

*International Civil Aviation Organization*

ICAO

**Seventh Meeting of the Asia/Pacific ATS Inter-facility  
Data-link Communication Implementation Task Force  
(APA TF/7) of APANPIRG**

Video Teleconference, 7-9 June 2021.

**Agenda Item 3:** Sharing of experience on AIDC implementation and update the implementation status

**UPDATE THE AMHS/ATN IMPLEMENTATION STATUS TABLE AND  
THE AIDC IMPLEMENTATION TABLE**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the AMHS/ATN/AIDC Implementation Status table for review and update by the meeting. It also presents CRV Implementation Status Table for information.

**1. INTRODUCTION**

1.1 The Seventh Meeting of the Common Aeronautical Virtual Private Network Operations Group of APANPIRG (**CRV OG/7**) was held at the Conference Building of ICAO Asia Pacific Office, Bangkok, Thailand from 20 to 22 January 2020. The meeting reviewed and updated the status of ATN/AMHS/AIDC implementation and the CRV implementation table in the APAC Region.

1.2 The Seventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (**ACSICG/7**) was held from 21 to 23 July 2020 using Microsoft Teams. The ACSICG/7 meeting reviewed the outcomes of the 7th meetings of CRV Operations Group (CRV OG/7) and took following actions.

1.3 The Twenty Fourth Meeting of the Communications, Navigation and Surveillance Sub-group (**CNS SG/24**) of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), was held from *30 November to 4 December 2020* using Microsoft Teams. The meeting noted the updated ATN/AMHS/AIDC and CRV implementation status in the APAC Region.

1.4 The Eighth Meeting of the Common aeRonautical Virtual Private Network Operations Group of APANPIRG (**CRV OG/8**) was held via video tele-conference from *17 to 19 May 2021*. The meeting reviewed and updated ATN/AMHS/AIDC table and the CRV implementation table in the APAC Region.

**2. DISCUSSION**

2.1 The ATN/AMHS/AIDC implementation table and the CRV implementation table further updated by **CRV OG/8** is provided in **Attachment A and Attachment B** to this paper.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) review and update the ATN/AMHS/AIDC implementation table provided in **Attachment A**;
- c) note the information contained in the **Attachment B**; and
- d) discuss any relevant matter as appropriate.

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**ATN/AMHS/AIDC Implementation Status in the APAC Region**

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
AFGHANISTAN					
AUSTRALIA	<p>ATN tests were conducted. BIS Router and Backbone BIS Router and AMHS implemented.</p> <p>AMHS has been migrated to CRV.</p> <p>Connection with Singapore using AMHS was implemented October 2016;</p> <p>Another AMHS connections pending CRV (target date by March 2020) including both connection with New Zealand and USA.</p> <p>AMHS connection with Indonesia pending on CRV implementation</p> <p>AMHS connection with South Africa has been established</p> <p>Plan to upgrade AMHS support IWXXM traffic from Nov. 2020.</p>	COMSOFT	<p>AFTN/AMHS based AIDC Implemented between Brisbane and Melbourne, Oakland, Nadi and Auckland;</p> <p>Implemented between Melbourne and Johannesburg;</p> <p>AIDC is also in use between Melbourne and Mauritius;</p> <p>Operational trial between Brisbane and Ujung Pandang since May 2013. Implementation in July 2017. LOA needs to be updated.</p>		

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
BANGLADESH	In Q1/2013, Bangladesh installed ATN/AMHS and BIS Router at Dhaka (VGHS) with User Agents at Chittagong (VGEG) and Sylhet (VGSY).	COMSOFT	Tentative date of implementation of AIDC is Q4 of 2023 with Kolkata and Yangon.		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.
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	Currently not applicable. If required in the future, will decide after CRV implementation.		
BRUNEI DARUSSALAM	ATN BIS Router planned for 2015 and AMHS planned for 2015				

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
CAMBODIA	BIS Router and AMHS installed. Cambodia (CATS) AMHS connected with Bangkok via VSAT IP link since 10 December 2013	AVITECH	AIDC function and capability made available.  Ready for testing with neighbors ATS Facilities starting from 2017 and target date of implementation with Bangkok in 4Q2019	THALES which supports AIDC ICD Version 1.	
CHINA	<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.</p> <p>The Beijing-Hong Kong AMHS link was put into operation in 2018;</p> <p>With Thailand was put into operation in Q12020</p> <p>AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China is TBD. ATN/AMHS circuit with ROK has been put into operation since June 2011.</p>	IN-HOUSE (Aero-Info Technologies Co., Ltd)	<p>AIDC between some of ACCs within China has been implemented.</p> <p>AIDC between several other ACCs are being implemented.</p> <p>AIDC between Sanya and Hong Kong China put into operational use since 8 Feb 2007.</p> <p>AIDC between Dalian and Incheon implemented in Nov. 2016;</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.</p> <p>The Beijing-Hong Kong AMHS link was put into operation in 2018; With Thailand is completed POT, after sign the TMC circuit</p>	IN-HOUSE (Aero-Info Technologies Co., Ltd)

