



ICAO

International Civil Aviation Organization

**The Twelfth Meeting of the Common aeRonautical Virtual
Private Network Operations Group (CRV OG/12)**

Denarau Island, Fiji, 23-26 January 2024

Agenda Item 11: MPLS/IP based inter-regional connection

MPLS/IP BASED INTER-REGIONAL CONNECTION

(Presented by ICAO Secretariat)

SUMMARY

This paper provides the current discussion status for the potential interconnection of CRV and REDDIG II and CRV and New PENS.

1. INTRODUCTION

1.1. The Air Traffic Services (ATS) relies on an Aeronautical Telecommunication Network (ATN) infrastructure to transmit air-to-ground and ground-to-ground applications. The most common network is based on the Internet Protocol Suite (IPS). ICAO has developed the Standard and Recommended Practices (SARPs) based on the preferred concept, which is a framework to support the implementation of the System Wide Information Management (SWIM).

1.2. For providing services to Air Navigation Providers (ANSPs), almost all Communication Service Providers (CSP) use the Multiprotocol Label Switching (MPLS) infrastructure to deliver IP applications. MPLS services are used to implement regional IP networks such as Common aeRonautical VPN (CRV) for Asia and Pacific (APAC)/ Middle East (MID), New Pan-European Network Service (New PENS) for EUR/NAT and South American (SAM) Region Digital Network (REDDIG II). Currently, the communication service providers for these networks are PCCW Global (CRV), British Telecom (New PENS), and Lumen/Cirion Technologies (REDDIG II).

1.3. The CRV was developed to improve regional connectivity and help reduce telecommunications costs. To enhance global connectivity among states of different regions, it was suggested that States that connect to the CRV should also connect to other regional networks such as REDDIG II and New PENS.

1.4. There are potentially further benefits to implementing interconnections to regional networks, such as efficiency in the connection services such as SWIM reducing costs for states that connect to other regional networks. Some states had already expressed an interest in connecting to other regional networks, such as New Zealand to REDDIG II and Singapore to New PENS. Therefore, interconnection among regional networks may be critical to enhance air navigation capacity and efficiency.

1.5. The paper discussed the status of the discussion held for the potential interconnection of CRV and REDDIG II and CRV and New PENS.

2 DISCUSSION

CRV and REDDIG II Interconnection

2.1 As informed in WP/12 of CRV OG/11, the interconnection proposal of CRV and REDDIGII was initiated due to communications requirements between APAC and SAM ANSPs to set up the AMHS P1 connection between AMHS COM Centers of Christchurch (New Zealand) and Santiago (Chile) in 2021.

2.2 By WP/07 in the CRV OG/09 Meeting, PCCWG shared how States in the CRV Network can communicate with States in the REDDIG II Network. PCCWG proposed establishing two (2) interconnection points between the CRV Network and REDDIG II Network for primary and backup, respectively.

2.3 As the technical proposal for the interconnection of CRV and REDDIG II was agreed upon, the ACSICG/9 meeting held from 19-21 April 2022 suggested working on the way forward for the business case for the proposed interconnection along with the next course of action for PCCWG and Lumen for this interconnection requirements. The ACSICG/9 meeting formed an Ad-Hoc group comprised of APAC Member States having interregional connections, CRV OG Chairs, CRV and REDDIG II service providers, interested States of the SAM region, and the ICAO Secretariat under CRV OG. The ICAO Secretariat coordinated with the ICAO SAM Office to get nominations from interested SAM member states for this task.

2.4 In the Twenty-Eighth Meeting of the REDDIG II Coordination Committee (RCC/28) held in Lima, Peru, from 2 to 4 May 2022, a representative of Lumen reported that they were going to propose to PCCW Global a new, simpler interconnection scheme, using a Lumen data center in Santiago, Chile, where PCCW Global uses infrastructure as a Lumen customer. According to the Lumen representative, the proposal was more economical and faster to implement and would be discussed with PCCW Global representatives for approval and implementation.

2.5 The ICAO SAM Secretariat requested that Lumen's representatives contact PCCW Global representatives as soon as possible to make the interconnection of the networks, informing the REDDIG Administration of the progress made.

2.6 As per the updates at the end of 2022, Lumen LATAM (Latin America) was sold to Cirion Technologies. Therefore, the contract of ICAO for the provision of the terrestrial segment of REDDIG II (MPLS) was with the new company Cirion Technologies, which modified the solution inside the new company's infrastructure. Additionally, PCCW Global was a client of Cirion Technologies in Chile. This allowed to build an interconnection solution using the Santiago facilities. A proposal was presented by Cirion Technologies personnel in September 2022 at the RCC meeting. The ICAO SAM Secretariat requested Cirion Technologies to discuss the proposal with PCCW Global personnel and formally present it in the next RCC meeting.

2.7 ICAO APAC Office requested PCCW Global contact Cirion Technologies to discuss the interconnection proposal. However, despite several coordination in 2023, no significant progress has been reported by either company to the respective ICAO Secretariat. Therefore, no concert technical proposal is ready to work further for CRV and REDDIG II interconnection.

2.8 After analysis of the issues, it seems that in the current CRV/REDDIG II contract, there

is no clause that requires PCCW Global/Cirion Technologies to establish the interconnection with different regional networks. Therefore, the request to both parties for regional interconnection has been stalled. For this reason, it is essential to include a requirement in the new service contracting processes to establish interconnections with other ICAO regional networks.

CRV and New PENS

2.9 CRV and New PENS interconnection status is the same as shared in CRV OG/11 by WP/12. ICAO Secretariat is coordinating with Eurocontrol for further way forward. However, as of today, there are no outcomes to share.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss the way forward for regional interconnection; and
- c) discuss any relevant matter as appropriate;
