefore, additional work is required. Vaughan requested more support for this task.

**Agenda Item 8: Pacific Updates**

25. The Meeting updated the latest status as follows:

**ICAO-member PSIDS**

1. Cook Islands – Signed agreement- Oct 2025 (implementation expectation)
2. Fiji- Joined
3. Kiribati – Under Discussion (High-level questionnaires in progress by Fiji)
4. Marshall Islands- Not joining (FAA will control it from Oakland center)
5. Federated States of Micronesia- Not joining (FAA will control it from Oakland center)
6. Nauru- Australia is working on it
7. Palau-Not joining (FAA will control it from Oakland center)
8. Papua New Guinea- Joined
9. Samoa – Survey submitted
10. Solomon Islands – High-level questionnaire in progress- follow up with PCCWG by AUS and Inter-coordination between Airways NZ and Airservices AUS
11. Tonga – SEP completed
12. Tuvalu – Will not join
13. Vanuatu - Under Discussion (High-level questionnaire in progress by Fiji)

**Non- ICAO-member PSIDS**

1. Niue – SEP completed

**Agenda Item 9: Any Other Business**

- Cost of CRV from APAC States/Administrations- **Completed**
- Analysis of various incidents in all APAC States/Administrations that have severely impacted SLA- **Completed**
- SOP for contracting space-based ADS-B services over CRV- **Completed**
- A document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network- **Completed**
- ATN/AHMS Guidance Tree- **deferred**

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- ~~CRV Security Assessment to be included in future scope of work~~
- ~~The mandate of firewall deferred~~
- Any Other Matters

26. The Meeting recalled action item 13-23 from CRV OG/13 for Hong Kong China 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. The Meeting noted the formula presented by Hong Kong China as follows:

**Formula for bandwidth required for surveillance data sharing**

Based on a 2024 study conducted under the SURSG 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.

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

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

e.g.,

*Number of Targets in 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)*

27. It was agreed that the formula will be incorporated in CRV OG OM.
28. The Meeting was informed about the email shared by Russia to the ICAO Secretariat for a potential solution to join CRV. Vaughan will discuss the proposal with PCCWG and share advice for further action. **ACTION ITEM 17-9**

**Agenda Item 10: Next Meeting Dates**

29. The next ad-hoc Meeting will be organized **during the week of mid-May 2026 on any days on 11<sup>th</sup> May, 12<sup>th</sup> May and 14<sup>th</sup> May 2026**. The ICAO Secretariat will set up a poll to determine the exact date of the Meeting. **ACTION ITEM 17-10**
30. The Meeting was informed that a discussion is being made with India to host CRV OG/15 in India in June 2026. The Meeting appreciated India for this initiative.

CRV OG/15  
Appendix D to WP/08

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 May 2026, Video Tele-Conference (VTC)

