



REDDIG RTO/11

INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/03/901

**ELEVENTH TECHNICAL-
OPERATIONAL MEETING OF
THE REDDIG II DIGITAL**

(RTO/11)

FINAL REPORT

(Virtual, October 14-16, 2024)

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MEETING SUMMARY

ii-1 PLACE AND DURATION OF THE MEETING

The Eleventh Technical-Operational Meeting of REDDIG II (RTO/11), held virtually from October 14 to 16, brought together technicians and engineers from the region with the aim of improving and maintaining the skills necessary for the operation of this key communications network.

Before beginning with the development of the issues to be discussed, a review was made of the topics developed in the RTO-10. All the conclusions were reviewed, including those discussed in the RCC-30.

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ii-2 SYNTHESIS

During RTO/11, REDDIG Administrator Mr. Cristian Javier Vittor presented a detailed report on the network performance and led sessions to update and review maintenance procedures. Participants also analyzed experiences and knowledge on the operation of REDDIG II nodes, discussed different issues such as training proposals and spare parts purchases, and analyzed the next steps for the implementation of the future REDDIG III, projected for 2026.

ii-3 WORKING LANGUAGES

The working languages were Spanish, English, and French. In this regard, it is reported that there was simultaneous interpretation service from Spanish-English; from English-Spanish; from Spanish-French and from French-Spanish.

ii-4 PARTICIPANTS AND ORGANIZATION

Representatives of the Member States and one Organization (Brazil, Chile, COCESNA, Ecuador, Guyana, French Guiana, Panama, Paraguay, Peru, Trinidad & Tobago, Uruguay, Venezuela) participated in the meeting, as well as interpretation staff and assistants from the Regional Office.

Mr. Cristian Javier Vittor, Administrator of REDDIG II, acted as moderator and speaker of the meeting. The meeting was recorded.

ii-5 AGENDA

Agenda Item 1: Performance of the new REDDIG II since its commissioning

Agenda Item 2: Review and update of the procedures for the maintenance and operation of REDDIG II

Agenda Item 3: Analysis of the requirements for improving the provision of REDDIG II

Agenda Item 4: Other business

LIST OF PARTICIPANTS**ARGENTINA**

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3. Gerardo Martin
4. Pablo Daniel
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15. Ailton Rafael De Vasconcelos

CHILE

16. Christian Vergara

COLOMBIA

17. Carlos Mayorga
18. Walter López

ECUADOR

19. Nancy Tapia
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FRANCE (French Guyana)

21. Gilles Le Pabic
22. Freckhaus Samuel

GUYANA

23. Sewchan Hemchan

HONDURAS

24. Roger Perez
25. Manuel Flores
26. Leonardo Herrera
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PANAMA

30. Daniel De Avila
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34. Carlos Castro

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36. Jurgen R. Cicilson

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46. Luis Escobar

Agenda Item 1: Performance of REDDIG II to date

1.1 Under this agenda item, the meeting was informed of the performance of REDDIG II to date.

1.2 It was stated that work is being done at the expected levels of availability and functionality (99.9918%). It was agreed that this result is mainly due to the work carried out by the Administration, the technical staff of the NCC of Manaus and the technical staff of the States. **Appendix A.**

1.3 In the development of this issue, information was provided on the Services, Breakdowns, and Availability of REDDIG. **Appendix F.**

Logistical aspects

1.4 On this subject, the meeting was informed about the logistical movements that were carried out from the Regional Office. The historical record in this regard was also presented.

1.5 Considering that the REDDIG equipment is in the final stage of its life cycle, it is feasible that new developments will continue to appear, and it will be necessary to continue with the logistical processes for shipping, repairing and replacement of equipment. In addition to all the above, the manufacturers, NDSatcom and Terrasat, have not manufactured outdoor and indoor equipment since 2020. And there is only a commitment to have spare parts until 2022 and then it will be subject to availability of the manufacturers.

1.6 The REDDIG Administration sent the equipment detailed in **Appendix C** for factory repair during 2024.

1.7 It is worth highlighting the logistical work carried out by the Regional Office staff, who have taken on this task, which usually has its complexities/particularities, and which will be presented to the delegates at this meeting for their knowledge.

1.8 The reception of a 1070 modem from Guayaquil for factory repair is pending at the SAM Office. Two IBUCs from Suriname were received and have already been sent to the factory, along with a modem from Asunción and a modem from Curitiba. We have a faulty modem from Chile, awaiting shipment; and two IBUCs from Bolivia.

1.9 Reference to cybersecurity, with the acquisition and reception of the Fortigate, Forti Switch, Forti Manager and Forti Analyzer equipment, and the completion of the training courses, during 2023 the equipment was sent, distributed and installed in all the planned network nodes, with the exception of Argentina and Colombia, where, due to administrative issues specific to each State, the reception and installation of the same was not carried out.

1.10 In relation to this FortiNet equipment, the renewal of the equipment licenses is currently being managed. They must be renewed, although it depends on the contribution of the established quota. See **Appendix D.**

1.11 As has been expressed in other meetings, the Administration of REDDIG II informs the Focal Points that it must be considered that the REDDIG equipment has exceeded its useful life cycle, which will require continuing to carry out logistical processes for shipping, repairing and replacing equipment more

frequently.

1.12 For the repair of an item, the following expenses are generated:

- a) Payment to the factory for the maintenance performed;
- b) Payment to the transport company; and
- c) Payment for the services of customs agents.

1.13 The expenses incurred in the maintenance of an item are included in the annual fee of the State that has requested the maintenance intervention of the equipment of its node.

Inventory

1.14 Those present were informed of the inventory existing in the warehouse held by the Regional Office for their information. **Appendix E.**

Current status of nodes

1.15 Regarding the REDDIG MPLS network, in 2023, the nodes of Ilopango (03/28, El Salvador, COCESNA), ARSAT (12/13, Benavidez, Buenos Aires), and Madrid (12/5, Madrid, Spain) were incorporated. During 2023, the Panama node (01/18); and the Johannesburg, South Africa node (03/09) were incorporated.

1.16 It is reported that, monthly, a report is sent to Montreal with the availability of the MPLS nodes that were below the 99.7% availability of the service provision. Below this SLA parameter, the provider is penalized.

1.17 **Appendix G** presents an annual summary based on the amounts paid for lack of service availability during 2023 and the elapsed months of 2024.

1.18 Due to the stability and reliability of the terrestrial network, in most nodes (we have exceptions), the terrestrial network was used as the main network and the satellite network became the back-up.

1.19 Cirion and Intelsat offer access to the respective web pages, showing the options available to generate or follow up on a ticket, or to obtain important information on aspects related to the terrestrial and satellite networks. During the meeting, an online sample of what was expressed will be made.

1.20 To address developments in the MPLS network, the Contact Matrix is reviewed and updated annually, clarifying that everything continues to be centralized from the NCC Manaus.

1.21 Regarding Intelsat, information regarding the carrier frequencies in use as well as other details is published. This information has been the subject of consultation on several occasions.

Distribution of network accesses

1.22 During 2023 and the months elapsed in 2024, the nodes were distributed, by type of access, as follows:

- Satellite and MPLS: Ezeiza; Montevideo; Curitiba; Asunción; La Paz; Santiago; Lima; Brasilia; Manaus; Recife; Guayaquil; Cayena; Georgetown; Paramaribo; Piarco; Maiquetía; Bogotá. Subtotal: 17

- MPLS only: Rio de Janeiro; Ilopango; Cochabamba; Salt Lake City; Atlanta; ICAO SAM; AIREON; ARSAT (Buenos Aires); Madrid; Panama; Johannesburg; VSAT Santiago; VSAT Maiquetía. Subtotal: 13
- Satellite only: Tegucigalpa (MEVA antenna). Subtotal: 1
- MPLS in project: San Juan, Puerto Rico (costs borne by FAA); SITA (costs borne by the company). Subtotal: 2

Total: 32 Total Operational: 30 Projected: 2

Backup of Node Configuration

1.23 During 2023 and 2024, backups of the network equipment configurations were performed for each of the stations, which are kept safe and available at the NCC in Manaus.

Security

1.24 The planned distribution of the firewalls is in **Appendix K**. As will be explained in “Logistical Aspects”, this equipment was sent to the States. Although some States have already managed to remove the equipment from their respective Customs, in some cases the process of removing it is still ongoing. Remember that each State has its own Customs policies, and depending on the complexity of the policies, the time to have the equipment in the nodes may vary.

1.25 Considering that the project acquired a FortiAnalyzer and a FortiManager, and that these were installed at the Manaus NCC, during the end of 2024, personnel from this Center received virtual training on the administration and configuration of these particular devices.

1.26 In addition, password changes are made annually to the routers and switches of the stations, in order to keep the security and integrity measures of the processes and configurations of the equipment active. In the event of any intervention by local technical personnel, they must contact the NCC and report their activities and request access.

Solar Explosions

1.27 Every year, the process for reporting solar explosions that affect the satellite network is carried out. This phenomenon occurs twice a year and is saved thanks to the geographical redundancy of the Manaus and Ezeiza NCCs, and the fact that they have the MPLS network.

Alternation of the operation of the NCCs and the REDDIG Management Center

1.28 During 2023 and so far in 2024, the alternation of the operation of the NCCs from the REDDIG management center in Manaus to the Ezeiza NCC was not carried out.

1.29 It is observed that, during short periods of solar conjunction and eventualities, only the reference carrier was temporarily switched from the Manaus NCC to the Ezeiza NCC.

Other information on nodes and services.

1.30 Regarding P1/AMHS connections, the entire SAM Region works in this way between its MTAs. Directorio Telefónico de la REDDIG

1.31 The REDDIG Administration requires the focal points, as it does annually, to update the telephone directory (ATS and Administrative), or when there are modifications. In this regard, it is recalled that this information is subject to the operational documents/letters of agreement between States and that any modification, in addition to being reported and coordinated with the REDDIG administration, must be incorporated into the official documentation of the States and be communicated through official channels.

1.32 It is recalled and reiterated that the different CNS dependencies should be informed about the alternatives they have for coordination with their counterparts, considering the administrative telephone services, service messaging, and ATS oral services of the REDDIG. See **Appendix M**.

Improvements in coordination

1.33 During 2023, it was reiterated and requested to inform the REDDIG Administration and the nodes involved of technological changes, failure situations or configurations that are made in the States' systems, and that affect the services provided by REDDIG II (PABX, Voice Switching, MTA, automated systems, exchange of surveillance data, etc.). This request is reiterated in this RTO.

1.34 It is recalled that the Brazilian administration has provided a cell phone (Number +55 92 8412-6738) to the NCC technical staff that allows access to messaging (WhatsApp, Signal, Telegram, etc.); a tool that has considerably facilitated coordination. Currently, all NCC staff use this complementary means, and the Administrator uses his own cell phone service to meet this need for immediate communication.

REDDIG training program

1.35 The meeting requested to propose training for 2025 related to VoIP, and the use of sniffers.

Antivirus software on NMS servers

1.36 As is done annually, the antivirus renewal process was completed for 23 NMS servers, with a 1-year license. The renewal must be done starting on December 31 of each year. The antivirus update is carried out by NCC Manaus personnel, during the month of January of each year.

Preventive maintenance

1.37 The intention is to complete this task during the year 2024, paying special attention to the RF part of each station. Only maintenance actions were carried out, at the software level and by remote access. See **Appendix N**.

Visit to the nodes

1.38 During 2024, a mission to Uruguay was carried out by the REDDIG Administrator. A mission to Paramaribo, Suriname, is pending, as part of the two annual visits to the nodes that are expected to take place during this year. The latter depends on the reception of an amplifier in Paramaribo.

1.39 In relation to this issue, Conclusion RTO/8-2 on the need for technical visits by the REDDIG Administrator, which was also approved by the Coordination Committee of Project RLA/03/901, is maintained.

1.40 Consequently, it is proposed to continue with the two missions by the REDDIG Administrator.

Analysis of the Requirements for Improving the Performance of REDDIG II

1.41 During 2023 and 2024, the analysis of issues related to security, the inclusion of additional nodes within and outside the Region, the inclusion of new services, interconnections between Regions, the useful life of the equipment that makes up the current REDDIG and possible actions continued.

1.42 In this regard, work has been carried out on a platform based on the terrestrial network, taking into account known factors (cost/benefit, delay, jitter, throughput, latency, error rate, interaction of factors, etc.). This has led to a rethinking of whether the satellite network should continue to be considered the main medium. In this regard, in some cases, tests have been carried by the terrestrial network as the main medium, with very positive results.

Support for Extra-Regional Interconnection Coordination

1.43 The Regional Office is actively involved in the AMHS system interconnection processes in the Region, as well as in different services exchanged between States, such as tests with the OPMET Bank in Brasilia, exchange of surveillance data, provision of ADS B-satellite data providers with lower costs, etc. It was also reported that it collaborates in different situations that arise in each State in relation to services and systems, and that are often external to REDDIG.

1.44 Normally, collaboration is provided with all available tools to provide the necessary support for any action aimed at achieving interconnections, exchanges, and transport of different services and information. Also, with actions aimed at information analysis, traffic capture, etc., that allow finding solutions to difficulties raised between the exchanged services, as well as coordination and tasks in conjunction with the MEVA Administrator, and networks from other Regions, etc.

1.45 Coordinated actions were also carried out with INTELSAT in relation to interferences, measurements and antenna repointing at the time of transponder migration (with the Brasilia node).

Agenda Item 2: Review and update of the procedures for the maintenance and operation of REDDIG

2.1 Under this agenda item, the procedures necessary to carry out maintenance and operation of services in REDDIG II, the backup of network information, the regional telephone directory, the tables of the numbering of voice and data interfaces of each network node, as well as the standardization of configurations for native IP services will be reviewed and updated. Likewise, everything related to the interconnections of different systems for data exchange (Regional and Inter-Regional – AMHS, radar data, AIDC, ADS-B, etc.) will also be discussed. Aspects related to the operational part will also be addressed, as well as issues that must be taken into account when implementing new systems that interconnect with REDDIG.

Project Management and Administration

2.2 The structure and staff working on the management and administration of the Project were presented at the meeting.

REDDIG Overview and General Description

2.3 During RTO/10, a review of REDDIG's history was conducted in recognition of its 20 years of operation.

2.4 The SAM Region Digital Network (REDDIG) was deployed through an ICAO Regional Technical Cooperation Project (RLA/03/901) in 2003. The first version was known as REDDIG I and was basically a VSAT network for thirteen States of the SAM Region (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, France - French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela). Trinidad and Tobago later joined.

2.5 The network was modernized in 2015 and the current version (REDDIG II) has two segments: one satellite and one terrestrial, which provides redundancy and high availability (over 99.98%). One State (Trinidad and Tobago) and one Organization (COCESNA) of the CAR Region implemented REDDIG II nodes.

2.6 In recent years, REDDIG has been incorporated in the USA (Atlanta and Salt Lake City), Panama, Johannesburg and Madrid. MPLS nodes have also been installed in ARSAT, Rio de Janeiro, Ilopingo, Cochabamba, and their installation is being studied in Auckland, San Juan and Dakar.

2.7 In the modernization process, ICAO, on behalf of the States participating in the Regional Project RLA/03/901, contracted a Systems Integrator (INEO/ENGIE) to deploy the regional network on a turnkey project. In this version of the network (REDDIG II) the Systems Integrator will have to modernize the satellite segment and implement a new terrestrial segment, contracting a telecommunications service provider (TSP) to provide the links for an MPLS service.

2.8 After the complete deployment of REDDIG II (as a turnkey project), ICAO assumed the management and administration of the network on behalf of the participating States. In this regard, ICAO is responsible for managing the contracts with the satellite provider and the telecommunications provider of the MPLS service.

2.9 Cirion is the TSP that provides the MPLS links of the REDDIG II ground segment. The TSP supplies a Point of Presence (PoP) and a Customer Premises Equipment (CPE) at the premises of the

participating States.

2.10 At each node, there is a border router (deployed by the System Integrator) connected to the satellite link and to the ground link (on the WAN side).

2.11 On the LAN side, the border routers are connected to the aeronautical systems (PBX/PABX, AMHS servers, automated systems, surveillance systems, etc.).

2.12 All the equipment installed in the REDDIG II nodes (VSAT, border routers and interfaces) belongs to the States.

2.13 Maintenance must be performed by technical personnel from each State (who were trained for this purpose). REDDIG II management and administration provide assistance to the State technicians in the event of a breakdown.

2.14 REDDIG II management also provides assistance in sending an item or equipment for factory maintenance. If a spare part is available at the SAM Office, this item is sent to the node while the original equipment is being repaired by the manufacturer.

2.15 During the network deployment (turnkey project), all equipment was supplied by the system integrator. Using resources from the Regional Project, some spare parts were also supplied.

2.16 If a damaged item/equipment is not available at the SAM Office, the participating State may request the REDDIG II Management (SAM Office) to acquire a new item/equipment using resources from the Regional Project.

2.17 The cost will be charged to the next annual contribution of the State that requested the purchase. Of course, a State may also purchase an item/equipment using its own resources.

