



**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
ASIA AND PACIFIC OFFICE**

**REPORT OF**

**THE TENTH MEETING OF AERONAUTICAL COMMUNICATION SERVICES  
IMPLEMENTATION COORDINATION GROUP OF APANPIRG (ACSICG/10)**

*Bangkok, Thailand, 24 - 26 May 2023*

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

Approved by the Meeting  
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## **PART I – HISTORY OF THE MEETING**

### **1. Introduction**

1.1. The Tenth Meeting of the Aeronautical Communication Services (ACS) Implementation Coordination Group (ACSICG/10) was held at ICAO APAC Regional Office, Bangkok, Thailand, from *24 to 26 May 2023*. The meeting was held back-to-back with the First Meeting of CRV OG Ad-hoc Governance Group from 22 to 23 May 2023.

### **2. Attendance**

2.1 The Meeting was attended by **Sixty-two (62)** participants from **Nineteen (19)** States/Administrations, namely Bhutan, China, Hong Kong China, Macao China, Fiji, India, Indonesia, Japan, Jordan, Malaysia, Maldives, New Zealand, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, USA, and Viet Nam, **Two (2)** International Organizations namely IATA, and ICAO, and **One (1)** industry partner namely Frequentis. The List of participants is provided in **Attachment 1**.

### **3. Opening of the Meeting**

3.1 The meeting was opened by Mr. Hoang Tran, International Telecommunications Lead, FAA ATO Program Management Organization and Co-Chair of ACSICG. Mr. Hoang Tran extended a warm welcome to all participants and was pleased to meet all in person after 3 years. He highlighted the importance of transition to CRV to provide the infrastructure in supporting existing service and future growth of increasing traffic, and hoped to work together to enhance the AMHS performance. Since it would be the last meeting for Mr. Hoang Tran to serve as a co-chair of ACSICG, he expressed his thanks to Member States/Administrations and International Organizations for supporting the implementation of AMHS and CRV in APAC region.

3.2 Mr. Chonlawit Banphawatthanarak, Expert, Director Level, Aeronautical Radio of Thailand Ltd. and Co-Chair of ACSICG welcomed all participants. He added that ACSICG not only covers ground-ground communications but also other types of coordination. He also pointed out that the meeting was going to expand on the importance of other modes of communication, such as voice over CRV, and encouraged everyone to participate as much as possible and to contribute to and get benefit from the forum as a whole.

3.3 Mr. Luo Yi, Regional Officer, CNS, on behalf of the ICAO APAC Regional Director welcomed all participants to the meeting. Mr. Luo Yi reminded the history of ACSICG and its achievements with the highlight on the objective of the meeting, and emphasized the need for the ACSICG members to continue making efforts for the coordinated implementation. He expressed sincere appreciation to Mr. Hoang Tran for his dedication and contributions and wished for the success of the meeting.

### **4. Officers and Secretariat**

4.1 Mr. Hoang Tran, International Telecommunications Lead, FAA ATO Program Management Organization and Mr. Chonlawit Banphawatthanarak, Expert, Director Level, Aeronautical Radio of Thailand Ltd co-chaired the meeting. Mr. Luo Yi, Regional Officer CNS and Ms. Soniya Nibhani, Regional Officer ANS (CNS) Implementation, ICAO Asia and Pacific Regional Office, acted as secretary for the meeting with the support of Ms. Zhong Wenhan, Regional Officer CNS, and Ms. Varapan Meefuengsart, Programme Assistant of the same office.

**5. Working Arrangements, Language and Documentation**

5.1 The ACSICG/10 met as a single body during the meeting. The working language for the meeting was English inclusive of all documentation and this Report. The meeting considered **Eighteen** (18) Working Papers, **Six** (6) Information Papers and **Three** (3) Presentations under its **Twelve** (12) Agenda Items. The list of Papers and Presentations is provided in **Attachment 2**.

**6. Conclusions/Decisions - Definition**

6.1 The ACSICG of APANPIRG records its actions in the form of Draft Conclusions, Draft Decisions and Decisions with the following significance:

- a) **Draft Conclusions** deal with matters which, in accordance with the Sub-Group's Terms of Reference, require the attention of States/Organization or actions by ICAO in accordance with established procedures;
  - b) **Draft Decisions** relate solely to matters dealing with the internal working arrangements of APANPIRG and its contributory bodies; and
  - c) **Decisions** relate solely to matters dealing with the internal working arrangement of the ACSICG.
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## **PART II – REPORT OF AGENDA ITEMS**

### **Agenda Item 1: Adoption of agenda**

#### *Adoption of Agenda- Sec (WP/01)*

- 1.1 The tentative agenda items presented in **WP/01** were adopted as agenda for the meeting.

### **Agenda Item 2: Review of outcomes of relevant meetings**

#### *Review of Relevant Meetings - Sec (WP/02)*

- 2.1 The paper summarized relevant information and updates with the highlight on the reviewed outcomes of ACSICG/9, SWIM TF/6, SRWG/6, SURICG/7, ATMAS TF/3, and relevant discussions of other meetings of CNS SG/26 and APANPIRG/33.

- 2.2 The CNS SG/26 meeting adopted Five (5) Conclusions and Two (2) Decisions. In addition, based on the outcome of discussions on various agenda items, the CNS SG/26 meeting developed Five (5) Draft Conclusions and One (1) Draft Decision, which were adopted by APANPIRG/33. The meeting noted Conclusions/Decisions adopted by CNS SG/26 and APANPIRG/33 of interest to the group and discussed the follow-up.

- 2.3 In response to the query on the status of ASBUs while the meeting was reviewing the Action Items of CNS SG/26, the Secretariat supplemented that GANP edition 7 adopted by Assembly 41 mainly mapped the BBBs to the Universal Safety Oversight Audit Programme (USOAP) protocol questions, the GANP 8 will be released in 2025 during Assembly 42 with revisions on ASBU. The meeting was also informed on the preparation of seminar to be held by ATMAS TF on 27 June 2023, and reminded to consider the distribution of information if FF-ICE operational concept is introduced.

#### *Relevant Outcomes of the Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7) – Sec (WP/15)*

- 2.4 The paper presented relevant information on the outcomes of SWIM TF/7 held *from 9 to 12 May 2023* with highlighted on [a draft of AMHS/SWIM Gateway technical specifications](#) presented by AMHS/SWIM Gateway Study Group (SWAMWAY SG). The work done by SWAMWAY SG to develop a draft of the technical specifications for the AMHS/SWIM Gateway, providing a minimum set of requirements ensuring the exchange of information during the transition to SWIM as well as ensuring the interoperability with AMHS and with SWIM was summarized.

- 2.5 SWAMWAY SG informed that the target of the study group is to get the endorsement of ICAO EUR/NAT AFS to the SWIM Transition Task Force (AST TF) Meeting, to be held from 14-16 June 2023, for the proposed AMHS/SWIM Gateway technical specification as a previous step to be recognized by ICAO and considered as an international standard. Therefore, the SWIM TF/7 Meeting requested all delegates to provide feedback on the AMHS/SWIM Gateway technical specification draft **by 31 May 2023**. ACSICG/10 was also invited to review draft AMHS/SWIM Gateway Technical Specification and provide comments to share with SWAMWAY SG.

- 2.6 The meeting was informed that since SWIM offers to provide P1 interface to AMHS, therefore SWIM should be the one to host the AMHS/SWIM Gateway. However, further closely coordination and verification with SWIM TF is necessary. Regarding the transition to comply with SWIM requirements, the meeting was reminded to make sure that the routing for AMHS/SWIM should not be confused, and this was further discussed in the meeting with Presentation/03 from Frequentis.

#### *Outcomes of MET/IE WG/21 - Chair of MET/IE WG and Sec (WP/17)*

2.7 The paper presented relevant outcomes from the Twenty-first Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/21) to support global IWXXM exchange and invited the ACSICG meeting to consider proposals for the expedited implementation of AMHS (with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE)) intra- and inter-regionally, and a possible conjoint meeting session to be conducted by the MET/IE WG and ACSICG in 2024. Supporting discussion and a related proposal were presented through WP/10.

2.8 The meeting reviewed the supporting discussions during the MET/IE WG/21, and noted that while some States indicated the capability to generate meteorological information in the IWXXM form, they could not disseminate the IWXXM messages from the NOCs to the ROCs because the necessary AMHS with FTBP and IHE was not implemented. It was informed that MET/IE WG/21 formulated the *Draft Conclusion MET/IE WG/21-03: GLOBAL EXCHANGE OF IWXXM* that ACSICG prioritise the implementation of intra- and inter-region network circuits, including support for the AMHS with FTBP and IHE, to support the global exchange of messages in the IWXXM form. Furthermore, to support meteorological information exchange initiatives more generally, MET/IE WG/21 proposed an update to its terms of reference to "coordinate and seek support from other enabling ICAO groups (e.g. SWIM TF, ACSICG, CRV OG, etc.)".

2.9 The meeting supported the proposal to conduct a conjoint meeting session of the MET/IE WG and ACSICG in 2024. Therefore, the meeting requested the Co-Chairs and Secretariat to consider convening a conjoint meeting session of the ACSICG in 2024 in conjunction with MET/IE WG.  
**ACTION ITEM 10-1**

2.10 The meeting suggested that MET/IE WG focus the coordination with SWIM TF and ACSICG, and SWIM TF and ACSICG would translate the requirements by MET/IE WG into demand of bandwidth for CRV implementation. The meeting reiterated that the MET/IE WG/21 Draft Conclusion proposal to prioritize the ACSICG support for the global dissemination of IWXXM was consistent with the existing ACSICG terms of reference and work program, a Decision or Draft Decision on action specific to the ACSICG was not required.

2.11 The meeting agreed a modified version of the MET/IE WG/21 Draft Conclusion to propose further action by States and ICAO to support the global dissemination of meteorological information in IWXXM form, would be an appropriate outcome from ACSICG/10.

2.12 The meeting also discussed that the information traffic monitoring is provided by PCCW in the form of the percentage of the subscribed channel without detailed bandwidth usage of services exchanged between two COM centers over CRV, while this data is available for IPL.

2.13 The meeting was brought to the attention about IWXXM AMHS header requirement to be generated in IWXXM message. This is different than today's procedure which TAC is not required to include. This creates some issues for MET to generate proper IWXXM messages.

*Relevant Action Items of 57<sup>th</sup> Conference of Directors General of Civil Aviation - Sec (IP/03)*

2.14 The paper presented the CNS related outcomes of the 57th Conference of Directors General of Civil Aviation Asia and Pacific Regions (DGCA/57), which held at Republic of Korea from 4 to 8 July 2022. There were two discussion papers in the Safety stream shared information and proposed further actions on 5G and Radio Altimeter issue. It was also noted that the Air Navigation stream formed five Action Items from twelve discussion papers. The papers which are mainly relevant to CNS were listed, and the Action Items under the relevant agenda items of the Conference related to CNS were summarized. The ACSICG/10 meeting was invited to review the Action Items related to CNS fields

derived from the DGCA Conf/57, and identify CNS related issues if any that need to be brought to the attention of the DGCA Conf/58, which will be hosted by Bangladesh in 2023.

### **Agenda Item 3: Review the report of the Eleventh meeting of Common aeRonautical VPN Operations Group (CRV OG/11) and CRV OG Ad-Hoc Governance Group**

*Review the report of the Eleventh meeting of Common aeRonautical VPN Operations Group (CRV OG/11) - Sec (WP/03)*

3.1 The paper summarized the relevant outcomes of the Eleventh Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (CRV OG/11) held *from 1 to 3 February 2023* in ICAO Asia and Pacific Regional Office, Bangkok, Thailand. CRV OG/11 meeting report, working papers, information papers, and other resources can be accessed by following link:

<https://www.icao.int/APAC/Meetings/Pages/2023-CRV-OG11-.aspx>

#### *Outcomes of CRV Governance Workshop*

3.2 The CRV OG/11 Meeting reviewed the outcomes of the ICAO Asia Pacific Idea Generation Workshop: *CRV Governance* held at the ICAO APAC Office, Bangkok, Thailand, on **31 January 2023**. A total of **Three (3)** presentations were delivered followed by brainstorm sessions to discuss the improvement of CRV governance to meet current requirements and future challenges. The Workshop report, presentations, and other resources can be accessed by following link: <https://www.icao.int/APAC/Meetings/Pages/2023-CRV-Governance-Workshop.aspx>

3.3 The Workshop agreed to create the **CRV OG Ad-hoc Governance Group** for preparing and presenting the **potential CRV OG Governance model** to future CRV OG Meetings. Terms of Reference (ToR) of CRV OG Ad-hoc Governance Group would be finalized by the existing CRV OG Ad-hoc Expert Group planned to meet virtually on 20 April 2023. Additionally, CRV OG/11 meeting concurred that the First Meeting of **CRV OG Ad-hoc Governance Group** should be organised as **In Person Meeting** to have an opportunity for detailed deliberation about the ToR of the group and future roadmap from **22-23 May 2023**.

3.4 The CRV OG Ad-hoc Expert Group meeting on 20 April 2023 finalized the ToR of CRV OG Ad-hoc Governance Group, which was further discussed in CRV OG Ad-hoc Governance Group Meeting from 22-23 May 2023. The outcomes of CRV OG Ad-hoc Governance Group First Meeting are provided in **WP/04** of ACSICG/10.

#### *CRV OG Operations Manual Status*

3.5 New Zealand presented the status of the current draft of the CRV OG Operations Manual. The CRV OG/11 meeting was informed that since the publication of the CRV OG Operations Manual in April 2022, there have been many updates, including those coming from the CRV OG Ad Hoc Groups. The updates in different sections were explained in detail. The CRV OG/11 meeting adopted the **Decision CRV OG/11/01 - Publish the updated APAC CRV Operations Manual (CRV OG OM v1.2)**.

3.6 The latest version of the CRV OG Operational Manual has been published on [ICAO APAC e-docs](#) under CNS, [ICAO APAC CRV Secure portal](#), and on the [CRV portal](#) hosted by Airways New Zealand, and the relevant information has been shared with Member States/Administration through State Letter **Ref.:** 8/2.15 – AP034/23 (CNS) dated **22 February 2023** on the subject - *Publication of ICAO APAC CRV OG Operations Manual v1.2 and ICAO APAC CRV Implementation Plan v2.2*.

3.7 Nepal suggested incorporating 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. The CRV OG Ad-hoc Expert Group will discuss the possibility of adding such provisions and draft relevant clauses to add in CRV OG OM.

Outcomes of CRV OG Experts Ad-hoc Group Meetings

3.8 The paper presented the outcomes of the APAC CRV Ad-Hoc Expert Group discussions held last year after the CRV OG9. The CRV OG/11 meeting noted that seven virtual Ad-hoc Meetings were held between CRV OG/9 organised from 25-27 *January, 2022* till date, and one distinct Meeting was held with the SWIM Task Force task leads on 28 October, 2022. The outcomes of the Ad-Hoc Group Expert Group discussions on contract extension, upgrade/downgrade CRV circuits subscribed, different CRV Users and their joining process, and Package D+ formalization were presented, which were further reviewed in CRV OG/11 by separate working papers. Other topics, including the mandate of firewall, common Package review, chair’s functions, and operations manual as a formal document, were discussed.

Update to CRV Implementation Plan

3.9 The paper presented the proposed updates/editorial changes to the CRV Implementation Plan for review and adoption. The CRV OG/11 meeting agreed to publish the CRV OG Implementation Plan and adopted the **Decision CRV OG/11/02 - Update to the CRV Implementation Plan**. The latest version of CRV OG Implementation Plan without restricted information has been published on [ICAO APAC e-docs](#) under CNS Section. The latest version of CRV OG Implementation Plan has been uploaded on the [ICAO CRV Secure portal](#), and [CRV portal](#) hosted by Airways New Zealand. The relevant information has been shared with Member States/Administration through State Letter **Ref.:** 8/2.15 – AP034/23 (CNS) dated **22 February 2023** on the subject - *Publication of ICAO APAC CRV OG Operations Manual v1.2 and ICAO APAC CRV Implementation Plan v2.2*.

ATN Documentation Tree Update

3.10 The paper presented an update of **the Asia/Pacific regional ATN Documentation Tree**. The CRV OG/11 meeting deliberated the proposed APAC ATN Documentation Tree and various CRV documents suggested to be placed in the Tree. Supplementary consultation requirements with more Member States for further modifications and updates were sensed. The proposed ATN Documentation Tree, which is provided in **Appendix A** to the Report, was referred to as *the first snapshot of the Tree*, which required more deliberation.

3.11 The CRV OG/11 Meeting agreed that the CRV OG Ad Hoc Expert Group will work on modifying relevant CRV documents and updating the CRV OG Operations Manual to ensure that any changes within CRV consider modifications required to the document tree.

3.12 The CRV OG/11 Meeting arranged that as the current APAC ATN Documentation Tree uploaded on ICAO APAC Website was not updated for a long time, the ICAO Secretariat will take necessary action to update ATN Documentation Tree on the [ICAO APAC Regional Implementation Projects webpage](#) with the modified first snapshot of the Tree after ACSICG/10 modifications. The ATN Documentation Tree would be amended in future as more modifications would be made by ACSICG/CRV OG Meetings.

3.13 With aforementioned, the ACSICG/10 Meeting further reviewed and updated the Tree, and endorsed the following draft conclusion for CNS SG/27 consideration:

<b>Draft Conclusion ACSICG/10/01 – Adoption of the Asia/Pacific Regional ATN Documentation Tree</b>		
What:	<b>a.</b> the ATN Technical Document be published in a loose-leaf form to include future amendments to the Document Tree; and <b>b.</b> the ATN	Expected impact: <input type="checkbox"/> Political / Global

Documentation Tree provided in <b>Appendix A</b> be adopted.		<input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Ops/Technical
Why: The current ATN/AMHS Documentation Tree published on ICAO APAC Website is not updated for few years. Therefore, it required updates. Additionally, some documents related to CRV are required to add and other required to delete into the tree due to obsolete documentation	Follow-up: <input type="checkbox"/> Required from States	
When: 26-May-23	Status: Draft to be adopted by Subgroup	
Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: CRV OG		

Risk Assessment framework for CRV OG

3.14 New Zealand presented a risk assessment framework for CRV. Over years of CRV operations, various installations and CRV processes issues have been encountered. These issues can be considered as the risk impacting availability of CRV network and services. The CRV OG/11 meeting noted that these risks were documented in the Airways New Zealand risk evaluation template, which can be accessed on the portal [APAC CRV - Risk Register.docx](#), which has criteria crafted to suit and reflect Airways New Zealand. The CRV OG/11 meeting noted it would be prudent to create a Risk Evaluation Framework for the CRV against the ICAO DOC 9859 Safety Management that would suit the particular environment for CRV. The reviewed criteria for the consequences by categories to reflect the CRV and risk assessment framework is provided in **Appendix B** to the Report.

Mandate Firewall

3.15 New Zealand presented information on the potential to mandate the use of a firewall as part of the CRV implementation. Referring to the APAC CRV Operations manual and the System Design Document (SDD), the CRV OG/11 meeting noted the router with an ACL can only provide very limited security and it is recommended that external security advice is sought. Three options for mandating a firewall were presented for consideration. These were Option 1 – *PCCW implemented firewall*, Option 2 – *CRV User implemented firewall*, and Option 3 – *Update INFOSEC Policy*.

3.16 The CRV OG/11 meeting discussed that another option might be that a firewall is provided by PCCWG at one end of connection for State and at another end, State may install their firewall based on States preferences. However, as implementing a firewall and its maintenance may be costly for some States, mandating firewalls for CRV needs more deliberations. The additional proposed option was that CRV OG specifies a set of requirements to meet by States to comply with CRV security policy. However, it required additional contributions from more Member States.

Update the APAC CRV Implementation Table

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

- **Under Operation**  
Australia, Bhutan, China, Fiji, Hong Kong China, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, PNG, Republic of Korea, Singapore, Thailand, and USA.
- **Under Provisioning**


Nepal, Mongolia, Vietnam

- **Hot Prospects in 2023**  
Sri Lanka, Pakistan, and New Caledonia

3.18 The CRV OG/11 meeting reviewed and updated the APAC CRV Implementation Table, which is provided in **Appendix C** to the Report.

*ATN Routing and Telecommunication Update*

3.19 USA presented the latest Asia/Pacific Regional data telecommunication infrastructure and ATN routing that includes Air Traffic Message Handling System (AMHS) and Aeronautical Fixed Telecommunication Network (AFTN), which is updated and maintained by Aero Thai. After reviewing the structure of the table, the CRV OG/11 meeting suggested to modify it to accommodate the latest requirements. It was agreed that ACSICG Co-Chair, CRV OG Co-Chairs, and ICAO Secretariat would deliberate and review the structure of the table. The revised structured table will be uploaded on [CRV portal](#) hosted by Airways New Zealand and updated by all APAC Member States. The table will be further reviewed and updated by the ACSICG/10 Meeting.

3.20 After CRV OG/11 Meeting, the revised table is prepared by ACSICG Co-Chair, CRV OG Co-Chairs, and ICAO Secretariat and uploaded on the CRV portal hosted by Airways New Zealand. The table was **also shared with Member States on 17 March 2023** for updates. The latest updated table from Member States can be accessed by  [AsiaPac ATN Infrastructure Routing Plan.xlsx](#) on CRV portal hosted by Airways New Zealand.

*Upgrade/Downgrade of CRV Circuits Subscribed and Addition of New Sites and Services in the CRV Contract*

3.21 The paper summarized the outcomes of the discussion of the ICAO CRV Steering Group formed in the CRV OG/9 to devise the terms and conditions for the addition of new services, upgrade/downgrade of Packages along with the addition of new sites by the CRV contracted States into their contract.

3.22 In CRV OG Ad-hoc Expert group Meetings, relevant Clauses for upgrade/downgrade/addition of new services or sites were deliberated and finalized. The CRV OG/11 meeting **reviewed, modified and endorsed** the Addendum to Terms And Conditions between PCCW Global and CRV Authority **v3**, High-Level Individual Site Questionnaire **v2.2**, PCCWG System Design Document **v4.6**, and Service Order Form (**v2**), which can be accessed on [ICAO CRV Secure portal](#), and [CRV portal](#) hosted by Airways New Zealand. The CRV OG Operations Manual v1.2 has also been updated to incorporate agreed Addendum to Terms and Conditions between PCCW Global and CRV Authority.

*Various CRV users and their joining process*

3.23 To follow up the Action Item 9-9 of the CRV OG/9 and Action Item 6-1 of SWIM TF/6, the paper presented the outcomes of relevant discussion of various CRV OG Expert Ad-hoc group Meetings along with the definition of CRV users prepared by CRV OG Expert Ad-hoc group in concurrence with MET SG experts and their joining process for Meeting approval.

3.24 The reviewed and finalized definition agreed upon by the Meeting was as follows:

**CRV USER – State/Administration:** An entity officially designated by the State to provide the air traffic or air navigation services the State is obligated to provide according to the ICAO provisions.

**CRV USER – Industry:** An entity not officially designated by the State but authorised by the State to provide aviation or related services commercially.

3.25 It was approved that State's ANSPs will assign IP addresses to any entities joined CRV, and all entities will sign their contract individually. Additionally, for the difference in the joining process, CRV Users- State/Administration **will follow the same process** as mentioned in CRV OG Operational Manual and CRV Landing Page, while industries will **need sponsorship** by States.

3.26 The relevant amendments to CRV OG Operations Manual to include CRV Users definitions and CRV Implementation Plan for IP addressing assignments process for various CRV Users was completed.

3.27 The ACSICG/10 proposed to include paragraph 3.24 into IP Routing Policy Document as shown in ATN Documentation Tree.

#### *Extension of CRV Contract*

3.28 To follow up **Conclusion APANPIRG/33/7 - Extension of CRV Contract for one year**, the ICAO Secretariat has issued State Letter **Ref.: T 8/2.15 –AP003/23(CNS)** dated **4 January 2023** on the subject: - *Extension of CRV Contract for one year and a reminder for the target year of CRV Implementation by 31 December 2023 in the APAC Region* to inform Member States about the extension of the current contract on same Terms and Conditions and urged to initiate a service order with the PCCW Global for CRV implementation as early as possible, on or **before 31 December 2023** and synchronize the implementation of CRV in the APAC region.

3.29 The CRV OG/11 meeting was invited to modify their contract with PCCWG, as required, and initiate a service order with the PCCW Global for CRV implementation before 31 December 2023, if not joined CRV.

#### *Flexibility in CRV Contract Renewal*

3.30 CRV OG Co-Chair (Asia) shared that the term of the contract with the CRV Service Provider (PCCW Global) was set for an initial five years with five additional one-year contract additions totaling a ten-year contractual agreement until 31st December 2027. However, there is an overhead to managing rolling one-year renewals, a different degree of flexibility is required.

3.31 With some States approaching the five-year anniversary of their contracts with PCCWG, questions were being asked about the ability to sign for different periods of time. Therefore, it was proposed that the CRV OG Operations Manual is updated to allow contract extensions of two or three year. The CRV OG/11 meeting agreed for the proposed clauses to add to CRV OG Operations Manual and CRV OG OM v1.2 was updated accordingly.

#### *Addition of New Package D+ in CRV*

3.32 The paper presented the details of a new Package D+ and proposed to add them in the current CRV common Packages for Meeting review and adoption. The list of documents to be updated in CRV Common Packages after the endorsement of Package D+ definition by CRV OG/11 was shared and the finalized definition and updated CRV common Packages to include the new Package D+ was presented by PCCWG through **the WP/08** to the CRV OG/11 meeting.

CRV - New Package D+

3.33 PCCWG presented the details of new Package D+, which was intended to enhance the existing Package D option. The CRV OG/11 meeting noted that the service management and SLA of Package D+ connectivity is the same as Package D. In addition, the commercial price for Package D+ is same as Package D. Nonetheless, it needs to add the additional NID price which is available from the current CRV price book in the common Package.

3.34 The CRV OG/11 meeting **reviewed, modified, and adopted** the modified CRV common Package documentation incorporating Package D+. The collective modified CRV common Package document agreed for the upgrade/downgrade/addition of new sites and services and Package D+ is provided on the [ICAO CRV Secure portal](#), and [CRV portal](#) hosted by Airways New Zealand.

CRV Network Yearly Service Review 2022

3.35 PCCWG shared Latest CRV Updates and CRV Network Yearly Service Review for 2022. The CRV OG/11 meeting was informed about the 2022 Ticket Summary by Ticket Type and their overview. PCCWG informed that there are 65 circuits in 34 cities with different CRV Packages, A, B+, C+, C and D. There are 2 service providers in the CRV network and 4 circuits (B+ and D) are under implementation. It was further informed that 3 cities are joining CRV in 2023, which are French Polynesia / New Caledonia, Sri Lanka – Colombo, and Pakistan- Karachi.

CRV Post Implementation Issues in Bhutan

3.36 The paper updated the progress of the issues faced by Bhutan related to CRV post implementation in 2021 due to the non-readiness of peer States and the actions taken by CRV OG and ACSICG for its resolution.

3.37 The CRV OG/11 meeting noted that Bhutan informed the ICAO APAC Office through email on 6 July, 2022 that considering the connectivity between Bhutan and Thailand is currently under inspection process for reliability/stability test and after consensus with New Zealand, Bhutan has decided to discontinue the temporary CRV connectivity with New Zealand. Thailand confirmed that the CRV connectivity with Bhutan had been implemented. Therefore, the ad-hoc group formed to resolve this issue was **dissolved**. The relevant action items resulting from past CRV OG and ACSICG Meetings were marked as closed.

PASNet for the Pacific Islands CRV connectivity

3.38 The paper presented an overview of the options for using PASNet to connect the Pacific Islands to CRV. Considering the options for network connectivity to some Pacific Islands are limited and in some cases expensive, the World Bank implemented the **Pacific Aviation Safety Network (PASNet)** in 20xx. The PASNet was built in a similar way to the CRV, focusing on immediate needs. The options for connecting CRV to PASNet have been narrowed to two options: *installing a new CRV NID in Christchurch* and *using the exiting Airways New Zealand Christchurch CRV NID*. The CRV OG/11 meeting discussed the significance of PASNet project, its potential benefits after implementation and noted the progress of the project. Further updates on the project will be shared by New Zealand in CRV OG Meetings.

Progress of CRV Implementation by APAC Member States

3.39 Fiji, India, Indonesia, Japan, Malaysia, and Republic of Korea presented the CRV implementation status by different Papers.

*MPLS/IP Based Inter-Regional Connection*

3.40 The paper provided the current status of discussion being done for potential interconnection of CRV and REDDIG II and CRV and New PENS and requested APAC Member States to record their interest, willingness, or need for interconnection of the CRV with other regional networks such as REDDIG II / New PENS with the ICAO secretariat. It was noted that there is no concert technical proposal ready to work further for CRV and REDDIG II interconnection, while the interconnection proposal for CRV and New PENS is in progress.