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p>ATN/AMHS tests with India has been put into operation since 2016.</p> <p>ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2021</p> <p>Connection tests with Nepal is TBD.</p> <p>AMHS testing with Japan was completed in March 2021.It will put into operation after TMC is signed.</p> <p>AMHS testing with Russia in 2021.</p>		<p>AIDC between Shanghai/Guangzhou and Tapei put in to operational use since 2013.</p> <p>AIDC between Guangzhou and Hong Kong China put into operational use since May 2018.</p> <p>OLDI between Shenyang and Khabarovsk put into operational use since Oct.2019.</p> <p>For Beijing/Ulaanbaatar, Further testing is planned in 2020.</p> <p>Kunming/Yangon under test and progress since May 2017</p> <p>Kunming/Vientiane under test and progress since Dec. 2018.</p>	<p>and was put into operation in Q12020</p> <p>AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China in 2019.</p> <p>ATN/AMHS circuit with ROK has been put into operation since June 2011.</p> <p>ATN/AMHS tests with India has been put into operation since 2016.</p> <p>ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2020</p> <p>Connection tests with Nepal is TBD.</p>	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			Sanya/Hanoi under test trial since 2019.	AMHS testing with Japan in 2020.  AMHS testing with Russia in 2020	
HONG KONG, CHINA	<p><b>Manila / Philippines</b> CRV/AMHS circuit was put into operation in May 2019.</p> <p><b>Beijing / China</b> ATN/AMHS circuit was put into operation in 2018. Plan to migrate to CRV in Q4 2020.</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> ATN/AMHS circuit was put into operation use in 2014. Wait for Thailand to join CRV.</p> <p><b>Fukuoka / Japan</b> Currently on AFTN. Plan to carry out IOT of CRV/AMHS in July 2020 and cut over to CRV/AMHS in Q3 or Q4 2020.</p>	COMSOFT	<p>AFTN-based AIDC with Sanya put into operational use in Feb 2007.</p> <p>AIDC with Taipei put into operational use in Nov 2012.</p> <p>AIDC with Guangzhou put into operational use in May 2018.</p> <p>AIDC with Manila put in operational use in May 2019.</p>	Raytheon ATM system Support AIDC ICD Version 3 commissioned in November 2016.	<p>Already support exchange of IWXXM messages based on FTBP.</p> <p>Support of IHE is planned for October 2020.</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<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>Taibei</b> CRV/AMHS circuit was put into operation in June 2020.</p>				
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>Upgrade of ATN/AMHS to support IPS and IWXXM planned with tentative target date of Q3 2021.</p>	COMSOFT	[Not applicable for using AIDC, looking into the possible application between TWR and ACC/APP]		
COOK ISLANDS					
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS planned for in 2011.		With neighboring ACCs to be implemented		

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
<b>FIJI ISLANDS</b>	<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>	COMSOFT	AFTN based AIDC implemented between Nadi/ Brisbane, Auckland and Oakland.	<p>- Support and implemented AIDC messaging: ABI, EST, CPL, CDN, ACP, TOC, AOC with all three centers</p> <p>- AIDC ICD version 2.0 implemented with Auckland and Oakland.</p> <p>- AIDC ICD Version 1.0 implemented with Brisbane</p>	<b>B2B connection between Nadi AMHS and Brisbane AMHS planned for Q3, 2021 as backup for CRV.</b>
<b>FRANCE</b> <i>(French Polynesia Tahiti)</i>	<p>Planned for implementation of AMHS in <b>2022 (T1)</b>.</p> <p>Using IP with New Zealand since 2017.</p>		Implementation of AIDC (based on Version 3) with adjacent centers (Oakland and Auckland) since 2009.	THALES EUROCAT for AIDC	Alternate routing for backup between Tahiti and Christchurch via Tahiti/New Caledonia IP link
INDIA	<p>Dual stack ATN/IP router and AMHS implemented at Mumbai in 2011.</p> <p>Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi implemented.</p> <p>With Beijing implemented in 2016;</p> <p>With Colombo implemented in May2017;</p> <p>With Bhutan implemented in July 2017;</p>	COMSOFT	Initially-15-May-2017, AIDC implemented between Chennai and Kuala Lumpur with ABI and EST messages. India is currently using APAC AIDC ICD version 3.		