2.18 Each node has a monitoring system that presents the status of the node's equipment.

2.19 The monitoring system of each node is connected to a centralized system at the Network Control Centre (NCC) that monitors the entire network.

2.20 During the warranty period, ICAO oversaw managing the warranty on behalf of the States (since the contract was signed by ICAO).

2.21 As already mentioned, a (limited) number of spare parts are available at the SAM Office to provide assistance in case of equipment failure, while the original item is being repaired at the factory.

MPLS network: architecture and security

2.22 REDDIG is a "Peer" network (visible to all), but for example CRV is an "overlay" network (point to point).

Circuit-oriented approach and Network-oriented approach

2.23 The REDDIG approach is network-oriented, where bandwidth is contracted and participants can manage this bandwidth to establish the necessary circuits.

2.24 The network is fully meshed and the available bandwidth is like “a big pipe and the virtual circuits are small pipes inside it”.

2.25 It is not necessary for the TSP to configure the circuits. The nodes, coordinating between themselves (or with the help of a network administrator), can configure the virtual circuits.

2.26 Regarding security, the TSP provides a regular service based on an SLA (Service Level Agreement) signed with the contract. States/Organizations connected to REDDIG II through an “additional node” (i.e. contracting links directly from the TSP) must implement their own security measures.

Current voice and data services on the Network

2.27 The costs of these services, as well as any other you wish to incorporate, are included in the annual fee.

2.28 Due to the network topology, it is feasible for everyone to access voice communications with any ATS and administrative centre of any State; and Access to current data services (AMHS) and future ones with any State that is part of the Project.

Some advantages of REDDIG

- Multi-service platform with future growth
- Being a project that involves many States, cost advantage, cooperation, advances according to global demands, etc.
- No country is left behind.
- Guarantee of constant and annual training of technical staff, not only in current services, but in future ones.
- Integration that allows the constant exchange of knowledge and improvement of services.
- Operational security widely addressed.
- Technical assistance is offered 24 hours a day and advice on other operational and CNS issues.
- 99.9% availability.
- Logistical support.
- Supervision

Service penalties, how are they measured? Intermittent failures?

2.29 The contract calls for a monthly availability of 99.7%. If we consider 720 hours of operation per month, the TSP has to provide 717.84 hours or more of service. If the TSP provides less than 717.84 hours, penalties apply, according to a formula established in the contract.

2.30 The main Network Control Center (NCC) is located in Manaus, from where the Network Administrator can access any node using an application (WhatsUp Gold) to monitor and configure any node. The REDDIG II Administrator is supported by six (6) Brazilian technicians (dedicated to this activity) to provide 24/7/365 support to the network participants.

Voice. Compression rates and standards

2.31 For voice, the compression rate adopted is 8 kbps. As an ATN/IPS network, REDDIG II supports

all the standards recommended in ICAO documents. The ED137 standard is related to the implementation of End Systems (Application).

General characteristics of the mpls network

2.32 Cirion confirms that the communication circuits will comply with the standards of the ITU-T and the relevant telecommunication regulatory institutions of the reddig II member states

2.33 Cirion confirms that the monthly availability of each PP supplied:

- a) Will be 99.70%.
- b) Will take into account all interruptions except scheduled ones.
- c) Will be calculated as the ratio between the normal operating time of the communication circuit and the total observation time in a month.

Interest of IP networks

2.34 IP has many compatible protocols between manufacturers, such as DiffServ, which is used for traffic prioritization, OSPF for dynamic routing.

2.35 For the voice application CoDec G729br8 will be used, with a payload of 40 and 50 ms per IP packet. This gives an IP bit rate of 16 kbps and 14.4 without Robust Header Compress (RoHC). SIP V.2

2.36 The terrestrial data network is based on local clear-channel links that are included in our MPLS cloud through an edge router located in the same country or transported over an international fiber network to enter the MPLS of another country. This depends on the technical facilities available in each country.

2.37 All local links have 5 Mbps (eventually 1 Mbps) bandwidth, which connect the CPEs (Customer Premises Equipment) installed at the REDDIG II project sites with our PEs (Edge Routers). In this CPE/PE connection, we will configure a dynamic routing protocol called BGP, which will allow us to share the IP networks without the need for additional manual configuration.

2.38 To ensure a higher Quality of Service (QoS), policies are configured in the CPEs and PEs, this allows the IP packets marked and separated according to a predefined priority level to have different weights (for example, voice is marked with the highest priority using the EF label). QoS policies are activated when the local 5 Mbps link is saturated. In this case, reservations are respected according to each policy.

Routing: This QoS is reserved for messages exchanged by routing protocols such as BGP. No service packets should be marked with this QoS. Marking is automatic for routing protocols.

Real-time: Packets carrying voice over IP (VoIP) and IP signaling are reserved for this CoS. It has priority over the rest of the CoS (strict priority) and low latency queue (low latency queue or LLQ).

Video: Packets carrying information for video type applications will be distinguished from the rest of critical client traffic. This is the case for applications such as: RADAR, ADS and Asterix.

Critical and Priority: The client has the say to differentiate between these two CoS indicating which programs and services fall within this description.

Standard: Default class of service for MPLS and other private networks.

Best Effort: This class of packets is intended exclusively for the public IP network. Here we normally have internet traffic.

Assumptions for policy configuration:

There should be no packet loss or errors on the interfaces. Stress tests should ensure saturation of the contracted bandwidth. Consider that each device that performs some prioritization or bandwidth reservation function applies QoS on its output interfaces. QoS configuration should be performed at each IP hop between PE and CPE.

Coordination with Third Party Suppliers

2.39 Cirion is responsible for coordinating with the companies involved in the service implementation processes in each location for the REDDIG II Project.

2.40 The aeronautical telecommunications services carried by the REDDIG II Network mainly include:

- ATC voice telecommunications services between Area Control Centers (ACC) specified in the Regional Air Navigation Plan data messaging services (flight plans, NOTAM, AIDC, etc.) - AFTN and AMHS connections specified in the Air Navigation Plan
- Surveillance data exchange services
- Operational advantages. Very high availability of 99.9998% thanks to the dual backbone configuration (fully redundant satellite-based MPLS and ground-based MPLS)
- Support for current and future ATS and administrative services
- Fast and efficient implementation of new services
- Optimal terrestrial and satellite bandwidth efficiency
- Guaranteed maintenance of the network throughout its life cycle

AMHS

2.41 X.400 is a standard conforming to the Open Systems Interconnection Model (OSI) for the exchange of electronic mail (then called Interpersonal Messages or IPMs) developed by the ITU-T (then called CCITT) with the approval of the ISO since 1984.1 X.400 is an Application layer protocol.

2.42 The main protocols of X.400 were: P1 for communication between MTAs (the "electronic couriers"), P3 between user agents (UAs, i.e. the end user's email program) and MTAs, and P7 between UAs and message stores.

2.43 Conceptual protocols were defined for communication between UAs, even though this could not happen directly, using P1 and P3 as a reliable channel. This protocol was called P2 in the Red Book and P22 in the Blue Book.

2.44 X.500 is a set of ITU-T1 computer networking standards for directory services, which are understood as databases of electronic (or other) addresses. The standard was developed jointly with ISO as part of the Open Systems Interconnection Model, for use in supporting X.400 electronic mail. X.500 is an Application layer protocol.

2.45 Protocols defined by X.500 include: the Directory Access Protocol (DAP); the Directory System Protocol; the Directory Information Hiding Protocol; and the Directory Operational Link Management Protocol.

Considerations

2.46 As a reference for the SAM REDDIG, we can mention two networks as a reference:

- The PENS (Pan-European Network Service) network was implemented in 2009 and modernized (NewPENS) from 2016
- The CVR (Common Regional Virtual Private Network) network was implemented in 2017, providing services for 73 States in the APCA and MID Regions. ¿Qué queremos para REDDIG III?

-A topology like the current one (with adjustments)

-A network based on service management and that minimizes logistical and equipment issues as much as possible.

-A fully meshed network, with high availability, and multiple access

2.47 It is important to define the services, by State, that are going to be transported by the network.

2.48 If you continue working with satellite links, analyze the RF part and, based on the problems observed in REDDIG II, see options.

2.49 If we move on to service management, geographically redundant NCCs cease to be relevant, and the figure of a service management center appears, which can be called NMC (Network Management Center).

2.50 This NMC can operate from any location, preferably where the conditions for access to network management are practically 100% available. It could be from the provider's data center, for example.

2.51 It must be an intelligent, highly balanced network that allows for reporting, statistics, monitoring, management of service transport, direct connection to the cloud, agility and lower operating costs, optimization of existing infrastructure, cost reduction, improved reliability and security

2.52 This has led us to think about possible technologies such as SDWAN, SASE, MSI, NaaS, etc. Inviting different providers to participate by providing possible solutions oriented to these new technologies. Possible companies that can be invited:

Cirion
Lumen
Equans
Telefónica
Ufinet
British Telecom
PCCWGlobal

Status of nodes

2.53 A review was made of the status of each of the REDDIG nodes.

Antivirus software on NMS servers

2.54 The Meeting was informed about the renewal of the antivirus for 23 NMS servers, with a 1-year license. The renewal must take place as of December 31. This action will be carried out based on the necessary procedures that will be coordinated with the technical focal points to proceed with the antivirus update.

Agenda Item 3: Analysis of the requirements for improving the performance of REDDIG II

3.1 In this matter of the agenda, taking into account the results of the analysis of the behavior of REDDIG II since its implementation to date, as well as the review of the procedures for the maintenance and operation of REDDIG II, the Meeting will proceed to the analysis of the short and medium term requirements for the improvement of the performance of REDDIG II. In this sense, issues related to security, the inclusion of additional nodes inside and outside the Region, inclusion of new services, upgrading of bandwidths of the terrestrial network, etc. will be addressed. Aspects related to a future network, useful life of the equipment that makes up the current REDDIG and possible actions. Future REDDIG planned for the end of 2024.

NEW ACTIVITIES AND SERVICES OF REDDIG II***REDDIG III***

3.2 The forecast is that REDDIG III will begin to operate at the beginning of 2026. In this sense, we are working with two well-defined objectives. One is to maximize the operation of the RF equipment currently in use. Due to the useful life of the satellite network, the failures of the RF equipment and components are more recurrent, which demands and will demand a greater effort related to preventive and corrective maintenance tasks. The current satellite network is scheduled to be deactivated in December 2025. And second, it is to report that during the RCC-29 the draft of the Technical Specifications of the WAN network was presented, which was reviewed and, based on this action, within a period of three months, it was sent to TCB to start the REDDIG III bidding process.

3.3 Please note that, during the RCC/29, the Secretariat reported that the contract with the provider of the space segment (Intelsat) of the REDDIG II satellite communication network (VSAT) has been renewed until December 31, 2025.

3.4 The new REDDIG III is defined as a network more oriented towards service management and detached from the logistical problems that have been manifested during the two previous versions of the same.

3.5 It has been defined that by January 2026 a network with two MPLS accesses by different last mile physical means will be contracted. And, by 2026, the network equipment of each node will be replaced and based on the work of the Ad-hoc Group formed during the RCC-29.

3.6 In addition, work must be done on the migration to VoIP of all circuits that connect between the States and the REDDIG. The network's premise is to support migrations to new technologies, such as the use of SDWAN.

3.7 Regarding situations associated with the migration process to the new network, it is important to highlight that the pandemic and other circumstances have had an impact on the activities of the nodes. Among other things, it has not allowed the preventive maintenance plan established for 2020, 2021, and 2022 to be fulfilled. These actions were resumed in 2023 and 2024, applying the same Schedule and adjusting it in the remainder of this year. So far, in addition to preventive maintenance, corrective maintenance is being carried out in conjunction with the technical staff of the nodes.

3.8 In order to preserve the useful life of the satellite station equipment, States should also consider taking actions to leave a single chain running in the nodes. This coordination must be carried out between the Administrator and the focal points of each State, establishing the time of shutdown of the equipment,

maintenance phases and alternation of operation (that they operate alternately every 3 or 4 months). This decision is specific to each State. It must be considered a recommendation, which, if accepted, will always be applied with the approval of the focal point of each node. This will be carried out with the exchange of an email between the parties involved or other documentation that the State considers pertinent.

3.9 The last items mentioned above must be highly considered, since they will allow an orderly process to be carried out, without urgency, and according to what was planned.

REDDIG III implementation phases

3.10 During RCC/29, after deliberating on the information contained in WP/07 (<https://www.icao.int/SAM/Pages/MeetingsDocumentation.aspx?m=2023-RLA03901-RCC29&t=1>), the Meeting agreed to carry out two phases. The first phase would consist of working on the WAN part of the network, contracting services from a telecommunications service provider (MPLS) with redundancy of last mile links. The second phase would consist of working on the LAN part of the network, modernizing the connectivity equipment, the interfaces necessary for connecting the existing aeronautical services in each node and adapting the acquired cybersecurity equipment to the new architecture of the LAN part of the network.

3.11 The Meeting also agreed that the REDDIG III Ad-hoc Group should carry out the necessary analyses and develop the technical specifications to implement Phase 2 of the REDDIG III development.

3.12 In this regard, the Meeting developed the following conclusion, but it should be noted that where it says January 2025, this has been modified to January 2026:

Conclusion	
RCC/29-3	
REDDIG III IMPLEMENTATION	
<p>That:</p> <p>The Meeting approved that the implementation of REDDIG III be in two phases:</p> <p>- Phase 1 WAN infrastructure: Contracting of services, to start operations in January 2025, of a telecommunications service provider (MPLS) with redundancy of last mile links, according to the approved technical specifications.</p> <p>- Phase 2 LAN infrastructure: Modernization of connectivity equipment, with the necessary interfaces for connection of existing aeronautical services at each node and adaptation of the cybersecurity equipment acquired to the new architecture of the LAN part of the regional network. This phase should be planned to start operations in January 2027.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political/Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input checked="" type="checkbox"/> Economical</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Technical/Operational</p>
<p>Why:</p> <p>Ensure a harmonious and homogeneous transition from the current regional network (REDDIG II) to the new network infrastructure called REDDIG III.</p>	

When: As of March 2023.	Status: Approved at RCC/29
Who: Participating States of the Regional Project and SAM Office.	

Adding firewalls to the network

3.13 A firewall network was installed, aimed at continuing with the security policies that have been in place since 2012. This firewall network has been in operation since mid-2024. The only nodes pending installation are Ezeiza and Bogotá for the reasons explained above. It should be noted that the issue of renewing the equipment licenses must always be considered. Remember that the purchase was approved during RCC/22 (Lima, Peru, March 5-7, 2019), that the equipment finally arrived in the first months of 2022, then training was carried out, and finally installed during 2024.

Requirements to delegates

3.14 As is done every year, delegates are asked to do the following:

- a) Verify that the stations are registered with the frequency spectrum regulatory bodies, and report the situation. Remember that a change of carrier frequencies was carried out.
- 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 urged to check the status of the installations, the UPS of each of the nodes and the grounding system.

3.15 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 the homogeneity of the systems in each of the nodes and proceed accordingly.

3.16 States are urged to make the necessary efforts to improve the logistics processes, in order to avoid the problems that have been occurring. These situations threaten the availability of the network, harm the other nodes, and may affect the safety of air operations.

3.17 States are urged to ensure that, in the event of system inoperability or changes in their infrastructure or other actions or tasks that affect international operational services, there is timely communication, through operational and other available means, to allow the most pertinent measures to be taken in each case and to collaborate in such situations. Likewise, contingency plans should be reviewed, interested parties should be advised on alternatives, and these should be verified.

3.18 Communication should be strengthened in relation to new developments that arise in our environment and that affect operational services. The necessary means should continue to be used to be able to intervene promptly in the event of a new development.

Twelfth Technical Operational Meeting of REDDIG II

3.19 A in person meeting for RTO-12 must be defined during RCC-31.

3.20 Regarding the RTOs, the need to associate it with training remains. During the week, sessions will be available to specify the RTO and sessions for training.

Activities carried out in 2024

3.21 Regarding the activities carried out in 2024:

- Application of the Preventive Maintenance Program;
- Visits to the REDDIG II nodes (pending Paramaribo);
- Interconnection with other regional networks (pending the process of the new REDDIG mpls network and CANSNET and New Pens);
- Operational alternation of the NCC Manaus to NCC Ezeiza;
- Tendering process for the new network (scheduled for 2025);
- Improved connectivity between the SAM States and CAR States;
- Commissioning of the firewall network and improvements in its configuration;
- Incorporation of the San Juan de Puerto Rico node into the network (in process);
- Analysis processes and preparation of a draft Technical Specification of the Ad-Hoc Group created for the modernization of networking equipment;
 - Analysis process of the proposal for a new structure for the Management and Administration of REDDIG by the Ad-Hoc Group created for this purpose; and
 - Advance the interconnection of voice services, using VoiP and with the aim of replacing analog interfaces.

Preventive maintenance programming

3.22 By 2025, the REDDIG Administration will continue with the preventive maintenance program for all equipment in all REDDIG nodes.

