



Agenda Item 4: Work plan for 2021

ACTIVITIES FORESEEN FOR 2021

(Working paper presented by the Secretariat)

SUMMARY	
This working paper presents information on the activities foreseen to be carried out in 2021 under Project RLA/03/901 - <i>REDDIG management system and satellite segment administration</i> .	
References	
<ul style="list-style-type: none">• Twenty-fourth meeting of the REDDIG Coordination Committee (RCC/24) (Lima, Peru, 03 to 06 March 2020); and• Twenty-fifth meeting of the REDDIG Coordination Committee (RCC/25) (Teleconference, 16 October 2020)	
ICAO strategic objectives:	A – <i>Safety</i> B – <i>Air navigation capacity and efficiency</i>

1. Introduction

1.1 The main activities scheduled for 2021 are:

- a) New REDDIG II activities and services;
- b) Activities and new services on the MEVA III/REDDIG II interconnection;
- c) Operation of REDDIG II and analysis of the implementation of new services; and
- d) 2021 training programme.

2. Description

NEW ACTIVITIES AND SERVICES OF THE REDDIG II

REDDIG III

2.1 As expressed in the RCC/24, taking into account the service life of the network (ten years maximum) and the recurrent failures in some units in particular, which will become more frequent, it is necessary to start considering the design of a REDDIG III.

2.2 Taking into account the new contract with Lumen, where almost all the nodes will have an upgrade from 1 Mbps to 5 Mbps, that the Venezuela node will have an important modification in its topology, which will notably increase performance and availability, and the inclusion of new additional nodes, it must be defined whether the functionality of the network will continue with the primary and ground satellite mode as an alternative, or if the priority will be modified during 2021.

2.3 The constitution of an Ad-Hoc group to discuss a project outlined within the next 4 years must be resumed. This group shall analyse new solutions, new technologies, and in particular foresee future needs to define a network that allows all needs to be covered (Conclusion RCC/24-2 Establishment of the REDDIG III Ad-Hoc Group).

2.4 It is also necessary to discuss the possibility of having only one chain of stations in operation, in order to extend the service life of the equipment.. The Administrator must present a schedule to be implemented this year, which establishes the time of equipment shutdown, maintenance phases and alternation of operation (they operate alternately every 3 or 4 months).

New contract with the ground network provider

2.5 As the new contract with the ground network provider (LUMEN) was signed, for a period of two years (with the option of renewal for two more years), work will be done to upgrade bandwidth (in most of the nodes it will be from 1 Mbps current to 5 Mbps), topology modifications (as is the case of the Maiquetía node), in the 99.7% committed availability in all nodes, new nodes and new additional nodes; as seen in **Appendix A**.

Requirements to delegates

2.6 Like every year, delegates are requested to do the following:

- a) Verify that the stations are registered in the regulatory bodies of the frequency spectrum, and report the situation;
- b) Update the Focal Points for the Project through an official written communication, addressed to the Regional Office; and
- c) The areas responsible for the electrical installations are again encouraged to check the status of the installations, the UPSs of each of the nodes and the grounding system.

2.7 States that are in a position to acquire spare parts and/or spare equipment for their REDDIG nodes are urged to do so with the necessary advice from the ICAO Regional Office, in order to maintain homogeneity and availability of the systems in each of the nodes.

2.8 States are urged to make the necessary efforts to improve logistics processes, in order to avoid the inconveniences that have arisen. These situations threaten the availability of the network, can harm other nodes, and affect the safety of air operations.

2.9 In order to carry out more efficient preventive maintenance in the RF stages of the nodes, it is reiterated the need to have the appropriate RF measurement instruments for L-band measurements. In this sense, the Administrator, during the RTO/08, indicated to the delegates of the States the minimum and necessary instruments.

2.10 States are urged to proceed an inventory to the assets of each Aeronautical Administration, and if irregularities are found, proceed to normalize them.

2.11 The Regional Office's concern about the status of corrosion of the parts of the antennas and accessories is reiterated, and the need for the States to take action in this regard.

ACTIVITIES AND NEW SERVICES ON THE MEVA III/ REDDIG II INTERCONNECTION

Ninth technical-operational meeting of REDDIG II

2.12 The Ninth technical-operational meeting of REDDIG II was scheduled to take place in Cochabamba, Bolivia. Due to the pandemic, it was cancelled. In this sense, the Bolivian Administration should be consulted about the possibility to carry out the RTO/09 during 2021, and if agrees to host it, on a date to still be confirmed. One fellowship per state and simultaneous translation would be planned for this event.