*Inter-regional connection between Russian and APAC AMHS Centers*

3.41 Considering the restrictions on the use of Cisco equipment at Moscow and Khabarovsk COM centers, the Russian Federation shared the 3 proposed solutions to be studied for connecting Moscow and Khabarovsk COM centers to CRV to ensure the transition to AMHS technology with COM centers of the APAC region (Japan and China). With due consideration to the time needed to study the available solutions, Russia proposed to implement an interim connection between COM centers via a dedicated L2 VPN link to expedite transition to AMHS. The current status of transition to AMHS with Japan and China was shared.

3.42 In addition, the Russian Federation also shared its support for the initiative to explore potential MPLS/IP based inter-regional connection between CRV and REDDIG II networks. The establishment of such connection will eventually provide for the transition to AMHS via the CRV and ensure exchange of other types of information as one of the prerequisites for system-wide information management (SWIM) implementation.

3.43 Japan informed that as it had already implemented CRV, instead of establishing an additional L2 VPN link, Japan would prefer to wait for Russia to join CRV. Russia shared its willingness to discuss with Japan other proposals for interconnection individually.

*Update on Using the Rest of CRV MSA*

3.44 The paper presented an update on the recent development of using the balance fund of the MSA. To follow up **Conclusion APANPIRG/33/6 - Revised Amendment of the Management Service Agreement for CRV project (RAS14801)**, ICAO Secretariat issued State Letter **Ref.: T 8/2.15 –AP-CNS 00xx/23** dated 9 January 2023 and **Ref.: T 8/2.15 – AP-CNS 0026/23** dated 17 January, 2023 on the subject: - *Revised Amendment of the Management Service Agreement for the CRV project (RAS14801)* to Countersign the Revised amended Project Document or inform the intention to receive the share of the remaining fund balance to 16 pioneer States. Additional clarifications were issued on 17 January 2023. In response, **16** Member States countersigned or shared confirmation to countersign the Revised amended Project Document to provide consent to utilize the remaining fund for the CRV.

3.45 It was proposed that after finalizing of Terms of Reference for the approved task and estimated cost, if the remaining amount of is too low to utilize for agreed tasks, CRV OG may deliberate and decide on additional cost-sharing arrangements. Additionally, if it is agreed that the remaining amount is too low for approved work and there is no consensus for the remaining cost-sharing arrangement, it is proposed to refund the remaining share to all 16 pioneer States/Administrations.

*Using the rest of money: ToR of Safety Assessment*

3.46 New Zealand presented Safety Assessment options for the CRV using the remaining Pioneer State money. Discussion at CRV OG Meeting has suggested that the remaining funds from the CRV Project could be used to facilitate a Safety Assessment of the CRV network. It was assumed that the Safety Assessment means a Cyber Security Review. The **6 possible Security Review** options were provided to be considered by the CRV OG/11 meeting.

3.47 It was anticipated that this will use all of the remaining funds from the project. Consideration from the CRV should be given to the possibility of needing to contribute further funds depending on the Terms of Reference (ToR) and subsequent quote. The CRV OG/11 meeting deliberated for various proposed options and **agreed to adopt Option 2 - Penetration test of the PCCWG implementation only and Option 5 - Engage a Security consultant to review the Common Package, RFP documentation including the response, Implementation Plan and the Operations Manual and provide a Security recommendation based on this review.**

3.48 With the aforementioned, the following **Conclusion** formulated by CRV OG/11 was endorsed by ACSICG/10.

<b>Conclusion ACSICG/10/02 (CRV OG/11/03) – Selection of Security Review Options 2 and 5 and Develop a ToR</b>	
What: The utilisation of the CRV Project Funds would be used to carry out a Security Review of the CRV.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To provide State assurance on the security of the CRV network.	Follow-up: <input type="checkbox"/> Required from States
When: 26-May-23	Status: Adopted by ACSICG
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: CRV OG	

3.49 Due to limited time, as a way forward, it was agreed that a draft ToR will be prepared by CRV OG Ad-hoc Expert Group and submitted to the ACSICG/10 Meeting for review and approval. After the ACSICG/10 Meeting approves ToR, **quotations will be requested from various cyber security expert agencies and appraised cost with a tentative plan and timelines for its accomplishment will be presented to the CRV OG/12 Meeting** for agreement on the scope of work and the final decision for utilization of fund for agreed ToR. After the approval of CRV OG/12, an agency will be selected, and the chosen agency will execute the task.

3.50 The draft ToR for Security Review using Options 2 and/or 5 was prepared by CRV OG Ad-hoc Expert Group, which has been shared with the CRV OG/11 delegates for their review and feedback on 25 April 2023. The draft ToR provided in **Appendix D** was reviewed by ACSICG/10 Meeting.

3.51 With the aforementioned, the following **Conclusion** was adopted by ACSICG/10.

<b>Conclusion ACSICG/10/03– Adoption of ToR for CRV Security Review using Options 2 and/or 5</b>	
What: The utilisation of the CRV Project Funds would be used to carry out a Security Review of the CRV using <b>Options 2 and/or 5</b> as per the ToR provided in <b>Appendix D</b> . <b>Option 2</b> - Penetration test of the PCCWG implementation only <b>Option 5</b> - Engage a Security consultant to review the Common Package, RFP documentation including the response, Implementation Plan and the Operations Manual and provide a Security recommendation based on this review	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical

Why: To provide State assurance on the security of the CRV network.	Follow-up: <input type="checkbox"/> Required from States
When: 26-May-23	Status: Adopted by ACSICG
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: CRV OG	

*(New) PENS and the EATM CERT Cybersecurity Considerations*

3.52 EUROCONTROL generically introduced the security management practices from the PENS Community perspective and the activities of the European Air Traffic Management Computer Emergency Response Team (EATM CERT) with a focus on penetration testing (ethical testing). The CRV OG/11 meeting was informed that the Cybersecurity Assessment conducted by EUROCONTROL/NM in 2018 highlighted that the New PENS Contract/Service incorporates all industry good practices on security requirements. PENS Community approaches to User Security and Cyber Security were shared. With the introduction of the risk levels definition, the results of penetration testing on aviation systems were explained. It was further informed that the penetration testing was volunteered by States, and the New PENS service provider was obliged to allow penetration testing as per the contract.

*(New) PENS IPv6 Addressing Considerations*

3.53 EUROCONTROL shared that PENS is IPv6 enabled (dual IPv4/IPv6 stack available) and each individual PENS User is assigned upon request 4x /48 IPv6 public ranges by EUROCONTROL. Ranges assigned to any given PENS Users are public, specific to the user hence unique on a global scales. Ranges assigned to the PENS Users are therefore decoupled from that of the PENS Service Provider avoiding the need for IP address change/renumbering when changing service provider. Furthermore, the IPv6 address space allocation which is performed through the “Network Addresses Management Services (NAMS)” were introduced.

*Review ToR and Action Items*

3.54 The CRV OG/11 meeting reviewed the ToR of CRV OG and further updated the Action Items for CRV OG.

*Date and Venue for the Next Meeting*

3.55 The CRV OG/11 meeting agreed to organize the next CRV OG Meeting as an **In Person Meeting** to further progress tasks listed in the Terms of Reference, with a tentative date from **24-26 January 2024**.

*Review of Outcomes of the First Meeting of CRV OG Ad-Hoc Governance Group – Sec (WP/04)*

3.56 The paper summarized the outcomes of the First Meeting of CRV OG Ad-hoc Governance Group held *from 22 to 23 May 2023* at ICAO APAC Regional Office, Bangkok, Thailand. The meeting was attended by **56** participants from **17** Member States/Administration and **2** International Organizations. The meeting report, working papers, information papers, and other resources can be accessed by following link:

<https://www.icao.int/APAC/Meetings/Pages/2023-CRV-OG-Ad-hoc-Governance-Group-and-the-ACSICG10.aspx>

*Key Outcomes of ICAO APAC Idea Generation Workshop: CRV Governance and the Draft ToR of CRV OG Ad-Hoc Governance Group*

3.57 The paper presented key outcomes of the *ICAO Asia Pacific Idea Generation Workshop: CRV Governance* held at the ICAO APAC Office, Bangkok, Thailand, on **31 January 2023**, and the draft ToR of CRV OG Ad-Hoc Governance Group.

3.58 The Workshop agreed to create the **CRV OG Ad-hoc Governance Group** for preparing and presenting the **potential CRV OG Governance model** to future CRV OG Meetings. The CRV OG Ad-hoc Expert Group Meeting held virtually on 20 April 2023 prepared and agreed on the draft ToR of CRV OG Ad-hoc Governance Group for further discussion in the First Meeting of CRV OG Ad-hoc Governance Group.

3.59 The First Meeting of CRV OG Ad-hoc Governance Group agreed that while defining modified CRV Governance, it is crucial to consider AMHS/SWIM Transition over CRV. The First Meeting of CRV OG Ad-hoc Governance Group reviewed and adopted the draft ToR of CRV OG Ad-hoc Governance Group. The finalized and agreed ToR of CRV OG Ad-hoc Governance Group was provided in Appendix A of the paper, and the List of nominated dedicated Experts for CRV OG Ad-hoc Governance Group was provided in Appendix B of the paper.

#### *XML Projected Bandwidth Requirements*

3.60 Due to the relevance of the topic of the presentation to be shared by USA with ACSICG/10 and the availability of key CRV Experts in the CRV OG Ad-hoc Governance Group, USA presented the XML Projected Bandwidth Requirements, which was also presented to ACSICG/10 through Presentation/02.

3.61 It was proposed that close coordination and collaboration within CRV OG, SWIM TF, and other groups using CRV to do any trial or prepare solutions must be done. Additionally, it was recommended that CRV OG should be informed about the types and amount of data being planned by various Member States to transmit on CRV so that CRV OG can anticipate future CRV requirements and restrict some non-safety critical data from sharing over CRV if needed, to maintain cost-efficient CRV circuits.

3.62 CRV Governance Ad-hoc group will also consider future CRV bandwidth requirements, security measures, and other technical specifications while defining modified CRV Governance.

#### *Review of CRV Governance Model - A New CRV Management Strategy*

3.63 CRV OG Co-Chairs presented the current CRV governance model and proposed a new CRV management strategy.

3.64 It was noted that based on the current CRV governance model, the CRV OG manages the operational issues related to CRV shared by Member States. At the same time, network operations are primarily the responsibilities of the CRV Service provider (PCCWG) and concerned States. The Member States bring any issues and ideas to the CRV OG. The presentation also compared the CRV Governance model with other regional networks, including REDDIG (South American Network) and New PENS (European Network). Three options for CRV governance models, including a model similar to the REDDIG II Governance model without network monitoring, a model similar to the REDDIG II Governance model with network monitoring, and a model similar to New PENS Governance, were presented and elaborated in detail. The proposed future work processes were summarized together with timelines.

3.65 The First Meeting of CRV OG Ad-hoc Governance Group was informed that the presented options were prepared and proposed by CRV OG Co-Chairs and ICAO Secretariat based on the current CRV Governance, REDDIG II and new PENS Governance models. However, there may be other

potential options and the meeting was requested to brainstorm other options, review and discuss on the best solution, and recommend a way forward.

*Outcomes of Brainstorming Session*

3.66 The First Meeting of CRV OG Ad-hoc Governance Group agreed that both models of Option 2 utilized by REDDIG II Network and Option 3 New PENS Governance model may not be directly adopted for Asia/Pacific Region, which is vast and enormous in geographical size with many small Member States.

3.67 The First Meeting of CRV OG Ad-hoc Governance Group noted the heavy workload of the current CRV OG Ad-hoc Expert Group and agreed that the workload would increase in future and require a dedicated paid group to do the necessary work for the management of CRV. However, it was recommended to start by defining a list of problems exists with the CRV OG Ad-hoc Expert Group in the management of the CRV. The Member States were encouraged to do more participation and contributions to CRV Ad-hoc Expert Group.

3.68 Based on the problem statement, a gap analysis can be prepared to contemplate and propose potential solutions. A cost estimate can be prepared for each possible solution, and a final resolution can be adopted based on various factors, including a cost-efficient solution. For a way forward, the First Meeting of CRV OG Ad-hoc Governance Group agreed to break down the current governance model step by step and document the model, issues, and resolution options.

3.69 The First Meeting of CRV OG Ad-hoc Governance Group drafted the first version of the problem statement, which will be reviewed in future CRV OG Ad-hoc Governance Group meetings.

*Date and Venue for the Next Meeting*

3.70 The First Meeting of CRV OG Ad-hoc Governance Group agreed to organize the next CRV OG Ad-hoc Governance Group Meeting as a virtual Meeting to further progress tasks listed in the Terms of Reference (ToR) on 2 October 2023 from 0800-1000 Bangkok Time (UTC+7). The Secretariat will issue a meeting invitation in due course.

3.71 CRV OG Ad-hoc Expert group is considering to organize next CRV OG Meeting for four days to allow sufficient time for discussion on many on-going action items.

**Agenda Item 4: AMHS/AFTN routing issues and coordination with ATS Messaging Management Centre (AMC)**

*AFTN/ATSMHS Routing Directory in APAC – Sec (WP/06)*

4.1 The paper presented a brief history of the ICAO APAC AFTN Routing Directory which was based on the existing AFTN circuits in the Asia and Pacific regions. The meeting was reminded again that the region would follow the AFTN/ATSMHS routing directory during transition period, for inter-regional traffic, it is required to follow the existing entry/exit points and procedure.

4.2 The meeting reviewed and updated the AFTN/ATSMHS CONNECTIONS\_ASIA/PAC Routing Directory, which is provided in **Appendix E** to this report.

*APAC AMHS Implementation Status from AMC - Thailand (WP/18)*

4.3 The paper presented the AMHS implementation status information in Asia/Pacific Region updated in ATS Messaging Management Centre (AMC) (OPER 247) as of 3 May 2023 in Attachment A of the paper. AMC was implemented by EUROCONTROL to provide off-line network

management services in support of the ground ATS Messaging network of Air Navigation Service Providers (ANSPs). It was informed that the AMC round 248 has been cancelled due to technical failure, and the next round for AMC data update will be AMC round 249 on 18 May. The meeting was invited to review and update information to AMC via AEROTHAI if necessary, including points of contact.

#### **Agenda Item 5: AMS and Datalink communication**

##### *Space-Based Very High Frequency (VHF) Communication Services – Singapore (WP/12)*

5.1 This paper presented the meeting the scope of the proposal and the objectives considered in the design of the space-based VHF system, it also summarized the progress of the technical and regulatory studies of space-based VHF communications (voice and data) in the frequency band 117.975-137 MHz in International Telecommunication Union (“ITU”), ICAO Communications Panel (CP) and ICAO Frequency Spectrum Management Panel (“FSMP”).

5.2 The paper shared that there are two companies working in parallel to the launch prototype satellites with VHF payload for Proof-of-Concept (PoC) Demonstration between 2023 and 2025. To conduct the PoC demonstration, there will be a need for ICAO regional office to assign appropriate VHF frequencies so that verification tests could take place.

#### **Agenda Item 6: Review and update the AMHS/ATN/AIDC Implementation Status**

##### **6.1 AMHS implementation Status**

##### *Proposal for Transition from AFTN to AMHS between Indonesia (Jakarta) and Australia (Brisbane) – Indonesia (WP/13)*

6.1 The paper presented the proposal for transition from AFTN to AMHS between Indonesia (Jakarta) and Australia (Brisbane).

6.2 Following the AMHS Implementation, Jakarta AMHS System has connected to Singapore via ATN/AMHS on February 2018 and connected to Australia via AFTN. In accordance with ASIA/PAC routing directory, Indonesia is an alternate for Singapore and Australia concerning the AFTN/AMHS connectivity. Thus, Indonesia would like to connect the AMHS to Australia that would involve Jakarta and Brisbane.

6.3 Several issues of message distribution between Jakarta and Brisbane due to mix used of AMHS and AFTN systems were introduced, while as a solution, a transition from AFTN to AMHS between Jakarta and Brisbane via CRV was proposed. The meeting noted in March 2023, there were discussions between Indonesia and Australia regarding to the transition process of the AMHS. It was acknowledged to propose the connection between AMHS to AMHS and the interoperability Test is planned for June 2023.

6.4 The meeting also advised Indonesia to update the AMHS implementation with AMC in time.

##### *AMHS/ATN Implementation Status of Thailand (IP/02)*

6.5 The paper presented information about AMHS/ATN implementation status of Thailand as well as the summary of link configuration after the successful implementation of CRV network in May 2022. AEROTHAI has migrated most AMHS links from conventional IPLC (private leased line) onto CRV, and started investigating other services to be used on CRV such as voice, SWIM-enabled applications, etc. With the introduction of current AMHS connections with other BBIS and BIS states, the

meeting also noted that Thailand has performed IOT and POT with Vietnam, the commissioning is planned to be completed during Q4 2023. The AFTN/AMHS monthly traffic load report of Bangkok COM Centre from 2019 to 2023, AIDC implementation status over AMHS, and the current status of data connections over CRV have also been listed in detail. Furthermore, Thailand shared the work plan to consider solutions for Business Continuity Plan (BCP) for CRV connections, use ATS Direct Speech Circuit over CRV with Malaysia, and experiment on using CRV to relay ATFM messages with relevant stakeholders.

6.6 The meeting noted that the AMHS link between Thailand and Bhutan has been migrated from Internet to CRV, Thailand and Bhutan informed that CRV provided a better performance to both parties.

*AIDC Implementation Status – Malaysia (IP/04)*

6.7 The paper presented the AIDC implementation status in Malaysia between Kuala Lumpur Area Control Centre (ACC), Kota Kinabalu ACC, and Kuching Sub-ACC, with adjacent ACCs, including India, Thailand, and Singapore. Following the successful implementation of AIDC as described in the matrix, Malaysia shared the plan to expand this initiative with other adjacent States on the AIDC implementation and exchange additional AIDC messages between the already established ACCs, which includes Vietnam, Indonesia, Philippines, and Singapore.

6.8 Malaysia supplemented that with the successful implementation of TOC and AOC between Kuala Lumpur and Chennai, Malaysia is open to discuss the implementation of TOC and AOC with other States.

**6.2 Readiness of AMHS to support IWXXM**

*AMHS Implementation and Readiness Status for Supporting IWXXM Traffic in the APAC Region - Sec (WP/07)*

6.9 The paper summarized the AMHS readiness status for supporting IWXXM Traffic of the States/Administrations in APAC Region, including States/Administrations that have no AMHS in operations, to facilitate the relevant Meteorological authorities/organisations with the dissemination of IWXXM messages accordingly. As of CNS SG/26, there were **13** States/Administrations provided their status on AMHS readiness and experience for supporting IWXXM Traffic with details, while out of the **23** States/Administrations in the APAC Region put their AMHS into operations per the AMHS Routing Directory Tables from the ATS Messaging Management Centre (AMC) as of April **2023**.

6.10 The meeting was invited to consider consolidating the information in Appendix A - AMHS Readiness Table for Supporting IWXXM Traffic, Appendix B - State with AMHS in Operations in APAC, Appendix C - State with no AMHS in Operations in APAC, and Appendix F - Implementation status of ATN AMHS in the APAC Region by ACSICG9 of the paper into a new table to monitor the implementation of AMHS completely and effectively for the region, including the readiness of AMHS to support IWXXM.

6.11 The meeting updated the AMHS Readiness Table for Supporting IWXXM Traffic and the Implementation status of ATN AMHS in the APAC Region, which are provided in **Appendix F** and **Appendix G** to the Report respectively.

6.12 Mr. Hoang Tran, the co-chair of ACSICG, made a statement on the necessity to implement AMHS for States. He recalled that the first implementation of AMHS in APAC was in 2005, the introduction of CRV was in 2013 while the first implementation was in 2019. It may take 5 to 10 years for States to implement the infrastructure after the formal adoption by the region. Due to the

technical limitation, AFTN is only supported by X.25, AMHS is the only available solution over IP before SWIM can take over. Therefore, AMHS is needed by States to support IWXXM traffic as of today.

6.13 The meeting also clarified that the Pacific island with AMHS UA implementation should not be considered AMHS capable and should not be monitored in Appendix C of WP/07 (States without AMHS in Operation).

*XML Projected Bandwidth Requirements – USA (Presentation/02)*

6.14 USA introduced the XML Projected Bandwidth Requirements. Recent amendments to ICAO Annex 3 define requirements that Member States shall disseminate certain MET information in ICAO Meteorological Information Exchange Model (IWXXM) form in addition to Traditional Alphanumeric Code (TAC) form. The meeting was informed that IWXXM requires the use of AMHS for international exchange, and the example was given to compare the METAR in TAC form and IWXXM form. It was summarized that IWXXM/XML message without compression is expected to be 68 times the size of current message formats used by AMHS, which is representative of what we can expect for SWIM exchanges. For AMHS transport, the IWXXM message is compressed, which result in 8 times of the bandwidth required to carry TAC format. The meeting was also reminded that as recommended by ICAO Annex 10 Vol III Chapter 8, States managing AFS should consider upgrading their respective bandwidth to support AFTN/AMHS integrity.

6.15 The meeting also advised that SWIM TF should consider compressing the data using XML format.

**6.3 AIDC Implementation Status**

**6.4 AIDC over AMHS**

*Repository of AIDC Implementation Status in APAC – Sec (WP/05)*

6.16 The paper presented the latest repository of AIDC Implementation Status in APAC region, the preliminary analysis of the current status, and invites States/Administrations to review and continue to update the AIDC implementation status if necessary.

6.17 To follow up ACTION ITEM 3-2 of ATMAS TF/3, the table of AIDC repository with current status has been circulated through State Letter **Ref.: T 8/3.5: AP135/22 (CNS)** with Subject – *Validate and Supplement the Table of AIDC Implementation Status in APAC Region* on 17 October 2022. Total 13 updates have been received from States/Administrations, and a preliminary analysis of the current AIDC implementation status in APAC region has also been summarized and shared with the meeting. It was noted that in APAC region, total 19 States/Administrations have already implemented AIDC, 5 States/Administrations are still under testing, and 19 States/Administrations have not implemented AIDC yet. In order to monitor the AIDC implementation status in APAC region more effectively and have a more comprehensive analysis report, Member States/Administrations are encouraged to continue keeping the ICAO Secretariat updated on the latest AIDC implementation status/progress/plan.

6.18 The meeting updated the table of AIDC Implementation Status in APAC region, which is provided in **Appendix H**, and the list of focal point for AIDC Implementation, which is provided in **Appendix I** to the Report.

6.19 Since all the AIDC messages are in AFTN format (with AFTN IA-5 message header), the co-chair suggested to consider whether it is necessary to include Column 7 – Transmission Means in the repository. It was also suggested to add additional explanation of Re-coordination or Coordination Negotiation to the Column “Methods of Coordination” to avoid ambiguity.

*AIDC and AMHS Implementation Status in Republic of Korea (IP/05)*

6.20 Republic of Korea presented its AIDC and AMHS implementation status. Republic of Korea introduced the detailed AIDC implementation status with China and Japan, and highlighted that ROK has been carrying out AIDC establishment project since June 2022 to interlink Incheon ACC with Shanghai ACC, with the project scheduled to be completed in June 2023, while the function test of the AIDC will be conducted in May. Furthermore, the establishment of AMHS between ROK and China, and between ROK and Japan have been completed and been officially operated since January 2023 through CRV, and the project for the exchange of next-generation weather information (IWXXM) between countries is being prepared.

**6.5 ATN Documentation Tree**

6.21 Updated through WP/03, no paper under this sub-agenda.

**Agenda Item 7: Review Table CNS II-1 and II-2 in APAC e-ANP Volume II**

*Telecommunication Infrastructure Plan for APAC – USA (WP/09)*

7.1 The paper presented the telecommunication infrastructure including Common aeronautical VPN (CRV) and other telecommunication media used in the region, which was also presented to CRV OG Ad-Hoc Governance meeting.

7.2 It was noted that AMHS has been a centric for telecommunication infrastructure before CRV was implemented. CRV now allowed direct connection over Internet Protocol (IP) network without the need of AMHS routing plan. As such, the current tracking table developed for AMHS should be modified to reflect CRV infrastructure. For better management and coordination, a draft version of Telecommunication Infrastructure table, which compiles all tables developed by CRV OG and includes a section for AMHS coordination with AMC, was proposed for review and recommendation.

7.3 The drafted table was reviewed and adopted by the meeting, which is provided in **Appendix J** to the Report. It was recommended that the agreed table should be posted on the CRV OG website for members to update, and supersede the Table CNS II-2 — Required ATN Infrastructure Routing Plan in the ANP VOL II part III, and CRV OG will be the task owner to maintain the table in future. The table is now posted on CRV Portal hosted by Airways New Zealand for members to update, States are invited to visit this CRV Portal at [https://airwayscorporation.sharepoint.com/:x/r/teams/APAC-CRV/\\_layouts/15/Doc.aspx?sourcedoc=%7B1E37219E-2B6C-4B46-BDFB-B214231EAE97%7D&file=AsiaPac%20ATN%20Infrastructure%20Routing%20Plan%203-2023.xlsx&action=default&mobileredirect=true&DefaultItemOpen=1](https://airwayscorporation.sharepoint.com/:x/r/teams/APAC-CRV/_layouts/15/Doc.aspx?sourcedoc=%7B1E37219E-2B6C-4B46-BDFB-B214231EAE97%7D&file=AsiaPac%20ATN%20Infrastructure%20Routing%20Plan%203-2023.xlsx&action=default&mobileredirect=true&DefaultItemOpen=1). To establish an account, members should email to [APAC-CRV@AirwaysCorporation.onmicrosoft.com](mailto:APAC-CRV@AirwaysCorporation.onmicrosoft.com) for approval.

7.4 With aforementioned, the following **Draft Conclusion** was adopted by ACSICG/10:

<b>Draft Conclusion ACSICG/10/04 - TELECOMMUNICATION INFRASTRUCTURE TABLE</b>	
<b>What:</b> TRACKING TABLE To have a single tracking table with online update capability to support implementation of future services, managing bandwidth. This table will supersede all telecommunication tables maintained by CRV OG and ACSICG.	<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<b>Why:</b> Managing Telecommunication Infrastructure	<b>Follow-up:</b> <input checked="" type="checkbox"/> Required from States
<b>When:</b> 26-May-23	<b>Status:</b> Draft to be adopted by Sub-group

Who:	<input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: ACSICG
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7.5            The meeting agreed to stop the updating of Table CNS II-1 and II-2 in APAC e-ANP Volume II in APAC region.

**Agenda Item 8: Inter-regional AFS/MPLS/IP based connection**

*ACSICG Support for Progressing Inter-Regional IWXXM Exchange – Australia (WP/10)*

8.1            The paper described the status of inter-regional IWXXM exchange as observed by the Meteorological Information Exchange Working Group (MET/IE WG) and requested the support from ACSICG to further progress the global exchange of IWXXM.

8.2            The recent Twenty-first meeting of the ICAO APAC Meteorological Information Exchange Working Group (MET/IE WG/21) noted that a significant obstacle in the progress of global availability of IWXXM is the inter-regional exchange. The lack of global availability of OPMET in IWXXM form is currently inhibiting system suppliers and users switching to IWXXM and delaying benefits realisation from the implementation of IWXXM. MET/IE WG/21 also identified the needs for establishment of inter-regional IWXXM exchange with the MID and AFI regions, alternate (secondary) paths to each region, adequate capacity and bandwidth to support IWXXM exchange, and interconnecting of the CRV with future equivalents in the MID and AFI regions for the global IWXXM exchange to succeed.

8.3            The meeting supported the global dissemination of meteorological information in IWXXM form, formulated the following **Draft Conclusion**:

<b>Draft Conclusion ACSICG/10/05 - GLOBAL DISSEMINATION OF IWXXM</b>	
What: Support the global dissemination of meteorological information in the ICAO Meteorological Information Exchange Model (IWXXM) form by prioritizing the implementation of intra- and inter-regional aeronautical communication services and network circuits, including support for the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE), and facilitating, through inter-regional consultation, the enhancement of inter-regional network redundancy (i.e., primary circuits and backup paths).	Expected impact: <input checked="" type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Following the provisions of ICAO Annex 3 – <i>Meteorological Service for International Air Navigation</i> , States shall ensure that certain meteorological information is disseminated to users in the IWXXM form. However, without suitable communication network connections to support the necessary intra- and inter-regional exchange of IWXXM messages, global dissemination of meteorological information in IWXXM form will not be possible. Consequently, the migration of user and supplier systems from meteorological information in the traditional alphanumeric code (TAC) form to the IWXXM form, as envisaged in the Global Air Navigation Plan (GANP), will remain inhibited.	Follow-up: <input checked="" type="checkbox"/> Required from States
When:            Now	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input checked="" type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: PIRGs in other ICAO Regions	

*AFTN/AMHS Connection between APAC Region and Other Regions – Sec (WP/16)*

8.4 The paper summarized the status of AFTN/AMHS connection between APAC region and other regions (Europe, Mideast, Africa, North America, and South America) with reference to the information contained in ASIA/PAC ROUTING DIRECTORY and the COM Charts by EUROCONTROL AMC. It was also noted there is no direct connection between South America and Asia/Pacific, the aeronautical messages are routed via USA. A extract of AFTN/ATSMHS Inter-Regional Connections from ASIA/PAC ROUTING DIRECTORY, and the COM Chart by EUROCONTROL AMC for AFI, EUR, MID, NAM and SAM as of 25 April 2023 were also shared for easy reference.

