



International Civil Aviation Organization

MID Region ATM Enhancement Programme Board

Third Meeting (MAEP Board/3)
(Cairo, Egypt, 16-18 January 2017)

Agenda Item 3: MAEP Projects

**MID IP NETWORK
(COMMON AERONAUTICAL VPN NETWORK-CRV)**

(Presented by the Secretariat)

SUMMARY

This paper presents a progress report on the Common aeRonautical VPN Network (CRV) Project (MID IP Network).

Action by the meeting is at paragraph 3.

REFERENCES

- CNS SG/7 Report
- CRV TF/6 Report
- CRV OG/1 Report
- MAEP SC/2 Report
- MID IP Network Workshop SODs

1. INTRODUCTION

1.1 The CRV became a programme that would expectedly procure a safe and secured IP-based transportation service for the CRV users from 2017 onwards through a common contractual framework. This common contractual framework is based on a sealed tender process to successfully recommend a supplier.

2. DISCUSSION

2.1 The meeting may wish to recall that the MAEP SC/2 meeting (Cairo, Egypt, 20-22 October 2015) reviewed the MID IP Network Project Proposal Document developed by the MID IP Network Action Group, and was apprised of the progress made in the implementation of the Common Regional Virtual Private Network Programme (CRV) in the APAC Region. The MAEP SC/2 meeting discussed three scenarios for the implementation of the MID IP Network:

- Scenario 1: MID Region drives its own IP-based network project and uses CRV procurement framework for all regional and interregional connections.

- Scenario 2: MID Region drives its own IP-based network project and uses CRV procurement framework only for interregional connections along the major traffic flows.
- Scenario 3: MID Region drives its own IP-based network project and does not use at all the CRV procurement framework.

2.2 The MAEP SC/2 meeting agreed that scenario 1 is the best scenario for the implementation of the MID IP Network and that close coordination with APAC through the Bangkok Regional Office should be carried out in order to use the CRV procurement framework for the implementation of the MID IP Network. In this respect, the meeting agreed that a joint APAC/MID IP Network Workshop be organized as soon as possible (early 2016) to address all issues related to the implementation of the MID IP Network using the CRV procurement framework (Draft Conclusion 2/3 refers).

2.3 It was highlighted that a structure for managing the network once commissioned will need to be established (governing body). The meeting noted that in APAC a CRV Operations Group (CRV OG) would be established and States/Administrations will have to join the CRV OG before signing an individual service contract with the selected supplier. Furthermore, before starting the operations, CRV users will have to nominate their operations Point of Contact.

2.4 The meeting may wish to recall that, as a follow-up action to the MAEP SC/2 meeting Draft Conclusion 2/3, the ICAO MID Office with the support of the ICAO APAC Office conducted the MID IP Network Workshop at the ICAO MID Office in Cairo, Egypt from 24 to 25 January 2016. The main objective of the Workshop was to provide a complete overview of the specifications developed by APAC for the CRV and to bring together all MID States and APAC Experts to review the MID IP Network regional requirements, cost effectiveness considerations, and global/regional integration of the IP networks.

2.5 The Workshop recognized that Regional IP Network is a major Enabler for ASBU Block 1 implementation, essential for the harmonization and interregional coordination for the implementation of many ASBU Modules and the CRV Regional IP Network is to be renamed as Common aeRonautical VPN (CRV) in order to reflect both Regions common IP Network. The Workshop recommendations together with a summary of benefits, CRV data and services and some project details are at **Appendix A**.