OPERATION OF REDDIG II AND ANALYSIS OF THE IMPLEMENTATION OF NEW SERVICES

2.13 Regarding the activities undertaken by 2021 is planned:

- Purchase of REDDIG II spare parts and update of configurations
- Application of the preventive maintenance program
- Visits to REDDIG II nodes
- Transfer of the REDDIG II node of Bogotá
- Installation of additional nodes in Cochabamba, ICAO SAM Office, and Rio de Janeiro
- Implementation of new REDDIG II services
- Continue supporting the interconnections between AMHS systems in the Region and with other Regions.

Purchase of REDDIG II spare parts and update of configurations

2.14 Regarding the Skywan 1070 modems and Terrasat equipment, it is important to note that both manufacturers (NDSatcom and Terrasat) have given notice of the discontinuation of the manufacture of the product models used in the nodes.

2.15 It is pending, the reception of the two 80W IBUCs that are faulty in Maiquetía, Venezuela; two faulty Skywan 1070 modems and Rx 1+1 Switching System of La Paz, Bolivia.

2.16 The acquisition of more modems, amplifiers or other parts should be analyzed, taking into account what is stated in this paper and in WP/03.

2.17 As annually is done, proceed with the necessary actions to acquire the renewal of the anti-virus software license of the servers. Each year, the license expires on December 31, therefore it must be renewed.

Application of the preventive maintenance program

2.18 For 2021, as in the previous years, the REDDIG Administration has established a preventive maintenance program for all the equipment of all the REDDIG nodes. The schedule of preventive maintenance is the same that was presented in the RCC/22.

Visits to REDDIG II nodes

2.19 The States approved, as part of the maintenance and training activities in the REDDIG, that the REDDIG Administrator visit two nodes per year in order to carry out a complete evaluation of the node and develop a general update training for the personnel in charge of the node maintenance.

2.20 For the year 2021 and if conditions allow it, it has been considered to visit the nodes of Piarco and Guayaquil, added to the assistance that must be carried out during the transfer of the Bogotá node.

2.21 In the first two cases, each visit will last one week. In the case of the Bogotá node transfer, the Colombian Administration will assume the costs of the Administrator presence during this process and costs will be charged in the annual fee.

Transfer of the REDDIG II node of Bogotá

2.22 As developed in WP/03 of this Meeting, it is currently awaiting nationalization/release to have the new antenna and material sent by INEO/ENGIE.

2.23 The material is in Colombia in the process of being removed from Customs, under the responsibility of the Colombian administration. The costs that this generates will be assumed by the Colombian administration while the costs generated by the storage of the material in the warehouses of the United States and France, will be charged to the Colombia's annual fee of Project RLA/03/901.

Interconnection of Regional IP networks

2.24 In 2021, discussions began with APAC and EUR to implement the interconnection of regional IP networks (CRV, PENS and REDDIG II). In this task, with the initiative of the SAM Regional Office, meetings will be held with representatives of the three telecommunication companies: PCCW Global (APAC), British Telecom (PENS) and Lumen (REDDIG II), and with the organizations and States involved. (Conclusion RCC/24-3 Interconnection of Regional IP Networks).

2.25 In **Appendix B** to this working paper, the summary of the teleconference held with representatives of the APAC Region to establish the AMHS P1 interconnection between the COM AMHS Centers of Chile and New Zealand is presented.

Alternation of the operation of the NCC and the REDDIG management center

2.26 In 2021, the operation of the NCCs and the management center of the REDDIG in Manaus should be alternated, as long as conditions allow it.

2.27 During short periods of solar conjunction and eventualities, only the reference carrier will be temporarily switched from Manaus to Ezeiza.

2021 TRAINING PROGRAMME

2.28 The following training activities are foreseen for 2021:

- a) Recurrent on REDDIG II operation and maintenance (virtual);
- b) Course on security policies and firewall configuration *;
- c) Advanced course on firewall management and monitoring *;
- d) Virtual training for Manaus NCC staff on analysis of IP packages using sniffer (RADAR, AMHS, etc.); and
- e) Course on security policies and firewall configuration *.

** These trainings depend on the purchase process*

Recurrent on REDDIG II operation and maintenance (virtual)

2.29 This activity has been carried out every year and was carried out during the scheduled visits to the nodes by the Administrator. Given the current pandemic situation, it is proposed to carry out this training virtually. If the possibility of face-to-face visits by the Administrator arises, it will be carried out on a regular basis.