8.5 The meeting was informed the Mumbai-Muscat AMHS connection has been implemented, and ICAO APAC Office is requested to coordinate with MID Office to push forward the AMHS implementation between Beijing and Kuwait. **ACTION ITEM 10-2**

8.6 The meeting reminded that global SWIM implementation should be the real push for the inter-connection of regional IP networks in future. But for now, AMHS connections between regions are the feasible solution to support global dissemination of meteorological information in IWXXM form, which implies additional cost for concerned States if they need to enhance the inter-regional AMHS connections to support XML format messages.

8.7 The meeting determined that the current AMHS links between Mumbai and Muscat along with the links between Singapore-London and Bangkok-Rome, could support the exchange of IWXXM between Asia/Pac and MID regions. For AFI region, there is a connection between Brisbane-Johannesburg that could support the exchange of IWXXM. However, long term planning needed to be considered regarding bandwidth of the underlying network.

#### **Agenda Item 9: AFS related cyber-safety/security issues, best practices, and resilience**

##### *Protecting the Integrity and Efficiency of CRV Time-Sensitive Exchanges – USA (WP/14)*

9.1 The paper presented considerations for CRV information exchanges as CRV usage increases and evolves to support SWIM. CRV has been a success story for the Region, and encouraged greater inter-connectivity between the States than was previously practical and cost-effective with point-to-point technologies. Increased demand, and the future evolution to SWIM services, presents challenges to the efficiency of time-sensitive information exchange.

9.2 The meeting reviewed the challenges faced by CRV regarding defined exchanges, edge protection, network user governance, network contingencies, migration to swim information exchanges, information transport priorities, and SWIM information security, and summarized the proposed suggestions for the introduction of SWIM traffic for consideration as follow:

- Use agreements to formalize the exchange of information
- Continue the use of GRE tunnels between network access points
- Consider whether extra bandwidth is needed to support the SWIM traffic
- Consider whether functionality for data integrity and confidentiality can be built into the SWIM information exchanges before implementation.
- Determine what DSCP codes should be used for network transport processing
- Address traffic contingencies for failure or compromise scenarios

##### *CRV-Evolution of Services – USA (Presentation/01)*

9.3 USA presented CRV-Evolution of Services. By introducing that a typical MPLS VPN distributes IP addresses to all users, it was informed that CRV has GRE tunnels between ANSPs that have information exchanges, which can limit the IP address visibility. USA explained that different types of traffic are marked with Differentiated Services Code Points (DSCPs), such as “EF” (Expedited Forwarding) used for voice, and “AF21” used for AMHS. DSCP markings help PCCW apply different priority and transport processing in the network. Considering a network Access Point may support

multiple tunnels to different partners, PCCW will engineer the network so that the minimum required bandwidth is available for each defined path. It was also suggested that as paths and traffic grows, ANSPs may have to increase Access bandwidth.

9.4 Based on the discussion above, it's recommended that CRV OG coordinate with CRV vendor, PCCW Global, and SWIM Task Force to set priority of the traffic types: voice service, time-sensitive message, and advisory message, etc. **ACTION ITEM 10-3**

**Agenda Item 10: Review ToR and update Subject/Tasks List**

*Review Terms of Reference of ACSICG – Thailand and Sec (WP/08)*

10.1 The paper recalled the establishment of the Aeronautical Communication Services Implementation Coordination Group, and reviewed the Terms of Reference. The meeting was reminded that ACSICG, as the parent body of CRV OG on the reporting path to APANPIRG through CNS SG, was established with a target to complete implementation of Asia and Pacific (APAC) Aeronautical Telecommunication Network (ATN) and voice/data service to support the evolving ICAO operational requirements for the dynamic exchange and management of aeronautical information, with the rapid change of communications technology to support G-G and A-G solution/application, it is deemed necessary to revisit the ToR of ACSICG to align the tasks and deliverables with the emerging requirements.

10.2 Through a joint effort by Thailand and the Secretariat, a draft of ToR was proposed for ACSICG consideration. The meeting reviewed and updated the proposed ToR against the new direction given by APANPIRG in fields of Aeronautical Communication Services. The ToR agreed by the meeting is provided in **Appendix K** to the Report, and the following **Draft Decision** was proposed by ACSICG/10 for CNS SG/27 consideration.

<b>Draft Decision ACSICG/10/06: Revised ToR of Aeronautical Communication Services Implementation Coordination Group (ACSICG)</b>	
That, the Revised Terms of Reference of the Aeronautical Communication Services Implementation Coordination Group (ACSICG) provided in <b>Appendix K</b> to this report be adopted.	Expected impact: <input type="checkbox"/> Political /Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: The proposed ToR of the ACSICG to include the new direction given by APANPIRG in fields of Aeronautical Communication Services.	Follow-up: <input type="checkbox"/> Required from States
When: 26-May-2023	Status: To be adopted by Sub-Group
Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> APANPIRG <input checked="" type="checkbox"/> Other: ACSICG	

*Review Work Programme for ACSICG and AMHS Focal Point – Sec (WP/11)*

10.3 The work programme for ACSICG was developed by ACSICG/3 meeting based on a project management methodology. The ACSICG/10 meeting further reviewed and updated the work programme of ACSICG from ACSICG/9, which is provided in **Appendix L**. Additionally, the ACSICG/10 meeting also updated the AMHS Focal Contact Point proposed by ACSICG/9, which is provided in **Appendix M**.

### **Agenda Item 11: Election of Co-Chair**

11.1 Nominated by the USA and seconded by the Thailand and Philippines, Mr. Kelepi Dainaki, General Manager Assets & Infrastructure, Fiji Airport Limited, Co-Chair (Pacific) of CRV OG, was elected as Co-Chair of ACSICG.

### **Agenda Item 12: Next meeting date and any other business**

#### *Bidirectional AMHS/AMQP interface- Frequentis (Presentation/03)*

12.1 Frequentis presented a brief introduction to the bidirectional AMHS/AMQP interface. By comparing the differences between AMHS and SWIM, the concept of bidirectional AMHS/AMQP interface was explained with detailed scenario analysis. It was informed that the bidirectional AMHS/AMQP interface can convey aeronautical information from any AMHS originator to dedicated AMQP queues (from AMHS to SWIM), and from dedicated AMQP queues to dedicated AMHS recipients (from SWIM to AMHS). Furthermore, the meeting noted AIDA-NG is capable to act as gateway from AMHS to SWIM since 2021, and gateway from SWIM to AMHS will be available on August 2023.

12.2 As the migration from AMHS to SWIM is expected to last a long period, the meeting discussed mixed operation of AMHS and SWIM, as well as transition for international links. It is recommended to use a local gateway for the data exchange between AMHS and SWIM, this would provide more flexibility for a migration step-by-step to SWIM. For the bilateral information exchange between States, the exclusive use of AMHS or SWIM is recommended.

12.3 Regarding the AMHS/AMQP gateway implementation, it can be implemented as an extension of the AMHS system or as a separate system.

12.4 Regarding the AMHS/AMQP interface's compliance to the specification proposed by the SWAMWAY SG, it was clarified that the current specification is a draft and subject to changes based on the feedback from the community. The implemented AMHS/AMQP gateway relays on the current specification provided by the SWAMWAY SG and will be adjusted to any future changes of the specification.

12.5 The dual operations of SWIM and AMHS was discussed. It's recommended that an ANSP needs to select either AMHS or SWIM to distribute a selected message between ANSPs. An ANSP should not use both AMHS and SWIM to distribute a same message over CRV.

12.6 The use of SWIM/AMHS Gateway should be interfaced between a same ANSP AMHS and SWIM. This means SWIM/AMHS gateway is used to convert message format between AMHS and SWIM within an ANSP.

#### *AMHS Upgrade in Jordan (IP/06)*

12.7 The paper presented the AMHS implementation status in Jordan and the plan for full migration. The meeting noted Amman COM Center implemented AMHS in 2009 to ensure seamless and interoperable Aeronautical Ground/Ground communication. Furthermore, Jordan expressed their willingness to join the Regional IP Network projects (CRV or New PENS) pending the technical and financial details that make a positive business case.

#### *Note of Appreciation*

12.8 The meeting extended sincere gratitude to Mr. Hoang Tran for his dedication and contributions towards the planning and implementation of Aeronautical Communications Infrastructure

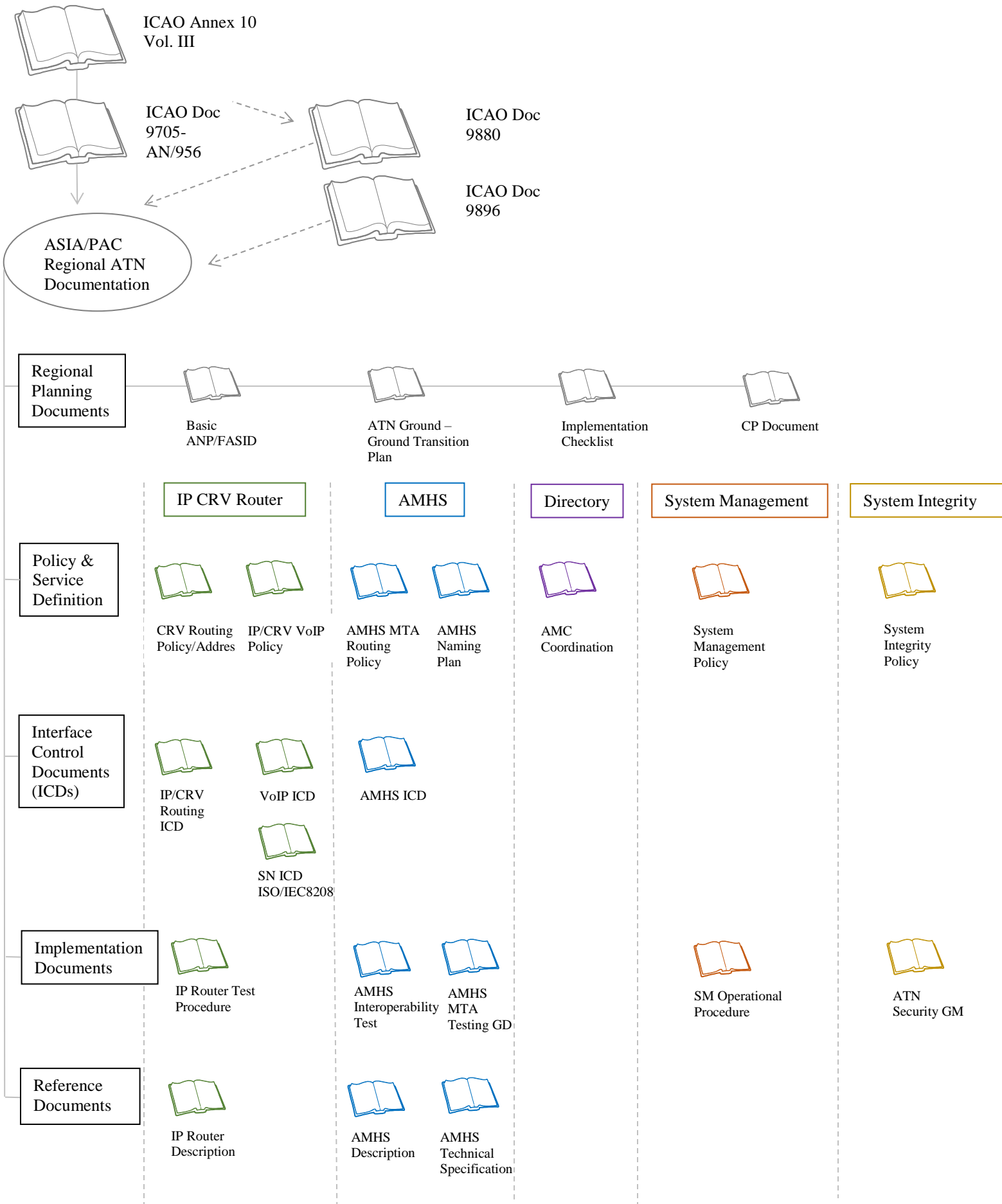
and Services in APAC Region as the Chairman of Aeronautical Telecommunication Network (ATN) Implementation Co-Ordination Group of APANPIRG (ATNICG) from May 2006 to March 2013 and as the Chairman of Aeronautical Communication Services Implementation Coordination Group of APANPIRG (ACSICG) from May 2014 to June 2023.

*Date and Venue for the Next Meeting*

12.9           The meeting discussed to meet Face-to-Face (F2F) with a tentative date on May 2024 to further progress the tasks listed in the Terms of Reference. However, considering the proposal to conduct the joint meeting with MET/IE WG, the ICAO Secretariat will coordinate internally and inform participants in due course for the exact dates and venue.

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APAC CRV Risk Register as at 14/09/2022



Risk Assessment<sup>v</sup>

Risk Owner	Hazard / threat	Risk Description				Impact Category <sup>i</sup>	Consequence rating <sup>iv</sup>	Current Controls in place	Likelihood	Current Risk (with current controls) L/M/H/E	Further actions to be taken (mitigations/treatments)	Action Owner and date due <sup>ii</sup>	Target Risk (after actions and current controls) <sup>iii</sup>
		Due to	Event (Something happens)	Consequence (result, impact "leading to...")									
OG	Failure of multiple states connections	Common POP	Maintenance or failure at the POP	Loss of redundancy or full communication between several APAC states	Service Delivery Aviation Safety Asset Performance	Major	<ol style="list-style-type: none"> <li>1. APAC CRV Overview Drawing showing POP connectivity.</li> <li>2. Monthly service provider reports.</li> <li>3. Service Provider invited to APAC CRV OG meetings</li> <li>4. Maintenance and outage notifications</li> </ol>	Unlikely	Medium 8				
OG	Increased billing	Joining process	State joins before peering states are ready	Delayed decommissioning of current services and increased billing as supporting dual services.	Financial	Minor	<ol style="list-style-type: none"> <li>1. APAC CRV Operation manual detailing the joining process.</li> <li>2. Webinars on the processes</li> <li>3. Lessons learned discussions at APAC CRV OG meetings</li> </ol>	Possible	Low 3				
OG	Loss of a states connectivity	Routing failure	Service provider or last mile connection fails but not the NID to the states network	Loss of connectivity with no failover resulting in lost communication	Service Delivery Aviation Safety Asset Performance	Major	<ol style="list-style-type: none"> <li>1. Service Providers System Engineering Plan</li> </ol>	Possible	Medium 12				
OG	CRV Failure	Service provider issue	Global network or multiple POP issue	Complete loss of communication across APAC	Service Delivery Aviation Safety Asset Performance	Major	<ol style="list-style-type: none"> <li>1. APAC CRV Overview Drawing showing POP connectivity.</li> <li>2. Monthly service provider reports.</li> <li>3. Service Provider invited to APAC CRV OG meetings</li> <li>4. Where possible implement Internet based B2B connections outside of the APAC CRV Network</li> </ol>	Rare	Low 4				

- 
- <sup>i</sup> There can be multiple categories that the risk may fall into and they are all relevant. Once you have identified all categories, the one which as the highest consequence will be taken to combine with the likelihood to get a risk rating
- <sup>ii</sup> - The action owner needs to be a specific person responsible for this actions completion
- When assigning a due date, be generous to ensure it is achievable
- <sup>iii</sup> This rating is encompassing what the risk would be if ALL the mitigation actions were to be completed (consequence, likelihood or a combination of both can be reduced)
- <sup>iv</sup> The consequence rating does not necessarily need to be the 'worst case scenario' but should be the most **feasible** for that risk
- <sup>v</sup> Use the [Risk Evaluation Framework](#) to do the assessment of the risk

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Business unit:

Date of review:

Participants:

Risk Owner	Hazard	Risk description			Impact	Current controls	Risk assessment (current controls)				Next Review Date	Risk assessment (Target level)				Future Actions	Action Owner	Action Due Date
		Due to	Event	Resulting in			Severity	Probability	Risk Rating	Risk Level		Severity	Probability	Risk Rating	Risk Level			
CRV OG	Failure of multiple states connections	Common POP	Maintenance or failure at the POP	Loss of redundancy or full communication between several APAC states		<ol style="list-style-type: none"> <li>APAC CRV Overview Drawing showing POP connectivity.</li> <li>Monthly service provider reports.</li> <li>Service Provider invited to APAC CRV OG meetings</li> <li>Maintenance and outage notifications</li> </ol>	Major	Improbable		2C								
CRV OG	Increased billing	Joining process	State joins before peering states are ready	Delayed decommissioning of current services and increased billing as supporting dual services.		<ol style="list-style-type: none"> <li>APAC CRV Operation manual detailing the joining process.</li> <li>Webinars on the processes</li> <li>Lessons learned discussions at APAC CRV OG meetings</li> </ol>	Minor	Remote		3D								
CRV OG	Loss of a states connectivity	Routing failure	Service provider or last mile connection fails but not the NID to the states network	Loss of connectivity with no failover resulting in lost communication		<ol style="list-style-type: none"> <li>Service Providers System Engineering Plan</li> </ol>	Major	Remote		3C								
CRV OG	CRV Failure	Service provider issue	Global network or multiple POP issue	Complete loss of communication across APAC		<ol style="list-style-type: none"> <li>APAC CRV Overview Drawing showing POP connectivity.</li> <li>Monthly service provider reports.</li> <li>Service Provider invited to APAC CRV OG meetings</li> <li>Where possible implement Internet based B2B connections outside of the APAC CRV Network</li> </ol>	Major	Extremely Improbable		1C								

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<b>Consequence by Categories</b>	Negligible	Minor	Major	Hazardous	Catastrophic
Aviation Safety					
Service Delivery					
Reputational					
Security					
Financial					
Legal, Regulatory and Compliance					

**UPDATED APAC CRV~~CRV~~ IMPLEMENTATION TABLE**

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> <b>Fiji</b> March,2019 (AMHS June 2019/AIDC, Voice completed April) <b>New Zealand</b> , February, 2019 (AMHS June 2019, AFTN May 2019/AIDC), March, 2019 (Voice April 2019 completed) <b>Singapore</b> Dec, 2020 (AMHS/AIDC); <b>PNG</b> June 2021 (AFTN) Oct 2021 (Voice) <b>USA</b> March 2019 (AFTN) March 2019 (Voice)  <u>Pending:</u> <b>South Africa TBC</b> (AMHS/AIDC, Voice);	Staged approach	Termination of current COM contract

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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
				Indonesia TBC 2022 (AMHS/AIDC, Voice, ADS-B);		
3	Bangladesh					
4	Bhutan	<u>Thailand (Bangkok)</u>	<u>Contract signed on Oct 2019.</u>  <u>CRV installed successfully in Dec 2021.</u>  <u>CRV P2P Test between Paro-Bangkok completed.</u>  <u>CRV P2P Test between Paro-Mumbai completed on Jan 2023</u>  <u>CRV cutover between Paro-Mumbai is scheduled on March 2023</u>	<u>AMHS first. Voice and ADS-B – to be decided.</u>  <u>AMHS first and Voice &amp; ADS B will follow up after AMHS.</u>	<u>Staged Approach</u> <del>Staged Approach</del>	<u>Dependent on India for full utilization of CRV network.</u> <del>Dependent on India and Thailand for utilization of CRV network.</del>

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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
			<p>Contract signed on Oct 2019.</p> <p>CRV installed successfully in Dec 2021.</p> <p>CRV P2P Test between Paro-Mumbai &amp; Paro-Bangkok to be done once India and Thailand join CRV</p>			
5	Brunei Darussalam					
6	Cambodia		As early as convenient, dependent on neighbouring countries			Internal decision making

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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
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	

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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	<b>Hong Kong, China*</b>	Philippines China Japan Thailand Vietnam	Contract signed on 6 April 2018.  Connection was installed successfully in June 2018.	<b>With Manila</b> CRV-Voice put into operation in August 2018 CRV-AMHS put into operation in May 2019  <b>With Fukuoka</b> CRV-AMHS put into operation in September 2020  <b>With Beijing</b> CRV - AMHS POT in March and operation in April 2021  <b>With Bangkok</b> CRV-AMHS put into operation in August 2022	Staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV in a harmonized manner, etc.
9	<b>Macau China</b>		December 2022	To be confirmed	Staged approach	Migration from X.25 to IPS
10	<b>Cook Islands</b>					
11	<b>Democratic People's Republic of Korea</b>		Contract in 3Q2018 and service readiness in 4Q2018	AFTN and VoIP		

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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

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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*	<p>The GRE tunnels has been setup between:</p> <p>Mumbai–Bangkok, Mumbai- Singapore, Mumbai–Beijing and Mumbai-Paro.</p> <p>Mumbai- Kathmandu GRE Tunnel under tests</p> <p>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.</p>	<p>Contract for CRV implementation with M/s PCCW in India Signed on 15<sup>th</sup> March, 2022. CRV Circuit has been delivered in Dec, 2022.</p> <p>CRV Cutover: End of 1Q2023</p>	AFTN/AMHS, , ATS Voice & ADS-B	Staged approach	<p>Note: On successful trial Operation with BBIS/BIS States, the CRV Cutover will be planned.</p>

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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
15	Indonesia		Contract in 1Q2022 and service readiness in 2023.	Australia 2023 (voice & data) Malaysia 2023 (voice) Papua New Guinea 2023 (voice) Philippine 2023 (voice) Singapore 2023(voice & data) USA 2023(voice)		
1616	<del>Japan*</del> <del>Japan*</del>	<del>Hong Kong China</del> <del>USA</del> <del>Singapore</del> <del>China</del> <del>RoK</del> <del>Philippine-Hong Kong China</del> <del>USA</del> <del>Singapore</del> <del>China</del> <del>RoK</del>	<del>Contract signed in Nov.2017 and service readiness in1Q 2018 for Fukuoka</del> <del>Contract signed in Nov.2017 and service readiness in1Q 2018 for Fukuoka</del>	<del>USA</del> <del>AMHS(1Q 2019) Voice(2Q 2021)</del> <del>Hong Kong, China</del> <del>AMHS(3Q 2020)</del> <del>Singapore</del> <del>AMHS(4Q 2020)</del> <del>China</del> <del>AMHS(1Q 2021) ATFM(1Q 2021)</del> <del>Taipei ACC</del> <del>Voice(1Q 2022) AIDC(planned 1Q 2023)</del> <del>R.O.K</del> <del>AMHS(4Q 2022) Voice(1Q 2021) and additonal line plan in progress</del> <del>AIDC(planned 1Q 2024)</del> <del>Philippine</del> <del>Voice(2Q 2022)</del>	<del>In progress</del> <del>In progress</del>	
17	Kiribati					

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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
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.	<p><b>Thailand</b></p> <ol style="list-style-type: none"> <li>1) Network connectivity testing (AMHS/AIDC) – Oct 2022</li> <li>2) Completed cut over &amp; migration (AMHS /AIDC) – Jan 2023</li> <li>3) Voice &amp; ADS-B (testing, migration-TBD)</li> </ol> <p><b>Singapore</b></p> <ol style="list-style-type: none"> <li>1) Network connectivity testing (AMHS/AIDC) – May 2022</li> <li>2) Estimate cut over &amp; migration (AMHS/AIDC) – Q1/2023</li> <li>3) Voice &amp; ADS-B (testing, migration-TBD)</li> </ol> <p><b>India</b></p> <ol style="list-style-type: none"> <li>1) Estimate network connectivity testing (AMHS/AIDC) – Q1/ 2023</li> <li>2) Estimate cut over &amp; migration (AMHS/AIDC) – Q1/2023</li> <li>3) Voice &amp; ADS-B (testing, migration-TBD)</li> </ol> <p><b>Indonesia</b></p>	Staged approach	

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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) 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: <b>China</b> Dec, 2022(AMHS), (ADP) TBD Voice, ADS-B, AFTN <b>Russia</b> TBD (AFTN, ADS-B, AMHS, Voice)	staged approach	Negotiations with neighbouring countries and stakeholders on CRVs and its use are critical to implementation.

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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	<u>China , India, Thailand, Laos, Bangladesh.</u>	<u>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. Con- tract will be signed after discussed with PCCW Global. Implementation was targeted in 3Q/2023 depends on PCCW's proposal quotation, and getting the Budget approval from Authority concerned.</u>	<u>AFTN/AMHS, AIDC, ADS-B and Voice</u> <del>AFTN/AMHS, AIDC, ADS B and Voice</del>	<u>Staged approach</u> <del>staged approach</del>	<u>Need to coordinate with relevant CAAs/ANSPs in joining CRV network to be harmonized regionally. One of counterparts join in</u>
25	Nauru					

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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
26	Nepal		SO signed with PCCW	AFTN/AMHS	Staged Approach	BBIS-state India joining the CRV network, as most traffic is routed through it
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.

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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
28	<b>Pakistan</b>	China India	Duly Signed Service Order Form Submitted on 23 <sup>rd</sup> 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	<b>Palau</b>					
30	<b>Papua New Guinea</b>	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	<b>Philippines</b>	Hong Kong China Singapore USA Japan	Contract signed in March 2018 and service readiness in 2Q2018	Completed: With <b>HONG KONG</b> AIDC - 2Q2019; AMHS - 2Q2019; Voice - 3Q2018.	staged approach	Success transition to the New ATM center in 4Q2018  Dependencies:

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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
				<p>With <b>SINGAPORE</b> AIDC – 4Q2019; AMHS – 4Q2020; Voice – 1Q2020.</p> <p>With <b>USA</b> AMHS – 2Q2021; Voice – 4Q2019.</p> <p>With <b>JAPAN</b> Voice – 1Q2022.</p> <p>Operational Trial: With <b>USA</b> AIDC – 4Q2022</p> <p>Planned: With <b>INDONESIA</b> Ujung Pandang Voice – 1Q2023</p>		<p>AIDC with Kota Kinabalu implemented via BBIS Singapore</p> <p>AIDC with Ujung Pandang implemented via BBIS Singapore</p>

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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	<b>Republic of Korea</b>	Japan China	Contract in 3Q 2019 and service readiness in 4Q 2022	Completed: <b>with Japan</b> Voice –March 2021 Data(AMHS) - December 2022  <b>With China</b> Data(AMHS) – November 2022  Planned; <b>With Japan</b> Voice additional lines-from 2022 to 2023	staged approach	Data(AMHS) POT in 4Q and operation from 4Q 2022
33	<b>Samoa</b>					
34	<b>Singapore*</b>	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	

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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
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.
37	Thailand		1. Contract in 3Q2021 Status: Completed 2. Service readiness in 2Q2022 <b>Status: Completed</b>	Data first Then voice, subject to safety case: <b>Bhutan 3Q2022 (Completed)</b> <b>Hong Kong 3Q2022 (Completed);</b> <b>Singapore 3Q2022 (Completed);</b> <b>Malaysia 1Q2023(Completed);</b> <b>India 1Q2023;</b> <b>Beijing 2Q2023</b>	Staged approach	
38	Timor Leste					
39	Tonga					
40	Tuvalu					

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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 Papua New Guinea Tahiti Russia	Contract in January 2018	1) AMHS with Australia Fiji Japan Philippines New Zealand Papua New Guinea (2021) Indonesia (2022)  2) AIDC with Fiji Japan New Zealand Papua New Guinea (Direct planned 2021) Tahiti (via New Zealand) Indonesia (Direct planned 2022) Russia (when join CRV)  3) VoIP with Fiji Japan Philippines New Zealand Papua New Guinea (direct planned 2021) Indonesia (2022)	Staged approach	

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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
42	<b>Vanuatu</b>					
43	<b>Vietnam</b>	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	staged approach	

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## Terms of Reference

### 1. Background

The Asia Pacific Common aeRonautical Virtual Provide Network (APAC CRV) provides air traffic navigation networking to the Asia Pacific Region  
The APAC CRV Operations Group (APAC CRV OG) have requested a design review of the CRV.