3.23 Delegates are reminded of the need to verify the existence of appropriate RF measurement instruments for L-band measurements. Once their existence has been verified, they will be asked to prepare the RF diagram of the node of both chains, in order to have it as a future reference to observe if there is degradation of the equipment. The above, in coordination with the REDDIG Administration.

Visit to REDDIG II nodes

3.24 The States approve, as part of the maintenance and training activities in REDDIG, that the REDDIG Administrator visits two nodes per year.

3.25 The objective is to carry out a complete evaluation of the node and develop a training/recurrent, aimed at the personnel in charge of node maintenance.

3.26 For the year 2025, visits to the nodes of La Paz (Bolivia) and Panama (Panama) are proposed.

3.27 In both cases, the visit will last one week.

Interconnection with other regional networks

3.28 Discussions will continue with APAC, NAM/CAR and EUR to implement the interconnection of the regional networks (CANSNET, CRV, New PENS and REDDIG). In this task, an initiative of the SAM

Regional Office, meetings are being held with representatives of the three telecommunications companies: PCCW Global (APAC), British Telecom (PENS) and Cirion (REDDIG II), and with the organizations and States involved (Conclusion RCC/24-3 Interconnection of Regional IP Networks).

CONCLUSION RCC/24-3	INTERCONNECTION OF REGIONAL IP NETWORKS
<p>That</p> <p>a) The Secretariat take the necessary administrative steps to hold a meeting in Lima, with the participation of ICAO officers and the telecommunications providers of the regional IP networks of the APAC, EUR and SAM Regions.</p> <p>b) he participation of the secretary of the Communications Panel (CP) is ensured with resources of Regional Project RLA/03/901 (air tickets and daily allowance).</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Technical/operational</p>
<p>Why: To start discussions for the interconnection of the implemented regional IP networks in order to create a global ATN, thus reducing the cost of leased circuits between regions.</p>	
<p>When: Immediately</p>	<p>Status: Definitive</p>
<p>Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO Secretariat <input checked="" type="checkbox"/> ICAO HQ <input type="checkbox"/> Others: Users/industry</p>	

3.29 The proposal in RTO-09, coordination between CENAMER and Quito, is reiterated in order to establish a P1/AMHS connection between the parties, to improve, among other things, the conditions for the exchange of AIDC data.

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

3.30 In 2025, the alternation of the operation of the NCCs and the REDDIG management center in Manaus should be carried out, as long as conditions permit, and with the consideration that it would be desirable for the Administrator to move to the Ezeiza NCC during the alternation (expected to take one week).

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

REDDIG telephone directory

3.32 States are required to update or ratify the REDDIG telephone directory (ATS and Administrative) annually.

3.33 In this regard, it is recalled that this information is subject to the operational documents/letters of agreement between States and that any modification, in addition to being reported and coordinated with the administration of REDDIG, must be incorporated into the official documentation of the States and communicated through official channels.

Recurrent on Operation & Maintenance of REDDIG II

3.34 This is an activity that has been carried out every year and was completed during the scheduled visits to the nodes by the Administrator. Also, every month or two, meetings are held that include

training/briefing for the NCC Manaus staff. In addition, it is proposed to hold virtual meetings with the NCC Ezeiza staff. Regarding visits, in case of the need of any State, which considers it necessary, it can request it, as was done in French Guiana at the end of 2022. Keep in mind that the costs, for this last alternative, will be borne by the requesting State.

Incorporation of firewall equipment into the network

3.35 The Secretariat reported that, during the training, a basic initial configuration of the firewall equipment was chosen. One firewall equipment dedicated to the protection of the LAN part of the node and the second equipment dedicated to the protection of the WAN (MPLS) part of the node. The adoption of this basic configuration was done to facilitate the prompt installation and activation of security measures, in a homogeneous manner, even in the nodes of the States that did not participate in the training.

3.36 During RCC/29, Brazil suggested forming a group of experts to study and propose a more optimized configuration, taking better advantage of the functionalities of the acquired equipment, providing greater resilience to potential attacks. The proposal was supported by other participating States, and the following conclusion was formulated:

Conclusion RCC/29-1		AD HOC GROUP TO STUDY AND PROPOSE AN ADVANCED STANDARD CONFIGURATION FOR THE FIREWALLS ACQUIRED	
That: RLA/03/901 member States form an <i>ad hoc</i> group, with cybersecurity experts, to study and propose an advanced standard configuration for the firewall equipment acquired by Project RLA/03/901.		Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Interregional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational	
Why: To optimise the initial basic configuration, taking better advantage of the functionalities of the equipment purchased, increasing the resilience of the network to potential attacks.			
When: As of April 2023.		Status: Approved by RCC/29	
Who: States concerned.			

3.37 The Ad-hoc Group was formed by the following States: Argentina, Brazil, Chile, Colombia, Paraguay and Venezuela. A representative from Brazil will be the coordinator of the Ad-hoc Group.

3.38 The RCC will be asked to analyze the possibility of carrying out a new training on FortiNet equipment with the same methodology as that developed in the Regional Office during the year 2025.

3.39 In addition, see the possibility of carrying out training on VoIP with considerations for EUROCAE protocols.

3.40 It is requested to provide one vacancy per node for the face-to-face courses, and 30 for the virtual ones. The costs involved in carrying out the course, which will be covered by the Project.

Other business

3.41 It is worth noting that 100% of the interconnections are IP and, consequently, as was done with AMHS, moving to using VoIP is an inevitable change to be carried out. There are already States that have made significant investments to support operational telephony in VoIP using the SIP protocol, and highlighting the criticality of recording as a requirement.

3.42 Today, States such as Argentina, Brazil, Chile, and Colombia have already incorporated systems that support VoIP for aeronautical services, and are in the process of changing the analog interfaces they have with REDDIG to VoIP.

3.43 Regarding the previous item, remember that REDDIG II supports SIP V.2, and that the installation of firewalls is an important step associated with these new implementations.

3.44 Suriname raised the need to move the antenna to a new position. In addition to improving the conditions or relocating the rack. This should be discussed, because it must be taken into account that satellite stations, as we know them today, are expected to be deactivated in December 2025. It is suggested that this proposal be evaluated based on costs, administrative times, and execution times in a process of these characteristics.

3.45 Likewise, Suriname announced that the facilities in Paramaribo have been improved, that the systems for the implementation of ADS-B are being updated and that they are studying the implementation of ADS-C.

3.46 Chile expressed its interest in continuing the negotiations on the possibility of having an MPLS node in Auckland/Christchurch. This is a topic that has been discussed for a considerable time, and the RTO is an appropriate meeting to share the progress and advantages that this new node can represent for the Project participants.

3.47 Likewise, Chile continues in the process of negotiations to contract Satellite ADS-B, and considers REDDIG as a means of access to lower costs, taking advantage of the fact that Aireon has an MPLS node in the network.

3.48 Bolivia reported that, in relation to the Cochabamba node, there is no information regarding the commissioning of the new center. However, it has been proposed to use this node as a backup, and vice versa for the La Paz node, for which some actions must be carried out between personnel from the Bolivian administration and with the collaboration of the Project.

3.49 Although the Cochabamba node remained de-energized for a long period, it is currently back in operation and available for use, although it does not provide services. The same situation can be considered regarding the ARSAT node, which does not provide services.

3.50 Regarding the MTA, Bolivia changed its provider, and despite the problems that were observed in previous years, it can now be seen that the system is stable. It should be noted that Bolivia has always highlighted to the Administration the collaboration of the States, in particular Argentina, Brazil and Peru, which opportunely helped to save contingency situations.

3.51 In the node of La Paz, two ATS internals were enabled by available FXS circuits and that had to be connected directly to the voice switching, without going through a Northel Telecom PBX. Currently, the

node of La Paz has the possibility of configuring and enabling 4 FXS circuits and connecting these circuits directly to the VSC.

3.52 Regarding the ATS voices, there are still developments between the Corumba position (which operates in the ACC of Curitiba) with Puerto Suárez. Keep in mind that the operator of Puerto Suárez only goes to the airport on demand, and that the controller of Corumbá operates from Curitiba.

3.53 While Colombia requested that the possibility of installing a REDDIG node in Leticia be studied and for consideration, although there is no official request to be able to move forward with this issue, if feasibility exists.

3.54 Another issue is that, until Ecuador acquires a new PABX or VSC that supports the circuits that meet the required requirement, (keep in mind that Guayaquil has been without a PABX since January 20, 2020, and boards were sent from the Regional Office that allowed to recover the minimum capacity for coordination with operational users from other States). In this sense, temporarily, Ecuador wants to increase the number of FXS interfaces in REDDIG routers. The official order was made, and from the Regional Office, the boards have been acquired, which will be sent to the Ecuadorian administration for subsequent installation.

3.55 In this sense, Colombia offered to share an application with Ecuador to implement the same solution that was offered to Venezuela for the case of Cúcuta and Táchira, which is currently used.

3.56 The current Bogotá Telephone Exchange has a function that allows implementing remote extensions through the Internet. An application (application) can be installed on a computer or mobile phone allowing the assignment of an extension (terminal) of the Bogotá Exchange, connected through the Internet.

3.57 Chronic problem in the link between Curitiba and Foz. From the Curitiba node we were informed that work is still being done to improve this national circuit, which affects the oral coordination between AD of Paraguay and Foz. Same affectation for AD of Argentina. As well as work was done to create a 2nd ATS between APP Guaraní with Curitiba, but for a satellite alternative from Brazil.

3.58 Another important issue was that, with the incorporation of the MPLS node in Panama, and added to the sending of a router from the Regional Office, with voice interfaces, this State has recovered the capacity of oral coordination channels, as well as established P1/AMHS connection with SAM States. It has strengthened its interconnection possibilities with States that are part of the Project.

3.59 Opportunely, its representatives expressed the motivation that this generates for them and the satisfaction of carrying out, to date, several integrations of voice and data services with the SAM Region.

3.60 During 2023, COCESNA, through its REDDIG node in Ilopango, is receiving Satellite ADS-B traffic from the REDDIG AIREON node (Virginia, USA). This guarantees that any State that is part of the project can take advantage of this service with AIREON, even at lower costs.

3.61 Regarding voice services, during the RTO/09 it was indicated that there are cases where States have all users configured as operational, and no administrative users. While in other States administrative users are considered. Since the operational network and the administrative network are different, this means that users of the different networks cannot communicate, which causes difficulties for coordination. Work was urged to solve these situations in those cases that arise. To date, no actions have been observed to correct this situation or determinations on this issue.

3.62 Regarding the node of the Regional Office, coordination has begun to install an AMHS terminal and that it can be integrated into the network. This action will allow the recovery of the capacity that the Regional Office had in the old facilities located at the airport, and will also represent a very useful tool for ICAO Officers in relation to having access to aeronautical messaging and being an official and valid means of coordination between the States and their Regional Office.

3.63 Venezuela proposes that Uruguay consider a P1/AMHS connection between both States. In addition, it offered to be available to carry out P1/AMHS interconnections with the States that consider it.

3.64 Chile requested a P1/AMHS connection with Bolivia, and that this generate the necessary steps to begin coordination.

3.65 Bolivia requested that coordination be carried out to work on contingencies, taking into account possible system failures.

3.66 It is reported that there are problems due to a lack of technical personnel.

3.67 COCESNA has expressed the possibility of migrating the Tegucigalpa node to an mpls node and having redundancy with the Ilopango node.

3.68 COCESNA proposes to analyze the possibility of a P1/AMHS connection with Brasilia (Brazil). Interest is expressed.

3.69 It is proposed to open a discussion on the subject of hotlines and review the agreements. The Hotline in Peru is not accessible from Chile, the same as Ecuador is requesting. Reestablish the hotline circuits between Chile and Peru, and between Ecuador and Peru.

3.70 The situation that occurred with the temporary move of the ACC from Lima is mentioned, and all the consequences that this constituted due to the lack of communication. In this regard, it is proposed to review the contingencies.

3.71 It is also urged to verify the operation of the public telephone system used as a contingency. This is due to the fact that in recent times problems have been detected with landline telephones, for telephone providers. This is due, in principle, to the fact that it is a medium that is increasingly less used in general, and with a tendency to disappear.

REDDIG II Interconnections

3.72 Regarding the exchange of surveillance data (using REDDIG as a means of transport), Argentina, Brazil, Paraguay and Uruguay are currently exchanging surveillance data; tests have been carried out between Chile and Argentina; and in coordination the sending of surveillance data from Manaus to Maiquetía, and exchange between Chile and Peru.

Operationally:

1) Paraguay is sending data from the Asunción radar via REDDIG to Ezeiza and from there finally to the automated system of the Resistencia ACC.

2) Argentina is sending data from the Corrientes radar to the Asunción ACC via REDDIG.

3) Argentina is sending data from the Posadas radar to Asunción.

3.73 On trial:

1) Paraguay is sending data from an ADS-B station in Asunción to Resistencia and the same are being evaluated at destination

3.74 Likewise, the Guaraní airport, in Ciudad del Este, is receiving data from the Foz de Iguazú radar (Brazil), injected into the REDDIG node, for APP.

3.75 The Meeting was informed that data from the Carrasco (Asterix) radar is being sent to Ezeiza, under evaluation. These activities are in addition to the radar data that is sent from Ezeiza (Argentina) to Carrasco (Uruguay); and the data from the Durazno (Uruguay) radar to Ezeiza.

	SENSOR	CANAL	SAEZ	SUMU
			SOURCE	DESTINATION
1	EZEIZA (Indra)	A	10.0.1.10	10.0.97.10
2		B	10.0.1.11	10.0.97.11
3	QUILMES (Invap)	A	10.0.1.12	10.0.97.12
4		B	10.0.1.13	10.0.97.13
5	PARANÁ (Invap)	A	10.0.1.14	10.0.97.14
6		B	10.0.1.15	10.0.97.15

1	INDRA	A		10.0.1.20
2		B		10.0.1.21
3	SELEX			10.0.1.8
4	DURAZNO			10.0.1.1

Desde	Hacia	Radar	ADS-B	Estado
Asunción (Paraguay)	Resistencia (Argentina)	Asterix		operativo
Asunción (Paraguay)	Resistencia (Argentina)		Asterix	a prueba
Corrientes (Argentina)	Asunción (Paraguay)	Asterix		operativo
Posadas (Argentina)	Asunción (Paraguay)	Asterix		operativo
Foz Iguazú (Brasil)	Guaraní (Paraguay)	Asterix		operativo
Carrasco (Uruguay)	Ezeiza (Argentina)	Asterix		a prueba (estuvo operativo)
Durazno (Uruguay)	Ezeiza (Argentina)	Asterix		a prueba (estuvo operativo)
Ezeiza (Argentina)	Carrasco (Uruguay)	Asterix		a prueba (estuvo operativo)
Paraná (Argentina)	Carrasco (Uruguay)	Serial/Asterix		a prueba
Quilmes (Argentina)	Carrasco (Uruguay)	Asterix		a prueba
Santiago (Chile)	Ezeiza (Argentina)	Asterix		deben continuar pruebas
Mendoza (Argentina)	Santiago (Chile)	Asterix		deben continuar pruebas
Manaos (Brasil)	Maiquetia (Venezuela)	Asterix		en coordinación previa

Monitoring of AMHS interconnections in the Region

3.76 Regarding AMHS interconnections in the Region, to date all connections planned in the Air Navigation Plan are being fulfilled 100%, and new extra-plan interconnections have been added in the Region.

Agenda Item 4: Other matters

4.1 Under this agenda item, the Meeting analyzed other matters related to the aspects discussed that were considered appropriate.

Recommendations

4.2. The Administrator recalled a series of recommendations for the staff of each of the nodes, and the most notable is to have the old REDDIG I Linkway modems available for power supply replacements.

Support for the coordination of extra-regional interconnections

4.3. The Meeting was informed that support continues to be provided to the States in relation to P1/AMHS interconnections and other services.

4.4. It was reported that the REDDIG Administration is actively involved in the AMHS system interconnection processes in the Region, as well as in different services exchanged between the States. It was also reported that it collaborates in different situations that arise in each State in relation to the services and systems, and that are external to the REDDIG.

4.5. Normally, the REDDIG Administration provides collaboration with all available tools in order to collaborate with any action tending to achieve interconnections, exchanges, transport of different services and information. Likewise, with actions tending to information analysis, traffic capture, etc., that allow finding solutions to difficulties raised between the exchanged services.

4.6. Normally the NCC carries out tasks beyond those planned, becoming a center, not only for network management, but also for consulting and support with issues outside of REDDIG.

Suggestions from RTO-11.

4.7. States that are in a position to acquire spare parts and/or backup equipment for REDDIG II were reiterated and urged to request assistance or technical support from the ICAO Regional Office, in order to maintain the homogeneity of the systems in each of the nodes and proceed accordingly.

4.8. An invitation was made to make an analysis of future additional nodes within each State based on the needs that will improve the redundancy and robustness of the network at a lower cost.