Course on security policies and firewall configuration

2.30 At the moment, it depends on the purchase of firewall equipment

2.31 It is reiterated that the purpose of training is, first, to introduce staff to the security policies and, then, to allow participants to configure the equipment to be installed in each node.

2.32 Taking into account that the purchased equipment would be delivered to the Regional Office, in principle, and if a normal sanitary state returns, training would be provided in Lima, for which a fellowship per State will be granted.

2.33 The participants will be required to have networking knowledge. In this sense, it should be noted that, through the project, the staff has received various courses on this subject.

2.34 Costs involved in the provision of the course will be included in the purchase of the equipment, while fellowships will be covered by the Project.

2.35 Is expressed again that this training will depend on the final acquisition of the equipment.

Advanced course on firewall management and monitoring

2.36 Same considerations as the previous activity.

2.37 The course is directly related to the “*Course on security policies and firewall configuration*”. Accordingly, it will be subject to the holding of the former.

2.38 It is foreseen a vacancy for the CNS Officer, the REDDIG Administrator, the Manaus NCC and the Ezeiza NCC.

2.39 Costs involved in the provision of this course will be included in the purchase of the equipment, while fellowships are to be covered by the Project.

Training for the Manaus NCC staff on analysis of IP packages using sniffer

2.40 During 2020, training could not be delivered due to the pandemic. This training is intended for the Manaus NCC staff and its purpose is to give support to the network and ensure data transport and integrity.

2.41 The intention is that, during 2021, if it cannot be done in person, it will be delivered virtually.

2.42 This training entails no cost and will be provided by the network Administrator.

3. Suggested actions

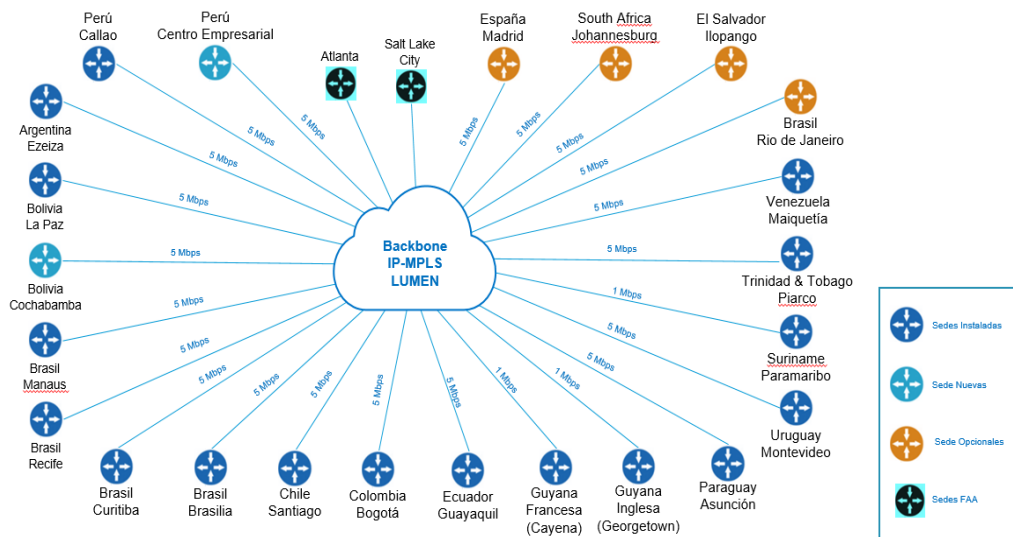
3.1 The Coordination Committee is invited to:

- a) take note of the information provided herein;
- b) review the activities foreseen for 2021; and
- c) discuss any other matter it may deem appropriate in relation to the activities scheduled for 2021 under Project RLA/03/901.