**Minutes of the Meeting of Eighteenth Ad Hoc Meeting: 12 May 2026, 08:00 AM-10:00 AM BKK time**

**Meeting Date:** 05/12/2026 08:00 AM

**Location:** Microsoft Teams Meeting

**Attendance:**

SN	Name	State	Email
1.	Ben Gilbert	Australia	<a href="mailto:ben.gilbert@AirservicesAustralia.com">ben.gilbert@AirservicesAustralia.com</a>
2.	Zheng China-Huang	China	
3.	Wallace Ng, HKCAD	Hong Kong China	<a href="mailto:wkwng@cad.gov.hk">wkwng@cad.gov.hk</a>
4.	Simon Lau	Hong Kong China	
5.	Jeffrey Wong	France	<a href="mailto:jeffrey.wong@aviation-civile.gouv.fr">jeffrey.wong@aviation-civile.gouv.fr</a>
6.	Benoit Reder	France	<a href="mailto:benoit.reder@aviation-civile.gouv.fr">benoit.reder@aviation-civile.gouv.fr</a>
7.	Sebastien Ropers	France	<a href="mailto:sebastien.ropers@aviation-civile.gouv.fr">sebastien.ropers@aviation-civile.gouv.fr</a>
8.	Ajay Kumar	India	<a href="mailto:ajaykumarcom@AAI.AERO">ajaykumarcom@AAI.AERO</a>
9.	Fumio Tagawa	Japan	<a href="mailto:tagawa-f213@jrnsa.or.jp">tagawa-f213@jrnsa.or.jp</a>
10.	俊太 牧	Japan	
11.	Naoto Toyofuku	Japan	
12.	JRANSA 豊福 直人	Japan	<a href="mailto:jransa.msbs-002@jrnsaoffice.onmicrosoft.com">jrnsa.msbs-002@jrnsaoffice.onmicrosoft.com</a>
13.	Kelepi Dainaki	Fiji	<a href="mailto:KelepiD@fijiairports.com.fj">KelepiD@fijiairports.com.fj</a>
14.	Hickford, Vaughan	New Zealand	<a href="mailto:vaughan.hickford@airways.co.nz">vaughan.hickford@airways.co.nz</a>
15.	April Rose Emmanuel	Philippines	
16.	Gilmar Tiro	Philippines	
17.	Alex Hong	Singapore	
18.	Amornsak Thorasin	Thailand	<a href="mailto:amornsak.th@aerothai.co.th">amornsak.th@aerothai.co.th</a>
19.	Jatuporn Nootapong	Thailand	<a href="mailto:jatuporn.no@aerothai.co.th">jatuporn.no@aerothai.co.th</a>
20.	Geeranuch Worapornbenjakul	Thailand	<a href="mailto:geeranuch.wo@aerothai.co.th">geeranuch.wo@aerothai.co.th</a>
21.	Gategunya Santisiripat	Thailand	<a href="mailto:gategunya.sa@aerothai.co.th">gategunya.sa@aerothai.co.th</a>
22.	Wirot Potilar	Thailand	<a href="mailto:wirut.po@aerothai.co.th">wirut.po@aerothai.co.th</a>
23.	Fullerton, John W-CTR (FAA)	US	<a href="mailto:John.W-CTR.Fullerton@faa.gov">John.W-CTR.Fullerton@faa.gov</a>
24.	O'Neill, Al (FAA)	US	<a href="mailto:Al.O'Neill@faa.gov">Al.O'Neill@faa.gov</a>
25.	Ramos, Raquel CTR (FAA)	US	<a href="mailto:Raquel.CTR.Ramos@faa.gov">Raquel.CTR.Ramos@faa.gov</a>

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26.	Manalo, Marie B (FAA)	US	<a href="mailto:Marie.B.Manalo@faa.gov">Marie.B.Manalo@faa.gov</a>
27.	Campbell, Shayne A	US	<a href="mailto:Shayne.A.Campbell@faa.gov">Shayne.A.Campbell@faa.gov</a>
28.	Nibhani, Soniya	ICAO	<a href="mailto:SNibhani@icao.int">SNibhani@icao.int</a>
29.	Zhang De	ICAO	<a href="mailto:dzhang@icao.int">dzhang@icao.int</a>
30.	Xu Jian	ICAO	<a href="mailto:jixu@icao.int">jixu@icao.int</a>

**Notes:**

1. The Meeting was chaired by Mr Vaughan Hickford, Manager Enterprise Architecture, Airways NZ. Dr Soniya Nibhani, Regional Officer ANS (CNS) Implementation, ICAO APAC Office, acted as the Meeting secretary. The presentation used for this Meeting is provided in **Appendix A**.

**Adoption of agenda:**

2. The provisional agenda circulated earlier was adopted by the Meeting.

**Agenda Item 1: Opening by CRV OG Chairs**

3. CRV OG Co-Chair (Asia) welcomed all delegates and shared opening remarks.

**Agenda Item 2:**

CRV OM updates

- Service Strategy
    - CRV Sub-regional Maintenance Window- **India**
  - Service Design
    - ~~Change to Jitter SLA for Data~~
    - ~~Package D does not support analog voice.~~
  - Service Transition
    - Review of Guidance on testing new services/SWIM services and transitioning into operations
    - Review of Guidance for using the residual bandwidth of CRV for testing/trial- **adoption in CRV OG15**
  - Service Operation
    - Network Visibility- **to be incorporated in CRV II T&C**
4. India presented “*Initial Draft for APAC Sub-Regional Maintenance Window for CRV Network,*” provided in **Appendix B** after incorporating feedback received from different States/Administrations. The Meeting appreciated the document and agreed that the initial draft is well written and can be further refined based on members' feedback. The Meeting was requested to provide feedback on the document *proposing changes to the track mode* with India and the ICAO Secretary, if any. **ACTION ITEM 18-1** It was agreed that this document may require feedback from PCCWG. India was requested to present a paper on this topic in CRV OG/15 for the adoption of this document by CRV OG/15. **ACTION ITEM 18-2**