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	Planned for IOT with Nairobi and Muscat for Q4 2020.		<p><b>A. Implementation within India:</b></p> <p>Trials have been carried out between various ATS units listed below</p> <p>I Delhi: Ahmedabad, Varanasi, Nagpur</p> <p>I. Chennai: Mumbai, Kolkata, Trivandrum, Mangalore, Trichy, Hyderabad, Bengaluru</p> <p>II. Kolkata: Chennai, Nagpur, Varanasi, Guwahati</p> <p>III. Mumbai: Chennai, Ahmedabad, Nagpur</p> <p>AIDC operations between Chennai and Mumbai have been put into regular operations.</p> <p><b>B: Implementation with Neighbouring States:</b></p> <p>The status on trails with following ATSUs of neighboring FIRs is as under:</p>		

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			<p>I. <b>Chennai &amp; Kuala Lumpur</b> (Malaysia) – ABI, EST successful. CDN is done with voice confirmation. TOC/AOC will be implemented later. LOA signed.</p> <p>II. <b>Chennai &amp; Male (Maldives)</b> – Trails have been successful. LOA in process.</p> <p>III. <b>Chennai &amp; Colombo</b> (Sri Lanka) - Colombo in process to address the syntax errors in ABI. Thereafter, trails will be conducted. LOA in</p> <p>IV. <b>Chennai &amp; Yangon</b> (Myanmar) – Trials commenced in January 2018. Issues of incorrect reference number in Counter CDN from Yangon persists</p> <p>V. <b>Mumbai &amp; Male (Maldives)</b> – Operational. LOA signed.</p>		

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			<p>VI. Ahmedabad &amp; Karachi (Pakistan) – Automatic message exchange (e.g. ABI, EST) happens for most of the East bound flights between Karachi &amp; Ahmedabad. Karachi Automation system not generating auto ACP message in response of EST messages.</p> <p>VII Kolkata &amp; Yangon (Myanmar) – Trials under process. Most of the message exchanges were successful</p> <p><b>C. Under Planning</b></p> <p>I. To conduct operational trials between Mumbai-Muscat, Kolkata-Dhaka, Mumbai Karachi (Pakistan), Delhi – Karachi (Pakistan), Delhi – Lahore (Pakistan), Chennai-Jakarta and Varanasi-Kathmandu subject to readiness from the concerned states.</p>		

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			<p>II. AFTN (AMSS) system upgradation to IP based AMSS is underway at various stations to address the latency issues for exchange of AIDC data.</p>		
<p>INDONESIA</p>	<p>ATN BIS Router and AMHS with Singapore implemented since February 2018;</p> <p>AMHS Trial (IOT) with Brisbane pending for CRV implementation.</p>	<p>IDS</p>	<p>AIDC implementation in Ujung Pandang ACC conducted as follows:</p> <ol style="list-style-type: none"> <li>1) Ujung Pandang ACC –Brisbane ACC: Implemented since July 2017.</li> <li>2) Ujung Pandang ACC – Manila ACC: <ul style="list-style-type: none"> <li>- Operational trial since October 2019;</li> <li>- Target date for implementation in 3Q2020.</li> </ul> </li> <li>3) Ujung Pandang ACC – Kota Kinabalu ACC: <ul style="list-style-type: none"> <li>- Successfully tested and target date for operational trial in 4Q2020;</li> </ul> </li> </ol>	<p>Thales TopSky in Makassar able to support ICD version 3 since December 2015.</p>	<p>For CRV, target of contract in 3Q2021 and implementation in 4Q2021.</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>- Target date for implementation 1Q2021.</p> <p>4) Ujung Pandang ACC – Oakland ARTCC: - Successfully tested and target date for implementation in 4Q2020.</p> <p>5) Ujung Pandang ACC – Port Moresby ACC: - Successfully tested on 7 July 2020; - Target date for operational trial in 3Q2020. - Target date for implementation 1Q2021.</p> <p>6) Ujung Pandang ACC – Jakarta ACC (4Q2020);</p> <p>AIDC implementation in Jakarta ACC will be carried out with the following priorities: 1) Jakarta – Ujung Pandang (4Q2020); 2) Jakarta – Chennai (3Q2021);</p>		<p>Priority is in accordance with Hot Spot identified by RASMAG/23</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>3) Jakarta – Melbourne (4Q2021);            4) Jakarta – Colombo (2Q2022);            5) Jakarta – Singapore (3Q2022);            6) Jakarta - Kuala Lumpur (4Q2022);            7) Jakarta – Kota Kinabalu (4Q2022).</p>		
<p><b>JAPAN</b></p>	<p>ATN BBIS router and AMHS installed at <b>USA</b> 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>Upgrading connection with Hong Kong and Singapore using VPN will be implemented in 2020 after implementation of CRV.</p> <p>Coordinating for all other circuits upgrading.</p>	<p>NEC</p>	<p>AIDC implemented between Fukuoka ATMC and Oakland ARTCC in 1998.</p> <p>AIDC implemented between Fukuoka ATMC and Anchorage ARTCC in 2005.</p> <p>AIDC implemented between Tokyo ACC/Fukuoka ACC and Incheon ACC in 2010.</p> <p>Implemented between Fukuoka and Incheon since June 2009.</p>		<p>Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p>Connection tests with Hong-Kong and Singapore using AMHS/FTBP over CRV since Dec 2019 and testing is going.</p> <p>AMHS/FTBP over CRV implementation with Beijing/China in 4Q2020, and with Incheon/Korea in 1Q2021.</p> <p>Connection AMHS over CRV as below:</p> <ul style="list-style-type: none"> <li>- Singapore from Oct. 2020</li> <li>- Hong Kong from Sep. 2020</li> <li>- Beijing from Mar. 2021</li> </ul>		<p>AIDC implemented between Fukuoka ACC/Naha ACC and Taipei ACC implemented.</p> <p>AIDC between Fukuoka ACC and Shanghai ACC under negotiation.</p>		
KIRIBATI	Connection with Nadi using UA/AMHS implemented in 2015.				
LAO PDR	ATN BIS Router and AMHS completed, planned for operation with Bangkok since 4Q 2016.	THALES	<p>AIDC testing with Bangkok in 2017 and target for implementation in 4Q2019.</p> <p>Testing with Hanoi on-going since 2017; with Cambodia operational test again in June 2018, and implementation 2Q 2019.</p> <p>Testing with Kunming and Yangon ongoing.</p>	THALES which is able to support ICD Version 2.	