To assess the architecture design on how well this has been secured. It will draw on industry best practices, documentation from the telecommunications provider the CRV, PCCW Global, and various CRV members using in the solution, and the experience of the consultant and wider team.

### 2. In Scope

The scope of this engagement will be limited to:

- A Security Design Review of the CRV
- Network Review

### 3. Out of Scope

The following are not in scope for the Services under this ToR:

- Any interaction with the live operational environment
- Testing which might cause a denial of service
- Implementation countermeasures and fixes. Advice will be provided on how this should be done by the consultant
- Any remediation testing is out of scope of this agreement and will be provided separately if requested in writing by the APAC CRV OG at the APAC CRV OG's cost.

## Detail of Work

### 1. Security Design Review

The consultant will carry out a security review of the CRV design.

- A review of the design concepts and the architectural design proposal. The aim is to both understand the approach for subsequent aspects of this review and to provide early feedback that may be used to guide the design down better pathways. This can start with the signing of the ToR and once the consultant has received all the design documentation, the review can be done remotely.

In reviewing the design, the consultant will:

- Use APAC CRV security objectives from the RFP and Operations Manual to be the basis of validation but will bring industry best practices to advise if these objectives are sufficient.
- Use policies and standards by relevant government, industry or internal bodies. These are likely to include but not limited to CIS benchmarks, ISO27001, ICAO Annex 17, NIST and ASD.
- Characterise the system architecture, component technologies, and interfaces to identify trust boundaries, data flows, and current security enforcing controls,
- Identify any additional controls that could be implemented to mitigate identified risks

Security Design Review	
<b>Service Type</b>	Security Design Review
<b>Assets / Targets</b>	APAC CRV
<b>Effort (days)</b>	TBD
<b>Access</b>	Remote, with calls via video conferencing when required.
<b>Approach</b>	<ul style="list-style-type: none"> <li>• Consume the documentation provided by the APAC CRV OG</li> <li>• Identify areas where further clarification may be necessary and, after receiving permission from the APAC CRV OG and PCCWG to hold video calls with authorised technical stakeholders</li> <li>• Walk through a list of preliminary findings with authorised technical stakeholders</li> <li>• Advise preliminary outcomes to APAC CRV OG Co-Chairs</li> <li>• Release a draft report for feedback</li> <li>• Release a final report</li> </ul>
<b>Specific requirements</b>	<ul style="list-style-type: none"> <li>• Up to date documentation</li> <li>• A list of authorised APAC CRV OG and PCCWG individuals who can respond to technical questions during the engagement</li> </ul> <p>Note: These requirements must be met at least 1 week before work is due to commence.</p>

### 2. Network Review of the APAC CRV

Security Design Review	
<b>Targets</b>	PCCWG's APAC CRV routers
<b>Perspectives</b>	Unauthenticated physical network access Authenticated physical network access
<b>Effort (days)</b>	TBD
<b>Access</b>	On site using Consultant provided Laptop Computers with options to provide testing VM within instance at consultant's discretion
<b>Approach</b>	<ul style="list-style-type: none"> <li>• The Consultant will be positioned on-site within a PCCWG POP or an APAC CRV OG members server/equipment room</li> <li>• The Consultant will be granted connectivity to the PCCWG CRV router or network element at the authorised site(s)</li> <li>• The Consultant will leverage information discovered during attacks against the CRV to compromise the CRV.</li> </ul>

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	<ul style="list-style-type: none"><li>• The Consultant is not specifically testing the APAC CRV members LAN however by design, access to this network is required to identify and access threat surface it presents to the CRV Vulnerabilities exploited or discovered that lead to a compromise of the CRV will be reported, additional vulnerabilities will be reported to the APAC CRV Co-Chairs regarding the CRV at the consultant's discretion.</li></ul> <p>The assessment is conducted according to the PTES Penetration Testing Methodology<sup>1</sup>. Activities include but are not limited to the following:</p> <ul style="list-style-type: none"><li>• Passive network reconnaissance</li><li>• Active interception and redirection of traffic</li><li>• Enumeration of exposed services and versions</li><li>• Automated vulnerability scanning of network systems</li><li>• Targeted exploitation of identified weaknesses</li><li>• Evaluation of the technical impact of each identified issue</li><li>• Horizontal and vertical privilege escalation</li><li>• Provide recommendations to mitigate any issues found in the review</li></ul>
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### 3. Restricting communications

- APAC CRV OG has requested that communications regarding the engagements in this Terms of Reference be treated as "Traffic Light Protocol: Red". That is to say, outcomes from each engagement must be limited to named individuals.
- APAC CRV OG must make the Consultant aware of any changes to personnel which might impact this requirement.
- The Consultants internal quality assurance processes necessitates peer review by another consultant; these consultants will be named.

## Deliverables

The deliverables for this project will include:

### 1. Final Report

A final report that will be delivered in PDF format and available the week following testing. It will contain the following components:

- An Executive Summary providing a summary of findings and general recommendations resulting from the review. The summary presents the assessment of APAC CRV's state of security and will detail APAC CRV's adherence to industry best practices and identify the current level of risk. The Executive Summary is intended to describe business-level risks resulting from technical findings such as regulatory, reputational and operational impacts. This section also includes a summary of severity rated as "Critical", "High", "Medium" or "Low" at a level that can be easily understood by functional management. Severity is based on a number of variables including the ease with which the vulnerability may be exploited and the potential impact of its exploitation in context of Client's business environment.
- A Detailed Findings section, which will provide in-depth details of identified vulnerabilities. This will include the steps to reproduce the issue, potential impacts of exploitation and severity rationale, and recommended remediation actions.
- A Compromise Narrative section may be included should the Consultant achieve significant compromise of APAC CRV's systems during the provision of the Services. The Compromise Narrative will provide a walk-through of the process used to achieve such compromise, including information on the tools and techniques used.

From receipt of the final report, the APAC CRV's has one working month to review and request changes. After this time the report is considered final and no further changes will be made.

### 2. Final Presentation

The Consultant will deliver the findings of the report to the relevant project stakeholders. The purpose of this presentation is to clearly articulate our findings, ensuring they are understood and to agree on the next steps.

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**Updated AFTN/ATSMHS Routing Directory for APAC Region AFTN/ATSMHS CONNECTIONS-ASIA/PAC ROUTING DIRECTORY**

Terminal 1 (^ - BBIS)	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
<b>Apia/Faleolo</b>	Christchurch	AMHS/UA	N
<b>Bangkok^</b>	Beijing	AMHS	N
	Mumbai	AMHS	<del>NY</del>
	Dhaka	AMHS	N
	Ho-Chi-Minh	AFTN	N
	Hong Kong	AMHS	<del>NY</del>
	Kuala Lumpur	AMHS	<del>NY</del>
	Phnom Penh	AMHS	N
	<b>Rome</b>	<b>AMHS</b>	N
	Yangon	AMHS	N
	Singapore	AMHS	<del>NY</del>
	Vientiane	AMHS	N
Paro	AMHS	<del>NY</del>	
<b>Beijing^</b>	Bangkok	AMHS	N
	Fukuoka	AMHS	Y
	Guangzhou	AFTN	N
	Hong Kong	AMHS	Y
	Karachi	AFTN	N
	<b>Khabarovsk</b>	<b>AFTN</b>	N
	Kathmandu	AFTN	N
	Mumbai	AMHS	<del>NY</del>
	Pyongyang	AFTN	N
	Seoul	AMHS	N
	UlaanBaatar	AFTN	N
Yangon	AFTN	N	
<b>Brisbane^</b>	Christchurch	AMHS	Y
	TimorLeste	AFTN/UA	N
	Jakarta	AFTN	N
	<b>Johannesburg</b>	<b>AMHS</b>	N
	Honiara	AFTN/UA	N
	Nadi	AMHS	Y
	Nauru	AFTN/UA	N
	Port Moresby	AFTN	Y
	Port Vila	AFTN/UA	N
	Singapore	AMHS	Y
<b>USA</b>	<b>AMHS</b>	Y	
<b>Brunei</b>	Kuala Lumpur	AFTN	N
	Singapore	AFTN	N
<b>Chennai</b>	Mumbai	AFTN	N
	Kolkata	AFTN	N
	<del>Kuala Lumpur</del>	<del>AFTN</del> <a href="#">Not in Operation</a>	N

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Terminal 1 (^ - BBIS)	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
<b>Christchurch</b>	Apia/Faleolo	AMHS/UA	N
	Niue	AMHS/UA	N
	Rarotonga	AMHS/UA	N
	Brisbane	AMHS	Y
	Papeete/Tahiti	AFTN	N
	Tonga/Fua'Amotu	AMHS/UA	N
	<b>USA</b>	<b>AMHS</b>	Y
<b>Chuuk</b>	USA	AMHS/UA	N
<b>Colombo</b>	Mumbai	AMHS	N
	Male	AFTN	N
	Singapore	AFTN	N
<b>Delhi</b>	Mumbai	AFTN	N
	Kolkata	AFTN	N
	<del>Tashkent</del> <del>UTTP</del> Not in <del>AFTN</del> <a href="#">Operation</a>		<del>N</del>
<b>Dhaka</b>	Bangkok	AMHS	N
<b>Fukuoka^</b>	Beijing	AMHS	Y
	Hong Kong	AMHS	Y
	<b>Moscow</b>	<b>AFTN</b>	N
	Seoul	AFTN	N
	Singapore	AMHS	Y
	Taibei	AMHS	Y
	<b>USA</b>	<b>AMHS</b>	Y
<b>Guangzhou</b>	Beijing	AFTN	N
	Hong Kong	AFTN	N
	Macau	AFTN	N
	Haikou	AFTN	N
	Hanoi	AFTN	N
<b>Hanoi</b>	Ho-Chi-Minh	AFTN	N
	Vientiane	AFTN	N
	Guangzhou	AFTN	N
<b>Haikou</b>	Guangzhou	AFTN	N
	Hong Kong	AFTN	N
<b>Ho-Chi-Minh</b>	Bangkok	AFTN	N
	Hanoi	AFTN	N
	Hong Kong	AFTN	N
	Singapore	AFTN	N
	Manila	AFTN	N
	Phnom Penh	AFTN	N
<b>Hong Kong^</b>	Bangkok	AMHS	<del>NY</del>

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Terminal 1 (^ - BBIS)	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
	Beijing	AMHS	Y
	Guangzhou	AFTN	N
	Ho-Chi-Minh	AFTN	N
	Macau	AMHS	N
	Manila	AMHS	Y
	Haikou	AFTN	N
	Taibei	AMHS	Y
	Fukuoka	AMHS	Y
<b>Honiara</b>	Brisbane	AMHS/UA	N
<b>Jakarta</b>	Brisbane	AFTN	N
	Singapore	AMHS	N
<b>Karachi</b>	Beijing	AFTN	N
	Mumbai	AMHS	N
	<b>Kabul</b>	<b>AFTN</b>	N
	<b>Kuwait</b>	<b>AMHS</b>	N
	<b>Tehran</b> ( <i>Not listed in the ANP AFTN Planning Table</i> )		
<b>Kathmandu</b>	Beijing	AFTN	N
	Mumbai	AMHS	<del>N</del> Y
<b>Kolkata</b>	Mumbai	AFTN	N
	Delhi	AFTN	N
	Chennai	AFTN	N
<b>Koro</b>	USA	AMHS/UA	N
<b>Kosrae</b>	USA	AMHS/UA	N
<b>Kuala Lumpur</b>	Bangkok	AFTN	N
	Brunei	AFTN	N
	Singapore	AFTN	N
	<del>Chennai</del> <i>Not in operation</i>	<del>AFTN</del>	N
<b>Macau</b>	Guangzhou	AFTN	N
	Hong Kong	AMHS	N
<b>Majuro</b>	USA	AMHS/UA	N
<b>Male</b>	Colombo	AFTN	N
<b>Manila</b>	Hong Kong	AMHS	Y
	Ho Chi Minh	AFTN	N
	Singapore	AMHS	Y
	Taibei	AMHS	Y
	<b>USA</b>	AMHS	Y

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Terminal 1 (^ - BBIS)	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)	
<b>Mumbai</b> <sup>^</sup>	Bangkok	AMHS	<del>N</del> <u>Y</u>	
	Dhaka	AMHS	N	
	Kolkata	AFTN	N	
	Colombo	AMHS	N	
	Delhi	AFTN	N	
	Karachi	AMHS	N	
	Kathmandu	AMHS	<del>N</del> <u>Y</u>	
	Beijing	AMHS	<del>N</del> <u>Y</u>	
	Chennai	AFTN	N	
	<b>Muscat/Seeb</b>	<del>AFTN</del> <del>AMHS</del> (No connection)		N
	<b>Nairobi</b>	AFTN		N
Paro	AMHS	<del>N</del> <u>Y</u>		
Singapore	AMHS	<del>N</del> <u>Y</u>		
<b>Nadi</b> <sup>^</sup>	Brisbane	AMHS	Y	
	Funafuti	AMHS/UA	N	
	Noumea	AMHS	N	
	Tarawa	AMHS/UA	N	
	<b>USA</b>	AMHS	Y	
	Wallis Is.	AMHS/UA	N	
<b>Nauru</b>	Brisbane	AMHS/UA	N	
<b>Niue</b>	Christchurch	Email	N	
<b>Noumea</b>	Nadi	AMHS	N	
<b>Pago Pago</b>	USA	AMHS/UA	N	
<b>Papeete/Tahiti</b>	Christchurch	AFTN	N	
<b>Paro</b>	Mumbai	AMHS	<del>N</del> <u>Y</u>	
	Bangkok	AMHS	N	
<b>Phnom Penh</b>	Bangkok	AMHS	N	
	Ho Chi Minh	AFTN	N	
<b>Pohnpei</b>	USA	AMHS/UA	N	
<b>Port Moresby</b>	Brisbane	AFTN	Y	
<b>Port Vila</b>	Brisbane	AMHS/UA	N	
<b>Pyongyang</b>	Beijing	AFTN	N	
<b>Rarotonga</b>	Christchurch	AFTN	N	
<b>Salt Lake City</b> <sup>^</sup>	Brisbane	AMHS	Y	
	Christchurch	AMHS	Y	
	Chuuk	AMHS UA	N	

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Terminal 1 (^ - BBIS)	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
	Fukuoka	AMHS	Y
	Koro	AMHS UA	N
	Kosrae	AMHS UA	N
	Majuro	AMHS UA	N
	Manila	AMHS	Y
	Nadi	AMHS	Y
	Pago Pago	AMHS UA	N
	Pohnpei	AMHS UA	N
	Yap	AMHS UA	N
<b>Seoul</b>	Beijing	AMHS	N
	Fukuoka	AFTN	N
<b>Singapore<sup>^</sup></b>	Bangkok	AMHS	<del>NY</del>
	Bahrain	AFTN	N
	Brisbane	AMHS	Y
	Brunei	AFTN	N
	Colombo	<del>AFTN</del> AMHS	N
	Ho-Chi-Minh	AFTN	N
	Jakarta	AMHS	N
	Kuala Lumpur	AMHS	<del>NY</del>
	<b>London</b>	<b>AMHS</b>	N
	Manila	AMHS	Y
	Mumbai	AMHS	<del>NY</del>
	Fukuoka	AMHS	Y
<b>Taibei</b>	Hong Kong	AMHS	Y
	Manila	AMHS	Y
	Fukuoka	AMHS	Y
<b>Tarawa</b>	Nadi	AMHS/UA	N
<b>Timor Leste</b>	Brisbane	AMHS	N
<b>Tonga/Fua'Amotu</b>	Christchurch	AMHS/UA	N
<b>UlaanBaatar</b>	Beijing	AFTN	N
	Irkutsk	AFTN	N
<b>Vientiane</b>	Bangkok	AMHS	N
	Hanoi	AFTN	N
<b>Wallist Is.</b>	Nadi	(planning)	-
<b>Yangon</b>	Bangkok	AMHS	N
	Beijing	AFTN	N
<b>Yap</b>	USA	AMHS/UA	N

*Note: Interregional connections are highlighted in yellow*

AMHS Readiness Report for Supporting IWXXM Traffic					
No.	States/Administration	Name of State (Administration)/name of BBIS/BIS location where AMHS is installed:	AFTN/AMHS transition date/schedule	Readiness Status of AMHS for supporting File Transfer Body Part (FTBP), the Interpersonal Message (IPM) Heading Extension (IHE) to support for exchanging IWXXM reports of a maximum size of 4MB and FTBP of maximum 2MB:	Capacity status of the operational AFS links to support the exchange of the required meteorological information in both IWXXM GML form and TAC form:
1	Australia	Airservices - Brisbane	Completed. AMHS exchange in place with USA, Fiji, New Zealand, Singapore and South Africa.  AFTN still in place with Indonesia and PNG, migration to AMHS based on pending readiness both partners Several Pacific island nations connecting via FCO CADAS ATS Terminal, currently over AFTN. Airservices plans to migrate to AMHS P3 CADAS but will need to provide user training.  All domestic users and data originators still on AFTN, no desire by external partners to migrate to AMHS, awaiting SWIM instead.	Full compliance and support since Nov 2020	Airservices has contracted a 2.0Mbps bandwidth using CRV Package C+ for Voice & AMHS services. Bandwidth on the leased line with South Africa / Johannesburg is also 2Mbps.
2	China	Beijing	AMHS deployed in 2008 which was upgraded to support ATN/IPS in 2013 and upgraded to support exchanging IWXXM in 2020.	support	CRV bandwidth is 3M. Minimally 64kbps for each AMHS connection..
3	Hong Kong China	Hong Kong China	December 2009	Support	2MB for CRV and 64kbps for IPLCs
4	Fiji	Fiji Airport/Air Traffic Management Centre	Completed. In June 2019, Fiji completed the transition of ATN BBIS to IPS for the AMHS service from Nadi to Salt Lake, USA & Brisbane, Australia over the CRV network. The local end User still operates on AFTN terminal and is converted to AMHS over the AFTN/AMHS Gateway.	The Comsoft AMHS System supports File Transfer Body Part (FTBP). Our system has the capability of exchanging IWXXM reports of a maximum size of 4MB and FTBP of maximum.	Nadi has contracted a 1.0Mbps bandwidth using CRV Package C+ for Voice & AMHS services. The total bandwidth usage for voice and data is 768K from the total 1.0Mbps. The bandwidth for AMHS is 64Kbps each to Brisbane & Salt Lake Center. It is noted in the ACSICG/7 WP04 presented by USA that 64Kbps is the minimum recommended required bandwidth for AMHS to exchange FTBP for IWXXM.
5	India	AAI/Mumbai Airport	AMHS is in operation since 2011.		

AMHS Readiness Report for Supporting IWXXM Traffic					
No.	States/Administration	Name of State (Administration)/name of BBIS/BIS location where AMHS is installed:	AFTN/AMHS transition date/schedule	Readiness Status of AMHS for supporting File Transfer Body Part (FTBP), the Interpersonal Message (IPM) Heading Extension (IHE) to support for exchanging IWXXM reports of a maximum size of 4MB and FTBP of maximum 2MB:	Capacity status of the operational AFS links to support the exchange of the required meteorological information in both IWXXM GML form and TAC form:
			<p>Note:</p> <p>1. PO was awarded to Frequentis Comsoft on Jan-2023 for the replacement of existing AMHS System at Mumbai.</p> <p>2. New AMHS System will be having DC at Mumbai &amp; DR at Delhi. Subsequently second CRV connection will be implemented with at Delhi for DR AMHS Operation.</p> <p>3. SDR (System Design Review) meeting with Frequentis Comsoft is planned in May 2023</p> <p>4. Tentative timeline for commissioning of new AMHS System is Dec 2024.</p>	<p>Presently India is not able to exchange the required 4 MB messages and 2 MB FTBP attachments.</p>	<p>Indian Meteorological Department is in the process of upgradation of HPC &amp; DB to support IWXXM.</p>
6	Japan	Japan/Fukuoka	<p>ATN BBIS router and AMHS installed at 2000.</p> <p>Connection tests with USA 2000 - 2004 and put into operational use in 2005 and over CRV in February 2019.</p> <p>Put into AMHS operation with Hong- Kong and Singapore in 2021. AMHS implementation with China in 2021 , Korea and Taipei in 2022.</p>	<p>Already support exchange of IWXXM messages based on FTBP in August 2015.</p> <p>It is possible to send , receive and transfer up to 2GB for the contents such as FTBP,IPM and IHE in AMHS,and the size of IWXXM supported system by Japan Meteorological Agency is 2MB</p>	<p>AFS links over CRV is a Package A, Bandwidth 2M.</p>
7	Macao China	Macao China	Q4/2009	Support exchange of IWXXM messages based on FTBP.	To be determined
8	Maldives	Maldives / Velana International Airport (VRMM)	Contract awarded to replace existing AFTN system to an AMHS in 1Q2023. Installation and commissioning of AMHS to be completed by 3Q2023	AMHS supports FTBP	Discussion with PCCW for 128k bandwidth CRV package D
9	New Zealand	Airways – Christchurch	AMHS connections are in place with Australia, USA and the New Zealand	Support	Airways New Zealand has contracted a 1.0Mbps bandwidth using CRV Package C+ for Voice and AMHS services from Auckland and Christchurch.

AMHS Readiness Report for Supporting IWXXM Traffic					
No.	States/Administration	Name of State (Administration)/name of BBIS/BIS location where AMHS is installed:	AFTN/AMHS transition date/schedule	Readiness Status of AMHS for supporting File Transfer Body Part (FTBP), the Interpersonal Message (IPM) Heading Extension (IHE) to support for exchanging IWXXM reports of a maximum size of 4MB and FTBP of maximum 2MB:	Capacity status of the operational AFS links to support the exchange of the required meteorological information in both IWXXM GML form and TAC form:
10	Philippines	Philippines/ATMC Manila	Completed March 2018	Can support IHE and FTBP maximum 1MB (tested with Taipei on 13-May-20)	1MB  Philippines has contracted 2Mbps bandwidth using CRV package "A" voice and data services.
11	Republic of Korea	Gimpo international airport	ATN/AMHS with China put into operational use in June, 2011. AMHS implementation with China and Japan over CRV will be in 4Q, 2022.	AMHS implementation for supporting FTBP and IHE will be in 4Q, 2022.	AFS links over CRV is a Package A, Bandwidth 2M.
12	Singapore	Singapore	March 2011	Yes	2MB for CRV and minimally 64kbps for IPLCs
13	Thailand	Thailand	BBIS/BIS Routers already implemented. AMHS has been implemented since July 2011. Connection with Bangladesh, Bhutan, Cambodia, China, India, Lao PDR, Myanmar, Singapore, Hong Kong China, and Malaysia implemented. Connection with SITA (SITA AMHS Gateway inter-connections) implemented. <b>Bangkok - Vietnam Circuit</b> IOT Test : Done POT Test: Planned for end of 3Q2021 <b>Bangkok - Rome Circuit</b> IOT Test: Planned for 3Q2021 POT Test: Planned for 4Q2021	Completed, the IWXXM exchange has been implemented since November 2020.	The capacity of links readied to support in both form.
14	USA	Federal Aviation Administration	Q4, 2020	Yes. FAA AMHS has FTBP capability. National Weather Service (NWS) projected to implement IWXXM by Q3, 2021	Yes. 2MB bandwidth over CRV

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**Implementation Status of ATN/AMHS in the APAC Region** Extracted from ATN/AMHS/AIDC Implementation Table

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
AFGHANISTAN			
AUSTRALIA	<p>AMHS over CRV with: Singapore, New Zealand, Fiji and USA</p> <p>AMHS over leased line with: South Africa</p> <p>AFTN over CRV with: PNG</p> <p>AFTN over leased line with: Indonesia</p> <p>Planning to migrate existing AFTN connections with Indonesia and PNG to AMHS over CRV (TBC, pending readiness both ends)</p> <p>Extended AMHS with FTBP in support of IWXXM exchange in operation since Nov. 2020.</p>	Frequentis Comsoft	
BANGLADESH	In Q1/2013, Bangladesh installed ATN/AMHS and BIS Router at Dhaka (VGHS) with User Agents at Chittagong (VGEG) and Sylhet (VGSY).	COMSOFT	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
BHUTAN	<p>ATN/AMHS circuits, using IP over VPN, with Thailand (Bangkok) and India (Mumbai) commissioned in June and July 2017 respectively.</p> <p>IOT and POT with Mumbai completed on 27<sup>th</sup> June 2017.</p> <p>IOT and POT with Thailand completed on 2<sup>nd</sup> May 2017.</p> <p>TMC signing with both countries signed.</p>	AEROTHAI'S AMHS System	
BRUNEI DARUSSALAM	ATN BIS Router planned for 2015 and AMHS planned for 2015		
CAMBODIA	<p>BIS Router and AMHS installed.</p> <p>Cambodia (CATS) AMHS connected with Bangkok via VSAT IP link since 10 December 2013</p>	AVITECH	

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<p>CHINA</p>	<p>ATN Router and AMHS including NCC deployed in 2008 which is being upgraded to support ATN/IPS with target date of completion in December 2013. Hong Kong China The Beijing-Hong Kong AMHS link was put into operation in 2018; CRV/AMHS circuit was put into operation in April 2021</p> <p>Thailand With Thailand was put into operation in Q12020 Plan implement IOT and POT in 2022</p> <p>Macau China AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China is TBD.</p> <p>Korea ATN/AMHS circuit with ROK has been put into operation since June 2011. Completed CRV/AMHS IOT in 2021 Plan implement POT in Q2 2022</p> <p>India ATN/AMHS tests with India has been put into operation since 2016.</p> <p>Mongolia ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2021</p> <p>Nepal Connection tests with Nepal is TBD.</p> <p>Japan AMHS testing with Japan was completed in March 2021.It will put into operation after TMC is signed.</p>	<p>IN-HOUSE (Aero-Info Technologies Co., Ltd)</p>	<p>IN-HOUSE (Aero-Info Technologies Co., Ltd)</p>
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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
	<p>China have completed TMC signed and circuit put into operation in 2021</p> <p>Russia AMHS IOT with Russia in 2021.</p>		
HONG KONG, CHINA	<p><b>Manila / Philippines</b> CRV/AMHS circuit was put into operation in May 2019.</p> <p><b>Beijing / China</b> CRV/AMHS circuit was put into operation in April 2021</p> <p>Macao / China ATN/AMHS circuit was put into operation in December 2009. Wait for Macao to join CRV.</p> <p><b>Bangkok / Thailand</b> <del>ATN/AMHS circuit was put into operation use in 2014. Wait for Thailand to join CRV.</del> <u>CRV/AMHS circuit was put into operation in August 2022.</u></p> <p><b>Fukuoka / Japan</b> CRV/AMHS circuit was put into operation in September 2020.</p> <p><b>HoChiMinh / Vietnam</b> Currently on AFTN. Simple AMHS IOT was conducted in Dec 2019. Wait for Vietnam to join CRV.</p> <p><b>Taipei / China</b> CRV/AMHS circuit was put into operation in June 2020.</p>	COMSOFT	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
MACAO, CHINA	<p>ATN/AMHS interoperability test with Beijing commenced in March 2009.</p> <p>ATN/AMHS circuit with Hong Kong put into operational use in end Dec 2009.</p> <p><del>Upgrade of ATN/AMHS to support IPS and IWXXM 3.0 planned with tentative target date of Q4 2023. Upgrade of ATN/AMHS to support IPS and IWXXM planned with tentative target date of Q2 2023.</del></p> <p>-</p>	COMSOFT	
COOK ISLANDS			
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS planned for in 2011.		
FIJI ISLANDS	<p>ATN BBIS IPS router and AMHS implemented over CRV for connection to USA in April, 2019 with Australia planned for June, 2019.</p> <p>.</p> <p>For connections with sub-regional centers: For New Caledonia using AMHS since 2017; For connection with Kiribati using UA/AMHS implemented in 2015.</p> <p>Upgrade of AMHS to support the Extended ATS service with up to 4.0MB file size including FTBP. and IWXXM planned with tentative target date of Q2 2023.</p>	COMSOFT	B2B connection between Nadi AMHS and Brisbane AMHS planned for Q3, 2022 as backup for CRV.