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5. As no other comments were received for preferred maintenance windows other than the United States, all members were requested to respond with their preferred maintenance windows. **ACTION ITEM 18-3** It was noted further that after the adoption of this document, CRV OG OM may need to be updated. **ACTION ITEM 18-4**
6. The Meeting recalled the document “*Guidance on using the Residual Bandwidth of the (Operational) CRV for New Services Testing*” and the *Excel sheet for SWIM testing over CRV* prepared during the joint Meeting of SWIM and CRV experts in September 2025. It will be presented to CRV OG/15 for further discussion, review and adoption.
7. In response to a question about minimum bandwidth for testing, it was informed that it will be based on the requirements of the test. For instance, if someone wants to test a new voice service, it’s around 115 kbps; for a new AMHS connection, it’s 64 kbps, etc.
8. It was agreed that network visibility is a pending request from CRV users, which is expected to be incorporated in CRV II T&C.

Agenda Item 3

CRV-II

- ACSICG/13 Outcomes
  - Review of draft CRV II baseline Terms and Conditions
  - How to share draft baseline Terms and Conditions with all States before CRV OG15? - **email to CRV focal point or State Letter**
  - Review of CRV documents after CRV II contract decision-**updates from each State/Administration**
9. The Meeting noted the ACSICG/13 meeting has reviewed baseline T&C and suggested sharing it with all States/Administrations for advance review before CRV OG/15.
  10. It was suggested to send revised baseline T&C with States/Administrations **by State Letter and by emailing for CRV focal points**, both, to get a prompt response before the CRV OG/15 Meeting. **ACTION ITEM 18-5**
  11. The Meeting recalled the timelines for preparing baseline terms and conditions before CRV OG/15.
  12. The Meeting recalled feedback received from Thailand and the CRV OG/14 Meeting for additional expectations from CRV II. The following expectations were discussed in past.
    - Web-based traffic monitoring system
    - Centralised incident and log management system
    - Automated alert and notification system for all cases
    - Standardised network status monitoring system
    - Improved service management and customer coordination
    - **Internet Improvement for the Pacific/Package D** using direct internet access (DIA) as a minimum
    - PCCWG to take responsibility for the internet connection.
    - Move the **SLA for Package D away from Best Efforts**
    - Implement/improve the Vulnerability management and notification
    - Be more Proactive in incident management vs maintenance
    - Implement **Pacific POP**

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- Improved maintenance notifications/windows taking into account the operational risk for individual states and regions or sub-regions.
  - Implement Mitigation in the event of a primary or secondary circuit failure.
  - Regular Meetings between CRV OG and PCCWG.
  - Information sharing from ISPACG?
  - Pricing
    - Better transparency on the components that make up the pricing.
    - Price book that is annually reviewed and updated
  - Better visibility of the whole network.
  - New services
  - More open network to support SWIM
  - Security
  - Continuing to progress the conversation with PCCWG
  - Contract extension
  - Variation of the Legal, Technical, Commercial and Date.
  - 5years from 1 Jan 2029 to 31 December 2033 + 2yr extension option.
  - Better service credit management, move to proactive instead of the customer having to prove the issue.
  - Improved outage reporting. Treat everything as an outage and report on this.
  - SLA improvements
  - Ensure there is physical separation and path diversity
  - It was suggested to **add providing internet options using domestic DIA or satellite-based** and let CRV users choose preferred options.
13. Vaughan shared the T&C document (**Appendix C**), incorporating comments from Singapore and Sri Lanka. Some clarifications were required for some comments shared by Sri Lanka. Vaughan will contact Sri Lanka for clarification. **ACTION ITEM 18-6**
14. It was noted that many documents need to be updated to incorporate further modifications shared previously, **as outlined in section 12 of this document**. The following States/Administrations were requested to review their document on the collaborative workspace directly in “track mode” at [CRV II Documents - Documents - All Documents](#) before **31 May 2026**. **ACTION ITEM 18-7**