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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	<p>AIDC technical test between Kuala Lumpur ACC and Bangkok ACC conducted since November 2016 (ABI/EST/ACP/LAM/LRM/CDN/REJ/TOC/AO C).</p> <p>The operational trial commenced in August 2019 (EST/ACP/LAM/LRM).</p> <p>The operational implementation commenced on 14<sup>th</sup> March 2020 (EST/ACP/LAM/LRM). AIDC technical test between Kuala Lumpur ACC and Chennai OCC conducted since February 2013.</p> <p>The operational trial implemented in phases from September 2016</p>	SELEX which is able to support ICD Version 3.	

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			<p>(ABI/EST/MAC/LAM/LRM/ACP). Review on the CDN message implementation conducted in August 2017. SOP signed 26 April, 2017.</p> <p>The MOU signed on March 2020.</p> <p>The operational implementation commenced on 1<sup>st</sup> April 2020 (ABI/EST/ACP/LAM/LRM/CDN/R EJ/MAC).</p> <p>The operational trial for TOC/AOC started on 1<sup>st</sup> July until 1<sup>st</sup> August 2020.</p> <p>AIDC technical test between Kuala Lumpur ACC and Singapore ACC conducted since April 2015 (ABI/EST/ACP/LAM/LRM/CDN/R EJ).</p> <p>The operational trial started on September</p>		

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			<p>2018 (EST/ACP/LAM/LRM).</p> <p>The operational implementation commenced on 1<sup>st</sup> November 2019 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kuala Lumpur ACC and Ho Chi Minh ACC To Be Discussed (TBD).</p> <p>AIDC technical test between Kuala Lumpur ACC and Jakarta ACC TBD.</p> <p>AIDC technical test between Kota Kinabalu ACC and Manila ACC started on May 2019 (EST/ACP/ LAM/LRM). The operational trial plan to be started in 4Q2020 (EST/ACP/ LAM/LRM). The operational implementation plan to</p>		

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>be started in 1Q2021 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kota Kinabalu ACC and Ujung Pandang ACC started on August 2019 (EST/ACP/LAM/LRM).</p> <p>The operational trial plan to be started in 4Q2020 (EST/ACP/ LAM/LRM).</p> <p>The operational implementation plan to be started in 1Q2021 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kota Kinabalu ACC with Jakarta ACC TBD.</p> <p>AIDC technical test between Kota <u>Kinabalu</u> ACC and Singapore ACC started on</p>		

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			<p>November 2019 (EST/ACP/LAM/ LRM).</p> <p>The operational trial to be commenced on October 2020 (EST/ ACP/LAM/LRM).</p> <p>The operational implementation to be started in 1Q2021 (EST/ACP/LAM/ LRM).</p> <p>AIDC technical test between Kuching ACC and Singapore ACC started on November 2019 (EST/ACP/LAM/ LRM).</p> <p>The operational trial to be commenced on 20<sup>th</sup> July until 18<sup>th</sup> October 2020 (EST/ACP/LAM/ LRM).</p> <p>The operational implementation to be started in 4Q2020 (EST/ACP/LAM/</p>		