APPENDIX A

New contract of the ground network

	Point of Presence (PP)	Location indicator	bit/s	Availability (%)
1	Argentina (Ezeiza)	SAEZ	5 M	99.7
2	Bolivia (Cochabamba)	SLCB	5 M	99.7
3	Bolivia (La Paz)	SLLP	5 M	99.7
4	Brazil (Curitiba)	SBCW	5 M	99.7
5	Brazil (Recife)	SBRE	5 M	99.7
6	Brazil (Manaus)	SBMN	5 M	99.7
7	Brazil (Brasilia)	SBBR	5 M	99.7
8	Chile (Santiago)	SCEL	5 M	99.7
9	Brazil (Río de Janeiro)	SBRJ	5 M	99.7
10	Colombia (Bogotá)	SKED	5 M	99.7
11	Ecuador (Guayaquil)	SEGU	5 M	99.7
12	Guyana Francesa (Cayena)	SOCA	1 M	99.7
13	Guyana (Georgetown)	SYCG	1 M	99.7
14	Paraguay (Asunción)	SGAS	5 M	99.7
15	Peru (Lima - CORPAC)	SPIM	5 M	99.7
16	Peru (Lima - OACI)	ICAO	5 M	99.7
17	Suriname (Paramaribo)	SMPM	1 M	99.7
18	Trinidad & Tobago (Piarco)	TTZP	5 M	99.7
19	Uruguay (Montevideo)	SUMU	5 M	99.7
20	Venezuela (Maiquetía)	SVMI	5 M	99.7



APPENDIX B

Teleconference Minutes

Regional IP Networks Interconnection

21 January 2021 (01:00 – 02:30 UTC)

1. Invited participants

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2. Objective

The meeting aimed to start coordination to achieve the regional IP networks' interconnection (CRV and REDDIG), in order to set up the AMHS P1 connection between AMHS COM Centers of Christchurch (New Zealand) and Santiago (Chile).

3. Discussion

3.1 APAC and SAM Regions have implemented regional IP networks to provide service to the Air Navigation Services Providers (ANSP) through Communication Service Providers (CSP) using Multiprotocol Label Switching (MPLS) service to deliver the applications' packets. PCCW Global is the CSP for the Common Regional Virtual Private Network (CRV) of APAC/MID regions and Lumen is the CSP for the SAM Region Digital Network (REDDIG II).

MPLS Network-to-Network Interface

3.2 The MPLS service providers interchange IP packets carrying information of Internet applications (emails, video streaming, web services, voice communication, etc.), using the same routing protocols employed in the virtual private networks. It is technically possible for two nodes of

different networks (with different providers) to set up an IP connection. In this case, the concept of MPLS NNI is applied and the CSPs involved with different customers establish agreements, in order to coherently interconnect their own infrastructure. The Figure 1 depicts the concept of MPLS-NNI topology.

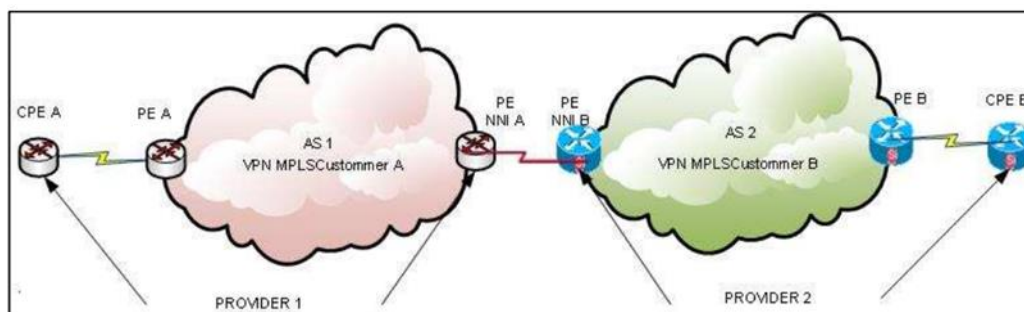


Figure 1 – MPLS NNI topology

3.3 This concept can be applied by the CSPs of CRV and REDDIG II, in order to connect nodes of the two networks. For instance the Auckland node of CRV with the Santiago node of REDDIG II. Figure 2 presents this concept.