SN	Document	Volunteer States
1.	CRV Conops	Australia (Ben Gilbert)
2.	Matrix Flow for CRV Services	Fiji
3.	Mapping of services for Quality Management	China
4.	SLA and Payment Deduction Table	Singapore
5.	CRV IRS	Thailand
6.	Price Schedule	Philippines
7.	Specific Terms for Managed Router	New Zealand
8.	Specific Terms for MPLS VPN Service	PNG
9.	PCCWG SDD	USA
10.	PCCWG ICD	India
11.	PCCWG SEP	APXUSA- 4
12.	Contract Management Plan	France
13.	Customer Support Service Plan	Hong Kong China

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**Agenda Item 4** Preparation for CRV OG/15

- List of Papers
- Pre-meeting on 14 June 2026- In Person in India

15. The tentative List of Papers (**Appendix D**) planned for CRV OG/15 was discussed.
16. It was agreed to conduct an in-person meeting on **14 June** in India to discuss the papers received for CRV OG/15, and advance discussion for the preparation of CRV II documents planned for adoption by the meeting. The ICAO Secretary will coordinate with India to arrange a venue for this meeting. **ACTION ITEM 18-8** She will also write to all members of the Ad-hoc Expert group to request their arrival before the morning of 14 June 2026 to attend the pre-meeting. **ACTION ITEM 18-9**

**Agenda Item 5** CRV III RFP with support of ICAO CDI

17. ICAO Secretary informed that she is in contact with ICAO CDI for the RFP process for CRV III. She informed that, as per ICAO CDI, the calculation of the estimation for CDI charges for CANSNET was based on **the non-recurring cost only (installation and delivery)**. ICAO CDI charged **7% of the contract value**, which was calculated on non-recurring charges. ICAO CDI has proposed to use the same methodology for CRV.
18. It was added the charging mechanism adopted in 2014-2016 for the CRV I project was based on the TCB process and principles in place at the time, which have since changed. Therefore, providing ICAO CDI support for the current CRV project in a manner similar to the past will not be possible.
19. She informed that in CANSNET, every State paid an equal amount based on a first estimation prior to the tender during the development of the PRODOC, and then using the estimated value of the contract known at the end of the procurement process (as the exact contract value signed between the State and the recommended supplier is known by these two Parties only).
20. It was added that the ICAO Secretary has informed ICAO CDI that in the APAC region, States may prefer to pay for their charges to ICAO CDI based on non-recurring charges applicable to them only, rather than to share equally among each other.
21. As per ICAO CDI, in the case of CRV and based on the CRV States' requirements, ICAO CDI propose to discuss with the States to agree on an estimated baseline cost for each State.
22. It was informed that a calculation of the **One-off Installation Fee for Dedicated Access** mentioned in the price bid of the CRV I project was used to calculate an approximation of the One-off Installation Fee for Dedicated Access for all APAC States/Administrations. The purpose was to obtain an estimate of the cost to be paid to ICAO CDI for the APAC Region. It was informed that the total cost of **the one-off installation fee for Dedicated Access** for the lowest bandwidth was approximately USD650,000, which will give approximately **USD46,000** to ICAO CDI services.

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However, it is to be noted that there may be other charges related to non-recurring changes for State/Administration and also the charges will increase based on the number of sites each State has. This topic will be further discussed in the CRV OG/15 Meeting. **ACTION ITEM 18-10**

23. Meanwhile, the ICAO Secretariat will continue gathering relevant information and data as required from States/Administrations and the ICAO CDI, which will help the APAC region to decide the way forward.
24. It was discussed that for CRV III, extension of the current contract and other options, such as CRV III RFP, by one APAC State for all States/Administrations in consultation with all, may be explored too for the future.

**Agenda Item 6:** Outcomes of Joint CRV OG Ad-hoc Expert and SWIM TF TLs Meetings

25. The Meeting noted key outcomes from the 5 February meeting and noted the progress.

**Agenda Item 7 CRV Governance**

26. For the way forward for CRV governance, Vaughan will present a paper on this topic in CRV OG/15.

**Agenda Item 8 CRV in AFI, EUR and MID Region/ CRV and REDDIG II/New PENS interconnection**

- CRV implementation in Russia
- Use cases for the regional interconnection of CRV
- Way forward for CRV II and REDDIG III interconnection

27. The Meeting was informed that the REDDIG III contract is still in progress.
28. The Meeting recalled that to further discuss the benefits of interregional connection, it was requested that all States utilising CRV and having interregional connection share the use cases for the interregional interconnection before 20 October 2025. In response, the following reply has been received.