Summary of final conclusions and topics proposed for discussion at the next RCC

- 5.1. It was reiterated that spare equipment will not be sent to the node that presents new developments in any of its equipment until the node sends the faulty equipment to the Office.
- 5.2. It was reiterated that the equipment of the satellite part of each node has reached the end of its life span, however, it will continue to be used as long as it is considered necessary and continues to function. Those present were reminded that the NDSatCom and Terrasat factories no longer manufacture the models of equipment used in the network, nor are there any spare parts.
- 5.3. Regarding the future REDDIG III, it was made clear that a solution that would force States to invest in new, high-cost satellite stations would not be chosen, and that a solution would be chosen that would focus on the terrestrial network with sufficient redundancies to have availability as close to 99.9% as possible.
- 5.4. The nodes of Madrid (Spain), Johannesburg (South Africa), Panama (Panama) were implemented, and the benefits and scope of these implementations were presented, as well as the advantages and benefits of the integration of the nodes of Atlanta, Salt Lake City, Ilopango, AIREON x2, Cochabamba, Rio de Janeiro, ICAO SAM.
- 5.5. Regarding the state of the satellite part of the nodes, a concern and commitment about spare parts, processes for sending equipment for repair, manufacturing discontinuity on the part of the manufacturers was expressed, and in particular, a commitment to take the necessary efforts in sending equipment to the SAM Office when it is clear that the equipment needs to be sent to the factory for repair, etc.
- 5.6. Trinidad & Tobago finished the P1/AMHS connection with Guyana but does not traffic.
- 5.7. It was reported that, in relation to the Skywan 7000 installed in the NCCs, they have not presented failures. While the Skywan 1070 has presented failures continuously in the different nodes and mainly due to problems with electrical power, parasitic currents and consequences associated with the failures of the sources. To overcome these new features, different solutions have been implemented, such as replacing the original source with compatible sources, such as those used in REDDIG I (sources for the Linkway modem), and the adaptation of other types of sources that have allowed the damaged sources to be replaced and the modems to continue to function.
- 5.8. The work in coordination with the terrestrial network provider to continue with the improvements to the last mile of access was reported. The cases of Manaus, Recife, Piarco, Cayenne, etc. were mentioned as examples.
- 5.9. The procedures to be followed in the event of a failure in the terrestrial network or a particular node were recalled.
- 5.10. It was reiterated, as every year, that the directories of each node must be kept up to date in order to avoid confusion and errors, and to take into account that there are operational agreement letters that must be observed before making any changes.
- 5.11. The importance of always working together with the operational parties of each State was emphasized, ensuring that technical personnel are aware of the contents of the letters of operational agreement regarding CNS services. Additionally, any change, alteration, or new development must always be coordinated with the involved parties, including users, while considering any pre-existing agreements.

- 5.12. Since 2012, security and IT issues have evolved, with an increasing focus on cybersecurity. Since 2017, intensive work has been done on physical security, at the software and hardware level, through the joint implementation of various policies. Currently, progress is being made in the implementation of firewalls in all nodes to strengthen security, even though REDDIG remains a closed network. This measure also responds to the incorporation of new actors, such as companies, Aireon, SITA and additional nodes, as well as to the integration processes being carried out by the States between their technical and administrative networks. In addition, the IP-based operational and administrative services that the States are implementing are linked to the REDDIG SAM multiservice platform. Finally, the integration work with other regions reinforces the commitment and responsibility in terms of security that this evolution requires.
- 5.13. It was reported that as of December 31, the antivirus software for the network servers will be updated, as it has already been renewed.
- 5.14. Regarding preventive maintenance, the current procedure will be maintained.
- 5.15. It was clarified that the visits to the two nodes that are carried out annually are included as tasks planned by the Project. The cost of these missions is borne by the project.
- 5.16. The possibility of installing an MPLs node in Leticia on the Colombian side is being studied, and the means to make this possibility a reality are being determined. Request a quote from the supplier to install an MPLs node in Leticia or a viable access solution. Check the feasibility.
- 5.17. Cocesna suggested implementing dedicated circuits between CENAMER and the SAM States. Dedicated lines, two with Ecuador and two with Colombia, and take advantage of the opportunity to implement these solutions via VoIP, although they could also be implemented as analog.
- 5.18. Colombia proposes implementing SIP VoIP with Cocesna, which is why it is agreed to begin testing to make this implementation a reality.
- 5.19. It is proposed to work on establishing redundancy between Ilopango and Tegucigalpa. One option that was expressed is to change the Tegucigalpa satellite node to an mpl node, and always in redundancy with Ilopango. The objective is high redundancy for COCESNA.
- 5.20. Mandatory test for acceptance of the MPLs nodes.
- 5.21. Chile uses a converter called Sigilo and the need to exchange radar data with the bordering States, with Peru and with Argentina. AIDC communications with Peru are working well, they are two automated centers. Working with Thales, which is providing an upgrade for the Santiago system. By the end of the year they will be 100% operational for the neighboring States and the Oceanic FIR with ASIA PAC and Peru.
- 5.22. It was highlighted that Puerto Suárez does not work 24 hours a day, but rather works on request. This is one of the reasons why it is possible that the situation in which Curitiba cannot speak to this tower may arise.
- 5.23. Expectations regarding the connection or adhesion to the network by SITA and other operators for the benefit of the SAM States. Not only to improve performance but also to reduce costs.
- 5.24. It was recalled that the States have all the power to acquire spare parts and ICAO is willing to

collaborate and advise on the acquisition of spare parts.

5.25. Regarding Guayaquil, Colombia stated that the fxs interfaces provided by ICAO helped to resume coordination.

5.26. The Intelsat and Cirion portals and all the particularities related to each of them were presented at the meeting.

5.27. The AMC page was shown and the information that can be obtained from it.

5.28. The distribution of the MTAs and the manufacturers of amhs systems was shown.

Topics proposed for discussion at the next RCC

5.29. Consider, in relation to REDDIG III, that during RTO/11, the delegates consider analyzing the consequences of becoming 100% dependent on a provider, and ceasing to have influence over the means of interconnection, without the possibility of any action in the event of a failure in the means of access or transport, depending entirely on the provider. Analyze again what this entails and consider the considerations of the case.

5.30. That the Administrator continue with the two annual visits, and it is proposed that visits to the nodes of La Paz (Bolivia) and Panama (Panama) be made in 2025.

5.31. The next RTO/12 must be in person and the RCC/32 will define the place where it will take place.

5.32. In reference to RTO/12, the need to associate it with training related to the necessary tools for analysis and evaluation of traffic transported by REDDIG is maintained. During the week, days will be set aside to finalize the RTO and days for training sessions.

5.33. Analyze the possibility of holding Fortigate courses again for technical personnel of the nodes.

5.34. Maintain the established schedules to carry out maintenance tasks planned based on the calendar and structure of the same that is being applied.

5.35. Continue coordination with the other regions and providers of the transport networks, to continue working with the vision of the integration of all networks and the objective of a network of networks, of a true global ATN (Aeronautical Telecommunications Network), especially with CRV/PCCGlobal, with New PENS/British Telecom, with the future CARNAM/CANSNET.

5.36. Based on the growth of new applications or the use of existing applications more frequently, the meeting considered that it is important to continue holding different training sessions at a regional level to not only have suitable personnel, but also to have agreement regarding the vision that is held. This is why it is urged not only to contract training courses through the project, but also to take advantage of the specialists of each State so that they can share their knowledge and experience in the implementation and development of different systems of regional interest.

5.37. The fundamental importance of the support of the States in relation to the processes that must be carried out in Customs for the shipment and reception of damaged or repaired equipment was emphasized again.

5.38. Work will continue so that the network works mainly through land access as a priority and satellite as a secondary.

5.39. It was urged to reinforce the issue of communication in relation to the novelties that arise in our environment and that affect operational services, to continue using the necessary means to be able to have a timely intervention in the event of a novelty. The importance of communication that must exist between those who are part of the network was emphasized.

5.40. It was urged to reinforce the issue of communication in relation to the novelties that arise in our environment and that affect operational services, to continue using the necessary means to be able to have a timely intervention in the event of a novelty. The importance of communication that must exist between those who are part of the network was emphasized.

5.41. It was emphasized that 100% of the interconnections will be IP in the SAM Region, and the intention to move to using VoiP is an inevitable trend. There are already States that have made significant investments to support operational telephony over VoiP over SIP, highlighting the critical issue of recording, which is a requirement. The usefulness of this new technology is highlighted, which allows, among other advantages, portability, the use of video, chat, either with the use of specific devices for this purpose or using cell phones through applications. This leads to rethinking the engineering of each node.

5.42. As in all meetings, the importance of exchanging experiences in the implementation and integration of systems has been emphasized, as well as the actions taken to provide solutions to new developments presented. There was significant participation by the participants in this regard. For example, the use of VoiP, the challenges that have been had in this regard; the issue of compatibility is always a recurring issue, the use of expertise, the need for technical staff to constantly evolve. The challenge of adapting new technologies to aeronautical systems, since they are solutions that have a specificity of aeronautics, taking advantage of consultancies, and the experiences of the States.

5.43. Cocosna proposes that Ecuador considers a P1/AMHS connection between both.

5.44. Venezuela offered availability to carry out P1/AMHS interconnections with the States that consider it.

5.45. Chile requests a P1/AMHS connection with Bolivia, and that this generates the necessary steps to begin the coordination.

5.46. Chile supports the steps on the possibility of having an mpls node in Auckland.

5.47. Chile is in the process of contracting AIREON, but it is in that process, and REDDIG is considered as a means of access to lower costs.

5.48. Maintain Bolivia's consideration of RTO/09, who requested that coordination be carried out to work on contingencies in response to possible system failures.

5.49. Two ATS internal Fxs were enabled in the Bolivia node to be connected directly to voice switching, which today work through a Northel Telecom PBX. In addition, 4 fxs circuits are available that can be connected directly to the VSC. There is no update from Bolivia.

5.50. Colombia requested that the proposal to connect Puerto Rico, Curacao, Aruba and Jamaica to REDDIG as mpls nodes be resumed or other solutions be sought. This will allow the problems that continue to arise to be resolved and the exchange of services with these SAM States to be improved. It recognized the efforts of ICAO to reestablish the switched circuits with the CAR States.

5.51. Colombia expressed its concern about analyzing the possibility of installing an mpls node in Leticia.

5.52. It expressed the need to continue attending the training of personnel.

5.53. The REDDIG has improved the exchange of information with SAM States

5.54. It has been found that there are cases where States have all users configured as operational, and no administrative users. While in other States, administrative users are considered. Since the operational network and the administrative network are different, this will imply that users of the different networks will not be able to communicate between one network and another.

5.55. It is proposed to open a discussion about hotlines and review the agreements. From Chile, the Hotline in Peru is not accessible, the same as what Ecuador is demanding. Reestablish the hotline circuits between Chile and Peru, and between Ecuador and Peru.

5.56. We must see about configuring the hotline circuits in Peru to recover the hotlines with Peru.

5.57. An annual schedule is proposed to record preventive maintenance tasks and ensure orderly execution. All delegates approved the continued application of this schedule for preventive maintenance.

5.58. It is proposed to coordinate between Cenamer and Quito to establish a P1/AMHS connection between the parties, to improve, among other things, the conditions for the exchange of AIDC data between the parties.

5.59. Cocosna proposes to analyze the possibility of a P1/AMHS connection with Brasilia (Brazil). Interest is expressed.

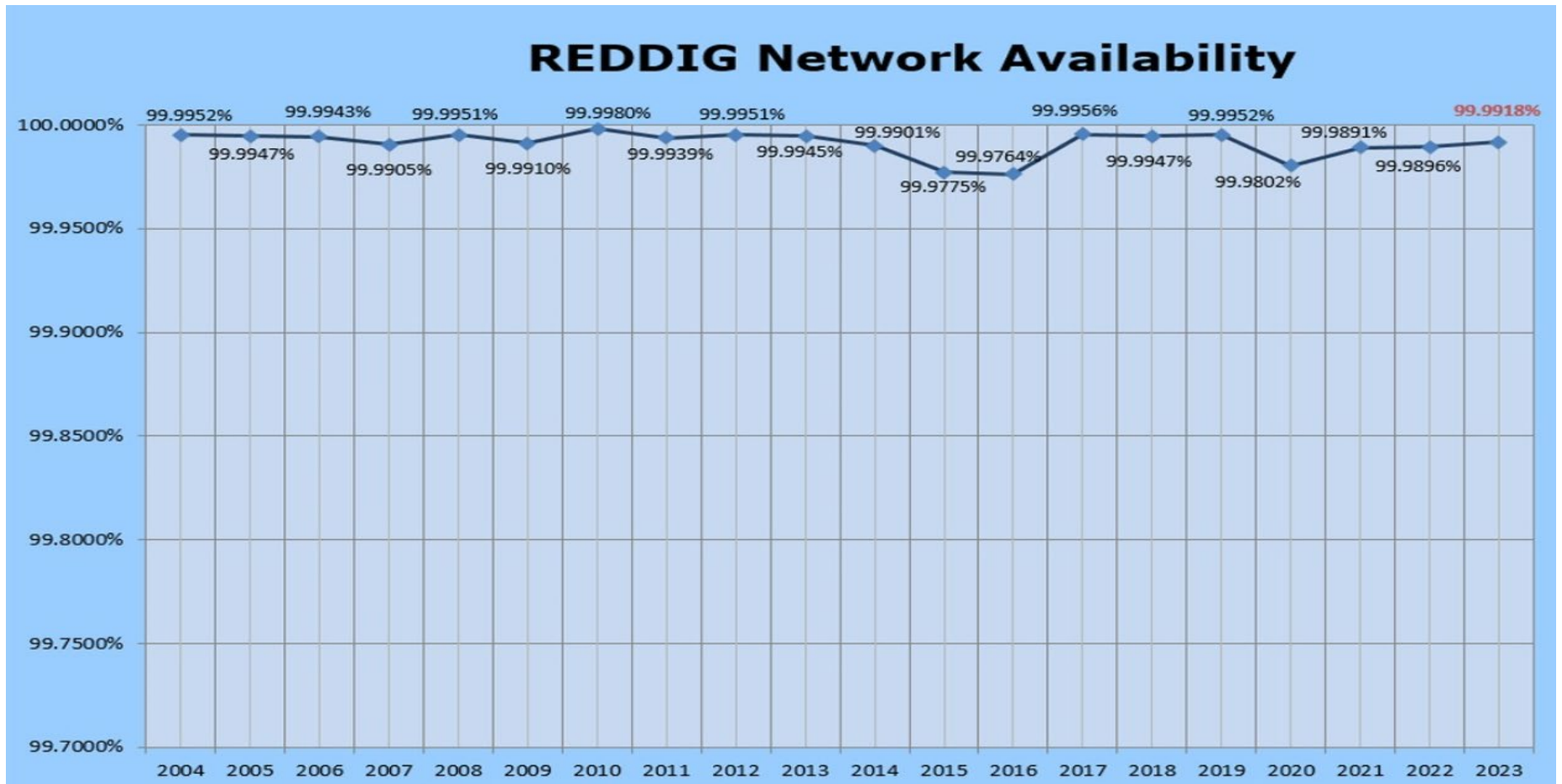
5.60. The question of reconfiguring the stations to use a single chain and preserving the equipment that makes one of the chains is raised again.

5.61. Training. RTO/11 considered it important that the RCC analyze and define the possibility and opportunity to carry out the following courses:

- One regarding IP telephony
- Another on traffic analysis with the wireshark tool. • Firewall training
- Share documentation of training sessions.
- Establish a shared link to access and access information.

