

1.3 These VSAT stations are called "Dual Stations" because they can communicate on the two networks (MEVA III and REDDIG II). Figure 1 presents the concept of the "Dual Station".

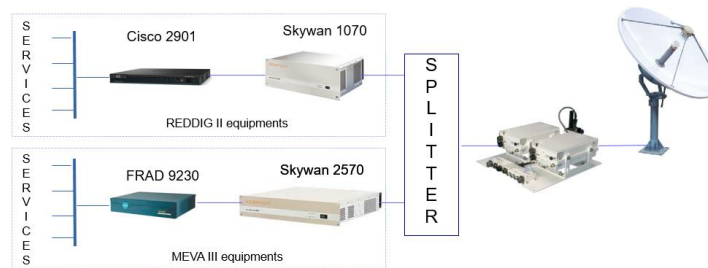


Figure 1 – MEVA III – REDDIG II Dual VSAT Station Concept

1.4 In 2015, during the Coordination Meeting of the MEVA III – REDDIG II Interconnection (Oranjestad, 25-26 May 2015), a Memorandum of Understanding (MoU) was adopted between the States/Territories/Organizations participating in the MEVA III network and ICAO, representing the Participating States/Organizations of the Regional Technical Cooperation Project RLA/03/901 (Administration of REDDIG II).

1.5 Table 1 presents the communications established by this interconnection scheme.

Table 1 – Communications established in the MEVA III – REDDIG II Interconnection

No.	Sites	Requirement
Connectivity through the Caracas, Venezuela MEVA III site		
1	Curaçao/Caracas (Venezuela)	1 ATS voice A 1 AFTN data, 2400 bps, X.25, IA-5
2	Aruba/Josefa Camejo (Venezuela)	1 ATS voice A
3	Atlanta (United States)/Caracas (Venezuela)	1 AFTN data, 9600 bps, X.25, IA-5
4	Puerto Rico/Caracas (Venezuela)	1 ATS voice A
5	San Juan (Puerto Rico) / Caracas (Venezuela) Curacao/ Caracas (Venezuela) Aruba/ Josefa Camejo (Venezuela)	ATS voice D
Connectivity through the Bogota, Colombia MEVA III site		
6	Barranquilla (Colombia)/Curaçao Barranquilla (Colombia)/Jamaica Barranquilla (Colombia)/Panama	ATS voice A ATS voice A ATS voice A
7	Bogota (Colombia)/Panama	1 AFTN data, 2400 bps, X.25, IA-5
8	Bogota (Colombia)/Panama Cali (Colombia)/Panama Medellin (Colombia)/Panama San Andrés (Colombia)/Panama Jamaica/ Barranquilla (Colombia) Curacao/ Bogotá (Colombia) Panamá/Bogotá (Colombia)	ATS voice A ATS voice A ATS voice A ATS voice A ATS voice D ATS voice D ATS voice D
9	Lima (Peru) / Atlanta (United States)	1 AFTN data, 9600 bps, X.25, IA-5
10	Atlanta (United States)/Manaus (Brazil)	1 AFTN data, 9600 bps, X.25, IA-5
Connectivity through the Tegucigalpa, Honduras REDDIG site		
11	COCESNA/Guayaquil COCESNA/ Bogotá	ATS voice

1.6 In 2020, the United States (FAA) has implemented two "additional nodes" of the REDDIG II terrestrial network (MPLS) in Atlanta and Salt Lake City, contracting directly from the REDDIG II Telecommunication provider (Lumen) links to access the network. Through these links, AMHS P1 interconnections with South American COM Centers were established (Brasilia, Caracas and Lima).

1.7 Panama and Aireon have already expressed interest in implementing "additional nodes" of the REDDIG II terrestrial network, directly contracting Lumen services.

1.8 In June 2021, COCESNA has signed the revision of Project RLA/09/901/D that includes the contracting of the terrestrial network node (MPLS) REDDIG II of Ilopango (San Salvador).