2.6 The meeting may wish to recall that the MAEP Board/2 meeting (Cairo, Egypt, 11-13 April 2016) reviewed the outcome of the MID IP Network workshop and agreed that the procurement framework of the APAC CRV be used for the implementation of the MID IP Network Project; and the MID IP Network be renamed as Common aeRonautical VPN (CRV) in order to represent both Regions. In this respect, it is to be highlighted that the CRV procurement includes all ICAO MID States as potential users. Accordingly, the MAEP Board/2 meeting agreed on the following MAEP Board Conclusion:

MAEP BOARD CONCLUSION 2/7: MID IP NETWORK PROJECT (CRV)

That,

- a) the procurement framework of the APAC Common Regional Virtual Private Network Programme (CRV) be used for the implementation of the MID IP Network Project use ;*
- b) the MID IP Network Project be renamed as Common aeRonautical VPN Network (CRV) in order to be one common IP Network with the APAC;*

- c) *States, that have not yet confirmed their commitment to join the CRV, be urged to do so before 10 May 2016; and*
- d) *further to the successful completion of the procurement process conducted in the APAC Region, States be urged to engage with the recommended supplier to establish individual service contracts.*

2.7 The meeting may wish to recall that the CNS SG/7 meeting (Cairo, Egypt, 31 May-2 June 2016) agreed with the MID IP Network Workshop recommendations. Furthermore, the meeting noted that seven (7) States (Bahrain, Egypt, Jordan, Kuwait, Lebanon, Saudi Arabia and UAE) conducted an initial basic local Cost Benefit Analysis (CBA).

2.8 It was highlighted that the CRV Framework accommodates the necessary legal framework for all States, where it is possible to adapt the individual service contract between States and the selected common service provider to the national laws and regulations. Furthermore, the selected common service provider will be responsible for dealing with the national telecommunication service providers in the States and may require standard support letter from the State.

2.9 The CNS SG/7 meeting reviewed and updated the IP Network Focal Points and commitment status table as at **Appendix B**. It was noted that six (6) States (Bahrain, Iran, Jordan, Kuwait, Lebanon and Sudan) confirmed their commitment and three (3) States (Oman, Saudi Arabia and UAE) confirmed provisional commitment to the project. The CNS SG/7 meeting further agreed that the project be pursued without delay and agreed that upon successful completion of the procurement process conducted in the APAC Region (with the support of TCB) States be urged to engage with the recommended supplier to establish individual service contracts within time frame of six months. The meeting urged all States to join the CRV in order to gain the maximum benefits from the project.

2.10 The CNS SG/7 meeting noted that the challenges related to the implementation of the IP Network Project include the cost-benefit analysis and preliminary safety analysis. The CBAs would help States to decide on the implementation plan of the IP network based on the CRV framework and further negotiate the contract with the selected Vendor.

Outcome of APANPIRG CRV TF/6 and CRV OG/1

2.11 The Sixth Meeting of the Common Regional VPN Task Force (CRV TF/6) and the First Meeting of the Common Regional VPN Operations Group (CRV OG/1) of APANPIRG were held at the ICAO APAC Office, Bangkok, Thailand on 14-15 and 16 December 2016, respectively. The invitation letters of the CRV TF/6 and CRV OG/1 meetings were distributed to the MID States on 5 October 2016, however only one (1) State from the MID Region (Kuwait) participated in the meetings.

2.12 The CRV TF/6 meeting noted that the approval of the evaluation process and report by the ICAO Contracts Board for the CRV Project was notified to the ICAO APAC Regional Office on 28 November 2016. As a follow-up to the approval by the ICAO Contracts Board, an award notification was sent on 7 December 2016. The award notification includes the name of the selected supplier, and that the final contract(s) will be awarded on an individual basis by States, subject to successful discussions.

2.13 The meeting noted that the final common package would be ready by end of January 2017 and would be available on the ICAO Secure Portal (CRV Group). The meeting agreed that an ICAO State letter would be sent to notify the package to all States in APAC region, and urge all States to implement CRV. Coordination will be made with MID Region to notify the MID States accordingly.

2.14 The CRV TF/6 meeting reviewed and updated the APAC CRV Implementation Plan (Version 0.3). Based on the APAC CRV Implementation Plan, the Secretariat developed the draft MID IP Network (CRV) Implementation Process at **Appendix C**, which might be helpful for States in case they decide to join the CRV.

2.15 Noting that all terms of reference of the CRV TF had been successfully completed and that the transition to CRV OG was managed regarding CRV implementation plan including contingency steps, the CRV TF/6 meeting agreed to dissolve the Task Force and the implementation of the project in APAC will be followed-up by the CRV OG.