APÉNDICE A / APPENDIX A

Disponibilidad de la REDDIG / Reddig Availability



APÉNDICE B / APPENDIX B

Movimientos logísticos / logistic movements

**Equipos enviados para reparar en fábrica durante 2023 /
Equipment sent for factory repair in 2023**

Equipo	Ubicación	Cantidad
Módem Skywan 1070	Asunción (Paraguay)	1
Módem Skywan 1070	Paramaribo (Surinam)	2
Módem Skywan 1070	Curitiba (Brasil)	1
IBUC 80W	Paramaribo (Surinam)	2

APÉNDICE C / APPENDIX C

Movimientos logísticos / logistic movements

**Equipos enviados para reparar en fábrica durante 2023 /
Equipment sent for factory repair in 2023**

MODEM SKYWAN 1070		
EQUIP.	S.N.	NODO / NODE
IDU 1070B	#00:40:71:F0:50:FC	Paramaribo (Surinam)
IDU 1070B	#00:40:71:F0:51:26	Paramaribo (Surinam)
IDU 1070B	#00:40:71:F0:50:AE	Curitiba (Brasil)
IDU 1070B	#00:40:71:F0:50:E4	Asunción (Paraguay)

EQUIPOS RF TERRASAT / TERRASAT RF EQUIPMENT		
IBUC 80W	TE 5022339/59	Paramaribo (Surinam)
IBUC 80W	TE 5022357	Paramaribo (Surinam)

EQUIPOS ENVIADOS A LOS NODOS RESPECTIVOS DURANTE 2023

MODEM SKYWAN 1070		
EQUIP.	S.N.	NODO / NODE
IDU 1070B	#00:40:71:F0:51:02	Cayena (Francia)
IDU 1070B	#00:40:71:F0:52:22	Maiquetia (Venezuela)
IDU 1070B	#00:40:71:F0:51:C2	Recife (Brasil)
IDU 1070B	#00:40:71:F0:51:C2	spare (OACI)
IDU 1070B	#00:40:71:F0:2C:3C	La Paz (Bolivia)
IDU 1070B	#00:40:71:F0:2C:3C	La Paz (Bolivia)

EQUIPOS RF TERRASAT / TERRASAT RF EQUIPMENT		
IBUC 80W	TE 5022353	Bogotá (Colombia)
IBUC 80W	TE 5022357	Cayena (Francia)
IBUC 80W	TE 5022342	Recife (Brasil)
RX 1+1	TE 6010447	Cayena (Francia)
RX 1+1	TE 6010441	La Paz (Bolivia)

MODEM SKYWAN 1070		
EQUIP.	S.N.	NODO / NODE
IDU 1070B	#00:40:71:F0:51:02	Cayena (Francia)
IDU 1070B	#00:40:71:F0:52:22	Maiquetia (Venezuela)
IDU 1070B	#00:40:71:F0:51:C2	Recife (Brasil)
IDU 1070B	#00:40:71:F0:51:C2	spare (OACI)
IDU 1070B	#00:40:71:F0:2C:3C	La Paz (Bolivia)
IDU 1070B	#00:40:71:F0:2C:3C	La Paz (Bolivia)

EQUIPOS RF TERRASAT / TERRASAT RF EQUIPMENT		
IBUC 80W	TE 5022353	Bogotá (Colombia)
IBUC 80W	TE 5022357	Cayena (Francia)
IBUC 80W	TE 5022342	Recife (Brasil)
RX 1+1	TE 6010447	Cayena (Francia)
RX 1+1	TE 6010441	La Paz (Bolivia)

APÉNDICE D / APPENDIX D

Licencia equipos Fortinet vencidos y a vencer / Expired and expiring Fortinet equipment licences

Serial Number	Product Name	Earliest Expired Date	Product Description
FMG2HGTA22000266	FortiManager 200G	15-Dec-24	ICAO SAM
FAZ3HGTA22000721	FortiAnalyzer 300G	13-Dec-24	ICAO SAM
FGT61FTK21013420	FortiGate 61F	03-Dec-24	ICAO SAM
FCTEMS8822008827	FortiClient EMS	14-Dec-23	FortiClient EMS Cloud
FGT61FTK21012992	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013002	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013041	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013141	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013176	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013222	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013226	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013385	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21013443	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014241	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014260	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014399	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014448	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014515	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014551	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014558	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014571	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014583	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014768	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014782	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014824	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014901	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014935	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014824	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014901	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21014935	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21015068	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21011243	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012420	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012456	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012472	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012479	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012609	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012851	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012861	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012911	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012919	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21012948	FortiGate 61F	04-Dec-23	ICAO SAM
FGT61FTK21010597	FortiGate 61F	03-Dec-23	ICAO SAM
FGT61FTK21014533	FortiGate 61F	25-Nov-23	ICAO SAM
S124EFTQ22002370	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002371	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002376	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002377	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002381	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002383	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002389	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002413	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002415	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002418	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM

APÉNDICE D / APPENDIX D**Licencia equipos Fortinet vencidos y a vencer / Expired and expiring Fortinet equipment licences**

Serial Number	Product Name	Earliest Expired Date	Product Description
S124EFTQ22002419	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002420	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002427	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002458	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002464	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002617	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002619	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002625	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002629	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002630	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002635	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
S124EFTQ22002840	FortiSwitch 124E FPOE	05-Mar-23	ICAO SAM
FGT61FTK21012961	FortiGate 61F	04-Mar-23	ICAO SAM
FGT61FTK21012486	FortiGate 61F	04-Mar-23	ICAO SAM

APÉNDICE E / APPENDIX E
Repuestos reddig ii 2023 / reddig ii spare parts

Description	Qty	Unit Price USD	Total Price USD
INDOOR Equipment			
IDU 1070-19" NS + PS AC	1	20,664.00	20,664.00
License Key Mesh Topology		included	
GORGY TIMING Equipment			
GPS Master Clock - RT9s including on outdoor GPS	1	3,289.00	3,289.00
Antenna and cable			
GPS standalone outdoor Antenna for RT9s (without cable)	1	937.00	937.00
LAN Port Server			
NPORT 5610-8	1	1,230.00	1,230.00
10 MHz Redundancy Equipment			
BIAS-T switch (10MHz redundancy system)	1	2,125.00	2,125.00
Passive DC-Block (Power injector 10MHz pass)	4	542.00	2,168.00
Passive DC-Block (RF Bandwidth)	4	130.00	520.00
Passive Splitter (2 Port RF Bandwidth)	2	265.00	530.00
Spare Parts for HPE PROLIANT DL160 Server			
Fans for HPE PROLIANT DL160 Server	5	124.00	1,240.00
Hot-Plug HP Midline HDD 500GB 7.2K SATA	2	405.00	810.00
OUTDOOR Equipment			
RF Equipment			
IBUC 80W	1	18,653.00	18,653.00
Tx 1+1 switching system	1	8707.00	8707.00
Rx 1+1 switching system	1	9,523.00	9,523.00
Waveguide Switch (CPRG flange) + Control cable	1	3,528.00	3,528.00
LNB with external 10MHz reference	1	804.00	804.00
RF filter (for LNB path)	1	676.00	676.00
N-Female Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	45.00	180.00
N-Male Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	44.00	176.00
N-Male Type coaxial connector (for CNT/LMR-600 Type coaxial cable)	4	67.00	268.00
EQUIPOS Y PIEZAS DE REPUESTO EN GENERAL			
Modem Satelital	1		
Cable de energía	1		
Tarjeta MOD	1		
Tarjeta SIC/DEMOM	1		
Tarjeta FPG	1		
Tarjeta UIM	1		
Cable de consola	1		
Cable de RF N-SMA Macho	1		
ROUTER Cisco 2901	1		
Two port Async-Sync Serial WAN interface card	1		
Two port Async-Sync Serial WAN interface card	1		
two port voice interface card FXS	1		
ROUTER Cisco 2911	1		
24 PORT RJ45 PATCH PANEL	1		
01 TARJETA EVM-HD TELEFONICO	1		
Cable serial CISCO V.24 DTE DB25	1		
Cable serial CISCO V.24 DCE DB25	1		
Cable telefonico RJ11 cross over	1		
High density 8 port analog and digital extension module	1		
ROUTER Cisco 2901	1		
Two port Async-Sync Serial WAN interface card	1		
two port voice interface card FXS	1		
Cable serial CISCO V.24 DCE DB25	1		
Rx 1+1	1		
Handheld Terminal with 2 m cable	1		
Accesorios para RX 1+1	1		
Cables de energia	2		
Cable Coaxial de RF con conectores tipo N 6m.	1		
Cable de Gestion para LNB	1		
Cable Coaxial de RF con conectores tipo N 30 cm.	2		

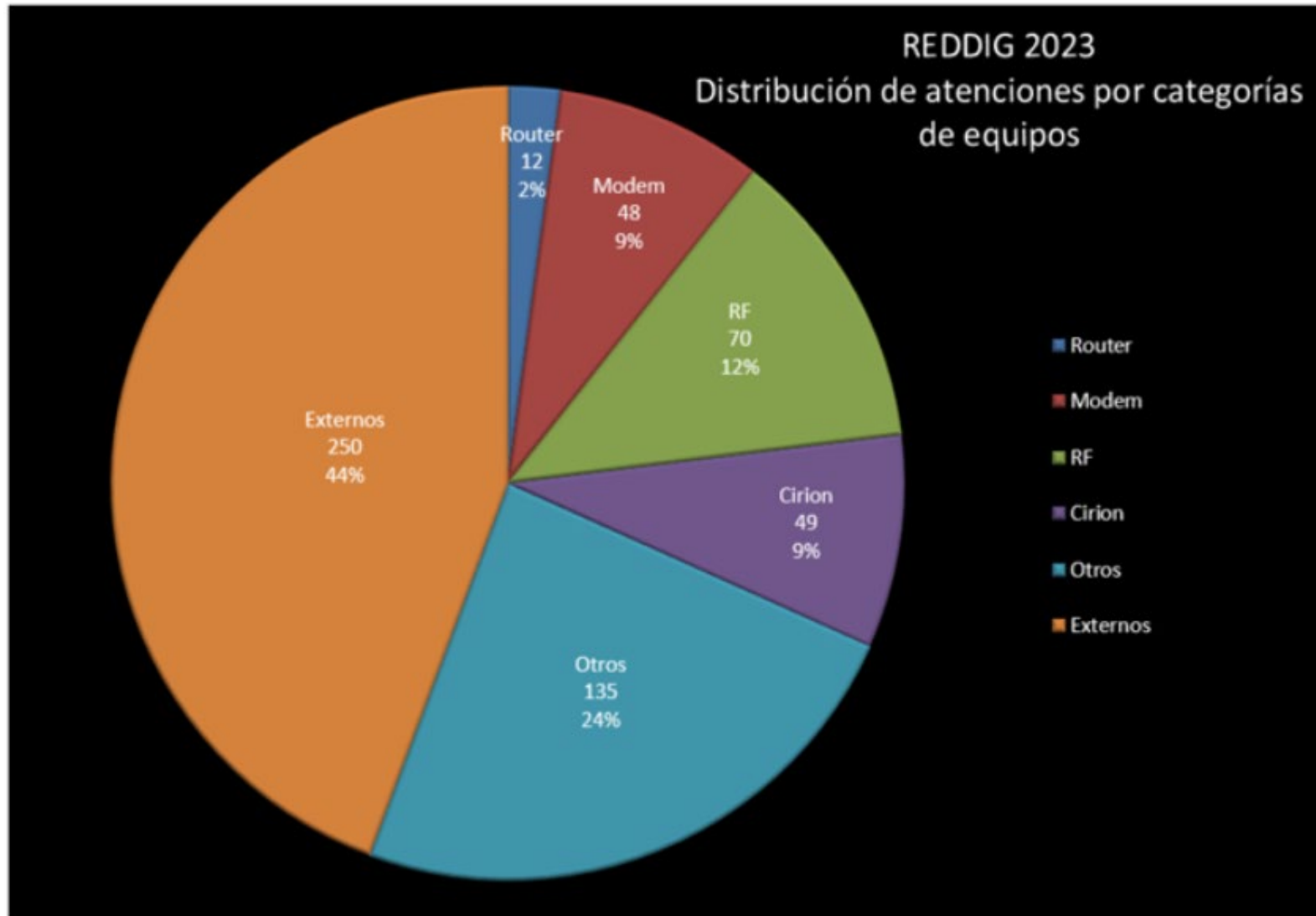
APÉNDICE E / APPENDIX E
Repuestos reddig ii 2023 / reddig ii spare parts

Wave Guide Switch for LNB	1		
LNB Banda C	1		
LNB Banda C	1		
Switch Netgear de 26 Puertos	1		
Cable USB	1		
Switch Netgear de 26 Puertos	1		
IBUC 40W	1		
IBUC 40W	1		
1+1 Interface	1		
Switch de Guia de Onda	1		
Cable Coaxial con conectores tipo N 30cm	2		
Cables de gestión con conector tipo Militar	2		
Cable de gestión tipo ethernet	1		
Cable de Energía	2		
Manuales de Curso de Rio de Janeiro			
Documentos Oficiales REDDIG II			
Manuales REDIG II			
Documentos Oficiales REDDIG II			
IBUC Terrasat 80 W	1		
IBUC Terrasat 80 W	1		
Tarjeta Serial MOXA de 8 Puertos RS-232 PCI	1		
Disco Duro Externo IOMEGA NAS 2 Tb	1		
Fuente para Disco Duro	1		
Manuales	1		
UPS Eaton Eclipse ECO 1200 VA	1		
Cable Multipuerto Moxa 8 puertos	1		
Cable Cisco V.24 DTE	5		
Cable Cisco V.24 DCE	11		
Cable DB25 Male-Female	6		
Cable Patch Cord ethernet RJ45	6		
Cable Multiple Cisco 8 puertos ethernet con adaptadores a DB25	2		
Two port Async-Sync Serial WAN interface card	1		
Four port Async-Sync Serial HWIC	1		
Four port Async-Sync Serial HWIC	1		
Eight port Async interface card	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Two Port Voice Interface Card FXS	1		
Four Port Voice Interface Card FXS	1		
Four Port Voice Interface Card FXS	1		
Four Port Voice Interface Card FXS	1		
Four Port Voice Interface Card FXO	1		
One Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	1		
High Density voice/fax external Module	1		
Two Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	1		
Eight port Async-Sync interface card	1		
Module Adapter for SM Slot on CI	1		
Module Adapter for SM Slot on CI	1		
Impresora Laser Jet Pro 400 M401dn	1		
Cables de Energía	1		
8 Port Device Server 10/100 eth	1		
RSS 16 SLOT 4U Chasis	1		
Power Module	1		
Network Control Card	1		
Dual 8 wire Module Jack A/B card	1		
Dual 8 wire Module Jack A/B card	1		
D25 A/B Card	1		
D25 A/B Card	1		
D25 A/B Card	1		

APÉNDICE E / APPENDIX E
REPUESTOS REDDIG II 2023 / REDDIG II SPARE PARTS

GPS Datum	2		
Cable de consola Cisco	1		
Cable de Gestion SSPA Paradise	1		
Conectores Tipo N 50R sin ensamblar	1		
Pulsera anti estatica	1		
Paquete de Placas vacias para equipos Memotec.	1		
Combinador-Divisor de RF	4		
Convertidos RS232-RS485	1		
Paquete de instalacion SUN SOLARIS	1		
Tarjeta Multipuerto Serial	1		
Cable multipuerto DB25 para Multi I/O Memotec	1		
Cable Patch Cord Ethernet RJ45 5m	2		
Cable de consola Memotec	1		
Adaptador DB9-DB25	2		
Adaptador DB25-M34	2		
Cable de energía	1		
Cable RF Coaxial N-SMA Male	2		

APÉNDICE F / APPENDIX F
Atenciones / Support



APÉNDICE G / APPENDIX G

Disponibilidad de Cirion durante 2023 / Cirion availability in 2023

Cirion_Unavailability Credits_2023

	Jan-23		Feb-23		Mar-23		Apr-23		May-23		Jun-23		Jul-23		Aug-23		Sep-23		Oct-23		Nov-23		Dec-23		TOTAL
	Availabili ty	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availabi lity	USD Credit	Availabi lity	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availab ility	USD Credit	Availabi lity	USD Credit	
1 SAEZ																									0.00
2 SBBR																									0.00
3 SBCT																									0.00
4 SBMN							95.35%	32.42			99.33%	2.75													35.17
5 SBRF	95.12%	32.29	98.23%	10.39	96.91	19.67					99.63%	0.51	99.19%	3.57	99.48%	1.54									67.97
6 SCEL																									0.00
7 SEGU																									0.00
8 SGAS								97.30%	40.08	98.23%	24.57														64.65
9 SKED					99.585	0.11																			0.11
10 SLLP								95.97%	88.03	98.47%	29.05														117.08
11 SMPM										98.66%	36.4	98.62%	37.77												74.17
12 SOCA												97.58%	50.14	99.69%	0.28										50.42
13 SPIM																									0.00
14 SUMU																									0.00
15 SVMI								94.41%	134.84	92.75%	177.23														312.07
16 SYGC										99.53%	7.11														7.11
17 TTZP					97.33%	18.82			99.39%	2.49			97.61%	16.62	99.39%	2.46									40.39
18 ARSAT															99.04%	9.02									9.02
19 SBRJ																									0.00
20 SLCB							96.75%	59.55																	59.55
21 FAOR								98.59%	8.36	0.00%	750				88.80%	81.78									840.14
22 MPTO																									0.00
23 LEEE											94.56%	38.55													38.55
24 MSLP																									0.00
25 ICAO																									0.00
		32.29		10.39		38.6		91.97		273.8		1066.17		108.1		95.08									
														1716.4											