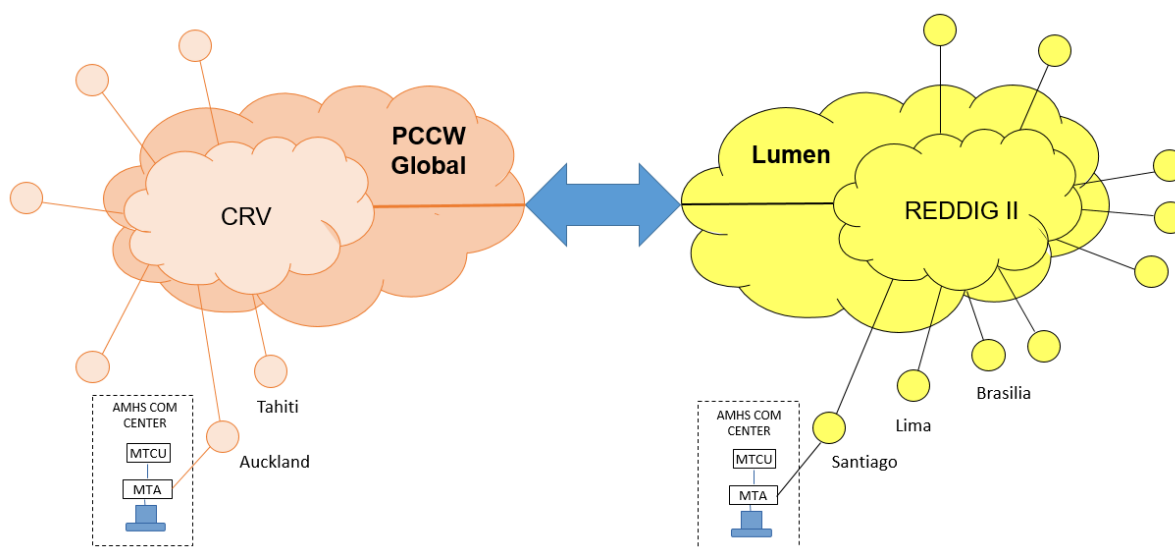


Figure 2 – MPLS NNI between CRV and REDDIG II

AIDC between oceanic ACCs of Chile and New Zealand

3.4 Chile and New Zealand have adjacent oceanic FIRs and plan to implement AIDC for Air Traffic coordination between the oceanic control centers (ACCs). The plan notes that the automation of coordination tasks using AIDC between adjacent sectors improves the quality of information on traffic transiting between sectors and makes it more predictable, thereby allowing reduced separation minima, decreased workload, increased capacity, more efficient flight operations, and enhanced safety.

3.5 To guarantee an effective AIDC connection, it is important to have a direct P1 AMHS connection between the two AMHS COM Centers providing message service to the involved oceanic centers. This AMHS P1 connection (extra-plan) between Christchurch AMHS COM Center (NZCH) and Santiago AMHS COM Center (SCSC) will be included in the respective regional Air Navigation Plans.

3.6 Figure 3 depicts the AMHS P1 connection between NZCH AMHS COM Center and SCSC AMHS COM Center.

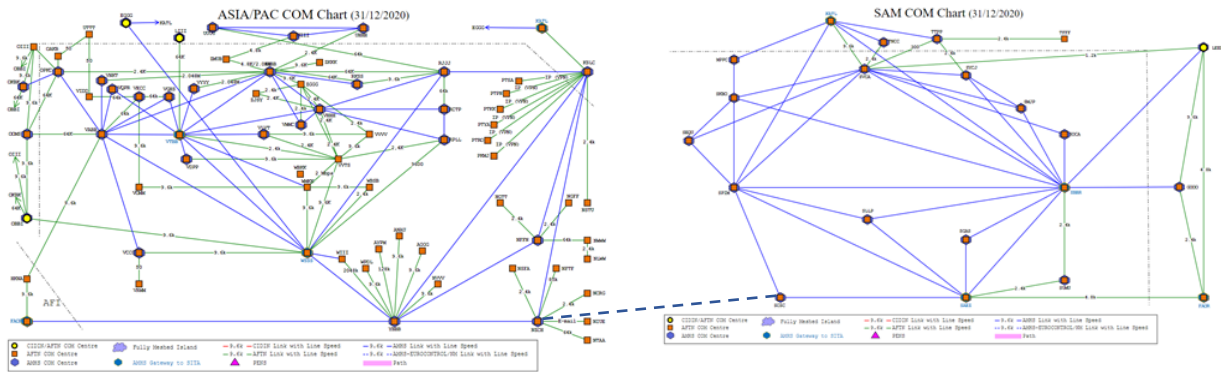


Figure 3 – AMHS P1 connection between NZCH and SCSC

4. Recommended actions

- a) To contact the respective Communication Service Provider to know what is necessary to implement the connection between the CRV node of Auckland and the REDDIG II node of Santiago:
 - Vincent Wong and Vaughn Hickford will contact PCCW Global; and
 - Francisco Almeida and Javier Vittor will contact Lumen.
- b) APAC and SAM CNS Regional Officers will inform the respective Committee/Board of CRV and REDDIG II about this initiative.
- c) A new teleconference will be scheduled, tentatively for the last week of February 2021, in order to present the results from the contact with the CSPs, to provide more information about both networks and the interconnection initiative, and to present the administrative/technical aspects and the next actions to be taken.