2.16 The CRV OG/1 meeting agreed that next meetings of the CRV OG and contract negotiations will be as follows:

- 17-18 January 2017: next meetings for negotiating States
- 2 February 2017 (web conference): CRV OG status meeting#1
- 15-16 May 2017: CRV OG/2 (back-to-back with ACSICG/4)

3. ACTION BY THE MEETING

3.1 The meeting is invited to urge:

- a) States that have already committed to join CRV to engage with the recommended supplier to establish individual service contracts; and
- b) States that have not yet done so, to carry out a comprehensive CBA related to the implementation of an IP Network under the CRV framework; and inform the ICAO MID Office, as soon as possible, about their decision related to the joining of CRV.

APPENDIX A

ICAO MID IP NETWORK WORKSHOP *(Cairo, Egypt, 24 - 25 January 2016)*

WORKSHOP RECOMMENDATIONS

- The Regional IP Network is to be named “Common aeRonautical VPN (CRV)” and be implemented under developed CRV framework as a priority.
- The benefits from implementation of the CRV could only be realized when majority of the States join the network. Accordingly, to maximize the benefits all MID States are urged to join the CRV.
- MID States are urged to conduct the Local CBA taking into consideration the safety assessment and provide all information to ICAO MID Regional Office by the end of Feb 2016.
- ICAO MID Regional Office to support the CBA and Safety assessment through teleconference with the focal points after receiving the Local CBA from the States by March 2016.
- The CRV will have to be interconnected with other Regional Networks (PENS, MEVA etc.).
- The APAC and MID Region to establish their own CRV Operational Groups to Manage the CRV in their Regions.
- One interregional OG meeting co-chaired by both Regions is conducted once a year and/or when needed.
- The CRV framework to consider in the design two regional networks with one service provider for both APAC and MID Regions, to the extent possible.

CRV BENEFITS, DATA AND SERVICES

Benefits:

- Reduce telecommunication costs in most cases (to be confirmed by local CBA)
- Enable integration in the aeronautical infrastructure and enhanced services (GANP, regional objectives)
- Enhance information security
- Provide a standardized interface for AFS (instead of multiple protocols, some of which are obsolescent)
- Rationalize coordination for network management and enhancement
- Respond to Air Traffic requirements in a timely and standardized manner

Services carried by CRV:

- “The objective of the CRV is to offer a safe, secure, robust and cost effective telecommunications transport service to all Members, and to offer the possibility to all Candidates to contract to that service”
- Ground-ground voice ATM communications, referred to as voice communications
- Air-ground Data Link communications (in case we have one day ATN routers in common), referred to as Data Link communications
- Ground-ground ATS surveillance data, referred to as surveillance data
- Ground-ground AIDC data, referred to as AIDC data
- Ground-ground AIM data, referred to as AIM data
- Ground-ground ATFM data, referred to as ATFM data
- Ground-ground SWIM data, referred to as SWIM data
- Miscellaneous data: other data not pertaining to the categories above, or carried for TEST purpose only
- Any other category as agreed later

Data that may be carried over CRV:

- AFTN/AMHS messages to replace the current AFTN/AMHS connections
- Ground-to-ground voice communications between states
- AIDC messages via the exchange of AFTN/AMHS messages
- METAR and SPECI (including TREND), TAF and SIGMET data in a GML-compliant format
- NOTAM and aeronautical data including obstacles, terminal procedures and airport mapping data in a GML-compliant format
- Data link communications
- AIM information such as eAIP over IP
- ATFM data flow of meteorological data in the same manner as support for WXXM data flow
- exchange of ATFM information such as flight schedule, ATFM messages, ATFM daily plan (ADP), etc.
- ATS messages, Traffic Flow Management, Airport CDM and boundary crossing in a GML-compliant format
- Other data as necessary

CRV in other Regions:

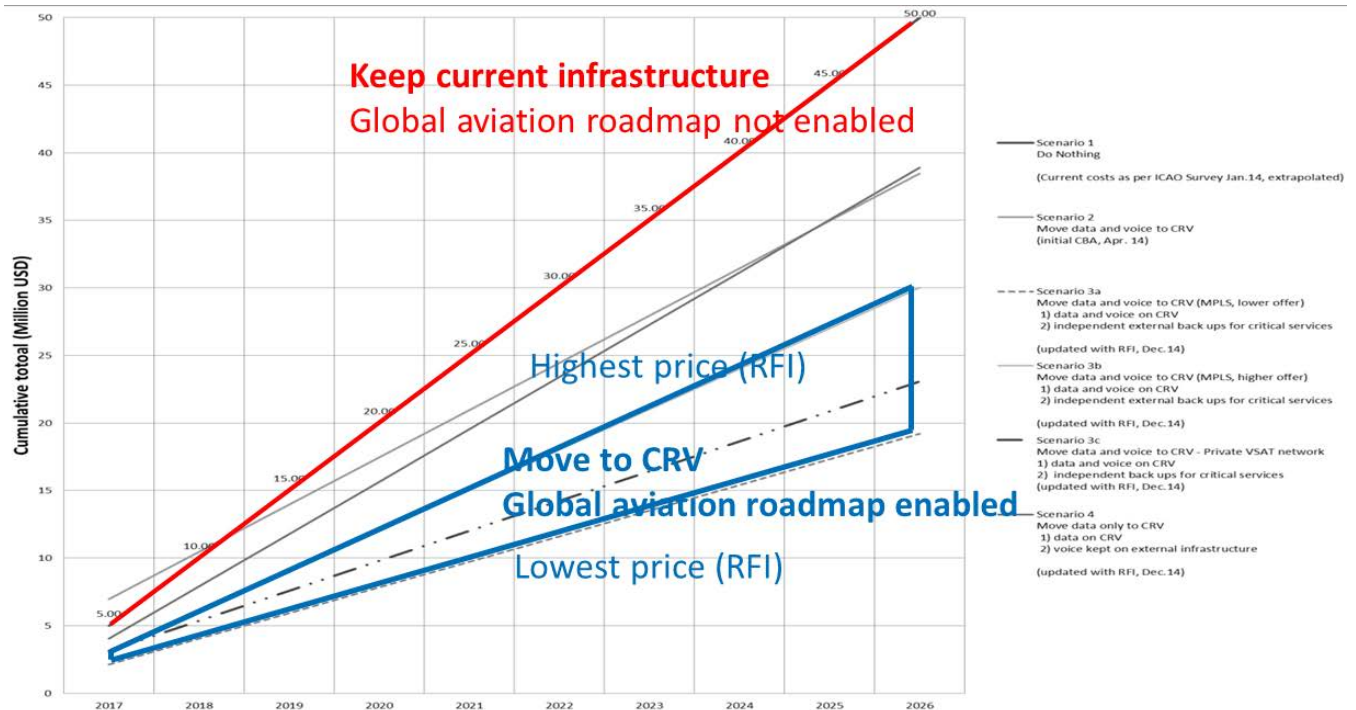
- European Region: Pan-European Network Service (PENS)
- North American Region: FAA Telecommunication Infrastructure (FTI) to support Canada and USA to distribute AFS data
- South America: REDDIG
- Caribbean: MEVA

Tender phase/costs:

- Pioneer States/Organizations in APAC shared the cost of conducting the Sealed Tender process on a cost-recovery basis
 - ICAO TCB services assigned one part-time expert in Aeronautical communications and procurement
 - Estimate of the total cost was USD109,300
 - Equal share between States/Organizations
- 17 Pioneer States in APAC have joined by paying their contribution

Cost-Benefit Analysis (CBA):

Based on the ICAO APAC survey in 2013-2014, first CBA in April 2014 in 15 States (before RFI) and second CBA adopted in September 2015 (after RFI):



Tasks for each individual State:

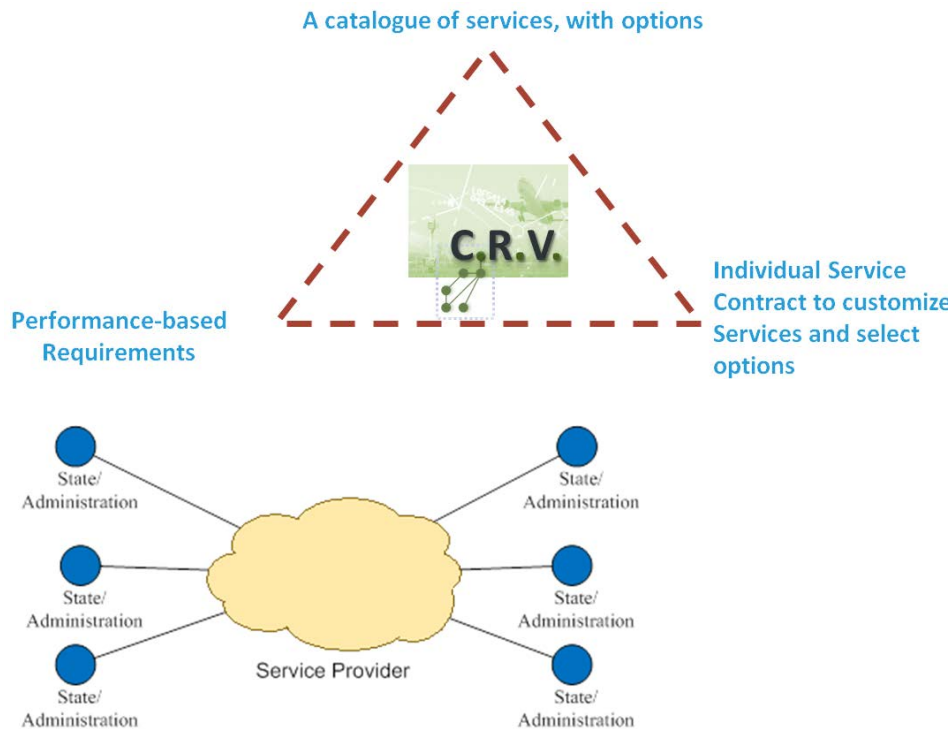
- Local CBA (based on CBA and bids received)
- Local safety case
- Local implementation plan
 - *These State's tasks are supported by CRV TF and CRV OG in APAC*

States' Requirements:

The implementation of the IP Network does not require a lot of investment in hardware, software, and or training. The following are major requirements:

- suitable Routers hardware with the appropriate software and ports;
- installation of suitable telecom line(s) in the equipment room;
- suitable electrical outlet with UPS;
- training of engineer(s) and operator;
- join the CRV Operation Group; and
- signature of contract with the Service provider.

Scope of the Service:



APPENDIX B

MID IP Network Project (CRV) Focal Points and Commitment Status

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
Bahrain	Mohamed Ali Saleh <i>Chief Aeronautical Telecomm</i>	Fax: +973 17329966 Tel: +973 17321187 Email: masaleh@caa.gov.bh	Air Navigation Directorate Building: 353, Road: 2408, Block:224, Muharraq, Bahrain Technical Room coordination point: 2616N 05038E	Y (1)
	Yaseen Hassan AlSayed <i>Head Aeronautical Telecomm Network</i>	Fax: +973 17329966 Tel: +973 17321183 Email: y.alsayed@caa.gov.bh		
Egypt	Mr. Mohamed Ramzy Mohamed Abdallah <i>Director of AFTN/AMHS Technical Department</i>	Tel: +202 22657981 +201007736780 Email: Mrma_eg@yahoo.com	Building Name: Cairo Air Navigation Center (CANC) Address: NANSO Company – Cairo 300701.0 N 0312342.4 E	
	Eng. Haitham Mohamed Ahmed Eldosoki <i>Director of AIM Technical Department</i>	Tel: +202 22650781 +201007810781 Email: Haitham.mohamed@nansceg.net		
Iran	Mr. AliAkbar SalehiValojerdi <i>Senior Expert of IRANAFTN/AMHS Training Department</i>	Fax: +98 21 66025101 Tel: +98 21 6102337 Mobile: +989 124 202775 Email: aasalehi@airport.ir		Y (1)
	Mr. Alireza Mahdavisefat <i>Senior Expert of IRANAFTN/AMHS COM Centre</i>	Fax: +98 21 66025101 Tel: +98 21 6314 6432 Mobile: +989 333510320 Email: mahdavi@airport.ir		
Iraq				
Jordan	Ms. Mona Ribhi AlNaddaf	Tel: +9626 4881473 +96279 9876710 Email: m.al-nadaf@carc.gov.jo		Y (1)
Kuwait	Mr. Hassan Alattar <i>Communication Engineer</i>	Fax: +965-2 4721 279 Tel: +965-2 4732 530 Mobile: +965 99449454 Email: ha.alattar@dgca.gov.kw		Y (1)