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			LRM).  AIDC between Kuching ACC and Jakarta ACC TBD.		
MALDIVES	<p>In the process of replacing the existing operational AFTN system by AMHS. It is expected to complete the installation before the end of 2019.</p> <p>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.</p> <p>Also will look for the possibility of implementing the CRV network to use with AMHS and AIDC during the same phase.</p>		<p>Connection established with all the adjacent ATSUs. Interoperability tests successfully completed in 2017.</p> <p>LOA signed for operational trials between Mumbai, Chennai, and Trivandrum. Operational trials were also successful with these ATSUs, while several issues were resolved from both ends.</p> <p>Ready to sign LOA with Melbourne and is expected during the 2nd quarter of 2019.</p> <p>Trials with Colombo had few issues, which Colombo is working to</p>	SELEX which is able to support ICD Version 3.	

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			resolve it on their end with the automation system supplier. Connections between all 5 ATSU's are turned ON in the ATS automation system to conduct pre-notified operational trials.		
MARSHALL ISLANDS					
MICRONESIA (EDERATED STATES OF)					
Chuuk					
Kosrae					
Pohnpei					
Yap					
MONGOLIA	AMHS/AFTN gateway implemented 2012.  ATNBIS router implemented in 2014.  ATN and AMHS IOT with China was completed in May 2018. Plan for	COMSOFT	ATM automation system supports both AIDC and OLDI.  Coordinating with Russia on OLDI connection in target date 2016.	INDRA Aircon 2100 supporting AIDC ICD Version 2.	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	commissioning after POT completion in 2019.		Coordinating with China on AIDC connection between Beijing/Ulaanbaatar technical trials in progress. Planned date of testing in 2019.		
MYANMAR	AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.	THALES	AIDC connection pre-operation test with Thailand conducted in 4Q2017 and Target date of implementation 4Q2020; AIDC testing with Chennai, Kolkata and Vientiane conducted in 2020. Myanmar improved ATS Surveillance Coverage at coordination point with China and will start AIDC test again with Kunming ACC in 2020.	THALES Automation system (Topsky ATC) supports APAC AIDC ICD Ver. 2.	AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.
NAURU					

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	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	<p>Nepal uses custom built ATM system from NEC.</p> <p>Some issues regarding ICD need to be resolved in order to proceed ahead with AIDC testing with India and China.</p>		
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT			
NEW ZEALAND	AMHS connection with the USA over CRV was implemented in April 2019. AMHS connection to Australia over CRV is scheduled for June 2019.	COMSOFT	AIDC implemented between New Zealand, Australia, Fiji, Tahiti, Chile and USA.	Supported the Basic 5 message set. ATM systems are LEIDOS and ADACEL	
PAKISTAN	<p>ATN/AMHS connections with Mumbai since 2015.</p> <p>Planning for AMHS connection with Beijing and Kuwait after upgrading existing facilities between the Countries. Target dates for implementation TBC.</p>	COMSOFT	<p>Implemented between Karachi and Lahore ACCs</p> <p>Further testing to be conducted between Delhi/Karachi &amp; Delhi/Lahore after system upgradation at Indian end;</p> <p>Mumbai/Karachi &amp; AHM/Karachi on trial</p>	ATM system from Intra AIRCON 2100	Existing Radar system being upgraded.

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			operation. For testing with Muscat planned for 4Q2019. Coordination for testing with Tehran is in progress.		
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	<p>AIDC using AFTN operational with Australia, testing/trial with Oakland (USA) started late last year and in progress.</p> <p>AIDC implementation with Indonesia to happen after CRV implementation this year.</p>	New ATM System from Thales (TopSky-ATC) implemented and operational now supports AIDC V3.	
PHILIPPINES	<p>New ATN/AMHS was installed at the New CNS/ATM Center in Manila. Site Acceptance was successfully done on October 2015.</p> <p>The new AMHS commissioned and operational in March 2018.</p> <p>The AMHS Implemented over CRV with <b>HONG KONG</b> - May 2019.</p> <p>The AMHS Implemented over CRV with</p>	<b>Frequentis - Comsoft</b>	<p><b>MANILA with:</b></p> <p><b>HONG KONG</b> – Implemented May 2019 via CRV;</p> <p><b>SINGAPORE</b> – Implemented November 2019 via X25; Implemented December 2020 via CRV;</p>	THALES which is able to support ICD Version 2.	<p>New ATN/AMHS was installed at the New CNS/ATM Center in Manila. Site Acceptance was successfully done on October 2015.</p> <p>The new AMHS commissioned and operational in</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p><b>TAIPEI</b> - September 2019.</p> <p>The AMHS implemented over CRV with <b>SINGAPORE</b> - December 2020.</p> <p>The AMHS implemented over CRV with <b>OAKLAND, USA</b> - April 2021.</p>		<p><b>TAIPEI</b> – Implemented December 2019 via CRV;</p> <p><b>UJUNG PANDANG</b> - Operational Trial since April 2020 via <b>SINGAPORE</b> (X25); Implemented since December 2020 via <b>SINGAPORE</b> AMHS;</p> <p><b>HO CHI MINH</b> – Tests conducted on October 2019. For further tests;</p> <p><b>KOTA KINABALU</b> – Tests conducted on May and October 2019 via <b>SINGAPORE</b> (X25). For further tests;</p> <p><b>OAKLAND</b> – Planned AIDC tests after AMHS successful implementation.</p>		<p>March 2018.</p> <p>The AMHS Implemented over CRV with <b>HONG KONG</b> - May 2019.</p> <p>The AMHS Implemented over CRV with <b>TAIPEI</b> - September 2019.</p> <p>The AMHS implemented over CRV with <b>SINGAPORE</b> - December 2020.</p> <p>The AMHS implemented over CRV with <b>OAKLAND, USA</b> - April 2021.</p>