Note: SLA-Availability for all nodes: 99.70%

USD 1716.40

APÉNDICE H / APPENDIX H

Prioridad de enrutamiento según servicios / Routing priority by services

Prioridad SET 2023

	SAEZ	SLLP	SLCB	SBRF	SBMN	SBBR	SBRJ	SBCT	SCEL	SKED	SEGU	SOCA	SYGC	SGAS	SPIM	SMPM	TTZP	SUMU	SVMI	MHTG	MHIL	KATL	KSLC	LETO	FAJO	MPTO	AIREON	OACI	Terrestre	Satelital
1 Argentina-Ezeiza		T	T		T	T	T	T	T					T	T			T	T	T	T	T	T	T	T	T	T	100.00%	0.00%	
2 Argentina-ARSAT	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
3 Bolivia-La Paz	T				T	T									T							T	T	T	T	T	T	T	100.00%	0.00%
4 Bolivia-Cochamba	T	T		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
5 Brasil-Recife	T	T	T		T	T	T	S	S	S	S	T	S	S	S	T	S	T	S	S		T	T	T	T	T	T	T	62.96%	37.04%
6 Brasil-Manaus	T	T	T	T		T	T	T	T	T	T	T	T	T	S	T	T	T	T		S	T	T	T	T	T	T	T	92.59%	7.41%
7 Brasil-Brasilia	T	T	T	T	T		T			T	T	T	S	T	T	T	S	T	T			T	T	T	T	T	T	T	91.67%	8.33%
8 Brasil-Rio de Janeiro	T	T	T	T	T	T		T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
9 Brasil-Curitiba	T	T	T		T	S						T										T	T	T	T	T	T	T	94.44%	5.56%
10 Chile	T	T	T		T	T	T								S	T						T	T	T	T	T	T	T	93.75%	6.25%
11 Colombia	T	T	T		T	T	T				T		S		T	T	S				S	T	T	T	T	T	T	86.36%	13.64%	
12 Ecuador		T	T		T	T	T			T						T	T				S	T	T	T	T	T	T	T	94.44%	5.56%
13 Francia		T	T	T	T	T	T						T		S	T	S					T	T	T	T	T	T	T	89.47%	10.53%
14 Guyana		T	T	S	T	S	T			S		T			S	T	S					T	T	T	T	T	T	T	85.00%	15.00%
15 Paraguay	T	T	T		T	T	T	T								T						T	T	T	T	T	T	T	100.00%	0.00%
16 Perú	T	T	T		S	T	T		S	T	T	S	S			T		S	T			T	T	T	T	T	T	T	77.27%	22.73%
17 Suriname	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T		T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
18 Trinidad & Tobago		T	T		T	S	T		T	S		S	T	T	T	T					S	T	T	T	T	T	T	T	80.95%	19.05%
19 Uruguay	T	T	T	T	T	T	T	T							S	T						T	T	T	T	T	T	T	95.00%	5.00%
20 Venezuela	T	T	T		S	T	T		T	T	T	T	T			T	T	S	T			T	T	T	T	T	T	T	91.30%	8.70%
21 COCESNA-Tegucigalpa	S			S	S	S		S	S	S	S	S	S	S	S	S	S	S	S										0.00%	100.00%
22 COCESNA-Ilopango	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T				T	T	T	T	T	T	100.00%	0.00%
23 EEUU-Atlanta	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
24 EEUU-Salt Lake City	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
25 España-Madrid	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
26 Sudáfrica-Johannesburgo	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
27 Panamá	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
28 AIREON	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
29 Oaci-Lima	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
30 SITA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
31 New Zeland-Auckland	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T	T	T	T	100.00%	0.00%
																													91.46%	8.54%
																													100.00%	

APÉNDICE I / APPENDIX I

Distribución de equipos Fortinet / Fortinet equipment distribution

	País	Localidad	Station	Contacto			Cantidad de equipos a enviar	FortiGate	FortiSwitch	FortiManag	FortiAnalyzer
				Nombre y Apellido	email	teléfono					
1	Argentina	Ezeiza	SAEZ	Hernán Canna	hcanna@eana.com.ar	+54 11 4480 2354-2357 / RTI 57 357	4	3	1		
	Argentina	Arsat	ARSAT								
2	Bolivia	La Paz	SLLP	Remigio Blanco	remigio.blanco@naabol.gob.bo rblancoflores@gmail.com	+591 71582523	4	3	1		
	Bolivia	Cochabamba	SLCB								
3	Brasil	Manaus	SBMN	Maj. Renata Rodrigues Frias	renatarrf@decea.mil.br	+55 (21)2101-6869/+55(21)98554-4011	14	8	4	1	1
	Brasil	Brasilia	SBBR								
	Brasil	Curitiba	SBCT	Bruno Pacheco Santos Azevedo Costa	pachecobpsac@decea.mil.br	+55 (21) 2101-6684					
	Brasil	Recife	SBRF								
Brasil	Rio de Janeiro	SBRJ									
4	Chile	Santiago	SCEL	Christian Vergara Leyton	cvergara@dgac.gob.cl	+56 22 8364005 cel: +56 9 98886452	3	2	1		
5	Colombia	Bogotá	SKED	Andrés Colmenares Rincón	andres.colmenares@aerocivil.gov.co	+57 601 241 2038 / +57 317 860 6289	3	2	1		
				Robinson Quintero	robinson.quintero@aerocivil.gov.co	+57 1 296 2040					
6	Ecuador	Guayaquil	SEGU	Nancy Karina Tapia Yagual	ntapia@aviacioncivil.gob.ec	+593 2 294 7400 ext 2197	3	2	1		
7	Guyana	Georgetown	SYGC	Mortimer Salisbury	msalisbury@gcaa-gy.org	592-625-7669// 608-7669 //261-2569	3	2	1		
8	Guyana Francesa	Caynea	SOCA	Serge Cupoli	serge.cupoli@aviation-civile.gouv.fr	+594 594 35 93 15	3	2	1		
9	OACI	Lima	OACI				1	1			
10	Panamá	Panamá	MPTO	Daniel De Avila	daniel.deavila@aeronautica.gob.pa	+507 65354512	3	2	1		
11	Paraguay	Asunción	SGAS	Juan Felix Estigarribia	jfe2406@gmail.com	+595 971 627227	3	2	1	entregados a Felix Estigarribia durante la RCC-29	
12	Perú	Lima	SPIM	Romel Isaias Tito Paredes	rtito@corpac.gob.pe	Teléf.: 230 - 1000 Anexo 1507 Celular: 951823131	3	2	1	entrega local	
13	Surinam	Paramaribo	SMPM	Jurgen Cicilson	jurmaja@hotmail.com	+(597) 325123/+(597) 531288 Cel +(597) 8792810	3	2	1		
14	Trinidad&Tobago	Piarco	TTZP	Rupnarine Baboolal Naresh Seeparsad	rbaboolal@caa.gov.tt nseeparsad@caa.gov.tt	1 868-668 8222 Ext. 2568	3	2	1		
						1(868)689-4267					
15	Uruguay	Montevideo	SUMU	Miguel Vera	miguelvera@adinet.com.uy	5982 6040408 int 4517	3	2	1		
16	Venezuela	Maiquetía	SVMI	Jarumy Castillo	jarumycastillo@gmail.com	+58 424 - 354.99.24	3	2	1		
							59	39	18		

APÉNDICE I / APPENDIX I

Distribución de equipos Fortinet / Fortinet equipment distribution

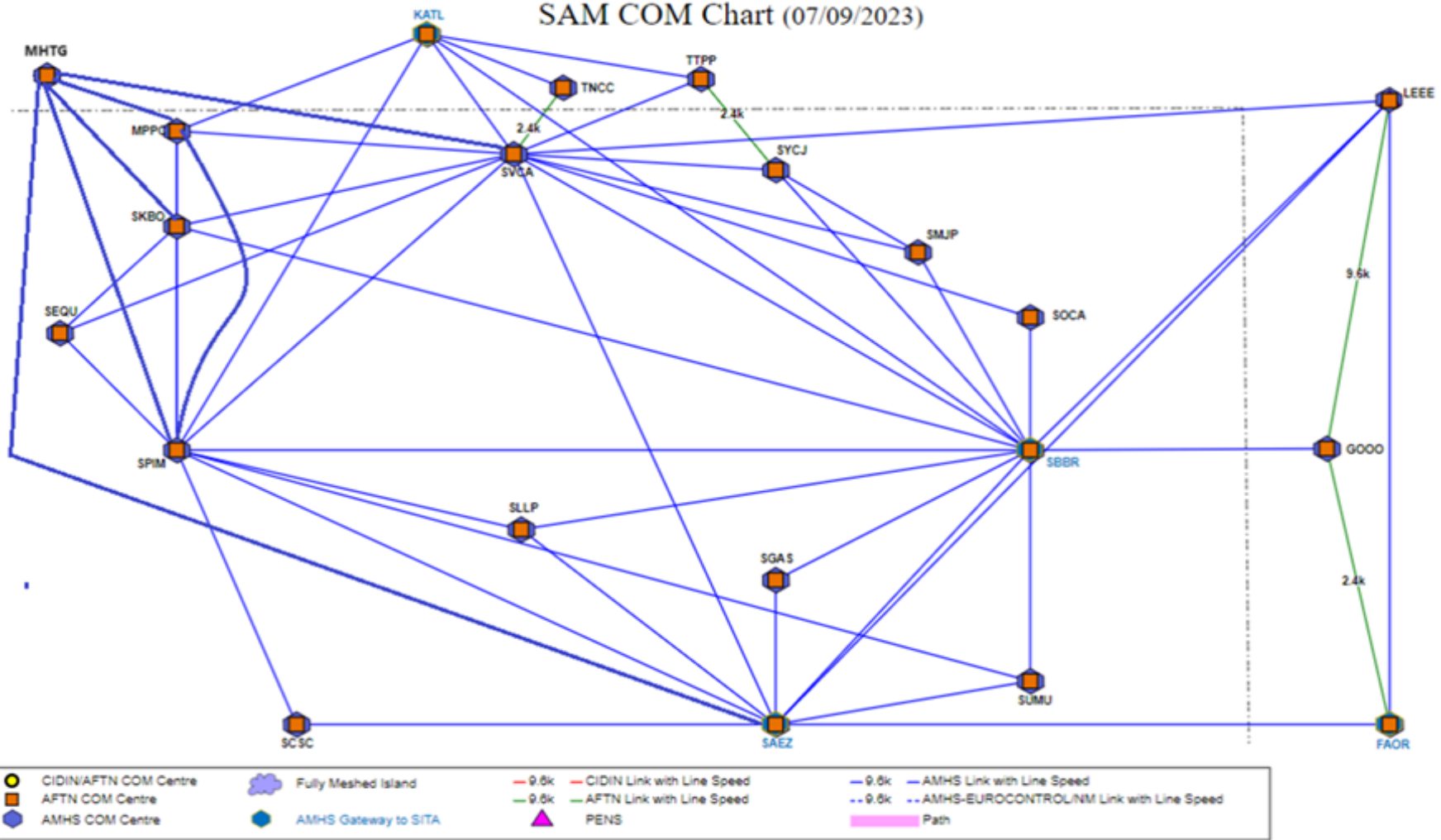
XX	Pais	Localidad	Station	Code	IP	Fortigate A Lumen	Fortigate B Estado	Fortiswitch	FortiAnalyzer	FortiManager	Mask	Gateway
						10.100.xx.130	Nro. Serie	10.100.xx.131	Nro. Serie	10.100.xx.140	Nro. Serie	10.100.xx.150
1	Brasil	Manaus	SBMN	36		SBMN-FORTI-FG-A FGT61FTK21012948	SBMN-FORTI-FG-B FGT61FTK21013420	SBMN-FORTI-FS-A S124EFTQ22002370	SBMN-FORTI-FAN-A FAZ3HGTA22000721	SBMN-FORTI-FMG-A FMG2HGTA22000266		
2	Argentina	Ezeiza	SAEZ	20		SAEZ-FORTI-FG-A FGT61FTK21012486	SAEZ-FORTI-FG-B FGT61FTK21012851	SAEZ-FORTI-FS-A S124EFTQ22002376				
3	Brasil	Curitiba	SBCT	30		SBCT-FORTI-FG-A FGT61FTK21012472	SBCT-FORTI-FG-B FGT61FTK21012919	SBCT-FORTI-FS-A S124EFTQ22002427				
4	Chile	Santiago	SCEL	40		SCEL-FORTI-FG-A FGT61FTK21012479	SCEL-FORTI-FG-B FGT61FTK21012609	SCEL-FORTI-FS-A S124EFTQ22002458				
5	Uruguay	Montevideo	SUMU	65		SUMU-FORTI-FG-A FGT61FTK21014558	SUMU-FORTI-FG-B FGT61FTK21012992	SUMU-FORTI-FS-A S124EFTQ22002464				
6	Bolivia	La Paz	SLLP	25		SLLP-FORTI-FG-A FGT61FTK21014533	SLLP-FORTI-FG-B FGT61FTK21014448	SLLP-FORTI-FS-A S124EFTQ22002630				
7	Colombia	Bogotá	SKED	45		SKED-FORTI-FG-A FGT61FTK21014399	SKED-FORTI-FG-B FGT61FTK21014768	SKED-FORTI-FS-A S124EFTQ22002617				
8	Ecuador	Guayaquil	SEGU	50		SEGU-FORTI-FG-A FGT61FTK21012420	SEGU-FORTI-FG-B FGT61FTK21011243	SEGU-FORTI-FS-A S124EFTQ22002619				
9	Paraguay	Asunción	SGAS	55		SGAS-FORTI-FG-A FGT61FTK21013141	SGAS-FORTI-FG-B FGT61FTK21014824	SGAS-FORTI-FS-A S124EFTQ22002377				
10	Perú	Lima	SPIM	60		SPIM-FORTI-FG-A FGT61FTK21014241	SPIM-FORTI-FG-B FGT61FTK21013222	SPIM-FORTI-FS-A S124EFTQ22002629				
11	Brasil	Recife	SBRF	38		SBRF-FORTI-FG-A FGT61FTK21012961	SBRF-FORTI-FG-B FGT61FTK21014260	SBRF-FORTI-FS-A S124EFTQ22002635				
12	Guyana F	Cayena	SOCA	92		SOCA-FORTI-FG-A FGT61FTK21014551	SOCA-FORTI-FG-B FGT61FTK21012456	SOCA-FORTI-FS-A S124EFTQ22002413				
13	Guyana	Georgetown	SYGC	90		SYGC-FORTI-FG-A FGT61FTK21015068	SYGC-FORTI-FG-B FGT61FTK21014782	SYGC-FORTI-FS-A S124EFTQ22002415				
14	Surinam	Paramaribo	SMPM	94		SMPM-FORTI-FG-A FGT61FTK21013226	SMPM-FORTI-FG-B FGT61FTK21012911	SMPM-FORTI-FS-A S124EFTQ22002419				
15	Trinidad &	Piarco	TTZP	91		TTZP-FORTI-FG-A FGT61FTK21014583	TTZP-FORTI-FG-B FGT61FTK21014901	TTZP-FORTI-FS-A S124EFTQ22002420				
16	Venezuela	Maiquetia	SVMI	80		SVMI-FORTI-FG-A FGT61FTK21013041	SVMI-FORTI-FG-B FGT61FTK21010597	SVMI-FORTI-FS-A S124EFTQ22002840				
17	Brasil	Brasilia	SBBR	34		SBBR-FORTI-FG-A FGT61FTK21014571	SBBR-FORTI-FG-B FGT61FTK21013443	SBBR-FORTI-FS-A S124EFTQ22002371				
18	Panamá	Panamá	MPTO	88		MPTO-FORTI-FG-A FGT61FTK21014935	MPTO-FORTI-FG-B FGT61FTK21014515	MPTO-FORTI-FS-A S124EFTQ22002381				
19	OACI	Lima	OACI	63		OACI-FORTI-FG-A FGT61FTK21013176						
20	Brasil	Rio de Janeiro	SBRJ	32		SBRJ-FORTI-FG-A FGT61FTK21013002						
21	Argentina	ARSAT	ARST	22		ARST-FORTI-FG-A FGT61FTK21013385						
22	Bolivia	Cochabamba	SLCB	27		SLCB-FORTI-FG-A FGT61FTK21012861						

S124EFTQ22002383	Sobran
S124EFTQ22002389	
S124EFTQ22002418	
S124EFTQ22002625	

APÉNDICE J / APPENDIX J

Interconexiones implementadas / Implemented interconnections

SAM COM Chart (07/09/2023)



APÉNDICE J / APPENDIX J

Interconexiones implementadas / Implemented interconnections

		AÑOS														
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
INTER. AMHS OPER.	SKBO – SPIM 08/11/2010			SEQU – SPIM 26/07/2012			SBBR – SPIM 14/12/2015	SBBR – SKBO 22/05/2017	SAEZ – SBBR 04/04/2018	SLLP-SPIM 10/05/2019	SEQU-SKED 16/01/2020	SVM-KATL 26/01/2021	SPIM-SUMU 25/11/2022	LEE-FAOR 04/07/2023		
			SAEZ – SGAS /2012			SCSC – SPIM 14/12/2015	SBBR – SYCJ 16/07/2017	SAEZ – SGAS 30/11/2018	SBBR-KATL 06/08/2019	SVM-SOCA 22/01/2020			SAEZ-SUMU 29/11/2022	COCESNA-FAA 13/06/2023		
							SKBO – SVM 01/12/2017	SBBR – SGAS 30/11/2018	SVM-SYCJ 27/08/2019	SBBR-SOCA 22/01/2020				SAEZ-COCESNA 12/10/2022	MPPC – SVM 22/06/2023	
							SPIM – SVM 01/12/2017	SBBR – SMJP 11/10/2018	SLLP-SBBR 30/07/2019	SAEZ-SCEL 21/01/2020				SVM-SAEZ 06/06/2022	SAEZ-FAOR 01/06/2023	
								SBBR – SVM 28/02/2018	SAEZ-SPIM 10/05/2019	MPPC-SKED 30/07/2020				SUMU-SBBR 07/02/223	SPIM-MPPC 04/04/2023	
								SEQU – SVM 11/10/2018	SAEZ-SITA 18/07/2019	SPIM-KATL 02/03/2020				SPIM-COCESNA 14/09/2022	SAEZ-LEE 08/03/2023	
								SMJP – SYCJ 11/10/2018	SVM-SMJP 21/03/2019						SBBR-LEE 28/02/2023	
								SBBR – SITA 16/08/2018	SBBR-LETO _05/2019						SVM-LEE 14/02/2023	
								SBBR-LETO 11/10/2018	SAEZ-SLLP						AIREON-COCESNA 20/04/2023	
			1		2			2		4	9		5		1	4
TOTAL INTERCONEXIONES											45					