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<b>State/Organization</b>	<b>ATN G/G Boundary Intermediate System (BIS) Router/AMHS</b>	<b>AMHS Vendors Selected</b>	<b>Remarks</b>
FRANCE <i>(French Polynesia Tahiti)</i>	Planned for implementation of AMHS in 2022 (T2).  Using IP with New Zealand since 2017.	COMSOFT	

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<p>INDIA</p>	<p>Dual stack ATN/IP router and AMHS implemented at Mumbai in 2011. Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi, <u>Beijing, Bhutan, Colombo &amp; Muscat</u> implemented.  <u>With Beijing implemented in 2016;</u>  <u>With Colombo implemented in May 2017; With Bhutan implemented in July 2017;</u></p> <p><u>Mumbai-Nairobi- AFTN Connectivity Implemented.</u></p> <p><u>CRV Circuits has been delivered in India/AMHS Mumbai in Dec 2022.</u></p> <p><u>Following AMHS Circuits has been migrated to CRV</u></p> <p><u>In Q1 of 2023:</u>  <u>Mumbai-Bangkok</u>  <u>Mumbai-Kathmandu</u>  <u>Mumbai-Bhutan</u>  <u>Mumbai-Singapore</u></p> <p><u>In Q2 of 2023:</u>  <u>Mumbai-Beijing</u></p> <p><u>Note: CRV Connection with Karachi, Dhaka &amp; Sri Lanka will be implemented once these states are ready with their CRV Connection from PCCWG.</u></p> <p><u>AMHS &amp; AFTN Connection with Muscat &amp; Nairobi respectively may be continuing with the existing IPLC circuit. <del>(HOT/POT) between Mumbai – Muscat is scheduled with mutual agreement between India &amp; Oman between 0600 0900 UTC from 21.06.2021. Technical Memorandum of Cooperation (TMC) between Oman and India has been</del></u></p>	<p>COMSOFT</p>	<ol style="list-style-type: none"> <li>1. <u>PO was awarded to Frequentis Comsoft in Q1 of 2023 for the replacement of existing AMHS System at Mumbai.</u></li> <li>2. <u>New AMHS System will be having DC at Mumbai &amp; DR at Delhi. Subsequently, second CRV Connection may be implemented at Delhi for DR AMHS Connection.</u></li> <li>3. <u>SDR (System Design Review) meeting with Frequentis Comsoft is planned in May 2023</u></li> <li>4. <u>Tentative timeline for commissioning of new AMHS System is Dec 2024.</u> INDIA</li> </ol>
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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
	<p><del>signed in Feb. 2022. As agreed mutually, Mumbai-Muscat AMHS circuit will be commissioned on 25/04/2022 at 0600UTC.</del></p> <p><del>Technical Memorandum of Cooperation (TMC) between Oman and India has been signed in Feb. 2022. As agreed mutually, Mumbai-Muscat AMHS circuit will be commissioned on 25/04/2022 at 0600UTC.</del></p>		
INDONESIA	<p>ATN BIS Router and AMHS with Singapore implemented since February 2018;</p> <p>AMHS Trial (IOT) with Brisbane pending for CRV implementation.</p>	IDS	For CRV, target of contract in 2Q2022 and implementation in 4Q2022.

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
JAPAN	<p>ATN BBIS router and AMHS installed at USA in 2000. Connection tests with USA in 2000 - 2004 and put into operational use in 2005.</p> <p>ATN BBIS router (to apply to Dual Stack) and AMHS (to upgrade in 2015. The connection test with each country which is not currently connecting is started after update.</p> <p>Hong-Kong AMHS/FTBP over CRV was put into operation in September 2020.</p> <p><b>Singapore</b> AMHS/FTBP over CRV was put into operation in December 2020.</p> <p><b>Beijing/China</b> AMHS/FTBP over CRV was put into operation in March 2021.</p> <p><b>Taipei/China</b> AMHS/FTBP over CRV was put into operation in March 2022.</p> <p><b>Incheon/Korea</b> Plan for AMHS/FTBP over CRV IOT in 4Q 2022</p>	NEC	Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.
KIRIBATI	Connection with Nadi using UA/AMHS implemented in 2015.		
LAO PDR	<ul style="list-style-type: none"> <li>- ATN BIS Router and AMHS Implemented with Bangkok and Phnom Penh.</li> <li>- AFTN used with Hanoi and Kunming.</li> <li>- For Yangon we have no direct link the connection is used via Bangkok.</li> </ul>	THALES	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
MALAYSIA	<p>ATN BIS Router completed 2007.</p> <p>AMHS for Malaysia – Singapore implemented in March 2020.</p> <p>AMHS for Malaysia – Thailand implemented in Dec 2019.</p>	FREQUENTIS	
MALDIVES	<p><del>In the process of replacing the existing operational AFTN system by AMHS. It is expected to complete the installation before the end of 2019.</del></p> <p><del>With the new AMHS, it is planned to establish a new IP connection between an additional neighboring ATSU as the current link is an X.25 connection between Colombo.</del></p> <p><del>Also will look for the possibility of implementing the CRV network to use with AMHS and AIDC during the same phase.</del></p> <p><del>IP link with Colombo to be established by 3Q2023 to replace the X.25 link used by AFTN.</del></p> <p><del>AMHS installation and commissioning to be completed 3Q2023.</del></p>	<u>IDS AirNav</u>	
MARSHALL ISLANDS			
MICRONESIA (EDERATED STATES OF)			
Chuuk			
Kosrae			

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
Pohnpei			
Yap			
MONGOLIA	<p>AMHS/AFTN gateway implemented 2012.</p> <p>ATNBIS router implemented in 2014.</p> <p>ATN and AMHS IOT with China was completed in May 2018. ATN and AMHS POT with China was completed in May 2019.</p> <p>Upgraded the AMHS system and purchased UA terminals in 2020, but it is not yet fully operational due to the Covid-19 pandemic situation.</p> <p>The AMHS system is planned to be fully operational in the fourth quarter of 2022.</p>	COMSOFT	
MYANMAR	<p>AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.</p>	THALES	<p>AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.</p>
NAURU			

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
NEPAL	<p>AFTN/AMHS Gateway implemented in 2012.</p> <p>AMHS implemented with India since June 2014.</p> <p>AFTN connection with China. Plan to test AMHS connection soon.</p>	COMSOFT	
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT	
NEW ZEALAND	<p>An AMHS connection with the USA over CRV was implemented in April 2019.</p> <p>The AFTN connection to Australia was moved to CRV in June 2019. The AFTN connection to Australia over CRV was replaced with an AMHS connection over CRV in September 2020</p> <p>Work to provide an AMHS connection over CRV between Bhutan and New Zealand as a temporary solution for their usage of CRV (pending Thailand and India connecting to CRV) is ongoing (April-2022).</p>	Frequentis Comsoft	
PAKISTAN	<p>ATN/AMHS connections with Mumbai and Kuwait since 2015 and 2018 respectively.</p> <p>AMHS connection with Beijing, Kabul, Tehran and Muscat will be provided after up gradation of existing AMHS at Karachi which is already in progress.</p>	Existing COMSOFT  After up gradation ISD	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
PAPUA NEW GUINEA	<p>Currently AFTN over IP.</p> <p>AMHS implementation is planned for after successful implementation of CRV this year.</p> <p>AMHS implementation planned for 2020.</p>	COMSOFT is the supplier of PNG AFTN/AMHS system	
PHILIPPINES	<p>ATN/AMHS Boundary Intermediate System was installed at the new Manila CNS/ATM Center;</p> <ul style="list-style-type: none"> <li>• Site Acceptance, Oct. 2015</li> <li>• Commissioned &amp; operational, March 2018</li> </ul> <p>AMHS implementation over CRV with the following adjacent FIR's;</p> <ul style="list-style-type: none"> <li>• <b>HONG KONG</b> - May 2019</li> <li>• <b>TAIPEI</b> - Sept. 2019</li> <li>• <b>SINGAPORE</b> - Dec. 2020</li> <li>• <b>OAKLAND</b> - April 2021</li> </ul>	<b>Frequentis - Comsoft</b>	<p>The New ATN/AMHS of Manila CNS/ATM center has been in domestic operations since March 2018. And with the implementation of CRV, AMHS connection has been implemented with the following adjacent FIR's;</p> <p><b>-HONG KONG</b></p> <p><b>-TAIPEI</b></p> <p><b>-SINGAPORE</b></p> <p><b>-OAKLAND</b></p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
REPUBLIC OF KOREA	Plan to upgrade AMHS supporting IWXXM from 2022 over CRV 1) AMHS/CRV IOT with China and Japan in 4Q of 2021 2) AMHS/CRV POT with China on July 2022, and with Japan in 4Q 2022 3) Cutover to CRV with China and Japan in 4Q 2022 4) Implementation of AMHS/CRV with China and Japan in 4Q 2022	FREQUENTIS	
SINGAPORE	AMHS implemented with: 1) AMHS circuit with India put into operational use in Mar 2011. 2) AMHS circuit with UK put into operational use in Mar 2012. 3) AMHS circuit with Thailand put into operational use in Dec 2014. 4) AMHS circuit with Australia put into operational use in Oct 2016. 5) AMHS circuit with Indonesia put into operational use in Feb 2018. 6) AMHS circuit with Malaysia put into operational in Mar 2020. 7) AMHS circuit with Japan put into operational in Dec 2020. 8) <u>AMHS circuit with Philippines put into operational in Dec 2020.</u> 9) <u>AMHS circuit with Sri Lanka put into operational in May 2022.</u>  Inter-Operability Test (IOT) with Vietnam and Sri Lanka started in 2019 and 2022 respectively.  IOT with Bahrain and Brunei to be confirmed.	FREQUENTIS COMSOFT	
SRI LANKA	ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017. <ul style="list-style-type: none"> <li>- Mumbai tested May 2017 operational planned for Q4 2017;</li> <li>- Singapore testing in Q4 2017 operational for 2018;</li> <li>- Male testing and operational date TBD.</li> </ul>	IDS	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
THAILAND	<p><del>BBIS/BIS Routers already implemented.</del> AMHS has been implemented since July 2011.</p> <p>Connection with Bangladesh, Bhutan, Cambodia, China, India, Lao PDR, Myanmar, Singapore, Hong Kong China, -Malaysia, and <u>Italy (Rome)</u> implemented.</p> <p>Bangkok - Vietnam Circuit <u>IOT Test: Done</u> <u>POT Test: Done</u> Commissioning: Planned for end of <u>4Q20233Q2022</u></p> <p>Connection with SITA (SITA AMHS Gateway inter-connections) implemented.</p>	AEROTHAI's AMHS System	
TONGA	<p>AMHS planned for 2008.</p> <p>The provider is linked to the New Zealand AFTN</p>		CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	<ul style="list-style-type: none"> <li>- Australia</li> <li>- Fiji</li> <li>- New Zealand</li> <li>- Japan</li> <li>- Philippines</li> <li>- Indonesia (2023)</li> </ul>	IN-HOUSE	
VANUATU			

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
VIET NAM	AMHS (basic) implemented from 4Q/2018. Plan AMHS extended from Q4 2022  IOT with Singapore from 10/2019 to 8/2020 IOT with Hong Kong 12/2019 IOT with Thailand 6/2020, POT 8/2020.	IN-HOUSE	
Wallis and Futuna (FRANCE)	AMHS implementation planned for end of 2017		

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**TABLE OF ATS INTER-FACILITY DATA COMMUNICATION (AIDC)  
IMPLEMENTATION STATUS IN APAC REGION**

Explanation of the Table

Column	Element	Explanation	Reason
1	State/Administration	Name of the State/Administration	
2	AIDC Implementation Status (Implemented or not)	AIDC has been implemented in the State/Administration or not (States have the technical capability implemented and at least one bilateral connection with adjacent ATS units in operational use will be regarded as implemented)	
3	Location of AIDC System ATSU1	the location of the AIDC end system under the supervision of State/Administration identified in column 1	
4	ATM Automation System	Make/Model of the ATM automation system used in this ATSU	
5	ATSU2 /Correspondent State/Administration – the correspondent AIDC System	ATSU2 – location of the correspondent AIDC end system Correspondent State/Administration – the name of the State/Administration responsible for management of the correspondent AIDC end system A “/” is placed between the ATSU2 and State/Administration	
6	Intraregional/Interregional	the connection is intraregional (inside APAC) or interregional	
7	Transmission Means	the transmission means used for the AIDC messages exchanged between the corresponding AIDC pair, AFTN, AMHS, etc.	The carriage of AIDC messages is facilitated through existing communication network (e.g. AFTN, AMHS, etc.). The type of network that will be used for AIDC message exchange will need to be defined, including the appropriate recovery/ contingency actions that will be adopted in abnormal situations
8	Frequency of Use (days in a week)	days of AIDC used in a week	to indicate how frequently the AIDC interface has been used
9	Main/Backup Circuit	the circuit is main or backup AIDC connection	if there is two circuits between the two ATSUs, it's better to identify which is main or backup
10	Communication Signal Speed	the communication signal speed for the AIDC messages exchanged (bps)	According to Pan Regional Interface Control Document (PAN ICD) for ATS Inter-facility Data Communications (AIDC) chapter 3.3.2.3, the communication signal speed between ATS systems using AFTN/AMHS should be greater than 2400 bps
11	Average Transmission Delay (One Trip Time)	the average transmission delay for exchanging AIDC messages in seconds	According to Pan Regional Interface Control Document (PAN ICD) for ATS Inter-facility Data Communications (AIDC), Average Transmission Delay (seconds) will influence the AIDC performance. In order to effectively use the AIDC application for the interchange of ATC coordination data, ATSUs should monitor the performance of the communication links to ensure the required performance is achieved. This monitoring should measure the latency of the AIDC message traffic between ATS systems in terms of the time measured between message transmission at the originating ATS system and receipt of the message at the receiving ATS system. The performance of the communications links should be such that 95% of all messages should be received within 12 seconds of transmission and 99.9% of all messages should be received within 30 seconds of transmission. In bilateral agreements, ATSUs, may agree on different performance requirements
12	Implementation Date or Target Date	date of implementation of the AIDC end system in the form of xQyyyy(quarter year), MON yyyy (Month) or yyyy	
13	Interface Status	the AIDC interface status, including Operational (already implemented), Testing (under progressing), Planned (under plan), No plan	
14	Interface Protocol /Version (OLDI or AIDC Version)	the AIDC service between the corresponding ATSUs	to show which AIDC version used and supported between two ATSUs and refer to Reason under Item 15
15	List of AIDC Messages Applicable between the Two ATSUs	the AIDC messages can be exchanged between the two ATSUs, including ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS	According to Asia/Pacific Seamless ANS Plan V3.0, PASL Phase II (expected implementation by 07 November 2019) and APANPIRG/24 CONCLUSION 24/16, ATS systems should enable AIDC (version 3 or later), or an alternative process that achieves at least the same level of performance as AIDC, between en-route ATC units and terminal ATC units where transfers of control are conducted consistent with FICE-B0/1, unless alternate means of automated communication of ATM system track and flight plan data are employed (Priority 1). As far as practicable, the following AIDC messages types should be implemented: • Advanced Boundary Information (ABI); • Coordinate Estimate (EST); • Acceptance (ACP); • TOC; and • Assumption of Control (AOC). Note: States should note the necessity to utilise Logical Acknowledgement Message processing (LAM) when implementing AIDC
16	Coordination by CDN or Voice	the method used in coordination phase	to show if the AIDC process a totally automatic or not
17	Automatic or Manual EST	the EST is sent out automatically or manually	to evaluate the automatic level of AIDC
18	A Warning Message to Controller in Case of AIDC Failure	the warning message for AIDC failure is capable or not	According to Pan Regional Interface Control Document (PAN ICD) for ATS Interfacility Data Communications (AIDC), failure to receive an operational response within timeout period Top should result in a warning message being displayed to the controller. Non receipt of a response to an ASM may indicate either a communication link failure or an ATC system failure. If an ATSU that has sent an ASM message does not receive an application response within a specified time, a warning message should be displayed at an appropriate position so that local contingency procedures can be executed
19	Remarks	any additional information describing the AIDC connection, including issues faced if any, mitigation, and limitation	

**Table of AIDC Implementation Status in APAC**

State/Administration	AIDC Implementation Status(Implemented or not)	Location of AIDC System ATSUI	ATM Automation System (Make/Model)	ATSU2 /Correspondent State – Administration	Intraregional/Interregional	Transmission Means	Frequency of Use(days in a week)	Main/Backup Circuit	Communication Signal Speed (bps)	Average Transimission Delay (One Trip Time in Seconds)	Implementation Date or Target Date as MON yyyy or xQyyyy	Interface Status (Operational, Testing, Planned, No plan)	Interface Protocol / Version (OLDI or AIDC Version)	List of AIDC Messages Applicable between the Two ATSUs (ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS)	Coordination by CDN or Voice	Automatic or Manual EST	A Warning Message to Controller in Case of AIDC Failure	Remarks		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
AFGHANISTAN	non-implemented	Kabul ACC		Kabul ACC /Afghanistan	Intraregional	AMHS														
				Karachi ACC/Pakistan	Intraregional	AFTN														
AUSTRALIA	Implemented	Brisbane ACC	Thales ATM system	Oakland ARTCC /USA	Interregional	AFTN	7					Operational	ICD V.X.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, CDN, REJ, MAC, CPL	CDN	Automatic	yes	Up- and down conversion of AMHS and AFTN required as connection between Australian ATM system and national Message Transfer Agent is X25/AFTN.		
				Auckland ACC /New Zealand	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, CDN, REJ, MAC, CPL, PAC	CDN	Automatic	yes				
				Melbourne ACC /Australia	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, ACP, AOC, EST, LAM, LRM, MAC, PAC, TOC	Voice	Automatic	yes				
				Ujung Pandang ACC /Indonesia	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, ACP, AOC, EST, LAM, LRM, MAC, TOC	Voice	Automatic	yes				
				Nadi ACC /Fiji	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, CDN, REJ, MAC, CPL, PAC	CDN	Automatic					
		Port Moresby/PNG	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes						
		Melbourne ACC	Thales ATM system	Brisbane ACC /Australia	Intraregional	AFTN	7							Operational	ICD V.X.0	ABI, ACP, AOC, EST, LAM, LRM, MAC, PAC, TOC	Voice		Automatic	yes
				Colombo ACC / Sri Lanka	Intraregional	AFTN	N/A							No plan		N/A				
				Jakarta ACC /Indonesia	Intraregional	AFTN	N/A							No plan		N/A				
				Johannesburg ACC / South Africa	Interregional	AFTN	7				Operational	ICD V.X.0	EST, ACP, LAM, LRM	Voice	Automatic	yes				
Male ACC / Maldives	Intraregional			AFTN	7				Operational	ICD V.X.0	ABI, ACP, EST, LAM, LRM	Voice	Automatic	yes						
Mauritius ACC /Mauritius	Interregional	AFTN	7				Operational	ICD V.X.0	ABI, ACP, AOC, CPL, EST, LAM, PAC, TOC, LRM	Voice	Automatic	yes								
Auckland ACC /New Zealand	Intraregional	AFTN	7				Operational	ICD V.X.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes								
BANGLADESH	non-implemented	Dhaka ACC		Kolkata ACC /India	Intraregional	AMHS												Implementation of AIDC is included in the “Modernization of CNS-ATM System of CAAB” project which is going on G2G agreement with French Government and likely to be implemented by the end of 2023.		
				Yangon ACC /Myanmar	Intraregional	AMHS						4Q2023	4Q2023		ICD V.2.0					
BHUTAN	non-implemented											No plan						Currently not applicable. If required in the future, will decide after CRV implementation.		
BRUNEI DARUSSALAM	non-implemented																			
CAMBODIA	Testing	Phnom Penh ACC		Bangkok ACC /Thailand	Intraregional	AMHS					4Q2019	Testing	ICD V.1.0							
				Vientiane ACC/Laos PDR	Intraregional	AFTN								Testing	ICD V.1.0					
				Ho Chi Minh ACC/Viet Nam	Intraregional	AMHS								Testing	ICD V.1.0					
CHINA	Implemented	Beijing ACC	THALES	Ulaanbaatar ACC/Mongolia	Interregional	AFTN					Dec 2023	Testing		EST, ACP, TOC, AOC, LRM, LAM						
		Sanya ACC	NUMEN	Hong Kong ACC / Hong Kong, China	Intraregional	AFTN					Dec 2007	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LRM, LAM		Automatic	yes			
				Hanoi ACC/Vietnam	Intraregional	AFTN				Dec 2023	Testing			EST, ACP, TOC, AOC, LRM, LAM						
				Ho Chi Minh ACC /Vietnam	Intraregional	AFTN				Dec 2023	Planned			EST, ACP, TOC, AOC, LRM, LAM						
		Kunming ACC	NUMEN	Vientiane ACC/Laos PDR	Interregional				Jan 2021	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LRM, LAM		Automatic	yes					
				Yangon ACC /Myanmar	Intraregional	AFTN					Testing		EST, ACP, TOC, AOC, LRM, LAM							
		Lanzhou ACC	NUMEN	Ulaanbaatar ACC/Mongolia	Intraregional	AFTN			Dec 2023	Planned		EST, ACP, TOC, AOC, LRM, LAM								
Lhasa ACC		Kathmandu ACC/Nepal	Interregional	AFTN																
Guangzhou ACC		Taibei ACC /China	Intraregional							Jan 2013	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LRM, LAM		Automatic	yes				

**Table of AIDC Implementation Status in APAC**

State/Administration	AIDC Implementation Status(Implemented or not)	Location of AIDC System ATSU1	ATM Automation System (Make/Model)	ATSU2 /Correspondent State – Administration	Intraregional/Interregional	Transmission Means	Frequency of Use(days in a week)	Main/Backup Circuit	Communication Signal Speed (bps)	Average Transmission Delay (One Trip Time in Seconds)	Implementation Date or Target Date as MON yyyy or xQyyyy	Interface Status (Operational, Testing, Planned, No plan)	Interface Protocol / Version (OLDI or AIDC Version)	List of AIDC Messages Applicable between the Two ATSUs (ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS)	Coordination by CDN or Voice	Automatic or Manual EST	A Warning Message to Controller in Case of AIDC Failure	Remarks		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
		Guangzhou ACC	THALES	Hong Kong ACC / Hong Kong, China	Intraregional	AFTN					May 2018	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LRM, LAM		Automatic	yes			
		Taipei ACC		Hong Kong ACC / Hong Kong, China	Intraregional	AFTN							Operational	ICD V.3.0						
				Fukuoka ATMC/Japan	Interregional	AFTN								Operational						
				Manila ACC/Philippines	Interregional	AFTN														
		Shenyang ACC	NUMEN		Khabarovsk/Russia	Interregional						Oct 2019	Operational	OLDI	ABI, ACT, MAC, HOP, ACP, LAM, and LRM		Automatic	yes		
		Urumqi ACC	NUMEN		Lahore ACC /Pakistan	Intraregional	AMHS													
		Nanning ACC	NUMEN		Hanoi ACC/Vietnam	Intraregional						Dec 2023	Planned							
Dalian ACC	NUMEN		Incheon ACC /Republic of Korea	Interregional						Oct 2016	Operational	ICD V.3.0 (trial opera	ABI, EST, ACP, TOC, AOC, LRM, LAM		Automatic	yes				
Shanghai ACC	NUMEN		Taipei ACC /China	Intraregional						Jan 2013	Operational	ICD V.3.0	LAM		Automatic	yes				
HONG KONG, CHINA	Implemented	Hong Kong ACC	Raytheon ATM system	Guangzhou ACC /China	Intraregional	AFTN	7	Main	2400	4	May 2018	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
				Sanya ACC /China	Intraregional	AFTN	7	Main	2400	4	Feb 2007	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
				Manila ACC /Philippines	Intraregional	AMHS	7	Main	up to 2M on C	1	May 2019	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes			
				Taipei ACC /China	Intraregional	AMHS	7	Main	up to 2M on C	1	Nov 2012	Operational	ICD V.3.0	EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
MACAO, CHINA	non-implemented	Macao ATZ										No plan								
COOK ISLANDS	non-implemented																			
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	non-implemented																			
FIJI	Implemented	Nadi ACC	Adacel ATM system	Auckland ACC /New Zealand	Intraregional	AFTN								Operational	ICD V. 2.0	ABI, EST, ACP, TOC, AOC, CDN, CPL				
				Brisbane ACC /Australia	Intraregional	AFTN									Operational	ICD V.1.0	ABI, EST, ACP, TOC, AOC, CDN, CPL			
				Oakland ARTCC /USA	Intraregional	AFTN									Operational	ICD V. 2.0	ABI, EST, ACP, TOC, AOC, CDN, CPL			
FRANCE FRENCH POLYNESIA, NEW CALEDONIA	Implemented	Papeete ACC	THALES EUROCAT	Auckland ACC /New Zealand	Intraregional	AFTN					2009	Operational	ICD V.3.0							
				Oakland ARTCC /USA	Intraregional	AFTN														
INDIA	Implemented	Ahmedabad ACC	INDRA Aircon 2100	Karachi ACC /Pakistan	Intraregional	AFTN						Testing		ABI, EST						
		Chennai ACC	Raytheon Auto track-III +	Colombo ACC / Sri Lanka	Intraregional	AMHS						4Q2018	Planned							
				Jakarta ACC /Indonesia	Intraregional	AFTN						4Q2019	Planned							
				Kuala Lumpur ACC / Malaysia	Intraregional	AFTN						Jan 2021	Operational	ICD V.3.0	ABI, EST, TOC, AOC	Voice				
				Male ACC /Maldives	Intraregional	AFTN						Sep 2021	Operational							
				Yangon ACC /Myanmar	Intraregional	AFTN								ICD V.2.0						
		Delhi ACC	INDRA Aircon	Karachi ACC /Pakistan	Intraregional	AFTN						1Q2019	No plan							
				Lahore ACC /Pakistan	Intraregional	AFTN								Testing						
		Kolkata ACC	INDRA Aircon	Dhaka ACC /Bangladesh	Intraregional	AMHS						4Q2018	Planned							
				Yangon ACC /Myanmar	Intraregional	AFTN						4Q2018	Testing	ICD V.2.0						
				Kathmandu ACC /Nepal	Intraregional	AFTN														
				Karachi ACC /Pakistan	Intraregional	AMHS						1Q2019	Planned							
		Mumbai ACC	Raytheon Auto track-III	Male ACC /Maldives	Intraregional	AFTN						Nov 2021	Operational							
Mogadishu ACC/Somalia	Interregional											Testing								
Muscat ACC /Oman	Interregional			AFTN								Testing								
Seychelles ACC / Mauritius	Interregional			AFTN																
Trivandrum ACC	INDRA Aircon 2100		Male ACC/Maldives	Intraregional	AFTN					3Q2018										
Varanasi ACC	INDRA Aircon 2100		Kathmandu ACC /Nepal	Intraregional	AFTN						Planned									