2. Description

2.1 Through the Regional Project RLA/03/901, communication services are contracted from Frequentis to implement the MEVA III – REDDIG II interconnection, through the nodes of Bogotá and Maiquetía.

2.2 The current contract (Contract 22501528) is valid until March 31, 2022 and the monthly cost for each MEVA III node of interconnection with the REDDIG is:

- Bogota: **USD 2,159.14** monthly; and
- Maiquetia: **USD 2,252.86** monthly.

2.3 Figure 2 presents the current MEVA III – REDDIG II interconnection scheme.

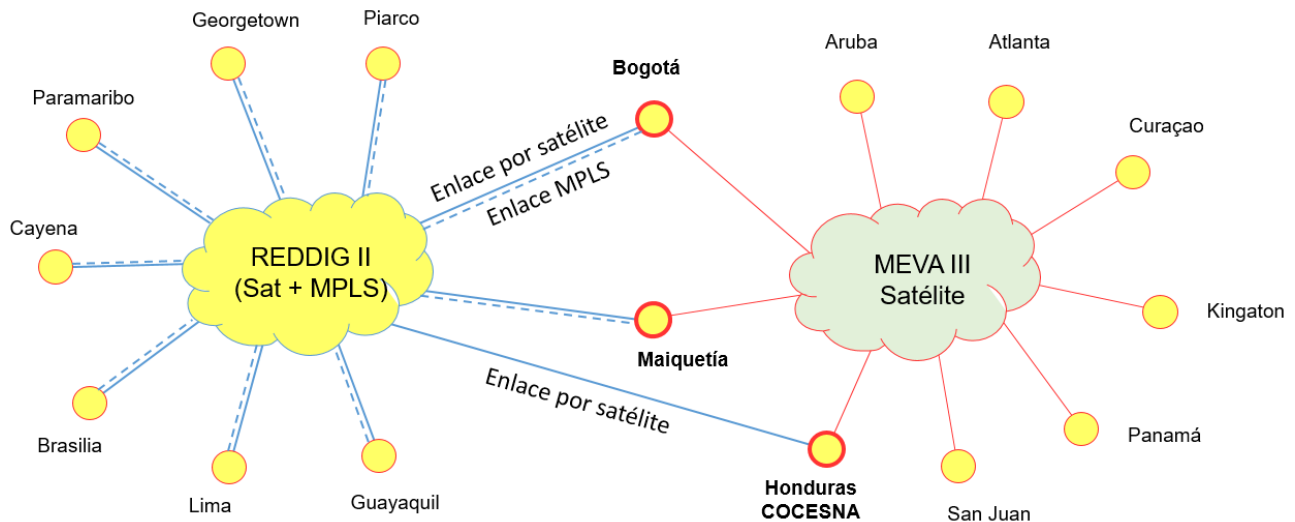


Figure 2 – Current MEVA III – REDDIG II interconnection scheme

2.4 Considering the States/Organization involved in the communications provided by the MEVA III nodes of Bogotá and Caracas (Aruba, Colombia, COCESNA, Curaçao, United States, Jamaica, Panama, Puerto Rico, Trinidad & Tobago and Venezuela), 6 would be connected to REDDIG II (Colombia, COCESNA, United States, Panama, Trinidad & Tobago and Venezuela), and it is interesting to analyze the possibility of the implementation of REDDIG II nodes in the remaining States of the interface between the CAR and SAM Regions.

Proposal for communications in the interface of the CAR and SAM Regions

2.5 The proposal consists of the implementation of REDDIG II (MPLS) nodes in Curaçao, Jamaica and Puerto Rico, where there are Lumen infrastructure, at a potentially lower cost, providing better communications to these States. Figure 3 illustrates the proposal made.