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
<p style="color: red;">REPUBLIC OF KOREA</p>	<p style="color: red;">Plan to upgrade AMHS support IWXXM from 2023 over CRV Frequentice</p> <ol style="list-style-type: none"> <li>1) AMHS/CRV IOT with China and Japan in 4Q of 2021</li> <li>2) AMHS/CRV POT with China and Japan in 4Q 2022</li> <li>3) Cutover to AMHS/CRV with Chi na and Japan in Q1 2023 after POT</li> <li>4) Implementation of AMHS/CRV with Japan Q1 2023</li> </ol>	<p style="color: red;">FREQUENTIS</p>	<p style="color: red;">AIDC implemented between ACC and Fukuoka ATMC in 2010</p> <p style="color: red;">AIDC between Incheon and Dalian implemented in Nov. 2016.</p>	<p style="color: red;">Rockheed Martin System</p>	
<p style="color: red;">SINGAPORE</p>	<p style="color: red;">AMHS implemented with:</p> <ol style="list-style-type: none"> <li>1) AMHS circuit with India put into operational use in Mar 2011.</li> <li>2) AMHS circuit with UK put into operational use in Mar 2012.</li> <li>3) AMHS circuit with Thailand put into operational use in Dec 2014.</li> <li>4) AMHS circuit with Australia put into operational use in Oct 2016.</li> <li>5) AMHS circuit with Indonesia put into operational use in Feb 2018.</li> <li>6) AMHS circuit with Malaysia put into operational in Mar 2020.</li> <li>7) AMHS circuit with Japan put into operational in Dec 2020.</li> <li>8) AMHS circuit with Philippines put into operational in Dec 2020.</li> </ol>	<p style="color: red;">FREQUENTIS COMSOFT</p>	<ol style="list-style-type: none"> <li>1) Operational with Ho Chi Minh implemented Jul 2014.</li> <li>2) Kuala Lumpur operational trial started since Sep 2018 and is implemented Nov 2019.</li> <li>3) Implemented with Kuching ATCC in Feb 2021.</li> <li>4) Operational trial ongoing with Kota Kinabalu ATCC since Nov 2020 and</li> </ol>	<p style="color: red;">THALES supports ICD Version 3 since December 2018</p>	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p>Inter-Operability Test (IOT) with Vietnam started in 2019.</p> <p>IOT with Sri Lanka, Bahrain and Brunei to be confirmed.</p>		<p>implementation planned in Jun 2021.</p> <p>5) Manila operational trial started in Feb 2019. Implementation Nov 2019.</p> <p>6) Technical trials with Jakarta ACC will be initiated once the Jakarta ACC ATMS renewal is completed.</p>		
SRI LANKA	<p>ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017.</p> <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	<p>Trials with Male planned for in 3Q2019.</p> <p>Trial with Chennai on-going. Plan for implementation in 2018 and with Melbourne plan for 1Q2018.</p>	INTELCAN which is able to support ICD Version 3.	
THAILAND	<p>BBIS/BIS Routers already implemented. AMHS has been implemented since July 2011.</p> <p>Connection with Bangladesh, Bhutan, Cambodia, China, India, Lao PDR, Myanmar, Singapore, Hong Kong China, and Malaysia implemented.</p>	AEROTHAI's AMHS System	<p>The implementation with</p> <ul style="list-style-type: none"> <li>· Malaysia has done on 14<sup>th</sup> March 2020</li> <li>· Lao PDR has done on 14<sup>th</sup></li> </ul>	THALES which supports AIDC feature, APAC AIDC ICD V.3.	T HAILAND