**Table of AIDC Implementation Status in APAC**

State/Administration	AIDC Implementation Status(Implemented or not)	Location of AIDC System ATSU1	ATM Automation System (Make/Model)	ATSU2 /Correspondent State – Administration	Intraregional/In terregional	Transmissi on Means	Frequency of Use(days in a week)	Main/Back up Circuit	Communication Signal Speed (bps)	Average Transimis sion Delay (One Trip Time in Seconds)	Implementation Date or Target Date as MON yyyy or xQyyyy	Interface Status (Operational, Testing, Planned, No plan)	Interface Protocol / Version (OLDI or AIDC Version)	List of AIDC Messages Applicable between the Two ATSU's (ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS)	Coordination by CDN or Voice	Automatic or Manual EST	A Warning Message to Controller in Case of AIDC Failure	Remarks				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				
INDONESIA	Implemented	Jakarta ACC		Melbourne /Australia	Intraregional	AFTN					2023	Testing										
				Colombo ACC / Sri Lanka	Intraregional	AFTN							2024	Testing								
				Singapore ACC /Singapore	Intraregional	AFTN								2022	Testing	ICD V.3.0						
				Kuala Lumpur ACC / Malaysia	Intraregional	AFTN								2024	Testing	ICD V.3.0						
				Kota Kinabalu ACC /Malaysia	Intraregional	AFTN								2025	Testing							
		Chennai ACC /India	Intraregional	AFTN								2022	Testing									
		Ujung Pandang ACC				Brisbane ACC /Australia	Intraregional	AFTN					July 2017	Operational								
						Oakland ARTCC /USA	Intraregional	AMHS								Planned						
						Port Moresby ACC/ PNG	Intraregional	AFTN								2Q2021	Operational					
						Kota Kinabalu ACC/Malaysia	Intraregional	AFTN									Testing					
Jakarta ACC /Indonesia	Intraregional													3Q2022	Testing							
Manila ACC/Philippines	Intraregional	AMHS								4Q 2020	Operational											
JAPAN	Implemented	Fukuoka ATMC	NEC	Anchorage ARTCC / USA	Intraregional	AMHS			2M		2005	Operational	ICD V.2.0									
				Oakland ARTCC / USA	Intraregional	AMHS							May 2017	Operational	ICD V.2.0							
		Tokyo ACC				Incheon ACC / Republic of Korea	Intraregional					2010	Operational	ICD V.1.0								
						Daegu ACC / Republic of Korea	Intraregional								Feb 2021	Operational	ICD V.1.0					
		Kobe ACC				Daegu ACC / Republic of Korea	Intraregional			64K		Feb 2021	Operational	ICD V.1.0								
						Incheon ACC / Republic of Korea	Intraregional								2010	Operational	ICD V.1.0					
		Fukuoka ACC				Daegu ACC / Republic of Korea	Intraregional					Feb 2021	Operational	ICD V.1.0								
						Taipei ACC / China	Intraregional						64K		2012	Operational	ICD V.3.0					
KIRIBATI	non-implemented																					
LAO PEOPLE'S DEMOCRATIC REPUBLIC	Implemented	Vientiane ACC	THALES TOPSKY (EUROCAT-C)	Bangkok ACC /Thailand	Intraregional	AMHS	7	Main	9600		14-Jul-20	Operational	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	CDN	Automatic	no					
				Hanoi ACC /Vietnam	Intraregional	AFTN	7	Main	9600				2Q2023	Planned	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM						
				Phnom Penh ACC /Cambodia	Intraregional	AFTN	7	Main	9600					2-Jan-20	Operational	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	CDN	Automatic	no		
				Yangoon/ Myanmar	Intraregional	AFTN	7	Main	9600					4Q2023	Planned	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM					
				Kunming ACC /China	Intraregional	AFTN	7	Main	9600					1Q2023	Testing	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	CDN	Automatic	no		
				Ho Chi Minh/ Vietnam	Intraregional	AFTN	7	Main	9600					3Q2023	Planned	ICD V.2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM					
MALAYSIA	Implemented	Kuala Lumpur ACC	LEONARDO	Bangkok ACC /Thailand	Intraregional	AMHS	7	Main	9600	7	Mar 2020	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes					
				Singapore ACC /Singapore	Intraregional	AMHS	7	Main	9600	7			Nov 2019	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes			
				Chennai ACC /India	Intraregional	AMHS	7	Main	9600	7			Apr 2020	Operational	ICD V.3.0	ABI, EST, ACP, LAM, LRM, CDN, REJ,MAC,TOC,AOC	CDN	Automatic	yes			
				Ho Chi Minh ACC /Vietnam	Intraregional	AMHS	7	Main	TBA	TBA			3Q2024	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes			
				Jakarta ACC /Indonesia	Intraregional	AMHS	7	Main	TBA	TBA			3Q2024	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes			
		Kota Kinabalu ACC	THALES	Ujung Pandang ACC /Indonesia	Intraregional	AMHS	7	Main	TBA	TBA			2Q2023	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes			
				Manila ACC /Philippines	Intraregional	AMHS	7	Main	TBA	TBA			3Q2023	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes			
				Singapore ACC /Singapore	Intraregional	AMHS	7	Main	9600	1			Jul 2021	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes			
													Sept 2022	Testing	ICD V.3.0	TOC, AOC	Voice	Automatic	yes			
				Jakarta ACC /Indonesia	Intraregional	AMHS	7	Main	TBA	TBA			3Q2024	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes			
				Singapore ACC /Singapore	Intraregional	AMHS	7	Main	9600	1	Feb 2021	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes					

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
		Kuching ACC	THALES	Singapore ACC /Singapore	Intraregional	AMHS	7	Main	2000		Sept 2022	Testing	ICD V.3.0	TOC, AOC	Voice	Automatic	yes				
				Jakarta ACC /Indonesia	Intraregional	AMHS	7	Main	TBA	TBA	3Q2024	Planned	ICD V.3.0	EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes				
MALDIVES	Implemented	Male ACC	LEONARDO	Mumbai ACC / India	Intraregional	AFTN	7	Main			3Q2021	Operational	ICD V.3.0	ABI, EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic	yes				
				Chennai ACC /India	Intraregional	AFTN	7	Main				3Q2021	Operational	ICD V.3.0	ABI, EST, ACP, LAM, LRM, TOC, AOC	Voice	Automatic				
				Mauritius ACC/Mauritius	Interregional	AFTN								No plan							
				Melbourne ACC /Australia	Intraregional	AFTN	7	Main						TBA	Testing	ICD V.3.0		Voice			
				Colombo ACC/Sri Lanka	Intraregional	AFTN		Main				64K			TBA	Testing	ICD V.3.0		Voice		Colombo AIDC connection temporarily disabled due to request from VCCC
				Trivandrum ACC/India	Intraregional	AFTN	7	Main						3Q2021	Operational	ICD V.3.0	ABI, EST, ACP, LAM, LRM, TOC, AOC	Voice			
MARSHALL ISLANDS	non-implemented																				
MICRONESIA (FEDERATED STATE OF)	non-implemented																				
MONGOLIA	Implemented	Ulaanbaatar ACC	INDRA Aircon - 2100	Khabarovsk/Russia	Interregional						2016		OLDI								
				Beijing ACC/ China	Intraregional	AFTN							4Q2022	Testing							
MYANMAR	Testing	Yangon ACC	THALES Automation system (Topsky ATC)	Bangkok ACC /Thailand	Intraregional	AMHS					4Q2020	Testing	ICD V.2.0								
				Kolkata ACC /India	Intraregional	AFTN							4Q2018	Testing	ICD V.2.0				Existing ATM system are likely to be upgraded in Lahore and Karachi ACC.		
				Chennai ACC /India	Intraregional	AFTN							4Q2018	Testing	ICD V.2.0						
				Kunming ACC /China	Intraregional	AFTN								Testing	ICD V.2.0						
				Vientiane ACC /Lao PDR	Intraregional	AFTN								4Q2018	Testing	ICD V.2.0					
				Dhaka ACC /Bangladesh	Intraregional	AFTN								4Q2018		ICD V.2.0					
NAURU	non-implemented																				
NEPAL	non-implemented	Kathmandu ACC	ATM system from NEC	Kolkata ACC /India	Intraregional	AFTN															
				Varanasi ACC/India	Intraregional	AFTN															
				Lhasa ACC /China	Intraregional	AFTN															
NEW ZEALAND	Implemented	Auckland ACC	LEIDOS and ADACEL	Brisbane ACC /Australia	Intraregional	AFTN						Operational	ICD V.1.0	ABI, EST, ACP, TOC, AOC							
				Nadi ACC /Fiji	Intraregional	AFTN									Operational	ICD V.1.0	ABI, EST, ACP, TOC, AOC				
				Oakland ARTCC /USA	Intraregional	AFTN									Operational	ICD V.2.0					
				Papeete ACC /French Polynesia	Intraregional	AFTN									Operational	ICD V.2.0					
				Chile	Intraregional	AFTN						Operational									
		Karachi ACC	Indra AIRCON 2100	Mumbai ACC /India	Intraregional	AMHS	7	Main	128 & 64Kbps		Jun 2025	Testing	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes	*Trial run carried out between Karachi and Ahmedabad. Partial connectivity between both systems is observed and Some issues regarding the auto acceptance of EST messages in Karachi ATM need to be addressed			
				Muscat ACC /Oman	Interregional	AFTN	7	Main	64Kbps			Jun 2025	No Plan	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes	*Trial run between Karachi and Mumbai was remained unsuccessful due to integration problems.		
				Tehran ACC /Iran	Interregional	AFTN	7	Main	1 Mbps			Jun 2025	No Plan	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes	* Trial run carried out between Lahore and Delhi ACCs in March 2021. Delhi ATM system rejects the ABI messages due to adding double space in FPL by Lahore ATM system (East bound Flights).		
				Ahmadabad ACC /India	Intraregional	AMHS	7	Main	Via Mumbai AMHS			Jun 2025	Testing	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			
				Kabul ACC /Afghanistan	Intraregional	AFTN	7	Main	1Mbps			Jun 2025	No Plan	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			
		Lahore ACC	Indra AIRCON	Delhi ACC /India	Intraregional	AMHS	7	Main	VIA Mumbai AHMS			Jun 2025	Testing	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			

**Table of AIDC Implementation Status in APAC**

State/Administration	AIDC Implementation Status(Implemented or not)	Location of AIDC System ATSUI	ATM Automation System (Make/Model)	ATSU2 /Correspondent State – Administration	Intraregional/Interregional	Transmission Means	Frequency of Use(days in a week)	Main/Backup Circuit	Communication Signal Speed (bps)	Average Transmission Delay (One Trip Time in Seconds)	Implementation Date or Target Date as MON yyyy or xQyyyy	Interface Status (Operational, Testing, Planned, No plan)	Interface Protocol / Version (OLDI or AIDC Version)	List of AIDC Messages Applicable between the Two ATSUs (ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS)	Coordination by CDN or Voice	Automatic or Manual EST	A Warning Message to Controller in Case of AIDC Failure	Remarks		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
PAKISTAN	Testing	Lahore ACC	2100	Kabul ACC /Afghanistan	Intraregional	AFTN	7	Main	1 Mbps via Karachi AMHS		Jun 2025	No Plan	ICD Version 2.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes	Lahore ATM does not generate ACP message in response to ABI message sent by Delhi ATM system (West Bound) Note :- Due to restructuring of Karachi ACC and Lahore ACC no need to AIDC testing /requirement between Karachi ACC and Delhi ACC. *AIDC is not fully functional with neighbouring FIRs due to difference in AIDC version. AIDC will be fully functional up to June, 2025 after replacement of ATM System at Karachi & Lahore ACCs.		
				Kabul ACC /Afghanistan	Intraregional	AFTN	7	Main	1 Mbps via Karachi AMHS			No Plan	ICD Version 3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			
		Islamabad ACC	Si ATM	Urumqui ACC /China	Intraregional	AFTN	7	Main	Via Beijing AFTN			No Plan	ICD Version 3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			
				Tajakistan ACC /Tajakistan	Interregional	AFTN	7	Main	Via Tehran AFTN			No Plan	ICD Version 3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC	Voice	Automatic	Yes			
PALAU	non-implemented																			
PAPUA NEW GUINEA	Implemented	Port Moresby	Thales (TopSky-ATC)	Brisbane ACC/Australia	Intraregional	AMHS						Operational	ICD V.3.0							
				Ujung Pandang ACC/Indonesia	Intraregional	AFTN							Planned	ICD V.3.0						
				Oakland ARTCC /USA	Intraregional	AFTN							Testing	ICD V.3.0						
PHILIPPINES	Implemented	Manila ACC	THALES	Hong Kong ACC / Hong Kong, China	Intraregional	AFTN														
				Singapore ACC /Singapore	Intraregional	AMHS						May 2019	Operational							
				Taibei ACC/China	Intraregional	AFTN														
				Kota Kinabalu ACC /Malaysia	Intraregional	AMHS							Dec 2019	Operational						
				Ho Chi Minh ACC /Viet Nam	Intraregional	AMHS								Testing						
				Oakland ARTCC /USA	Intraregional	AMHS								Testing						
				Fukoka ATMC /Japan	Intraregional	AMHS							1Q2019							
				Ujung Pandang ACC /Indonesia	Intraregional	AMHS							Dec 2020	Operational						
REPUBLIC OF KOREA	Implemented	Incheon ACC	Leidos System	Fukuoka ATMC /Japan	Intraregional	Dedicated L	7	Main	64000	1	2010	Operational	ICD V.1.0	CPL, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
				Shanghai ACC/China	Intraregional								3Q2023	Planned						
				Dalian ACC /China	Intraregional	Dedicated L	7	Backup	64000	1	Nov 2016	Operational	ICD V.3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
		Daegu ACC	Leidos System	Fukuoka ATMC /Japan	Intraregional	Dedicated L	7	Backup	64000	1	2010	Operational	ICD V.1.0	CPL, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
				Shanghai ACC/China	Intraregional								3Q2023	Planned						
				Dalian ACC /China	Intraregional	Dedicated L	7	Main	64000	1	Nov 2016	Operational	ICD V.3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes			
SAMOA	non-implemented																			
SINGAPORE	Implemented	Singapore ACC	THALES	Ho Chi Minh ACC /Vietnam	Intraregional	AMHS	7	Main	64k	80ms	Jul 2014	Operational	ICD V.1.0	EST,ACP,LAM,LRM	Voice	Automatic	yes			
				Manila ACC /Philippines	Intraregional	AMHS	7	Main	64k	45ms	Nov 2019	Operational	ICD V.3.0	EST,ACP,LAM,LRM,TOC,AOC	Voice	Automatic	yes			
				Jakarta ACC /Indonesia	Intraregional	AMHS	0	Main	64k	60ms			Planned	ICD V.3.0						
				Kuala Lumpur ACC /Malaysia	Intraregional	AMHS	7	Main	64k	20ms	Nov 2019	Operational	ICD V.3.0	EST,ACP,LAM,LRM	Voice	Automatic	yes			
				Kota Kinabalu ACC /Malaysia	Intraregional	AMHS	7	Main	64k	55ms	Jul 2021	Operational	ICD V.3.0	EST,ACP,LAM,LRM,TOC,AOC	Voice	Automatic	yes			
				Kuching ACC /Malaysia	Intraregional	AMHS	7	Main	64k	50ms	Feb 2021	Operational	ICD V.3.0	EST,ACP,LAM,LRM,TOC,AOC	Voice	Automatic	yes			
SOLOMON ISLANDS	non-implemented			Nadi ACC /Fiji	Intraregional															
				Port Moresby ACC /PNG	Intraregional															
				Brisbane ATSC /Australia	Intraregional															
SRI LANKA	Testing	Colombo ACC	INTELCAN	Male ACC /Maldives	Intraregional	AFTN			64000		SEP 2023	Testing	ICD V.3.0		Voice	Manual	no	ABI message is not working during trials.		
				Jakarta ACC / Indonesia	Intraregional	AMHS					2048000		SEP 2023	Planned	ICD V.3.0		Voice	Manual	no	

**Table of AIDC Implementation Status in APAC**

State/Administration	AIDC Implementation Status(Implemented or not)	Location of AIDC System ATSU1	ATM Automation System (Make/Model)	ATSU2 /Correspondent State – Administration	Intraregional/Interregional	Transmission Means	Frequency of Use(days in a week)	Main/Backup Circuit	Communication Signal Speed (bps)	Average Transmission Delay (One Trip Time in Seconds)	Implementation Date or Target Date as MON yyyy or xQyyyy	Interface Status (Operational, Testing, Planned, No plan)	Interface Protocol / Version (OLDI or AIDC Version)	List of AIDC Messages Applicable between the Two ATSUs (ABI, EST, ACP, TOC, AOC, LAM, LRM, PAC, CDN, CPL, REJ, MAC; TRU, EMG, MIS, TDM, ASM, FAN, FCN; ADS)	Coordination by CDN or Voice	Automatic or Manual EST	A Warning Message to Controller in Case of AIDC Failure	Remarks		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
SRI LANKA	Testing	Colombo ACC	INTELECAN	Melbourne ACC /Australia	Intraregional	AMHS			2048000		SEP 2023	Planned	ICD V.3.0		Voice	Manual	no			
				Chennai ACC /India	Intraregional	AMHS			2048000			SEP 2023	Testing	ICD V.3.0		Voice	Manual	no	ABI message is not working during trials.	
THAILAND	Implemented	Bangkok ACC	THALES	Kuala Lumpur ACC /Malaysia	Intraregional	AMHS					Mar 2020	Operational	ICD V.3.0	EST, ACP, LAM, LRM	Voice	Automatic	yes			
				Phnom Penh ACC /Cambodia	Intraregional	AMHS						Feb 2021	Operational	ICD V.3.0	ABI, EST, ACP, LAM, LRM	Voice	Automatic	yes		
				Vientiane ACC /Lao PDR	Intraregional	AMHS							Jul 2020	Operational	ICD V.3.0	ABI, EST, ACP, TOC, AOC, LAM, LRM	Voice	Automatic	yes	
				Yangon ACC /Myanmar	Intraregional	AMHS								Testing						Continuous operational use still not possible due to system limitation at Yangon ACC
TIMOR LESTE	non-implemented																			
TONGA	non-implemented																			
TUVALU	non-implemented																			
VANUATU	non-implemented																			
UNITED STATES	Implemented	Oakland ARTCC	Liedos, ATOP System	Anchorage ARTCC /United States	Intraregional	AMHS	7	Main	64,000	3	Oct 2005	Operational	ICD V.2.0	ABI, CPL, EST, MAC, CDN, ACP, REJ, EMG, MIS, LAM, LRM, PAC	CDN	Automatic	yes			
				Auckland OAC /New Zealand	Intraregional	AMHS	7	Main	64,000	4	Oct 2005	Operational	ICD V.2.0	ABI, CPL, MAC, CDN, ACP, REJ, LAM, LRM, PAC	CDN	Automatic	yes			
				Fukuoka ATMC /Japan	Intraregional	AMHS	7	Main	64,000	4	Oct 2005	Operational	ICD V.2.0	ABI, ACP, CDN, CPL, LAM, LRM, MAC	CDN	Automatic	yes			
				Nadi ATMC /Fiji	Intraregional	AMHS	7	Main	64,000	5	Oct 2005	Operational	ICD V.2.0	ABI, CPL, CDN, PAC, ACP, MAC, REJ, LAM, LRM	CDN	Automatic	yes			
				Brisbane ACC /Australia	Intraregional	AMHS	7	Main	64,000	1	Oct 2005	Operational	ICD V.2.0	ABI, EST, ACP, MAC, CDN, LAM, LRM	CDN	Automatic	yes	Full CDN functionality proposed 1-30-2023 via LOA.		
				Tahiti ACC /French Polynesia	Intraregional	AMHS	7	Main	64,000	10	Dec 2014	Operational	ICD V.2.0	ABI, CPL, CDN, PAC, ACP, MAC, LAM, LRM	CDN	Automatic	yes			
				Port Moresby/PNG	Intraregional	AMHS	7	Main	64,000	6	Dec 2021	Operational	ICD V.2.0	ABI, EST, ACP, LAM, LRM	Voice	Automatic	yes			
				Manila /Philippines	Intraregional	AMHS	7	Main	64,000	5	Dec 2022	Planned			ICD V.2.0					AIDC testing implemented via MOU with verbal verification for 30 days. Pending test results AIDC incorporation permanently via LOA.
				Mazatlan ACC	Interregional	AMHS	7	Main	64,000	4	Mar 2015	Operational	ICD V.2.0	ABI, ACP, EST, LAM, LRM	Voice	Automatic	yes			
				Ujung Padang/Indonesia	Intraregional	AMHS		Main	64,000							ICD V.2.0				
VIET NAM	Implemented	Ho Chi Minh ACC	THALES	Sanya ACC /China	Intraregional	AFTN														
				Phnom Penh ACC /Cambodia	Intraregional	AMHS								Testing						
				Vientiane ACC /Lao PDR	Intraregional	AMHS														
Singapore ACC /Singapore	Intraregional			AMHS								Jul 2014	Operational	ICD V.1.0						
Manila /Philippines	Intraregional			AFTN									Testing							
Hanoi ACC	Selex	Vientiane ACC /Lao PDR	Intraregional	AMHS								Testing								

**LIST OF FOCAL POINT FOR AIDC IMPLEMENTATION**

No.	States	Name/Title/Address	Tel/Fax/E-mail
1.	<b>Afghanistan</b>		
2.	<b>Australia</b>	Mr. Adam Watkin	Tel: Fax: E-mail: <a href="mailto:Adam.Watkin@AirservicesAustralia.com">Adam.Watkin@AirservicesAustralia.com</a>
3.	<b>Bangladesh</b>	Mr. Abdullah Al Faruk Assistant Director (ATM) Alternate Focal Point	Mobile: +880 1826 107 002 E-mail: <a href="mailto:mdfaruk3232@gmail.com">mdfaruk3232@gmail.com</a>
4.	<b>Bhutan</b>	Mr. Pema Tashi Superintendent of ANS Bhutan Civil Aviation Authority Paro International Airport Paro	Tel: +975 (8) 271 347 Ext. 107 Mobile: +975 1 762 2702 Fax: +975 (8) 271 944
5.	<b>Brunei Darussalam</b>		
6.	<b>Cambodia</b>	Ms. Heng Sovannrath Dy. Chief Bureau (CNS) Air Navigation Standard and Safety Department 44, Phnom Penh International Airport, Russian Federation Blvd., Phum Ta Ngoun, Sangkat Kakab, Khan Porsenchey, Phnom Penh	Tel: +855 (78) 961616 Mobile: +855 (23) 890102; 890108 E-mail: <a href="mailto:sovannrathheng@gmail.com">sovannrathheng@gmail.com</a>
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9.	<b>Macau China</b>		
10.	<b>Cook Islands</b>		
11.	<b>Democratic People's Republic</b>		

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	<b>of Korea</b>		
12	<b>Fiji</b>		
13	<b>France:</b>  <b>-New Caledonia</b>  <b>-French Polynesia</b>		
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		Mr. Indu Shekhar Joint General Manager (ATM) Airports Authority of India CHQ Rajiv Gandhi Bhawan, New Delhi	Tel: Fax: E-mail: <a href="mailto:indushekhar@aai.aero">indushekhar@aai.aero</a>
15	<b>Indonesia</b>	Mr. Arian Nurahman Air Navigation Inspector Directorate General of Civil Aviation Karya Building 23rd Floor Ministry of Transportation Jl. Medan Merdeka Barat No. 8	Tel: +62 (21) 350 5550 Ext. 4049, 5143 Mobile: +62 856 95414428 Fax: +62 (21) 350 7569 E-mail: <a href="mailto:arian.nurahman@gmail.com">arian.nurahman@gmail.com</a>
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17	<b>Kiribati</b>		
18	<b>Lao PDR</b>	Mr. Maity Sylithammavoing Dy. Director of ATS Division Lao Air Navigation Services P.O. Box 2985 Wattay International Airport Vientiane	Tel: +856 (21) 512006 Mobile: +8562055414040 Fax: +856(21) 512216 E-mail: <a href="mailto:maitymt1975@gmail.com">maitymt1975@gmail.com</a>
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19	<b>Malaysia</b>	<a href="#">Mior Adli Bin Mior Sallehhuddin</a> <a href="#">Acting Deputy Director CNS</a> <a href="#">Civil Aviation Authority of Malaysia</a> <a href="#">Air Navigation Services Technical</a> <a href="#">Division</a>  <a href="#">Address:</a> <a href="#">Kuala Lumpur Air Traffic Control</a> <a href="#">Centre Complex</a> <a href="#">Aras 1 West Wing Terminal North</a> <a href="#">Jalan CTA3 (KLIA)</a>	<a href="#">Tel : +603 8529 1213</a> <a href="#">Fax : +603 8529 1210</a> <a href="#">E-mail: mior.adli@caam.gov.my</a> <del>Tel : +603 8529 1306</del> <del>Fax : +603 8529 1310</del> <a href="#">E-mail: <del>sahrol@caam.gov.my</del></a>

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No.	States	Name/Title/Address	Tel/Fax/E-mail
		<p><a href="#">Kuala Lumpur International Airport</a> 64000 KLIA, Sepang Selangor, Malaysia</p> <p>Mr. Sahrol Nizam Ab. Rashid Principal Assistant Director Civil Aviation Authority of Malaysia, Air Traffic Management Division, Jalan CTA3 (KLIA), Kuala Lumpur International Airport, 64000 KLIA, Sepang, Selangor Darul Ehsan, Malaysia.</p>	
		<p>Sharudin Bin Hashim Principle Assistant Director Civil Aviation Authority of Malaysia Air Navigation Services Technical Division</p> <p>Address: <a href="#">Kuala Lumpur Air Traffic Control Centre Complex</a> <a href="#">Aras 1 West Wing Terminal North</a> <a href="#">Jalan CTA3 (KLIA)</a> <a href="#">Kuala Lumpur International Airport</a> 64000 KLIA, Sepang Selangor, Malaysia</p> <p>Ms. Dayang Zarina Abang Alli Deputy Director Civil Aviation Authority of Malaysia, Kuala Lumpur Air Traffic Control Centre, Jalan CTA3 (KLIA), Kuala Lumpur International Airport, 64000 KLIA, Sepang, Selangor Darul Ehsan, Malaysia.</p>	<p>Tel : +603 8529 1208 Fax : +603 8529 1210 E-mail: <a href="mailto:sharudin@caam.gov.my">sharudin@caam.gov.my</a> Tel : +603-8529 1204 Mobile : +60 13 864 5376 Fax : +603 8529 1210 E-mail: <a href="mailto:dygzarina@caam.gov.my">dygzarina@caam.gov.my</a></p>
20	<b>Maldives</b>	<p>Mr. Ishag Abdulla Associate General Manager Maldives Airports Co., Ltd Velana International Airport Hulhule 22000</p>	<p>Tel: +960 795 7235 Fax: E-mail: <a href="mailto:ishag@macl.aero">ishag@macl.aero</a></p>
21	<b>Marshall Islands</b>		
22	<b>Micronesia (Federated States of)</b>		
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No.	States	Name/Title/Address	Tel/Fax/E-mail
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		Mr. Aung Zaw Thein Assistant General Manager (ATM) Department of Civil Aviation, Myanmar	Tel: +95 (1) 533 268 Fax: +95 (1) 533 016 E-mail: <a href="mailto:azawthein@gmail.com">azawthein@gmail.com</a>
25	<b>Nauru</b>		
26	<b>Nepal</b>	Mr. Hansha Raj Pandey Director, CNS Planning & Development Department Head Office, Babarmahal Kathmandu	Tel: +977 (1) 424 9379 Fax: +977 (1) 426 2516 E-mail: <a href="mailto:hrp@caanepal.org.np">hrp@caanepal.org.np</a> <a href="mailto:cnsatm@mos.com.np">cnsatm@mos.com.np</a>
27	<b>New Zealand</b>	Mr. Paul Radford Oceanic Systems Manager Airways New Zealand P.O. Box 53093 Auckland Airport, Auckland 2150	Tel: +64 (9) 257 7508 Mobile: +64 21 334 2150 E-mail: <a href="mailto:Paul.Radford@airways.co.nz">Paul.Radford@airways.co.nz</a>
28	<b>Pakistan</b>	Mr. Muhammad Imran Sr. Joint Director (ATS) Ops. Directorate HQCAA, Karachi	Tel: +92-21-99072282 Mobile +92-3002278641 Email <a href="mailto:Muhhammad_imran@caapakistan.com.pk">Muhhammad_imran@caapakistan.com.pk</a>
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		Ms. Kaniz Fatima Sr. Asst. Director (CNS/ATM) CNS Directorate HQCAA, Karachi	Tele +92-21-99072213 Mobile +92-3456136023 Email <a href="mailto:kaniz.Fatima@caapakistan.com.pk">kaniz.Fatima@caapakistan.com.pk</a>
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30	<b>Papua New Guinea</b>		
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		Mr. Gilmar D Tiro CNS Systems Officer IV Air Navigation Service/ATM Centre Civil Aviation Authority of the Philippines Old Mia Road, Ninoy Aquino Avenue Pasay City, Metro Manila 1300	Tel: +63 (2) 672 7729 Fax: E-mail: <a href="mailto:gilmar.tiro@gmail.com">gilmar.tiro@gmail.com</a>

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32	<b>Republic of Korea</b>		
33	<b>Samoa</b>		
34	<b>Singapore</b>	Mr. Joe Chua Wee Jui Chief (Systems Planning) Air Traffic Services Division Civil Aviation Authority of Singapore P.O. Box 1	Tel: +65 8518 6300 Fax: E-mail: <a href="mailto:joe_chua@caas.gov.sg">joe_chua@caas.gov.sg</a>
35	<b>Solomon Islands</b>		
36	<b>Sri Lanka</b>		
37	<b>Thailand</b>	Mr. Sarawoot Rungruengwajiake Air Navigation Services Standards Officer Civil Aviation Authority of Thailand	Tel: +66 (2) 568 8800 Ext. 2510 Fax: +66 (2) 568 8847 Email: <a href="mailto:sarawoot.r@caat.or.th">sarawoot.r@caat.or.th</a>
		Mrs. Pantip Changpradit Air Traffic Management Network Manager Aeronautical Radio of Thailand Ltd 02 Ngamduplee Tungmahamek Bangkok 10120 Thailand	Tel: +66 (2) 228 78932 Fax: Email: <a href="mailto:pantip.ch@aerothai.co.th">pantip.ch@aerothai.co.th</a>
38	<b>Timor Leste</b>		
39	<b>Tonga</b>		
40	<b>Tuvalu</b>		
41	<b>USA</b>	Mr. Braks Etta Senior FAA/ATO Representative Asia Pacific 27 Napier Road Singapore 258508	Tel: +65 6476 9170 Fax: E-mail: <a href="mailto:braks.etta@faa.gov">braks.etta@faa.gov</a>
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		Mr. Vu Ngoc Tuan CNS Officer, Air Navigation Dept. Civil Aviation Authority of Viet Nam No. 199 Nguyen Son Street Long Bien District, Hanoi City	Tel: +84 (24) 3872 0199 Email: <a href="mailto:vungoctuan@caa.gov.vn">vungoctuan@caa.gov.vn</a>