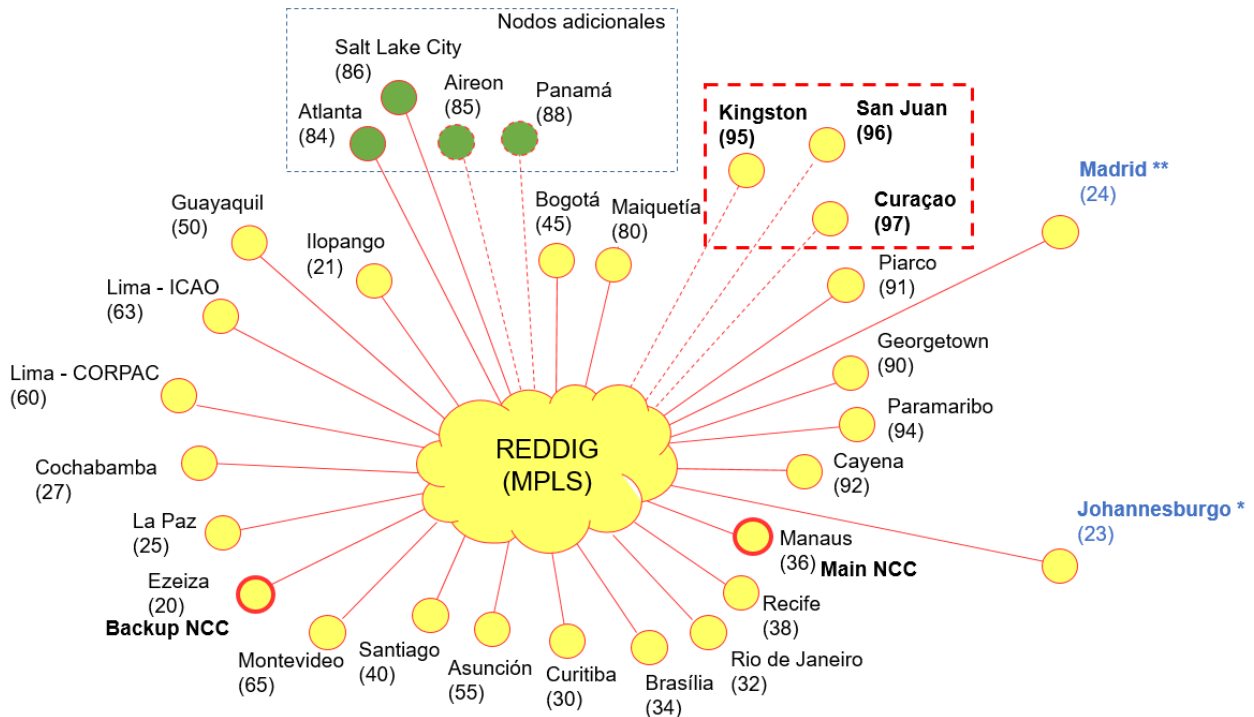


Figure 3 – REDDIG II terrestrial network (MPLS) with nodes in CAR States

2.6 This proposal would address all communications in Table 1, except the oral channels between TWR Josefa Camejo (Venezuela) and APP Aruba, which could be addressed by a technical arrangement using circuits (MEVA III) between Aruba and Curaçao. Figure 4 presents the new connection scheme to service communications on the interface of the CAR and SAM Regions.

2.7 The service contract with Frequentis for the nodes in Bogotá and Caracas would be cancelled and the resources would be used to implement the nodes in Curaçao, Jamaica and Puerto Rico for the period of validity of the current contract with Lumen (3 years).

2.8 This period coincides with the time needed for the development and implementation of the new regional IP networks CANSNET (NAM/CAR) and REDDIG III (SAM), which should already include the requirement that service providers ensure interconnection between the regional networks.