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	Bangkok - Viet Nam Circuit · IOT Test: Done · POT Test: <b>Planned for end of 3Q2021</b> Bangkok - Rome Circuit · IOT Test: <b>Planned for 3Q2021</b> Connection with SITA (SITA AMHS Gateway inter-connections) implemented.		July 2020 · <b>Cambodia has done on 22<sup>nd</sup> February 2021</b>  <b>In addition, it is planned to implement AIDC with Myanmar</b>		
TONGA	AMHS planned for 2008.  The provider is linked to the New Zealand AFTN				CPDLC and ADS-C is not considered for lower airspace
<b>UNITED STATES</b>	<ul style="list-style-type: none"> <li>- Australia</li> <li>- Fiji</li> <li>- New Zealand</li> <li>- Japan</li> <li>- Philippines</li> <li>- Papua New Guinea (2021)</li> <li>- Indonesia (2022)</li> </ul>	<b>IN-HOUSE</b>	<ul style="list-style-type: none"> <li>- Fiji, Japan, New Zealand</li> <li>- Tahiti (via New Zealand),</li> <li>- Papua New Guinea via Australia (Direct planned for 2021)</li> <li>- Philippines (2021)</li> <li>- Indonesia via Australia (Direct planned for 2022)</li> </ul>	<b>IN-HOUSE</b> which is able to support APAC and NAT ICDs currently Version 2.	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			- Russian Federation (pending joining CRV)		
VANUATU					
VIET NAM	<p>AMHS (basic) implemented. Trial phase from 4Q/2015 to 3Q/2018. IOT with Thailand in progress from 4Q/2017 Plan to use AMHS in 4Q/2018;</p> <p>Planned for IOT with Hong Kong, Singapore and Thailand in 2019</p> <p>For IOT with Laos PDR and Cambodia in 2019.</p>	IN-HOUSE	<p>Operational between Ho Chi Minh and Singapore since July 2014. Trial for additional messages sets since 2018.</p> <p>Implementation between Ho Chi Minh with Philippines planned for 4Q2020;</p> <p>Technical testing with Cambodia already done; Trials between Hanoi and Vientiane, Lao. PDR on going.</p> <p>with Malaysia TBC</p>	<p>Support ICD Version 1.0 with THALES at Ho Chi Minh ATM system.</p> <p>Support ICD Version 3.0 with Selex at Hanoi ATM System.</p>	

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State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			Testing with Cambodia on – going; For operation trial TBC.		
Wallis and Futuna (FRANCE)	AMHS implementation planned for end of 2017			COMSOFT	

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CRV IMPLEMENTATION TABLE

State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
<b>Australia</b>	Contract in May2018 and service readiness in 3Q 2018	<p>AFTN, ADS-B, AMHS, Voice With:</p> <p><b>Australia</b> February,2019(AMHS/AIDC), March,2019(Voice)</p> <p><b>Fiji</b> March,2019 (AMHS June 2019/AIDC, Voice completed April)</p> <p><b>New Zealand</b>, February, 2019 (AMHS June 2019, AFTN May 2019/AIDC), March, 2019 (Voice April 2019 completed)</p> <p><b>Indonesia</b> 4Q2019 (TBC) (AMHS/AIDC, Voice, ADS-B);</p> <p><b>PNG</b> 4Q2019(TBC), (AMHS/AIDC, Voice)</p> <p><b>Singapore</b> 2Q2019 TBC (AMHS/AIDC, Voice);</p> <p><b>South Africa</b> TBC</p> <p>3Q2019 TBC (AMHS/AIDC, Voice); <b>Japan</b> would be end of 2019.</p>	staged approach	Termination of current COM contract
<b>Bhutan</b>	<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>	AMHS first and Voice & ADS-B will follow up after AMHS.		Dependent on India and Thailand for utilization of CRV network.

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
<b>Cambodia</b>	As early as convenient, dependent on neighboring countries			Internal decision making
<b>China</b>	Contract signed on 21 June 2020.	Applications targeted: Data(AMHS) With: Hong Kong 3Q2020; Japan 4Q2020; Thailand TBD; India TBD. Republic of Korea 4Q2020 ATFM test with Japan and ROK at Sep 2020 over CRV	staged approach	
<b>Democratic People's Republic of Korea</b>	Contract in 3Q2018 and service readiness in 4Q2018	AFTN and VoIP		
<b>Hong Kong, China</b>	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 Taipei</b> CRV-AMHS put into operation in May 2020  <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	staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV in a harmonized manner, etc.