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35	<b>Solomon Islands</b>		
36	<b>Sri Lanka</b>		
37	<b>Thailand</b>	Mr. Sarawoot Rungruengwajiake Air Navigation Services Standards Officer Civil Aviation Authority of Thailand	Tel: +66 (2) 568 8800 Ext. 2510 Fax: +66 (2) 568 8847 Email: <a href="mailto:sarawoot.r@caat.or.th">sarawoot.r@caat.or.th</a>
		Mrs. Pantip Changpradit Air Traffic Management Network Manager Aeronautical Radio of Thailand Ltd 02 Ngamduplee Tungmahamek Bangkok 10120 Thailand	Tel: +66 (2) 228 78932 Fax: Email: <a href="mailto:pantip.ch@aerothai.co.th">pantip.ch@aerothai.co.th</a>
38	<b>Timor Leste</b>		
39	<b>Tonga</b>		
40	<b>Tuvalu</b>		
41	<b>USA</b>	Mr. Braks Etta Senior FAA/ATO Representative Asia Pacific 27 Napier Road Singapore 258508	Tel: +65 6476 9170 Fax: E-mail: <a href="mailto:braks.etta@faa.gov">braks.etta@faa.gov</a>
42	<b>Vanuatu</b>		
43	<b>Viet Nam</b>	Mr. Nguyen Hong Hiep, IT team leader, CNS dept/VATM 119, Nguyen Son street Long Bien District, Ha Noi City	Tel: +84 (24) 38 723 600 Fax: +84 (24) 38 274 194 Email: <a href="mailto:guyenhonghiepbk@vatm.vn">guyenhonghiepbk@vatm.vn</a>
		Mr. Vu Ngoc Tuan CNS Officer, Air Navigation Dept. Civil Aviation Authority of Viet Nam No. 199 Nguyen Son Street Long Bien District, Hanoi City	Tel: +84 (24) 3872 0199 Email: <a href="mailto:vungoctuan@caa.gov.vn">vungoctuan@caa.gov.vn</a>

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**TABLE CNS II-2 - REQUIRED ATN INFRASTRUCTURE ROUTING PLAN**

EXPLANATION OF THE TABLE

*Column*

- |   |   |
|---|---|
| 1 | Name of the Administration and Location of the ATN Router   |
| 2 | Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1) |
| 3 | Bandwidth: Link Speed expressed in bits per second (bps)  |
| 4 | Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)                                     |
| 5 | Type of services being transported on the linkie<br>AFTN/AMHS/Voice/Met/Radar   |
| 6 | Contract Types (CRV/MPLS/VPN/Dedicated Circuit)   |

Status from AMC									
Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Met/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS	
Administration/ State	City/Location	Administration/ State	City/Location						
1	2	3	4	5	6	7	8	9	
Afghanistan	Kabul (OAKB)	Pakistan							
American Samoa	Pago Pago	United States	Salt Lake City	64K	IP	AFTN/MET	VPN		
Australia	Brisbane	Fiji	Nadi						
		Indonesia							
		Japan							
		Papua New Guinea		64K	IP	AMHS	VPN		
		New Zealand	Christchurch	64K	IP	AMHS	CRV	Primary	
		New Zealand	Auckland	64K	IP	Voice	CRV	Primary	
		Singapore							
		South Africa							
		United States	Oakland	64K	IP	Voice	CRV		
		United States	Salt Lake City	64K	IP	AMHS	CRV	Primary	
	United States	Atlanta	64K	IP	AMHS	CRV	Backup		
	Melbourne	Fiji							
		Indonesia							
		Japan							
		Papua New Guinea		64K	IP	AMHS	VPN		
		New Zealand							
		Singapore							
		South Africa							
United States (Salt Lake City)			64K	IP	AMHS	CRV			
Bangladesh	Dhaka	India							
		Thailand							
Bhutan	Bhutan	India							
Paro	Paro								
Brunei Darussalam	Brunei Darussalam	Malaysia							
Brunei	Brunei	Singapore							
Cambodia	Cambodia	Thailand							
Phnom Penh	Phnom Penh								
China	China	DPR Korea							
Beijing	Beijing	Hong Kong, China							
		India							
		Japan							
		Kuwait							
		Macau, China							

Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Mer/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS
Administration/ State	City/Location	Administration/ State	City/Location					
1	2	3	4	5	6	7	8	9
		Mongolia						
		Myanmar						
		Nepal						
		Pakistan						
		Republic of Korea						
		Russian Federation						
		Thailand						
		Vietnam						
Taipei	Taipei	Hong Kong, China						
		Japan						
<b>Hong Kong, China</b>	<b>Hong Kong, China</b>	China	Beijing	2M	IP	AMHS	CRV	Share 2M bandwidth
			Guangzhou	2.4K	Async Serial	AFTN	Dedicated Circuit	
			Haikou	2.4K	Async Serial	AFTN	Dedicated Circuit	
		Japan	Fukuoka	2M	IP	AMHS	CRV	Share 2M bandwidth
		Philippines	Manila	2M	IP	AMHS	CRV	Share 2M bandwidth
				112K	IP	Voice	CRV	Guarantee 112K bandwidth on 2M CRV
		Taipei	Taipei	2M	IP	AMHS	CRV	Share 2M bandwidth
				448K	IP	Voice	CRV	Guarantee 448K bandwidth on 2M CRV
		Thailand	Bangkok	2M	IP	AMHS	CRV	Share 2M bandwidth
		Macau, China	Macau	64K	CLNP/X.25	AMHS	Dedicated Circuit	
		Viet Nam	Ho Chi Minh	2.4K	Async Serial	AFTN	Dedicated Circuit	
<b>Macau, China</b>	<b>Macau, China</b>	China						
		Hong Kong, China						
<b>Cook Island: Rarotonga</b>	<b>Cook Island: Rarotonga</b>	New Zealand						
<b>DPR Korea Pvongyang</b>	<b>DPR Korea Pvongyang</b>	China						

Status from AMC								
Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Me (Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS
Administration/ State	City/Location	Administration/ State	City/Location					
1	2	3	4	5	6	7	8	9
Fiji Nadi	Fiji Nadi	Australia	Brisbane	64K	IP	Voice & AMHS	CRV	
		Kiribati	Bonriki	Internet	IP	Voice & AMHS	VPN	
		New Caledonia	Tontouta	Internet	IP	Voice & AMHS	VPN	
		Tuvalu	Funafuti	IDD-Tel	PSTN	Voice	PSTN	Telephone IDD
		United States	Oakland	64K	IP	Voice	CRV	
		United States	Salt Lake City	64K	IP	AMHS	CRV	Primary
		United States	Atlanta	64K	IP	AMHS	CRV	Backup
		Wallis Islands	Wallis	Internet	IP	Voice & AMHS	VPN	
French Polynesia Papeete (NTAA)	French Polynesia Papeete (NTAA)	New Zealand		64K	IP	AFTN/MET	VPN	
India Mumbai	India Mumbai	Bangladesh						
		Bhutan						
		China						
		Kenya						
		Nepal						
		Oman						
		Pakistan						
		Singapore						
		Sri Lanka						
		Thailand						
		Nairobi						
Indonesia Jakarta	Indonesia Makassar Jakarta Makassar	Australia		2M	IP	AFTN/MET	MPLS?	
		Singapore		128K	IP	AMHS/MET	CRV	
		United States	Oakland	64K	IP	Voice	CRV	
Japan Tokyo	Japan Tokyo/Fukuoka	Australia						
		China						
		Hong Kong, China						
		Europe						
		Republic of Korea						
		Russia Federation						
		Singapore						
		Taipei						
		United States	Oakland	64K	IP	Voice	CRV	

Status from AMC									
Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Met/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS	
Administration/ State	City/Location	Administration/ State	City/Location						
1	2	3	4	5	6	7	8	9	
Kiribati Tarawa (NGTT)	Kiribati Tarawa (NGTT)	United States	Salt Lake City	64K	IP	AMHS	CRV	Primary	
		United States	Atlanta	64K	IP	AMHS	CRV	Backup	
		Fiji							
Lao PDR Vientiane	Lao PDR Vientiane	Thailand							
		Viet Nam							
Malaysia Kuala Lumpur	Malaysia Kuala Lumpur	Brunei							
		Singapore							
		Thailand							
Maldives Male (VRMM)	Maldives Male (VRMM)	Sri Lanka							
Marshall Islands Majuro (PKMI)	Marshall Islands Majuro (PKMI)	United States		64K	IP	AFTN/MET	VPN		
Micronesia Federated State of Chuuk (PTKK) Kosrae (PTSA) Ponapei (PTPN) Yap (PTYA)	Micronesia Federated State of Chuuk (PTKK) Kosrae (PTSA) Ponapei (PTPN) Yap (PTYA)	United States	Salt Lake City	64K	IP	AFTN/MET	VPN		
			Salt Lake City	64K	IP	AFTN/MET	VPN		
		United States	Salt Lake City	64K	IP	AFTN/MET	VPN		
		United States	Salt Lake City	64K	IP	AFTN/MET	VPN		
		United States	Salt Lake City	64K	IP	AFTN/MET	VPN		
Mongolia Ulanbaatar	Mongolia Ulanbaatar	China							
Myanmar Yangon	Myanmar Yangon	China							
		Thailand							
Nepal Kathmandu	Nepal Kathmandu	China							
		India							
New Caledonia Noumea (NWWW)	New Caledonia Noumea (NWWW)	Fiji							
New Zealand Christchurch	New Zealand Christchurch	Australia							
		Cook Is.							
		French Polynesia							
		Samoa							
		Tonga							
		United States	Oakland	64K	IP		Voice	CRV	
		United States	Salt Lake City	64K	IP		AMHS	CRV	Primary
United States	Atlanta	64K	IP		AMHS	CRV	Backup		

Status from AMC

Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Met/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS
Administration/ State	City/Location	Administration/ State	City/Location					
1	2	3	4	5	6	7	8	9
New Zealand Auckland	New Zealand Auckland	Australia			IP	Voice	CRV	
		Cook Is.			IP	Voice	PASNET	
		Fiji			IP	Voice	CRV	
		Samoa			IP	Voice	PASNET	
		Tonga			IP	Voice	PASNET	
		United States	Oakland	64K	IP	Voice	CRV	
Pakistan Karachi	Pakistan Karachi	Afghanistan						
		China						
		India						
		Oman						
		Iran						
		Kuwait						
Papua New Guinea	Papua New Guinea	Australia		64K	IP	AMHS	CRV	
		United States (Oakland)		64K	IP	Voice	CRV	
Philippine:	Philippine:	Hong Kong, China		2 M	IP	AMHS	CRV	
		Singapore		2 M	IP	AMHS	CRV	
		United States	Oakland	64K	IP	Voice	CRV	
		United States	Salt Lake City	64K	IP	AMHS	CRV	Primary
		United States	Atlanta	64K	IP	AMHS	CRV	Backup
Republic of Korea Seoul	Republic of Korea Seoul	China						
		Japan		2 M	IP	AMHS	CRV	
Samoa Ealeolo (NSEA)	Samoa Ealeolo (NSEA)	New Zealand		1.1 Mb	IP	AFTN/MET	VPN	
Singapore Singapore	Singapore Singapore	Australia		2 M	IP	AMHS	CRV	
		Bahrain						
		Brunei						
		India						
		Indonesia						
		Japan						
		Malaysia						
		Philippines						
		Sri Lanka						
		Thailand						
		United Kingdom						
Viet Nam								

Status from AMC								
Local		Remote		Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Met/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS
Administration/ State	City/Location	Administration/ State	City/Location					
1	2	3	4	5	6	7	8	9
Sri Lanka Colombo	Sri Lanka Colombo	India						
		Maldives						
		Singapore						
Thailand Banekol	Thailand Banekol	Bangladesh						
		Cambodia						
		China						
		Hong Kong, China						
		India						
		Italy						
		Lao PDR.						
		Malaysia						
		Myanmar						
		Singapore						
		Viet Nam						
Tonga Tongatapu (NETE)	Tonga Tongatapu (NETE)	New Zealand		85K	IP	AFTN/MET	VPN	
Tuvalu Faleolo	Tuvalu Faleolo	Fiji		64K	IP	AFTN/MET	VPN	
United States Salt Lake City	United States Salt Lake City with Atlanta as backup (CRV Package C/2MB at SLC and ATL)	Australia		64K	IP	AMHS	CRV	
		Australia		64K	IP	AMHS	VPN	BACKUP
		American Samoa	Pago Pago	64K	IP	AFTN/MET	VPN	
		Fiji		64K	IP	AMHS	CRV	
		Japan		64K	IP	AMHS	CRV	
		Marshall Islands		64K	IP	AFTN/MET	VPN	
		Micronesia, Federated State of		64K	IP	AFTN/MET	VPN	
		New Zealand		64K	IP	AMHS	CRV	
		Philippines		64K	IP	AMHS	CRV	
United States Oakland	United States Oakland (CRV Package A/2MB)	Fiji (Nadi)		64K	IP	Voice	CRV	
		Indonesia (Makassar)		64K	IP	Voice	CRV	
		Japan (Fukuoka)		64K	IP	Voice	CRV	

Status from AMC								
Local		Remote						
Administration/ State	City/Location	Administration/ State	City/Location	Bandwidth (bps)	Network Protocol (IP/X.25/Non Protocol)	Type of Service (AFTN/AMHS/Voice/Met/Radar)	Contract Types (CRV/MPLS/VPN/Dedicated Circuit)	REMARKS
1	2	3	4	5	6	7	8	9
		New Zealand		64K	IP	Voice	CRV	
		Papua New Guinea		64K	IP	Voice	CRV	
		Philippines (Manila)		64K	IP	Voice	CRV	
Viet Nam Ho Chi Minh/Hanoi	Viet Nam Ho Chi Minh/Hanoi	Hong Kong, China						
		Lao PDR.						
		Singapore						
		Thailand						
Wallis Islands (NLWW)	Wallis Islands (NLWW)	Fiji		64K	IP	AFTN/MET	VPN	

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**Still have plan information in AMC**

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark	Last update in AMC
China Beijing	BBIS	Inter-Regional	Kuwait	64000 bps	X.25		Router Implemented	
	BIS	Intra-Regional	Myanmar	64000 bps	IPS		Implementation on going/Plan Q4/15	
	BIS	Intra-Regional	Mongolia	9600 bps	X.25		Router Implemented	
	BBIS	Inter-Regional	Russian Federation	64000 bps	X.25		Router Implemented	
<b>Hong Kong, China</b>	<b>BIS</b>	<b>Intra-Regional</b>	<b>Viet Nam</b>	<b>2 M</b>	<b>IPS</b>	<b>CRV</b>	<b>Plan to implement by 2023. Share 2M bandwidth</b>	
India, Mumbai	BBIS	Intra-Regional	Nairobi	64000 bps	IPS			
Lao PDR Vientiane	BIS	Intra-Regional	Viet Nam	9600 bps	X.25			
Malaysia Kuala Lumpur	BIS	Intra-Regional	Brunei	2 M	IPS			
	BIS	Intra-Regional	Singapore	2 M	IPS	CRV	Scheduled for Q3/2022	29042022
Myanmar Yangon	BIS	Intra-Regional	China	64000 bps	IPS			
Singapore Singapore	BIS	Intra-Regional	Malaysia	2 M	IPv4	CRV	Scheduled for Q3/2022	29042022
Thailand Bangkok	BIS	Intra-Regional	Viet Nam	64000 bps	IPv4	VSAT	Plan to implement in Q3/2023	from Thailand
Viet Nam Ho Chi Minh/Hanoi	BIS	Intra-Regional	Hong Kong, China	64000 bps	X.25	DDN	TBD	
	BIS	Intra-Regional	Lao PDR.	9600 bps	X.25			
	BIS	Intra-Regional	Thailand	64000 bps	IPv4	VSAT	Plan to implement in Q3/2023	from Thailand

15-Jan-23

Red character is present status in AMC

**No Plan information in AMC**

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
Afghanistan Kabul (OAKB)	BIS	Intra-Regional	Pakistan	64000bps	VPN		Intra-domain
	BIS	Inter-Regional	Iran	50	AFTN		
Australia Brisbane	BBIS	Intra-Regional	Japan	64000 bps	IPS/IP-SNDCF	VPN	Not implemented
	BBIS	Inter-Regional	South Africa	64000 bps	TBD		Not implemented
Brunei Darussalam Brunei	BIS	Intra-Regional	Singapore	9600 bps	IPv4	DDN	ATN/AMHS trial commence on 2017
China Beijing	BIS	Intra-Regional	Vietnam	9600 bps	X.25		
Cook Islands Rarotonga			New Zealand	796 kbps	IPS		Intra-domain
DPR Korea Pyongyang	BIS	Intra-Regional	China	9600 bps	X.25		
Fiji Nadi	BIS	Intra-Regional	Kiribati	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
	BIS	Intra-Regional	New Caledonia	64000 bps	IPS (IPv4)	DDN	Intra-domain - Implementation 2016 Connect with Wallis
	BIS	Intra-Regional	Tuvalu	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
	BIS	Intra-Regional	Wallis Islands	Internet	IPv4	VPN	Connect with New Caledonia - Implemente in 2016
French Polynesia Papeete (NTAA)			New Zealand	64000 bps	IPS		Intra-domain
Indonesia Jakarta	BIS	Intra-Regional	Australia	64000bps	IPS		Not Implemented
Japan	BBIS	Intra-Regional	Australia	64000 bps	IPS/IP-SNDCF	VPN	Schedule after CRV
	BBIS	Inter-Regional	Europe	64000 bps	IP SNDCF	DDN/ TBD	

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**No Plan information in AMC**

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
Tokyo	BBIS	Inter-Regional	Europe	64000 bps	IP-SNDCF	VPN	TBD
	BIS	Intra-Regional	Republic of Korea	64000 bps	IPS(IPv4)	VPN	Implement from 2016 onwards Scheduled after CRV
	BBIS	Inter-Regional	Russia Federation	64000 bps	IP-SNDCF	DDN/VPN	TBD
<b>Kiribati</b> Tarawa (NGTT)	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
<b>Maldives</b> Male (VRMM)	BIS	Intra-Regional	Sri Lanka	64000 bps	X.25		
<b>Marshall Islands</b> Majuro (PKMJ)	BIS	Inter-Regional	United States	64000 bps	IP		VPN over Internet Intro-domain
<b>Micronesia</b> <b>Federated State of</b> Chuuk (PTKK) Kosrae (PTSA) Ponapei (PTPN) Yap (PTYA)	BIS	Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
<b>Nepal</b> Kathmandu	BIS	Intra-Regional	China	9600bps	X.25		Router Implemented
<b>New Caledonia</b> Noumea (NWWW)			Fiji	64000 bps	IPS (IPv4)	DDN	Intra-domain - Implementation 2016 Connect with Wallis
<b>New Zealand</b> Christchurch			Cook Is.	2.4 K	IPS		Intra-domain
			French Polynesia	64000 bps	IPS		Intra-domain
			Samoa	2.4 K	IPS		Intra-domain
			Tonga	85000 bps	IPS		Intra-domain
<b>Pakistan</b> Karachi	BIS	Intra-Regional	Afghanistan	64000 bps	IPS		
	BIS	Intra-Regional	China	64000 bps	X.25		
	BIS	Inter-Regional	Oman	64000 bps	-		

**No Plan information in AMC**

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BIS	Inter-Regional	Iran	64000 bps	-		
<b>Republic of Korea</b> Seoul	BIS	Intra-Regional	Japan	64000 bps	IPS(IPv4)	VPN	Implementation from 2016 onwards scheduled after CRV
<b>Samoa</b> Faleolo (NSFA)			New Zealand	1.1 Mb	IPS		Intra-domain
<b>Singapore</b> Singapore	BIS	Intra-Regional	Brunei	9600 bps	IPv4	DDN	ATN/AMHS trial commence on 2017
<b>Sri Lanka</b> Colombo	BIS	Intra-Regional	Maldives	64000 bps	X.25		TBD
<b>Tonga</b> Tongatapu (NFTF)	BIS	Intra-Regional	New Zealand	85000 bps	IPS		Intra-domain
<b>Tuvalu</b> Faleolo	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation Q3 2015
<b>United States</b> Salt Lake City			American Samoa		IP		Intra-domain
		Intra-Regional	Marshall Islands	64000 bps	IP		Intra-domain/Internet
		Intra-Regional	Micronesia, Federated State of	64000 bps	IP		Intra-domain
<b>Viet Nam</b> Ho Chi Minh/Hanoi	BIS	Intra-Regional	Singapore	9600 bps	X.25	DDN	ATN/AMHS trial planned to completed by end 2015
<b>Wallis Islands</b> (NLWW)	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Connect with New Caledonia - Implemente in 2016

**TABLE CNS II-2 - REQUIRED ATN INFRASTRUCTURE ROUTING PLAN**

EXPLANATION OF THE TABLE

*Column*

- 1 Name of the Administration and Location of the ATN Router
- 2 Type of Router (in end systems (ES) of the Administration shown in column 1)
- 3 Type of Interconnection:  
  
Inter-Regional: Connection between different Regions/ domains  
Intra-Regional: Connection within a Region/ domain.
- 4 Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1)
- 5 Bandwidth: Link Speed expressed in bits per second (bps)
- 6 Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)
- 7 Via: The media used to implement the interconnection of the routers. (in case of IP service bought from a service provider, indicate VPN)  
  
DDN (public telecomm leased line)  
VSAT  
VPN
- 8 Remarks

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
Afghanistan Kabul	BIS	Intra-Regional	Pakistan	64000bps	IPS		Intra-domain
	BIS	Inter-Regional	Iran	9600 bps	IPS		
American Samoa Pago Pago			United States				Intra-domain
Australia Brisbane	BBIS	Intra-Regional	Fiji	64000 bps	CLNP/IP-SNDCF (IPv4)	DDN	Implemented
	BIS	Intra-Regional	Indonesia	64000 bps	IPS		Not implemented
	BBIS	Intra-Regional	Japan	64000 bps	IPS/IP-SNDCF	VPN	Not implemented
	BIS	Intra-Regional	New Zealand	64000 bps	IPS	VPN	Not implemented
	BBIS	Intra-Regional	Singapore	64000 bps	CLNP/IP-SNDCF	DDN	ATN/AMHS trial planned to completed by end 2015
	BBIS	Inter-Regional	South Africa	64000 bps	TBD		Not implemented
	BBIS	Inter-Regional	United States	64000 bps	DDN lease line/IPS		
Bangladesh Dhaka	BIS	Intra-Regional	India	64000 bps	IPS		Implemented
	BIS	Intra-Regional	Thailand	32000 bps	IPv4	VSAT	Implemented
Bhutan Paro	BIS	Intra-Regional	India	64000 bps	IPS		TBD. Presently using AFTN via VPN through public internet
Brunei Darussalam Brunei	BIS	Intra-Regional	Malaysia	64000 bps	IPS		
	BIS	Intra-Regional	Singapore	9600 bps	IPv4	DDN	ATN/AMHS trial commence on 2017
Cambodia Phnom Penh	BIS	Intra-Regional	Thailand	64000 bps	IPv4	VSAT	Implemented
China Beijing	BIS	Intra-Regional	DPR Korea	9600 bps	X.25		Router Implemented
	BBIS	Intra-Regional	Hong Kong, China	64000 bps	X.25	DDN	Router Implemented
	BBIS	Intra-Regional	India	64000 bps	X.25/IPS	DDN	IOT/POT completed. - Migrate to IPS
	BBIS	Intra-Regional	Japan	64000 bps	IPS/SNDCF	VPN	Implement from 2016 onwards
	BBIS	Inter-Regional	Kuwait	64000 bps	X.25		Router Implemented
	BIS	Intra-Regional	Macau, China	64000 bps	X.25		Implemented
	BIS	Intra-Regional	Mongolia	9600 bps	X.25		Router Implemented

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BIS	Intra-Regional	Myanmar	64000 bps	IPS		Implementation on going/Plan Q4/15
	BIS	Intra-Regional	Nepal	9600 bps	X.25		Router Implemented
	BIS	Intra-Regional	Pakistan	64000 bps	X.25		Router Implemented
	BIS	Intra-Regional	Republic of Korea	64000 bps	X.25		Implemented
	BBIS	Inter-Regional	Russian Federation	64000 bps	X.25		Router Implemented
	BBIS	Intra-Regional	Thailand	64000 bps	CLNP/X.25	DDN	
	BIS	Intra-Regional	Vietnam	9600 bps	X.25		
Taipei	BIS	Intra-Regional	Hong Kong, China	64000 bps	X.25	DDN	TBD
	BIS	Intra-Regional	Japan	64000 bps	IPS	VPN	Implement from 2016 onwards Scheduled after CRV
Hong Kong, China	BBIS	Intra-Regional	China	64000 bps	X.25	DDN	Router Implemented
	BIS	Intra-Regional	Macau, China	64000 bps	X.25	DDN	Implemented
	BBIS	Intra-Regional	Japan	64000 bps	X.25/SNDCF	VPN	Scheduled for Q4/2017
	BIS	Intra-Regional	Philippines	64000 bps	X.25/IPS	DDN	Scheduled for Q4/2016
	BBIS	Intra-Regional	Taipei	64000 bps	X.25	DDN	TBD
	BBIS	Intra-Regional	Thailand	64000 bps	CLNP/X.25	DDN	Implemented
	BIS	Intra-Regional	Viet Nam	64000 bps	X.25	DDN	TBD
Macau, China	BIS	Intra-Regional	China	64000 bps	X.25		Implemented
	BIS	Intra-Regional	Hong Kong, China	64000 bps	X.25	DDN	Implemented
Cook Islands Rarotonga			New Zealand	796 kbps	IPS		Intra-domain
DPR Korea Pyongyang	BIS	Intra-Regional	China	9600 bps	X.25		
Fiji Nadi	BBIS	Intra-Regional	Australia	64000 bps	CLNP/IP-SNDCF (IPv4)	DDN	Implemented
	BIS	Intra-Regional	Kiribati	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
	BIS	Intra-Regional	New Caledonia	64000 bps	IPS (IPv4)	DDN	Intra-domain - Implementation 2016 Connect with Wallis
	BIS	Intra-Regional	Tuvalu	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BBIS	Inter-Regional	United States	9600 bps	CLNP/X.25-SNDCF	DDN	The protocol will upgrade to IPS/SNDCF in 2016
	BIS	Intra-Regional	Wallis Islands	Internet	IPv4	VPN	Connect with New Caledonia - Implemente in 2016
<b>French Polynesia</b> Papeete			New Zealand	64000 bps	IPS		Intra-domain
<b>India</b> Mumbai	BIS	Intra-Regional	Bangladesh	64000 bps	DDN leased line/IPS		Implemented
	BIS	Intra-Regional	Bhutan	64000 bps	IPS		TBD. Presently using AFTN via VPN through public internet
	BBIS	Intra-Regional	China	64000 bps	X.25/IPS	DDN	IOT/POT completed. - Migrate to IPS
	BIS	Inter-Regional	Kenya	64000 bps	TBD	TBD	Presently using AFTN via VPN via public internet
	BIS	Intra-Regional	Nepal	64000 bps	IPS		Implemented
	BIS	Inter-Regional	Oman	64000 bps	IPS		IOT completed. POT planned. TMC to be signed
	BIS	Intra-Regional	Pakistan	64000 bps	IPS		IOT/POT completed. TMC to be signed
	BBIS	Intra-Regional	Singapore	64000 bps	X.25	DDN	Implementation Plan Q4/15
	BIS	Intra-Regional	Sri Lanka	64000 bps	IPS	DDN	IOT/POT Ccompleted.
	BBIS	Intra-Regional	Thailand	64000 bps	X.25	DDN	Implemented
<b>Indonesia</b> Jakarta	BBIS	Intra-Regional	Nairobi	64000 bps	IPS		
	BIS	Intra-Regional	Australia	64000bps	IPS		Not Implemented
	BIS	Intra-Regional	Singapore	64000 bps	IPv4	VSAT	ATN/AMHS trial to be completed by end 2015. Implementation Plan O1/16
<b>Japan</b> Tokyo	BBIS	Intra-Regional	Australia	64000 bps	IPS/IP-SNDCF	VPN	Schedule after CRV
	BBIS	Intra-Regional	China	64000 bps	IPS/IP-SNDCF	VPN	Implement from 2016 onwards Schedule after CRV
	BBIS	Intra-Regional	Hong Kong, China	64000 bps	X.25/SNDCF	VPN	Scheduled for Q4/2017
	BBIS	Inter-Regional	Europe	64000 bps	IP-SNDCF	DDN/ VPN	TBD