Conexiones logradas y en proceso durante 2022/23

Argentina

- MTA Ezeiza – MTA Montevideo
- MTA Ezeiza – MTA Johannesburgo
- MTA Ezeiza – MTA Caracas (extra-plan – implementado)
- MTA Ezeiza – MTA Madrid

Brasil

- MTA Brasilia – MTA Montevideo
- MTA Brasilia – MTA Lisboa (coordinaciones iniciadas)
- MTA Brasilia – MTA Madrid vía REDDIG

Guyana

- MTA Georgetown – MTA Piarco (en coordinaciones)

Trinidad & Tobago

- MTA Piarco – MTA Atlanta & Salt Lake City por REDDIG (en coordinaciones)

Uruguay

- MTA Montevideo – MTA Brasilia
- MTA Montevideo – MTA Ezeiza

APÉNDICE J / APPENDIX J

Interconexiones implementadas / Implemented interconnections

- MTA Montevideo – MTA Lima (extra-plan)
- Venezuela
- MTA Caracas – MTA Curaçao (coordinaciones aún no iniciadas)
- MTA Caracas – MTA Ezeiza (extra plan)
- MTA Caracas – MTA Madrid

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S	Nodo:	COCESNA	Ciudad:	Tegucigalpa - Honduras	@	
	Dirección:	Aeropuerto Toncontin				
	Teléfono:	Central: 504 22757090 Ext: 1700 (técnico) - 1701 - 1702				
	Fax:					
	E-mail:	rperez@cocesna.org Roger Pérez-Gerente Estación Honduras				
D E L	NOC (Network Operation Center) Tel Directo: 504 22757161 OK					
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular	
N O D O						

	USUARIO	Teléfono REDDIG	Observ.
A		2101	ocupado
		2102	ocupado
S		2152	cenamer control
		2153	cenamer control

	USUARIO	Teléfono REDDIG	Observ.
A D M I N		2100	ocupado
		2151	ocupado

Nota

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SAEZ	Ciudad: Buenos Aires - ARGENTINA		
	Dirección:	Aeropuerto Ministro Pistarini (Ezeiza), 4to piso, DECODI			
	Teléfono:	5411 4480 2362 OK			
	Fax:	5411 4480 2363			
	E-mail:	hcanna@eana.com.ar (Hernan CANNA), haguirre@eana.com.ar (Hernan AGUIRRE), agonzalez@eana.com.ar (Antonio GONZALEZ), raranda@eana.com.ar (Ricardo ARANDA), mlonghini@eana.com.ar (Maria Veronica LONGHINI			
	Administrativa:	2057362 (Técnico de Turno 24 hs)			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Hernán Aguirre	<i>Jefe CECODI</i>	2057350	5411 4480 2350	timbra
	Hernán Canna	<i>REDDIG CAFSAT</i>	2057357	5411 4480 2357	54911 58489699
	Veronica Longhini	<i>RED ATN</i>	2057354	5411 44802354	ambulancia
Ricardo Aranda	<i>TELEFONIA</i>	2057361	5411 44802361	timbra	
Antonio Gonzalez	<i>AMHS</i>	2057376	5411 4480 2376	timbra	
A T S R E G I S T R O	USUARIO		Teléfono REDDIG	Observ.	
	Oficina Responsable Tecnico Nodo REDDIG EZEIZA		2020	ambulancia	
	Ezeiza Turno Técnico REDDIG (CECODI)		2000	OK	
	Torre de Control de Vuelo (TWR) Ezeiza		2005	timbra	
	Supervisión del Tráfico de la Red AFTN - Ezeiza		2006	OK	
	TWR San Fernando		2016	timbra	
	FPL Aeroparque Jorge Newbery		2017	OK	
	TWR Gualeguaychu		2018	OK	
	TWR Marambio		2019	timbra	
	ACC Córdoba (Principal)		2032	OK	
	ACC Comodoro Rivadavia		2033	OK	
	ACC Mendoza		2034	OK	
	ACC Córdoba (Secundaria)		2035	OK	
	ACC Resistencia (Principal)		2036	OK	
	ACC Mendoza (Alternativa)		2037	OK	
	TWR Aeroparque Jorge Newbery		2038	OK	
	TWR Iguazu (Alternativo)		2039	OK	
	TWR San Carlos de Bariloche (Principal)		2040	OK	
	TWR Iguazu		2041	timbra	
	TWR Paso de los Libres		2042	OK	
	TWR Concordia		2043	OK	
	Ezeiza I Turno Técnico ACC		2044	timbra	
	Ezeiza II Turno Técnico ACC		2045	timbra	
ACC Sur (Control Visual) Manual APP 2 Ezeiza		2050	OK		
ACC 1Norte I Radar DEO EZEIZA		2051	timbra		
ACC 2 APP 1 DEO TMA ESTE/OESTE/NORTE- Ezeiza		2052	OK		
TWR Ushuaia (Alternativa)		2055	OK		

2080

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O N A L	TWR Río Gallegos (Alternativa)	2056	1/1 ruim feito reporte
	ACC Ezeiza Supervisor	2060	timbra
	ACC Sur Radar APP2 - Ezeiza	2061	timbra
	ACC Radar Norte II DEO - Ezeiza	2062	timbra
	ACC Radar Norte III DEO - Ezeiza	2063	timbra
	TWR San Carlos de Bariloche (Alternativa)	2064	timbra
	ACC Mendoza Hot-Line punto a punto DOZ-CHI	2065	OK
	ACC Córdoba (Alternativa)	2066	OK
	ACC Resistencia (Alternativa)	2067	OK
	TWR Río Gallegos	2068	OK
	TWR Ushuaia	2069	OK
	ACC Resistencia	2090	OK
	A D M I N	AUTORIDADES	Teléfono REDDIG
Jefe Centro de Comunicaciones Digitales EZEIZA		2057350	timbra
Responsable Area Datos y REDDIG		2057357	timbra
Responsable Area Enlaces Terrestres - Servicios de VOZ		2057361	timbra
Responsable Area A.F.T.N.-A.M.H.S.		2057376	timbra
CCAM Centro de Comunicaciones Ezeiza		2057269	OK
Sala Técnica y Supervisión para los Sistemas Oral ATS, REDDIG, AFTN, A.M.H.S., Red Local Administrativa - Departamento Comunicaciones Digitales EZEIZA		2057362	timbra
		2057363	FAX
		2057364	timbra
		2057365	timbra
	2057500	timbra	
	2001	REDDIG	
C S O A S R P S A A S T	AUTORIDADES	Teléfono REDDIG	Observ.
	Jefe ARMCC		
	Jefe Aux. ARMCC	2055128	OK
	Encragado Sistema ARMCC	2055132	OK
	Turno Sistema ARMCC	2055131	OK
		2055133	OK
		2055134	OK
Telefono Red Publica Turno Sistema ARMCC (FAX)	FAX	5411 4751 2935 5411 4480 2486	

- Notas: 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada 57072 - 2- 7 xxxx (esto si no se esta llamando desde un telefono ATS)
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada 57062 - 7 xxxxxx (La cantidad de digitos que sean necesarios)

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Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SLLP		Ciudad: La Paz - BOLIVIA		
	Dirección:	Aeropuerto Internacional El Alto				
	Teléfono:	5912 2129901				
	Fax:	5912 2370340				
	E-mail:	titohermanh@latinmail.com				
	Teléfonos Red Administrativa:	2501				
		Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
		Remigio Blanco Flores	Punto Focal REDDIG	252141	5912 2370341	71582523
		Pablo Huayllas Lopez	Técnico	2501	59122129901	72529955
	Hernán Tito	Técnico	2501	59122129901	71276201	

A T S	USUARIO	Teléfono REDDIG	Observ.
	Coordinación ACC	2551	timbra
	ACC 1	2552	OK
	ACC 2	2560	timbra
	APP Puerto Suárez	2543	OK

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	AASANA - Dirección Ejecutiva	252101	ocupado
	AASANA - Dirección Técnica	252104	ocupado
	AASANA - Dirección Administrativa	252107	ocupado
	AASANA - Directorio	252110	ocupado
	AASANA - Jefatura de Obras Civiles	252132	ocupado
	AASANA - Jefatura Comercial	252135	ocupado
	AASANA - Jefatura de Ingeniería Electrónica	252138	ocupado
	AASANA - Jefatura División de Telecomunicaciones	252141	ocupado
	AASANA - Oficina de Planificación	252145	ocupado
	Mantenimiento Técnico de la REDDIG	2501	OK
Departamento Técnico	252233	ocupado	
	252235	ocupado	

- Notas:
1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

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Directorio REDDIG / REDDIG Directory

D A T O S	Nodo:	SBBR	Ciudad:	Brasília - BRASIL		
	Dirección:	CINDACTA I - SHIS QI 05 - Área Especial 12 - Lago Sul – 71615-600 – Brasília-DF – Brasil			CEP:	
	Teléfono:	55-61-3364-8000		55-61-3364-8474		
	Fax:	55-61- 3364-7030				
	E-mail:	thiagomaiatmm@gmail.com				
	Teléfonos Red Administrativa:	3401				
D E L N O D O	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular	
	Técnico de Dia	Sala Técnica	34376	(61) 3364-8474 / 8517	x	
	Cap Vitor / Ten Rodolfo	Chefia S. de Enlaces	34412	(61) 3364-8511	x	
	1S Barros	Seção de Enlaces 1	34494	(61) 3364-8480	x	
	3S Maia	Seção de Enlaces 2	34388 / 34494	(61) 3364-8532	x	
	CV Ricardo	Seção de Telefonía	34380	(61) 3364-8485	x	

A T S	USUARIO	Teléfono REDDIG	Observ.
	Supervisor	34200	atende TEL/RADAR
	FMC	34200	atende TEL/RADAR
	RCC	x	
	Sala PLN	x	
	Sala Técnica	34276	ok
A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Mantenimiento REDDIG-BR	3401	ok
	Supervisor del Centro de Mensajes (CTMA-BR)	34401	ok
	CTMA-BR Jefe	34429	ok
	Sala Técnica	34376	ok
	Chefia Seção de Enlaces	34412	ok
	Seção de Enlaces	34494 / 34388	ok
	RCC	34340	ok, SIVA
Sala PLN	34808 / 34824	ñ chama, ocupado	
FMC	34300	chama ñ atende	

cc sip
disconnect cause 16 200
disconnect cause 16 200

- Notas: 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

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Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SBCT	Ciudad:	Curitiba - BRASIL	
	Dirección:	Av. Erasto Gaertner, 1000. CEP 82515-000, Curitiba - PR, Brasil			
	Teléfono:	55 41 3251 53	/5318	/5416	/5278
	Fax:	55 41 3251 5341			
	E-mail:	jeffersonjmc@cindacta2.gov.br / zuckertezn@cindacta2.gov.br			
Teléfonos Red Administrativa:	305545, 305441 y/o 3001				
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Jefferson Cheron	Ingeniero	305315	5541 3251 5278	-
	Emerson Zuckert	Técnico	305315	5541 3251 5705	-
	Alex Rocha Aparecido	Técnico	305315	5541 3251 5705	-
	Técnico 24 horas		305315	5541 3251 5315	-

	USUARIO	Teléfono REDDIG	Observ.
A T S	Supervisor Curitiba	3060	Curitiba
	Controle/Assistente Porto Alegre	3051	Curitiba
	Controle/Assistente Florianopolis	3052	Curitiba
	Controle/Assistente de Red	3053	Curitiba
	Controle/Assistente Sorocaba	3054	Curitiba
	Controle/Assistente Foz de Iguazú	3055	Curitiba
	Controle/Assistente Campo Grande	3056	Curitiba
	Supervisão ACC	3076	Curitiba
	Assistente Console 10	3070	Curitiba
	ARCC – Salvaero	3062	Curitiba
	ACC Brasilia U5	3031	Brasilia
	ACC Brasilia U4	3032	Brasilia
	FMC Brasilia	3033	Brasilia
	APP Foz de Iguazú	3041	Foz de Iguazú
	APP Uruguaiana	3091	Ambulancia, Corumba
	APP Corumba	3083	Uruguaina
		3092	Ambulancia, hotline Asunción

cc sip
disconnect cause 16 200
disconnect cause 16 200

	USUARIO	REDDIG Telephone	Comments
	DECEA Director General	306200	Ocupado, RJ
	DECEA Sub-Departamento de Operaciones (SDOP)	306241	Ocupado, RJ

disconnect cause 65 488
disconnect cause 65 488

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Directorio REDDIG / REDDIG Directory

A D M I N	DECEA Sub-Departamento de Logística (SDLO)	306205	Ocupado, RJ	disconect cause 65 488
	CECATI	306250	Ocupado, RJ	disconect cause 65 488
	División CNS	306267	Ocupado, RJ	disconect cause 65 488
	División ATM	306273	Ocupado, RJ	disconect cause 65 488
	División de Telecomunicaciones	306220	Ocupado, RJ	disconect cause 65 488
	Portaria DTCEA Florianópolis	305545	Ocupado, Florianópolis	disconect cause 65 488
	CINDACTA 1 (Brasilia) Supervisor AFTN CCAM-BR	308377	Ocupado, Brasilia	disconect cause 65 488
	CINDACTA 2 (Curitiba) Mantenimiento 1	3001	Curitiba	
	CINDACTA 2 (Curitiba) Mantenimiento 2	305315	Curitiba	
	DECEA RJ	305900	Ocupado, RJ	disconect cause 65 488
	DECEA RJ	305901	Ocupado, RJ	disconect cause 65 488

- Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

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Directorio REDDIG / REDDIG Directory

D A T O S	Nodo:	SBMN	Ciudad:	Manaus - BRASIL		
	Dirección:	CINDACTA IV - Av. Do Turismo, No. 1350, Tarumã CEP: 69045-630, Manaus, Brasil				
	Teléfono:	55-92-3652 5713 - 55-92-3652 5712				
	Fax:					
	E-mail:					
S D	Terminos Red					
	Administrativa:	3601 / 3602				
E L N O D O	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular	
	1T Magno	Jefe Sala Técnica	3622	+55-92-3652 5470	+55-92-98212-6374	
	Sandro Mendes		3601 / 3602	+55-92-3652 5712	+55-92-99112-8089	
	Magno Rodrigues		3601 / 3602	+55-92-3652 5712	+55-92-98241-3087	
	Cleber de Souza		3601 / 3602	+55-92-3652 5712	+55-92-98173-5423	
	Eraldo Menezes		3601 / 3602	+55-92-3652 5712	+55-92-98125-7348	
	Leandro		3601 / 3602	+55-92-3652 5712	+55-92-98247-7414	
	Malcher Iggo		3601 / 3602	+55-92-3652 5712	+55-92-99122-4791	
	A T S	USUARIO		Teléfono REDDIG	Observ.	
		SBBL		6158	OK	desconfigurado?
SBBL			3650	OK		
SBBL			3652	OK		
SBBL			3656	OK		
SBBL			3651	OK		
SBMN			3653	OK		
SBMN			3655	OK		
SBMN			3658	OK		
SBMN			3657	OK		
SBMN			6170	OK	desconfigurado?	
SBPV			6169	OK	desconfigurado?	
SBPV			3672	OK		
SBPV			3673	OK		
SBPV			3670	ñ chama, ocupado		
SBPV			3659			
SBTT (Tabatinga)			3671	OK		
NCC Manaus - Número Operacional			3612	OK		
A D M	USUARIO		Teléfono REDDIG	Observ.		
	DT (Jefe)		3620	Ocupado	desconfigurado?	
	TEL (Jefe)		3621	Ocupado	desconfigurado?	
	Sala Técnica (Jefe)		3622	Ocupado	desconfigurado?	