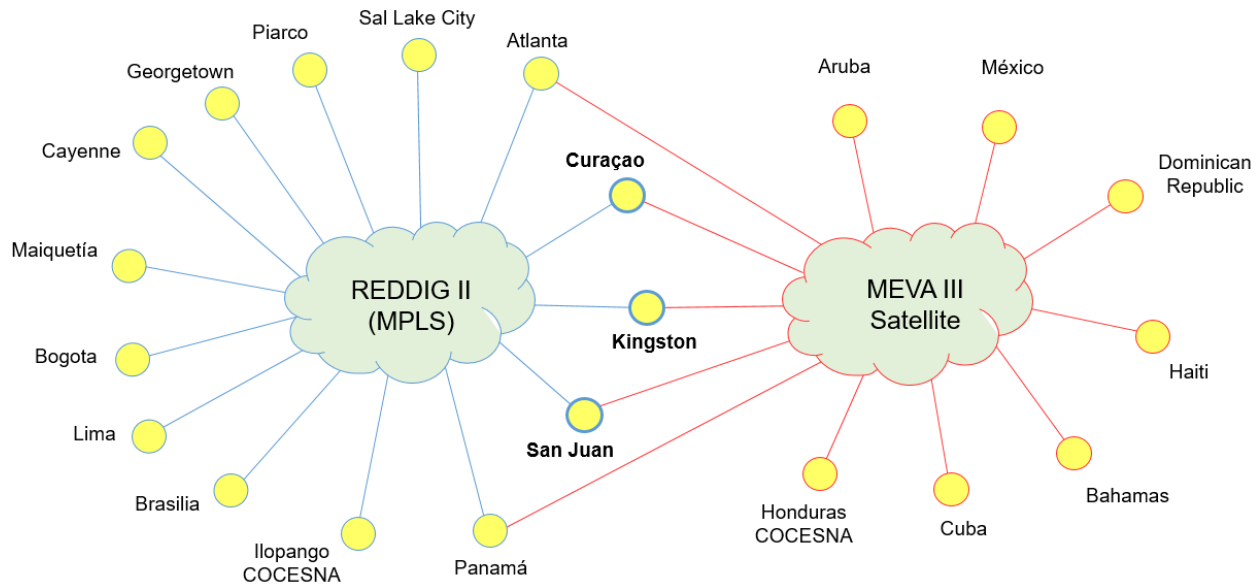


Figure 4 – Connection proposal for communications in the interface of CAR and SAM Regions

2.9 The characteristics of MPLS links for CAR States are:

- 1 Mbps bandwidth (mínimum);
- 99.7 % of monthly availability;
- BER less than 10^{-7} , 99.5% of the time; and
- The RTT for communication between two nodes, of a packet of 64 bytes, cannot exceed 150 ms in 95% of the measurements made, in a minimum time window of 10 seconds.

2.10 The reference values obtained from Lumen are:

Costs per service (monthly): **USD 1,864.00** (per node)

- a) Curaçao (DC-ANSP): Curaçao International Airport ($12^{\circ} 11' 05.89''N / 068^{\circ} 57' 31.50''W$);
- b) Jamaica (JCAA): 4 Winchester Rd – Kingston ($18^{\circ} 00' 39.52''N / 076^{\circ} 47' 31.81''W$); y
- c) Puerto Rico (FAA): Luis Muñoz Marín International Airport ($18^{\circ} 26' 15.63''N / 066^{\circ} 0' 17.76''W$).

Installation cost (one-time charge): **USD 1,864.00** (per node)

2.11 It is estimated that ICAO can negotiate for a monthly cost per node between USD 1,500.00 to USD 1,700.00.

Administrative measures

2.12 The first administrative measure would be for the Coordination Committee of the Regional Technical Cooperation Project RLA/03/901 to approve the implementation of the REDDIG II nodes (MPLS) in Curaçao, Jamaica and Puerto Rico.

2.13 Another important measure, if the proposal is approved, is to request authorization from the CAR States for the implementation of the nodes of Curaçao, Kingston and San Juan, through a letter, addressed to the CAR States, via the NACC Regional Office.

3. **Suggested Action**

3.1 The Coordination Committee is invited to:

- a) To take note of the information contained in this working paper; and
- b) Approve the adoption of the administrative measures indicated in this work paper.

- End -