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
Lebanon	Mr. Mohamad Abdallah Saad <i>Head of Telecommunication Equipment</i>	Fax: +961 1 629 031 Tel: +961 1 628 151 Mobile: +961 3 280 299 Email: msaad@beirutairport.gov.lb		Y (1)
Libya				
Oman	Mr. Nasser Salim Al-Suleimani Chief ATM Systems Mr. Ibrahim Said Al-Hajri ATM Systems Engineer	Email: nassers@paca.gov.om alhajri@paca.gov.om		P-Y (1)
Qatar				
Saudi Arabia	Ibrahim bash Senior Systems Engineer Automation Engineering Branch	Fax: +966 12 671 9041 Tel: +966 12 671 7717 Ext 1119 Mobile: +966 50 567 1231 Email: ibasheikh@gaca.gov.sa		(3 sites) (Riyadh, Jeddah and Dammam)
Sudan	Eng. Yasir Eltayeb Sidahmed	Fax: +249 183 770001 Tel: +249 183 782701 Email: yasirts@gmail.com		Y (1)
Syria				
UAE	Greg Kurten A/Director CNS Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6860 Email: gegkurten@szc.gcaa.ae	The co-ordinates are as follows: 242641.82 N 0543635.46 E The working number at site is: +971 2 5996900	P-Y (1)
	Shahzad Chaudhary Senior CNS Engineer Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6865 Email: shahzad@szc.gcaa.ae		
Yemen				

APPENDIX C

MID IP Network (CRV) Implementation Process

	Action Title	Activities	Responsible	Timeline
1	Technical requirements	<ul style="list-style-type: none"> • States/ANSP develop their requirements (specify performance, interface, conversion, operational procedure, acceptance test procedure) • Present to Vendor for comment and response • Finalize requirements 	<ul style="list-style-type: none"> • States/ANSPs (with support of Vendor) • States/ANSPs and Vendor • States/ANSPs 	6 to 9 months
2	Negotiation and agreement between two connecting States/ Administrations	<ul style="list-style-type: none"> • To decide on the type of data or voice to be exchanged via CRV, QoS for each type of applications and the required bandwidth • CRV Contractor to comment and response to the agreed requirements • Agree to implementation schedule 	<ul style="list-style-type: none"> • Two connecting States/ANSPs • Vendor • Two connecting States/ANSPs 	6 to 9 months (concurrent with Action 1)
3	CRV Contractor proposes draft Contract to ANSP/State	<ul style="list-style-type: none"> • Vendor to develop and propose a draft Contract 	<ul style="list-style-type: none"> • Vendor 	3 months
4	Signature of the Contract	<ul style="list-style-type: none"> • Review and finalize the Contract <ul style="list-style-type: none"> ➤ Contractual and Legal review ➤ Technical and operational review ➤ Finalize contract ➤ Establish contract and payment system • Signature of the Contract 	<ul style="list-style-type: none"> • States/ANSPs • States/ANSPs and Vendor 	3 to 6 months
5	Operation, test and evaluation	<ul style="list-style-type: none"> • Implementation and operation • Perform acceptance test with associated applications • Perform acceptance test with respective ANSPs/States 	<ul style="list-style-type: none"> • States/ANSPs and Vendor 	3 to 6 months
6	Service acceptance	<ul style="list-style-type: none"> • Service acceptance 	<ul style="list-style-type: none"> • States/ANSPs 	1 month