SN	States/Administrations	Connected States/Region	Use Cases
1.	Afghanistan	Iran	
2.	Australia	South Africa	AMHS connection
		United States	Melbourne - Salt Lake City
3.	China	Russia (Khabarovsk)	AFTN message exchange
		Kuwait	Beijing - Kuwait City
4.	Hong Kong China	No interregional connection	
5.	Fiji	United States	Nadi - Oakland centre Nadi - Salt Lake City Com Center

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6.	India	Oman in the Mid Region (Mumbai-Muscat) using a 2 Mbps leased line	AMHS DATA and Voice
		Nairobi (Kenya)	AMHS
7.	Japan	Russia Federation	Fukuoka – Moscow Fukuoka - Khabarovsk
		United States	Fukuoka - Salt Lake City
8.	Marshall Islands	United States	Majuro (PKMJ) - Salt Lake
9.	Micronesia Federated State of	United States	Chuuk (PTKK) - Salt Lake Kosrae (PTSA) - Salt Lake Ponapei (PTPN) – Salt Lake Yap (PTYA) - Salt Lake
10.	New Zealand	Chile	AMHS connectivity  Redundant connections to Auckland and Christchurch
		United States	Christchurch – Oakland, Salt Lake City, Atlanta Auckland - Oakland, Salt Lake City, Atlanta
11.	Pakistan	Kuwait	Karachi - Kuwait city
		Iran	Karachi - Tehran
		Oman	Karachi - Muscat
12.	Singapore	London and Bahrain	AMHS DATA and Voice
13.	Thailand	Italy	AMHS DATA
14.	USA	MEVA (we're a major hub for the Caribbean region).	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.	

29. For the MID region, it was informed that currently a discussion is going on to join CRV and New PENS, both by different States in the MID region.

**Agenda Item 7: Implementation of the cloud within the CRV network and integration of it with another cloud network**

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30. Vaughan will present a paper on this topic in CRV OG/15.

**Agenda Item 8: Pacific Updates**

31. The Meeting updated the latest status as follows:

**ICAO-member PSIDS**

1. Cook Islands – Joined CRV
2. Fiji- Joined
3. Kiribati – MoU between Kiribati and PCCWG is in progress. Fiji will support CRV connection for Kiribati if MoU is signed. Estimated deadline Q3 2026.
4. Marshall Islands- Not joining (FAA will control it from Oakland center)
5. Federated States of Micronesia- Not joining (FAA will control it from Oakland center)
6. Nauru- Australia is working on it
7. Palau-Not joining (FAA will control it from Oakland center)
8. Papua New Guinea- Joined
9. Samoa – Survey submitted
10. Solomon Islands – Airways NZ and Airservices Australia are working together
11. Tonga – Joined, Router installation plan on 26 May 2026
12. Tuvalu – Will not join
13. Vanuatu - MoU between Vanuatu and PCCWG is in progress. Fiji will support the CRV connection for Kiribati if the MoU is signed. Estimated deadline Q3 2026

**Non- ICAO-member PSIDS**

1. Niue – Joined, installation in progress.

Agenda Item 11

Any Other Business

- Cost of CRV from APAC States/Administrations- **Completed**
- Analysis of various incidents in all APAC States/Administrations that have severely impacted SLA- **Completed**
- SOP for contracting space-based ADS-B services over CRV- **Completed**
- A document explaining the configuration of Pseudo CRV to make States understand this network along with the procedure to request connection to this network- **Completed**
- ATN/AHMS Guidance Tree- **deferred**
- **New-** The policy/procedure to certify SWIM service providers to utilize CRV must be made by CRV OG- **Thirteen Ad-hoc Expert group meeting 22 August 2024**
- ~~CRV Security Assessment – to be included in future scope of work~~
- ~~The mandate of firewall – deferred~~
- Any Other Matters

Minutes of the Meeting for Ad-hoc Expert Group Meeting  
12 May 2026, Video Tele-Conference (VTC)

32. The policy/procedure to certify SWIM service providers to utilise CRV will be formulated once the SWIM Service provider joining process is defined. **ACTION ITEM 18-11**

**Agenda Item 10: Next Meeting Dates**

33. The next ad-hoc Meeting will be organised during the week of 14 September 2026 on any of the **days on 14<sup>th</sup> September, 17 September and 18<sup>th</sup> September 2026**. The ICAO Secretariat will set up a poll to determine the exact date of the Meeting. **ACTION ITEM 18-12**