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
		<b>Bangkok and Hochiminh</b> Subject to their readiness		
<b>Macao, China</b>	Service readiness in Q4 2021	To be confirmed	Staged approach	Migration from X.25 to IPS
<b>Fiji</b>	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
<b>France (New Caledonia and French Polynesia)</b>	2023 is target for DNSA to sign contract subject to internal security assessment (done).	ATS Voice, AMHS with Fiji & AIDC, AMHS with USA, AIDC/AMHS with NZ.		CBA, cost must be affordable <i>Wallis and Futuna: no dedicated connection to CRV</i>
<b>India</b>	Contract for CRV implementation with M/s PCCW in India will be signed in 3Q of 2021 and CRV Service will be ready in 4Q of 2021.	AFTN/AMHS, ADS-B, AIDC, ATS Voice	staged approach	Internal Administrative approvals & safety case

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
<b>Indonesia</b>	Contract in 3Q2021 and service readiness in 4Q2021.	AFTN, AMHS, ADS-B and voice		CBA completed
<b>Japan</b>	Contract signed in Nov.2017 and service readiness in 1Q 2018 for Fukuoka	Data first with: Hong Kong completed 3Q2020 USA completed 1Q2019 Singapore completed 4Q2020 China completed 1Q2021  Voice Plan with: USA 2Q2021 Daegu and Incheon (R.O.K) started in 1Q2021	staged approach	
<b>Malaysia</b>	Contract to be signed 4Q 2020 and service readiness in 1Q 2021	AFTN, AMHS, ADS-B and ATS voice	staged approach	New ATC centre operational in 2021 Contract issue with the new ATC main contractor. COM Project is part of the main contract.
<b>Myanmar</b>	Contract will be signed 4Q2020.	AFTN/AMHS, AIDC, ADS-B and voice	staged approach	One of counterparts join in
<b>Nepal</b>	Nepal intends to join CRV on staged approach with AMHS data connectivity as first priority and intends to sign the contract with PCCW within 2020.			

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
<b>New Zealand</b>	Contract signed in July 2018 and service implemented December 2018	<p>Australia Voice Completed March 2019 and AMHS June 2019 Completed</p> <p>USA Voice Completed March 2019 and AMHS March 2019 Completed</p> <p>Fiji Voice Completed April 2019</p> <p>French Polynesia AMHS and Voice</p> <p>Chile AMHS (SAM regional network REDDIG)</p>	<p>Awaiting French Polynesia joining.</p> <p>Awaiting outcome of inter-regional network connectivity discussion. For Chile</p>	CBA attractive if all counterparts join in.
<b>Philippines</b>	Contract signed in March 2018 and service readiness in 2Q2018	<p>Completed:</p> <p>with <b>HONG KONG</b> AIDC - 2Q2019; AMHS - 2Q2019; Voice - 3Q2018.</p> <p>with <b>TAIPEI</b> AIDC 4Q2019; AMHS 3Q2019; Voice 1Q 2019.</p> <p>with <b>SINGAPORE</b> AIDC – 4Q2019; AMHS –4Q2020; Voice – 1Q2020.</p> <p>with <b>USA</b> AMHS – 2Q2021; Voice – 4Q2019;</p>	staged approach	Success transition to the New ATM centre in 4Q2018

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
		with <b>INDONESIA</b> AIDC – 4Q2020.		
<b>Republic of Korea</b>	Contract in 3Q 2019 and service readiness in 4Q 2019	Completed: with Japan Voice –March 2021  Planned; With Japan Voice additional lines-from 2022 to 2023 AMHS-4Q 2022  With China Data(AMHS)-4Q 2022	staged approach	
<b>Singapore</b>	Contract signed in May 2019 and service readiness in Dec 2019	Data (AMHS over IP) with: Australia Dec 2020 (completed); Japan Nov 2020 (completed); and Philippines Dec 2020 (completed);and Malaysia Q3 2021.  Voice with: Philippines Mar 2020 (completed).	Staged approach	<b>Singapore</b>
<b>Sri Lanka</b>	As soon as CRV is available	AMHS connectivity with Mumbai, Singapore and Male.  Direct Speech facilities with Chennai, Trivendrum, Mumbai, Male, Jakarta, Melbourne, Singapore	Phased approach with the implementation of CRV	CBA

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
<b>Thailand</b>	Contract in 3Q2021 and service readiness in 1Q2022	Data first Then voice, subject to safety case: China 1Q2022 Hong Kong 1Q2022; Singapore 1Q2022; India 2022.	Staged approach	
<b>United States</b>	Contract in January 2018	<p>1) AMHS with Australia Fiji Japan Philippines New Zealand Papua New Guinea (2021) Indonesia (2022)</p> <p>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)</p> <p>3) VoIP with Fiji Japan Philippines New Zealand Papua New Guinea (direct planned 2021) Indonesia (2022) Russia (when join CRV)</p>	Staged approach	

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<b>State/ Administration</b>	<b>Intended date for CRV cut-over</b>	<b>Applications targeted</b>	<b>Migration scheme</b>	<b>Prerequisites/ dependencies</b>
Viet Nam	To be confirmed later (After discussed with PCCW Global)			

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