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BIS	Intra-Regional	Republic of Korea	64000 bps	IPS(IPv4)	VPN	Implement from 2016 onwards Scheduled after CRV
	BBIS	Inter-Regional	Russia Federation	64000 bps	IP-SNDCF	DDN/VPN	TBD
	BBIS	Intra-Regional	Singapore	64000 bps	IPS/SNDCF	DDN	Scheduled for Q1/2018
	BIS	Intra-Regional	Taipei	64000 bps	IPS	VPN	Implement from 2016 onwards Scheduled after CRV
	BBIS	Inter-Regional	United States	64000 bps	X.25-SNDCF	DDN/VPN	Implemented
<b>Kiribati</b> Tarawa	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
<b>Lao PDR</b> Vientiane	BIS	Intra-Regional	Thailand	32000 bps	IPv4	VSAT	Implemented
	BIS	Intra-Regional	Viet Nam	9600 bps	X.25		
<b>Malaysia</b> Kuala Lumpur	BIS	Intra-Regional	Brunei	64000 bps	IPS		
	BIS	Intra-Regional	Singapore	64000 bps	IPv4	VSAT	Scheduled for Q1/2018
	BIS	Intra-Regional	Thailand	64000 bps	IPv4	VSAT	Implemented
<b>Maldives</b> Male	BIS	Intra-Regional	Sri Lanka	64000 bps	X.25		
<b>Marshall Islands</b> Majuro	BIS	Inter-Regional	United States	64000 bps	IP		VPN over Internet Intro-domain
<b>Micronesia</b> <b>Federated State of</b> Chuuk Kosrae Ponapei Yap	BIS	Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
		Inter-Regional	United States	64000 bps	IP	VPN	VPN over Internet/Intra-domain
<b>Mongolia</b> Ulanbaatar	BIS	Intra-Regional	China	9600 bps	X.25		Router Implemented
<b>Myanmar</b> Yangon	BIS	Intra-Regional	China	64000 bps	IPS		

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BIS	Intra-Regional	Thailand	32000 bps	IPv4	VSAT	Implemented
Nepal Kathmandu	BIS	Intra-Regional	China	9600bps	X.25		Router Implemented
	BIS	Intra-Regional	India	64000 bps	IPS		Implemented
New Caledonia Noumea			Fiji	64000 bps	IPS (IPv4)	DDN	Intra-domain - Implementation 2016 Connect with Wallis
New Zealand Christchurch	BIS	Intra-Regional	Australia	64000 bps	IPS	VPN	Not Implemented
			Cook Is.	796 kbps	IPS		Intra-domain
			French Polynesia	64000 bps	IPS		Intra-domain
			Samoa	1.1 Mb	IPS		Intra-domain
			Tonga	85000 bps	IPS		Intra-domain
	BIS	Inter-Regional	USA	64000 bps	IPS		
Pakistan Karachi	BIS	Intra-Regional	Afghanistan	64000 bps	IPS		
	BIS	Intra-Regional	China	64000 bps	X.25		
	BIS	Intra-Regional	India	64000 bps	IPS		IOT/POT completed. TMC to be signed
	BIS	Inter-Regional	Oman	64000 bps	-		
	BIS	Inter-Regional	Iran	64000 bps	-		
	BIS	Inter-Regional	Kuwait	64000 bps	-		
Philippines	BIS	Intra-Regional	Hong Kong, China	64000 bps	X.25/IPS	DDN	Scheduled for Q4/2016
	BIS	Intra-Regional	Singapore	64000 bps	IPv4	DDN	2016
		Intra-Regional	United States	64000 bps	IPS		to be implemented in 2016
Republic of Korea Seoul	BIS	Intra-Regional	China	64000 bps	X.25		Implemented
	BIS	Intra-Regional	Japan	64000 bps	IPS(IPv4)	VPN	Implementation from 2016 onwards scheduled after CRV
Samoa Faleolo			New Zealand	1.1 Mb	IPS		Intra-domain
Singapore Singapore	BBIS	Intra-Regional	Australia	64000 bps	CLNP/IP-SNDCF	DDN	ATN/AMHS trial planned to completed by end 2015
	BBIS	Inter-Regional	Bahrain	64000 bps	IPv4	DDN	

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
	BIS	Intra-Regional	Brunei	9600 bps	IPv4	DDN	ATN/AMHS trial commence on 2017
	BBIS	Intra-Regional	India	64000 bps	X.25	DDN	Implemented
	BIS	Intra-Regional	Indonesia	64000bps	IPv4	VSAT	ATN/AMHS trial to be completed by end 2015. Implementation Plan Q1/16
	BBIS	Intra-Regional	Japan	64000 bps	IPS/SNDCF	DDN	ATN/AMHS trial commence on 2017 Scheduled for Q1/2018
	BIS	Intra-Regional	Malaysia	64000 bps	IPv4	VSAT	Scheduled for Q1/2018
	BIS	Intra-Regional	Philippines	64000 bps	IPv4	DDN	2016
	BIS	Intra-Regional	Sri Lanka	64000 bps	IPv4	DDN	Implementation Plan Q1/16
	BBIS	Intra-Regional	Thailand	64000 bps	CLNP/X.25	DDN	Implemented
	BBIS	Inter-Regional	United Kingdom	128000 bps	IPv4	VPN	Implemented
	BIS	Intra-Regional	Viet Nam	9600 bps	X.25	DDN	ATN/AMHS trial planned to completed by end 2015
<b>Sri Lanka</b> Colombo	BIS	Intra-Regional	India	64000 bps	IPS	DDN	Implementation Plan Q4/15
	BIS	Intra-Regional	Maldives	64000 bps	X.25		TBD
	BIS	Intra-Regional	Singapore	64000 bps	IPv4	DDN	Implementation Plan Q1/16
<b>Thailand</b> Bangkok	BIS	Intra-Regional	Bangladesh	32000 bps	IPv4	VSAT	Implemented
	BIS	Intra-Regional	Cambodia	64000 bps	IPv4	VSAT	Implemented
	BBIS	Intra-Regional	China	64000 bps	CLNP/X.25	DDN	
	BBIS	Intra-Regional	Hong Kong, China	64000 bps	CLNP/X.25	DDN	Implemented
	BBIS	Intra-Regional	India	64000 bps	X.25	DDN	Implemented
	BBIS	Inter-Regional	Italy	64000 bps	IPv4	DDN	
	BIS	Intra-Regional	Lao PDR.	32000 bps	IPv4	VSAT	Implemented
	BIS	Intra-Regional	Malaysia	64000 bps	IPv4	VSAT	Implemented
	BIS	Intra-Regional	Myanmar	32000 bps	IPv4	VSAT	Implemented
	BBIS	Intra-Regional	Singapore	64000 bps	CLNP/X.25	DDN	Implemented
	BIS	Intra-Regional	Viet Nam	64000 bps	IPv4	VSAT	
<b>Tonga</b> Tongatapu	BIS	Intra-Regional	New Zealand	85000 bps	IPS		Intra-domain

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Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remark
1	2	3	4	5	6	7	8
Tuvalu Faleolo	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Intra-domain (User Agent) - Implementation O3 2015
United States Salt Lake City	BBIS	Inter-Regional	Australia	64000 bps	IPS		
			American Samoa				Intra-domain
	BBIS	Inter-Regional	Fiji	9600 bps	CLNP/X.25-SNDCF	DDN	The protocol will upgrade to IPS/SNDCF in 2016
	BBIS	Inter-Regional	Japan	64000 bps	X.25-SNDCF	DDN/ VPN	Implemented
		Intra-Regional	Marshall Islands	64000 bps	IP		Intra-domain/Internet
		Intra-Regional	Micronesia, Federated State of	64000 bps	IP		Intra-domain
	BIS	Inter-Regional	New Zealand	64000 bps	IPS		Implemented
		Intra-Regional	Philippines	64000 bps	IP		to be implemented in 2016
Viet Nam Ho Chi Minh/Hanoi	BIS	Intra-Regional	China	9600 bps	X.25		
	BIS	Intra-Regional	Hong Kong, China	64000 bps	X.25	DDN	TBD
	BIS	Intra-Regional	Lao PDR.	9600 bps	X.25		
	BIS	Intra-Regional	Singapore	9600 bps	X.25	DDN	ATN/AMHS trial planned to completed by end 2015
	BIS	Intra-Regional	Thailand	64000 bps	IPv4	VSAT	
Wallis Islands	BIS	Intra-Regional	Fiji	Internet	IPv4	VPN	Connect with New Caledonia - Implemente in 2016

### NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

1. The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

a) <del>Text to be deleted is shown with a line through it.</del>	text to be deleted in
b) New text to be inserted is highlighted with grey shading.	new text to be inserted in
c) <del>Text to be deleted is shown with a line through it</del> followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

### REVISED TERMS OF REFERENCE FOR AERONAUTICAL COMMUNICATION SERVICES IMPLEMENTATION CO-ORDINATION GROUP (ACSICG)

The Objectives of the APAC ACSICG are to:

- 1) Complete implementation of Asia and Pacific **Regions** (APAC) Aeronautical Telecommunication Network (ATN) and voice/data service to support the evolving ICAO operational requirements for the dynamic exchange and management of aeronautical information.
- 2) Ensure continuous and coherent development of the aeronautical communication services and infrastructure of the Asia/Pacific Regional Air Navigation Plan (APAC ANP) in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs, the Global Air Navigation Plan and the Global Aviation Safety Plan.
- 3) Facilitate the implementation, enhancements, operation and maintenance of aeronautical communication services and infrastructure identified in the Aviation System Block Upgrades (ASBU) elements and Asia/Pacific Seamless Air Navigation Service (ANS) Plan (APSAP) elements using the project management principles where appropriate.
- 4) Review, identify and address major issues in technical, operational, safety and regulatory aspects to facilitate the implementation or provision of safe, secure, efficient and orderly aeronautical communication services to enhance systems robustness, resilience, interoperability and cybersecurity.
- 5) Encourage collaboration among ANSPs and keep abreast of the latest developments in aeronautical communication services and infrastructure to cope with forthcoming development and implementation so as to reduce operating costs and enable quick implementation of new requirements to cope with new challenges.

#### **Deliverables to meet the Objectives:**

- 1) To submit progress report to the ICAO APAC CNS Sub-group while keeping ATM Sub-group, MET Sub-group informed of addressing the APAC ACSICG deliverables (listed in 2 to 7 below);

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- 2) To support the ICAO in making specific recommendations and developing guidance materials, such as general/specific regional requirements, which aim at facilitating the implementation or provision of safe, secure and performance based aeronautical communication services by the use of existing and/or new procedures, facilities and technologies;
- 3) To review outcome of the AN-Conf., DGCA Conference, APANPIRG and its contributory bodies, ~~CNS Sub-group, ATM Sub-group, MET Sub-group, RASMAG, FIT Asia, SWIM TF and ATMAS TF~~ related to aeronautical communication services and infrastructure, revise and update a tasks list and action items for the ACSICG;
- 4) To facilitate and coordinate the implementations of aeronautical communication services and infrastructures within the Asia/Pacific Regions to support existing and evolving aeronautical applications, including
  - inter-facility communications,
  - datalink implementations,
  - air/ground communications
  - ground/ground communications
  - etc.
- 5) To Monitor the progress of aeronautical communication service and infrastructure implementation and provide regular updates ~~to stakeholders~~.
- 6) To provide guidance on the implementation of aeronautical communication services in accordance with relevant standards and regulations, facilitate sharing of information and recommend the best industry practice to Asia/Pacific States and aviation stakeholders on the progress of the development, standardization, and implementation of ICAO provisions<sup>2</sup> relating to aeronautical communication services and infrastructures.
- 7) To encourage research and development, trials and demonstrations of applications and technologies, and, as necessary, steer for the sharing of this information and expertise between States/Administrations through organizing educational seminars and symposia to educate States/Administrations and airspace users;
- 8) To formulate draft Conclusions and Decisions relating to matters in the field of aeronautical communication services that come within the scope of the ~~APANPIRG, CNS Sub-group, ATM Sub-group, and RASMAG~~ work plan;
- 9) To develop Asia/Pacific regional input and suggestions relating to the implementations and global standardization of aeronautical communication services and infrastructures to be submitted through the CNS Sub-group for APANPIRG consideration and endorsements, in support of ICAO technical panels' developments and implementations of ICAO SARPs; and
- 10) To collaborate with relevant international organizations (such as EUROCONTROL) for harmonisation of aeronautical communication services and infrastructures requirements.

**Timeframe for Deliverables:**

For deliverable items, the guidance materials and progress reports would be developed, updated/enhanced on an on-going basis and be made available as appropriate subject to review by the ACSICG. The life time of the ACSICG would be subject to review against the implementation and operation of all identified aeronautical communication services.

**Meeting:**

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*The APAC ACSICG shall convene annually, to review progress and address any issues that arise during implementation, at least one face-to-face meeting per year, which is supplemented by teleconference meetings (e.g. MS Teams, ZOOM or WebEx) as appropriate.*

**Membership:**

*All APAC member States/Administrations providing air navigation services in the Asia and Pacific Regions. APAC members should nominate Subject Matter Experts from Civil Aviation Authorities, ANSPs, and other organizations with strong background in engineering and operation in relation to aeronautical communication services and infrastructures requirements to participate into the ACSICG. The ACSICG would also invite representatives of International Organizations recognized by the ICAO Council *and Industry partners as required by the group which ~~as~~ representing important civil aviation interests to participate in its work in a consultative capacity.**

**Reporting**

*The Group will present its report to APANPIRG through the CNS Sub-group.*

**Note:**

*\*ICAO provisions mainly refer to the following*

*ICAO Annex 10;*

*Doc 9869: Performance-based Communication and Surveillance (PBCS) Manual;*

*Doc 9880: Technical Specifications for ATN using ISO/OSI Standards and Protocols;*

*Doc 9896: Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocol;*

*Doc 10037: Global Operational Data Link (GOLD) Manual*

*Doc 9673: Asia and Pacific Air Navigation Plan*

*Doc 7030: Regional Supplementary Procedures*

*Doc 9750: Global Air Navigation Plan (GANP), <https://www4.icao.int/ganportal/>*

*Doc 10004: Global Aviation Safety Plan (GASP)*

*Asia/Pacific Seamless Air Navigation Service (ANS) Plan (APSAP)*

Updated Work Programme of ACSICG

Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
2-1	COM Strategies	Revise Strategy for implementation of Communications Systems to support ATM operations in APAC	2016	2020	Close	G/G Australia/New Zealand, USA and Japan, New Zealand, and USA	Closed in ACSICG/6
2-2	AMHS Implementation	Implement AMHS transition including migration of concerned connections to SITA Type X mid 15 and updating APAC AMHS Naming Plan	2015	2020	Close	Australia, Singapore and Thailand	Closed in ACSICG/7
2-3	AMHS Implementation Registration	Continue coordination with members and other regions to maintain the AMC	On-Going	On-Going	On-going	Thailand	
2-4	Support AIDC implementation	Support Implementation of AIDC including PAN Regional AIDC ICD	2015	2021	On-going		
2-5	SWIM implementation APAC framework (SIAP) Project	Develop Cost Benefit Analysis to support SWIM using existing underlying ATN and IP sub-network	2016	2017	Close		Dependencies: SWIM ConOps and Technical Manual  <b>In ACSICG/4, it was modified to Action Item 4-1</b>
		Develop SWIM implementation roadmap and B1-SWIM ANRF			Close		
		Develop SWIM CONOPS refinement for APAC (FIXM, WXXXM, AIXM, NOTAM) - models/infrastructure			Close		
		Develop SWIM guidance and requirements (performance, functional, safety, security)			Close		
		Develop SWIM governance architecture	2015	2017	Close		
		Develop SWIM governance entity/procedures			Close		
		Develop SWIM access points/services architecture and definition (iterative)			Close		
		Support testing of SWIM based applications (FIXM, IWXXXM)			Close		
Coordinate SWIM implementation and transition from existing environment to SWIM	2015		Close				
2-6	CRV Project (under the TOR of CRV Task Force)	MSA/DOA	2014	2015	Close		closed in CRV OG/5
		Cost Benefit Analysis	2014	2015	Close		closed in CRV OG/5
		Users requirements (including performance and safety requirements)	2014	2015	Close		closed in CRV OG/5
		RFI	2014	2016	Close		closed in CRV OG/5
		Sealed Tender		2016	Close		closed in CRV OG/5

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Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
		Develop/agree on CRV Design (including an IPv6 address plan)		2017	Close		
		Implementation plan		2018	Close		
		Set up CRV OG		2016	Close		
2-7	CRV-OG	Oversight CRV operations and migration of applications	2016	2021	On-going		
2-8	Support ATFM Implementation using FIXM over CRV	Support development of ATFM IP ICD including coordination on the use of CRV to support ATFM FIXM (IP ICD developed by ACSICG has been provided to ATFM Group which is considered completed)	2015	2017	Close		Task description modified in ACSICG/5. It is revised text Close in CRV OG/5
2-9		Coordinate the IP network service for ATFM	2016	2019	Close		Added into revised text of 2-8 in ACSICG/5
2-10	Support transition of ATC voice service	Coordinate the use of VoIP technology to support the existing service based on Multiplexer	2015	2019	Close		Closed in CRV OG/5
4-1	Monitoring the SWIM implementation and work of APAC SWIM Task Force	Develop Cost Benefit Analysis to support SWIM using existing underlying ATN and IP sub-network	2016	2020	Close		
		Coordinate SWIM implementation and transition from existing environment to SWIM and confirm role of CRV (SWIM over CRV - role has been confirmed in 2019)	2017	2020	Close		Closed in ACSICG/8
4-2	AMHS Support IWXXM requirement 2020	Implement AMHS FTBP to meet the requirement of IWXXM including the basic AMHS plus FTBP sub-set of extended AMHS as defined in Doc9880. (Requirements for implementation is 5 November 2020) and monitor the possible compression solution following the ICAO guidelines for IWXXM implementation	2017	2020	On-going	All States/Administrations	
5-1	AFTN/ATSMHS Routing Directory and coordination with AMC	Update to the Directory and prepare a draft new Edition of the Directory	2018		Close	All States/Administrations	Completed
6-1	AMHS direct routing requirement	Develop AMHS routing policy to gain the benefits of implementation of AMHS over CRV.	2019	NA	On-going		
CNS SG/23 Task 2019	Update AMS and Datalink Strategies	Review and update AMS and Datalink Strategies (task given by CNS SG/23 Meeting)	2019	2020	Close		

Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
7-1	Monitoring the SWIM implementation and work of APAC SWIM Task Force	Demonstrate capability of CRV to support SWIM and evaluate the impacts on network bandwidth to incorporate AMHS service.	2016	2021	On-going	Hong Kong China, Singapore and Thailand, IATA as reporter to SWIM TF	On-going
7-2	CRV Operations Manual	A small ad hoc working group with CRV OG members from USA, Singapore and New Zealand to further improve the draft and get it ready for consideration by CNSG SG through a joint working paper. Thailand also agreed to provide some support to review the revised draft.	2020	2020	Close	CRV OG co-chair, New Zealand, USA, Singapore, Thailand	<b>SL Ref.: T 8/9.1 – AP262/20 (CNS), 22 December 2020</b> , Subject: The availability of various regional guidance materials for implementation of Air Navigation Facilities and Services in the Asia and Pacific Regions, <b>Conclusion CNS SG/24/4 - Publishing of CRV operational manual to provide the information and directions required for CRV OG performance and CRV operations</b>
7-3		States with designated BBIS: Australia, China, Hong Kong, China, Fiji, India, Japan, Singapore, Thailand and USA should increase their respective connection bandwidth to greater than 64kbps if feasible and applicable.  Any ANSPs that are not on the above list should upgrade their AMHS with FTBP functionality to support IWXXM traffic. <del>ICAO Regional Office will issue a reminder to States/Administrations that have no AMHS with FTBP capability to implement or upgrade their AMHS with FTBP function as soon as possible.</del> States/Administrations should also be requested to deploy AMHS connection with a minimum of 64Kbps bandwidth.	2020		Close	ICAO Secretariat	<b>State Letter: Ref.: T 8/3.5 &amp; T 8/2.11 – AP160/20 (CNS), 6 August 2020</b> , Subject: Reminder for implementation of ATS Message Handling System (AMHS) in APAC Region by 2020.  Traffic load data will support further action (ACSICG/9)

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Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
8-1	Suggested Implications to Cybersecurity and Associated Requirements for CRV Operations	i) The Meeting requested the ICAO Secretariat to inform and follow-up about the different requirements defined in <b>Section 3 in Flimsy01 of ACSICG/8</b> with different CNS Contributory bodies for their simultaneous and timely implementation. ii) CRV OG Chairs to note various requirements defined in Section 3 and initiate action to prepare strategies for contracting other services on CRV for future potential needs.	2021		Close	i) ICAO Secretariat ii) CRV OG Chairs	Replaced by new action items 9-6 by WP/08 of ACSICG/9
8-2	Interconnection of Regional Networks	ICAO Secretariat to take necessary action to discuss the interconnection of various regional networks at higher level.	2021		Close	ICAO Secretariat	Ad-hoc group created in ACSICG/9 under CRV OG.  Referred back to CRV OG  Keep Agenda Item in the meeting to note updates
8-3	Upgrade/Downgrade CRV Circuits Subscribed	ICAO Secretariat to take necessary action to discuss this issue with CRV OG as States should have option to upgrade/downgrade the circuits based on the need.	2021	ACSICG/10	Close	ICAO Secretariat, ACSICG chairs, CRV OG Chairs,	Meeting was held on <b>28 September 2021</b> .  PCCWG will draft <b>relevant clauses</b> to add in <b>Terms and conditions</b> document of CRV contract for consideration of CRV OG/9.  PCCWG will present <b>sample calculation of penalty charges</b> in case package degradation are opted by any contracting States within their terms of contract of CRV in CRV OG/9. Meeting held on 27 May, 19 August, 03 September 2021.
8-4	AMHS Routing Update due to CRV Post Implementation Issues in Bhutan	All six member States (Bhutan, India, Thailand, Singapore, Australia, and New Zealand) to create an Ad-hoc group with support of the ICAO Secretariat to further discuss about implementation of Option 2.	2021	ACSICG/10	Close	Bhutan, India, Thailand, Singapore, Australia, and New Zealand, ICAO Secretariat	Meeting was held on <b>27 May, 19 August, 03 September 2021</b> .  New Zealand will act as BBIS No AMC updates required As on 15 Sep 2021, Next meeting after Bhutan and New Zealand discussion.

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Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
9-1	Update ICAO APAC ATN/AMHS Guidance Document Tree	Ad-Hoc Group will update ICAO APAC ATN/AMHS Guidance Document Tree	2022	ACSICG/10	On-going	ICAO Secretariat, China, Fiji, New Zealand (Tentative), Singapore, USA	
9-2	Traffic Loading of CRV connection	States implemented CRV should note the Bandwidth Utilization rate and may present this data in upcoming CRV OG meetings.	2022	CRV OG/11	On-going	ICAO Secretariat, Member States	
9-3	A common template to report the monitoring of connection loading	ICAO Secretariat will consult with experts to propose a common template to report on the monitoring of connection loading	2022	ACSICG/10	On-going	ICAO Secretariat	To support Action Item 7-3
9-4	MPLS/IP Based Inter-Regional Connection	To discuss the potential options for business cases to move forward with the proposal in MPLS/IP Based Inter-Regional Connection between CRV and REDDIG II.	2022	ACSICG/10	Open	ICAO Secretariat under CRV OG, APAC Member States having interregional connections, CRV OG Chairs, CRV and REDDIG II service providers, and interested states of SAM region	
9-5	Nomination of SAM Member States to ad-hoc group under action item 9-4	ICAO Secretariat will coordinate with ICAO SAM Office to get nomination from interested SAM Member states for joining the Ad-Hoc Group in Action Item 9-4	2022	Jul-22	Open	ICAO Secretariat	
9-6	New Agenda Item to discuss Cybersecurity issues in Aeronautical Communications	Create a regular Agenda Item from ACSICG/10 and invite States and Organizations concerned to continue the discussion on improving in the cybersecurity ideas presented in various cybersecurity-related meetings and webinars.	2022	ACSICG/10	On-going	ICAO Secretariat, CANSO, IATA	
9-7	Continuation of Action Item 8-4	Bhutan and New Zealand would continue to work on above mentioned on-going proposal. The Ad-Hoc group will meet in last week of June 2022 to note the status of testing of CRV circuits between Bhutan and Thailand and progress on implementation of the temporary routing through New Zealand.	2022	ACSICG/10	Close	ICAO Secretariat, Ad-hoc expert group	

Reference	Title of Work	Task	Planned Start	Planned completion	Status	Action Parties	Comment
10-1	Consider convening a conjoint meeting session of the ACSICG in 2024 in conjunction with MET/IE WG	The meeting supported the proposal to conduct a conjoint meeting session of the MET/IE WG and ACSICG in 2024. Therefore, the meeting requested the Co-Chairs and Secretariat to consider convening a conjoint meeting session of the ACSICG in 2024 in conjunction with MET/IE WG.	2023	2024	Open	ICAO Secretariat, ACSICG chairs	
10-2	Enhance the coordination between APAC and MID regions to support the AMHS implementation	The meeting was informed the Mumbai-Muscat AMHS connection has been implemented, and ICAO APAC Office is requested to coordinate with MID Office to push forward the AMHS implementation between Beijing and Kuwait.	2023	ACSICG/11	Open	ICAO Secretariat	
10-3	Recommended that CRV OG coordinate with CRV vendor, PCCW Global, and SWIM Task Force to set priority of the traffic types.	it's recommended that CRV OG coordinate with CRV vendor, PCCW Global, and SWIM Task Force to set priority of the traffic types: voice service, time-sensitive message, and advisory message, etc.	2023	2024	Open	ICAO Secretariat	

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**AMHS FOCAL CONTACT POINT**  
(Key: **MAIN** – Main Contact; **ALT** – Alternative Contact)

*Note: Info in yellow extracted from [https://applications.icao.int/atn\\_chart/atn\\_chart.asp](https://applications.icao.int/atn_chart/atn_chart.asp)*

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\* Online Attendance

**LIST OF WORKING/INFORMATION PAPERS**

WP/IP No.	Agenda Item	Subject	Presented by
<b>WORKING PAPERS</b>			
WP/01	1	Provisional Agenda	Secretariat
WP/02	2	Review of Relevant Meetings	Secretariat
WP/03	3	Outcomes of the Eleventh Meeting of Common Aeronautical Virtual Private Network Operations Group (CRV OG/11)	Secretariat
WP/04	3	Outcomes of the First Meeting of CRV Ad-hoc Governance Group	Secretariat
WP/05	6	Repository of AIDC Implementation Status in APAC	Secretariat
WP/06	4	AFTN/ATSMHS Routing Directory in APAC	Secretariat
WP/07	6	AMHS Implementation and Readiness Status for Supporting IWXXM Traffic in the APAC Region	Secretariat
WP/08	10	Review Terms of Reference of ACSICG	Thailand & Secretariat
WP/09	7	Telecommunication Infrastructure Plan for APAC	USA
WP/10	8	ACSICG Support for Progressing Inter-Regional IWXXM Exchange	Australia
WP/11	10	Review Work Programme for ACSICG and AMHS Focal Point	Secretariat
WP/12	5	Space-Based Very High Frequency (VHF) Communication Services	Singapore
WP/13	6	Proposal for Transition from AFTN to AMHS between Indonesia (Jakarta) and Australia (Brisbane)	Indonesia
WP/14	9	Protecting the Integrity and Efficiency of CRV Time-Sensitive Exchanges	Secretariat
WP/15	2	Relevant Outcomes of the Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7)	Secretariat
WP/16	8	AFTN/AMHS Connection between APAC Region and Other Regions	Secretariat
WP/17	2	Outcomes of MET/IE WG/21	Secretariat and Chair of MET/IE WG
WP/18	4	APAC AMHS Implementation Status from AMC	Thailand

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WP/IP No.	Agenda Item	Subject	Presented by
<b>INFORMATION PAPERS</b>			
IP/01	-	Meeting Bulletin	Secretariat
IP/02	6	AMHS/ATN Implementation Status of Thailand	Thailand
IP/03	2	Relevant Action Items of 57th Conference of Directors General of Civil Aviation	Secretariat
IP/04	6	AIDC Implementation Status	Malaysia
IP/05	6	AIDC and AMHS Implementation Status in Republic of Korea	Republic of Korea
IP/06	12	AMHS Planning and Implementation Matters	Jordan
<b>PRESENTATIONS</b>			
01	-	CRV-Evolution of Services	FAA, USA
02		XML Projected Bandwidth	FAA, USA
03		Bidirectional AMHS/AMQP Interface	Frequentis

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