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Directorio REDDIG / REDDIG Directory

I N	NCC Manaus - Técnico 24Horas	3601/3602	OK
	Administrador REDDIG Tel: 55-92-3652 5714	3611	OK

- Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

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Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SBRF	Ciudad:	Recife - BRASIL	
	Dirección:	Av. Centenario Santos Dumont, s/n, Ibura, Recife-PE. CEP 51250-020			
	Teléfono:	5581 2129 8376			
	Fax:	5581 2129 8116			
	E-mail:	carlofefpaes@gmail.com			
	Teléfonos Red Administrativa:	3801 / 388376 / 388399 / 388166			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Cap. Alexandre Ricardson	Jefe Enlaces	388181	5581 2129 8180	55-81-997001049
			388116	5581 2129 8116	
			388399	5581 2129 8399	

	USUARIO	Teléfono REDDIG	Observ.
A T S	Supervisor Recife	3860	ok
	Asistente Sector 1	3851	ok
	Asistente Sector 2	3852	ok
	Asistente Sector 4	3853	ok
	Asistente Sector 7	3854	ok
	Asistente Sector 8	3855	ok
	Asistente Sector 11/12	3856	timbra
	Asistente Sector 13/16	3857	ok
	Asistente Sector 9	3871	ok
	Asistente Sector 10	3872	ok
	Plano de Voo – PLN	3873	ok
	Asistente Sector 6	3874	ok
	Asistente Sector 14/15	3875	timbra
	Salvaero	3876	ok
	Célula FMC	3877	ok
	Atlantico ACC - Control 1	3878	ok
Atlantico ACC - Control 2	3879	ok	

	USUARIO	Teléfono REDDIG	Observ.
A D M	DECEA Director General	306200	ocupado
	DECEA Sub-Departamento de Operaciones (SDOP)	306241	ocupado
	DECEA Sub-Departamento de Logística (SDLO)	306205	ocupado
	CECATI	306250	ocupado
	CERNAI	306200	ocupado
	División CNS	306267	ocupado

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Directorio REDDIG / REDDIG Directory

I N	División ATM	306273	ocupado
	División de Telecomunicaciones	306220	ocupado
	CINDACTA 1 (Brasilia) Supervisor AFTN CCAM-BR	308377	ocupado
	CINDACTA 3 (Recife) Mantenimiento 1 – Sala Técnica	3801/388166/388376	ok / ocupado/ocupado
	CINDACTA 3 (Recife) Mantenimiento 2 – Laboratório	388399/ 388243	ocupado/ocupado

- Notas:
1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

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Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SKED	Ciudad: Bogotá - COLOMBIA		
	Dirección:	Aeropuerto Internacional El Dorado, Centro Nacional de Aeronavegación			
	Teléfono:	571 425100 EXT 1244 / 571 4251000 EXT 1218 / 571 2962451 571 4251000 EXT 1201			
	Fax:				
	E-mail:	andres.colmenares@aerocivil.gov.co luis.lozanos@aerocivil.gov.co			
	Teléfonos Red Administrativa:	4501 / 4502/ 45-911			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Andres Colmenares	Coordinador Grupo Sistemas de Comunicaciones	4502 / 45281		57-3176567202
	Robinson Quinteros	Lider Funcional Grupo Comunicaciones	4501 / 45664		57-3176570797
	Central de Atención técnica CGAC	Personal asistencia tecnica	4501 / 45911		

	USUARIO	Teléfono REDDIG	Observ.
A T S	ACC SWP Bogotá (SKBO) PLANIFICADOR	4530	4536 opera como servicio alterno *
	ACC NWP Bogotá (SKBO)	4533	4538 opera como servicio alterno *
	ACC NEP Bogotá (SKBO)	4534	4539 opera como servicio alterno *
	ACC SWR Bogotá (SKBO)	4535	
	ACC SER Bogotá (SKBO)	4558	4540 opera como servicio alterno *
	ACC Supervisor Bogotá (SKBO)	4596	
	ACC Sector Norte Barranquilla (SKEC)	4531	
	ACC Sector Sur Barranquilla (SKEC)	4554	
	ACC Centro de Información de Vuelo Barranquilla (SKEC)	4555	
	ACC Supervisor Barranquilla (SKEC)/ACC Sector Sur Bar	4556	
	TWR Pasto (SKAN)	xxxx	No cuenta con salida REDDIG
	ACC Cali (SKCL)	4541	
	TWR Leticia (SKLT)	4546	DDI Operativo 5785924562
	APP Cucuta (SKCC)/TWR Cucuta	4557	

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Directorio REDDIG / REDDIG Directory

	USUARIO	Teléfono REDDIG	Observ.
A D M I N	Dirección General Aerocivil	45122	No se tiene disponible
	Subdirector General	45299	No se tiene disponible
	Secretario Técnico	45260	No se tiene disponible
	Director de Telecomunicaciones SKED	45277	Operativo
	Técnico Mantenimiento REDDIG	4501 - 664	
	Técnico Soporte PABX Central	4502 - 911	RETORNA SOM DE AMBULANCIA
	Técnico Planta HARRIS (Técnico grupo teléfonos)	4590	RETORNA SOM DE AMBULANCIA
	Técnico Planta HARRIS (Técnico grupo teléfonos)	45200	RETORNA SOM DE AMBULANCIA
	Comunicaciones AFTN - AMHS (Operador)	45668	OK
	Coordinación Administrativa Bogotá (Ing. Grupo Comunica	45281	OK

1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
- 3, DDI: Operación con Discado Directo Internacional
- 4, CGAC: CENTRO DE GESTION AERONAUTICA COLOMBIANA
- 5, Para ATS que operan como red Alterna estableceran contacto al evidenciarse falla en Red Principal.

Colombia

USUARIO	Teléfono REDDIG
ACC SWP Bogotá (SKBO) PLANIFICADOR	4530
ACC NWP Bogotá (SKBO)	4533
ACC NEP Bogotá (SKBO)	4534
ACC SWR Bogotá (SKBO)	4535
ACC SER Bogotá (SKBO)	4558
ACC Supervisor Bogotá (SKBO)	4596
ACC Sector Norte Barranquilla (SKEC)	4531
ACC Sector Sur Barranquilla (SKEC)	4554
ACC Centro de Información de Vuelo Barranquilla (SKEC)	4555
ACC Supervisor Barranquilla (SKEC)/ACC Sector Sur Barranquilla	4556
TWR Pasto (SKAN)	xxxx
ACC Cali (SKCL)	4541
TWR Leticia (SKLT)	4546
APP Cucuta (SKCC)/TWR Cucuta	4557
San Andrés	4547
Río Negro	4542

timbra distinto

ok

Panamá

USUARIO	Teléfono REDDIG
ACC NORTE 1	8801
ACC NORTE 2	8802
ACC SUR 1	8803
ACC SUR 2	8804
PANAMÁ RADIO	8805
SUPERVISOR ACC	8806
AREA TÉCNICA	8807

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Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SKED	Ciudad: Bogotá - COLOMBIA		
	Dirección:	Aeropuerto Internacional El Dorado, Centro Nacional de Aeronavegación			
	Teléfono:	571 425100 EXT 1244 / 571 4251000 EXT 1218 / 571 2962451			
	Fax:				
	E-mail:	andres.colmenares@aerocivil.gov.co luis.lozanos@aerocivil.gov.co			
	Teléfonos Red Administrativa:	4501 / 4502/ 45-911			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Andres Colmenares	Coordinador Grupo Sistemas de Comunicaciones	4502 / 45281		57-3176567202 Timbra
	Robinson Quinteros	Lider Funcional Grupo Comunicaciones	4501 / 45664		57-3176570797 Timbra
	Central de Atención técnica CGAC	Personal asistencia tecnica	4501 / 45911		

	USUARIO	Teléfono REDDIG	Observ.
A T S	ACC SWP Bogotá (SKBO) PLANIFICADOR	4530 OK	(4536 centro antiguo/ solo timbra)
	ACC NWP Bogotá (SKBO)	4533	4538 centro antiguo/ solo timbra)
	ACC NEP Bogotá (SKBO)	4534	(4539 centro antiguo/ não funciona/ Ocupado)
	ACC SWR Bogotá (SKBO)	4535	OK
	ACC SER Bogotá (SKBO)	4558 OK	(4540 centro antiguo/ não funciona/ ocupado)
	ACC Supervisor Bogotá (SKBO)	4596	
	ACC Sector Norte Barranquilla (SKEC)	4531	
	ACC Sector Sur Barranquilla (SKEC)	4554	
	ACC Centro de Información de Vuelo Barranquilla (SKEC)	4555	
	ACC Supervisor Barranquilla (SKEC)/ACC Sector Sur Barranquilla	4556	
	TWR Pasto (SKAN)	4518	
	ACC Cali (SKCL)	4541	
	TWR Leticia (SKLT)	4546	Ext 5785924562
	APP Cucuta (SKCC)/TWR Cucuta	4557	

	USUARIO	Teléfono REDDIG	Observ.
A	Dirección General Aerocivil	45122	
	Subdirector General	45299	
	Secretario Técnico	45260	
	Director de Telecomunicaciones	45277	OK

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D M I N	Director SKED	45277	
	Técnico Mantenimiento REDDIG	4501 / 4502	
	Técnico Mantenimiento REDDIG	45258	
	Técnico Planta HARRIS (Técnico grupo teléfonos)	4590	OK
	Técnico Planta HARRIS (Técnico grupo teléfonos)	45200	OK
	Suporte Técnico	4555	OK
	Suporte técnico central	45268	OK
	Comunicaciones AFTN (Operador)	4503	OK
	Coordinación Administrativa Bogotá (Ing. Grupo Comunicaciones)	45281	OK

1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
3. CGAC: CENTRO DE GESTION AERONAUTICA COLOMBIANA

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Directorio REDDIG / REDDIG Directory

D A T O S	Nodo:	SCEL	Ciudad: Santiago - CHILE		
	Dirección:	San Pablo N° 8411 , Pudahuel, Santiago, Chile			
	Teléfono:	5622 6448345	Estación SCEL en Centro de Control : 5622 8364007		
	Fax:				
	E-mail:	cvergara@dgac.gob.cl ppastrian@dgac.gob.cl			
	TEL	Teléfonos Red Administrativa:	404006 / 404007		
N O D O	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Christian Vergara	Pto. Focal REDDIG	404005	562 26448345	569 9888 6452
	Pedro Pastrian	Pto. Focal REDDIG	404011	562 26448345	569 9997 4990

	USUARIO	Teléfono REDDIG	Observ.
A T S	San Pablo ACC 1 (Ruta Norte)	4057 / 4058	
	San Pablo ACC 2 (Sector Norte)	4050	
	San Pablo ACC 4 (APP Terminal)	4051	
	San Pablo ACC 5 (Salidas Terminal)	4052	
	San Pablo ACC 6 (Terminal Sur)	4051	
	San Pablo ACC 7 (Sector VFR)	4053	
	San Pablo ACC 8 (Ruta Sur)	4059	
	San Pablo Supervisor ACCS	4060	
	Aeródromo Teniente Rodolfo Marsh	4039	
	San Pablo Mantenimiento ACCS - REDDIG	4044	
	CCAM	4075	
	Arica APP	4040	
	Iquique APP	4046	
	Iquique ACC SECTOR A	4028	56 57 2418217
	Iquique ACC SECTOR B	4029	56 57 2461327
	Antofagasta APP	4030	
	Puerto Montt SCTE	4032	
	Punta Arenas SCCI	4033	
	Puerto Williams APP	4049	
	Centro Oceanico - ACCO	4045	
		4055	

	USUARIO	Teléfono REDDIG	Observ.
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APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

A D M I N	Dirección General Aeronáutica Civil	402500	EAC
	Secretario General	402504	EAC
	Director Logístico y Telecomunicaciones	402418	EAC
	Subdirector de Telecomunicaciones	402415	EAC
	Director de Meteorología	403340	EAC
	Departamento de Planificación, Sección RAI	402443	EAC
	Director TIC, Jefe de Proyecto REDDIG	402878	EAC
	ACC Iquique	401321	IQUIQUE
		401322	IQUIQUE
	Jefe Centro de Control (ACCS)	404016	ACCS Sn. Pablo
	Supervisor ACCS	404019	ACCS Sn. Pablo
	Operaciones ACCS	404018	ACCS Sn. Pablo
	Entrenamiento ACCS	404020	ACCS Sn. Pablo
	Aeródromo Teniente Rodolfo Marsh	405707	Antártica
	Centro Oceánico - ACCO	404049	ACCS Sn. Pablo
		404029	ACCS Sn. Pablo
	Comunicaciones AFTN, Supervisores	404030	ACCS Sn. Pablo
Banco de Datos NOTAMs (NOF Internacional)	404033	ACCS Sn. Pablo	

- Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 3. Edificio Aeronáutico Central, Miguel Claro 1314, Santiago

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SEGU	Ciudad: Guayaquil - ECUADOR		
	Dirección:	Aeropuerto Internacional José Joaquín de Olmedo, Av. de las Américas, Guayaquil			
	Teléfono:	593 2 294 7463 EX: 2197			
	Fax:	N/A			
	E-mail:	ntapia@aviacioncivil.gob.ec			
	Teléfonos Red Administrativa:	502308 / 502309			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Nancy Tapia	Analista CNS para la Navegación Aérea	502309	593 2 294 7463 EX:2197	593-967118552
			502308	593 2 294 7463 EX:2141	593-988448196
			502308	593 2 294 7463 EX:2141	593-959149526

A T S	USUARIO	Teléfono REDDIG	Observ.
	ACC 1	5051	ok
	ACC2	5053	ok
	APP	5052	ok
	ADMIN ACC/ATFM	5060	timbra
	ACC (Con COCESNA) - COORDINACION CON CENAMER	5071	Interconexión ok

A D M I N	USUARIO	Teléfono REDDIG	Observ.	
	Técnico REDDIG	502308	ok	
	Jefatura Comunicaciones Satelitales	502309	timbra	
	Técnico Electrónico de Telecomunicaciones	502121	ok	
	TECNICO AMHS-SEGU	502358	ADMINISTRATIVO	
	ADMINISTRACIÓN AMHS-SEGU	502357	QUITO OK	
	TECNICO RADAR	502338	ADMINISTRATIVO	
	SALA ATS-SEGU	502302	ADMINISTRATIVO	
	TORRE DE CONTROL-SEGU	502301	ADMINISTRATIVO	
	AIS - NOTAM	502300	ADMINISTRATIVO	
	METEOROLOGÍA	502113	ADMINISTRATIVO	
	COORD. MET	MARCO ORTIZ	502112	ADMINISTRATIVO
	OBSERV. MET		502303	ADMINISTRATIVO
	BUSQUEDA Y SALVAMENTO	LUIS VILLACIS	502321	ADMINISTRATIVO

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SOCA	Ciudad: Cayena - GUYANA FRANCESA		
	Dirección:	Aviation Civile, Centre de contrôle aérien aéroport Felix Eboué, 97351 Matoury, Guyane Francaise			
	Teléfono:	594 594 359317 (Sala Técnica) - 594 594 359321 (Estación Antena)			
	Fax:	594 594 356166			
	E-mail:	cayenne.ttd@aviation-civile.gouv.fr			
	Teléfonos Red Administrativa:	9101 - Maintenance; 9140 - DGCA			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Serge Cupoli	Chef de la Subdivision Technique		594 594 35 93 15	594 694 40 33 31
			9201	OK	
			9201	594,594,359,375	
			9201	594,594,359,371	594,694,465,059
			9201	594 594 359 317	

A T S	USUARIO	Teléfono REDDIG	Observ.
	ACC	9254	ok
	ACC	9255	ok
	ACC Hotline	9251	>>> PIARCO ok
	ACC Hotline	9253	>>> MANAUS ok

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Sala Técnica, Mantenimiento 1	9201	ok
	Estación REDDIG Antena, Mantenimiento 2 (presencia personal a demanda)	9202	timbra

Nota: 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SYGC	Ciudad: Georgetown - GUYANA		
	Dirección:	Control Tower complex, Cheddi Jagan Int'l Airport, Timehri, East Bank Demerara, Guyana			
	Teléfono:	592 261 2569			
	Fax:	592 261 2279			
	E-mail:	mbsalisbury2000@yahoo.com			
	Teléfonos Red Administrativa:	9001			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Mortimer Salisbury		9001	592 261 2569	
			9001	592 261 2569	
			9001	593 261 2569	
		9001	594 261 2569		

A T S	USUARIO	Teléfono REDDIG	Observ.
	ATS - ACC	9051	Ok
	ATS - FIS	9053	Ok
	ATS - Supervisor	9060	OK

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Mantenimiento Técnico	9001	Ok

- Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S	Nodo:	SGAS	Ciudad: Asunción - PARAGUAY		
	Dirección:	Aeropuerto Internacional Silvio Pettirossi, Luque, Paraguay			
	Teléfono:	595 21 7585208 / 201 / 205			
	Fax:				
	E-mail:	moranchu@gmail.com aldopereira26@gmail.com ronaldbenitez1907@gmail.com vmoran@			
	Teléfonos Red Administrativa:	5501, 55100			
D E L N O D O	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Juan F. Estigarribia	Gte de Telecom y Elect	5501 / 55100	595 21 7585017	595 971 627227
	Alexander Aguayo		5501 / 55100	595 21 7585208	595 981 567951
			5501 / 55100	595 21 7585208	
A T S	USUARIO		Teléfono REDDIG	Observ.	
	ACC		5551	ok	
	ACC		5592	(hotline con Curitiba)	

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Oficina Técnica de Mantenimiento	5501 / 55100	ok
	Jefatura de Control de Area ACC	55101	Ocupado
	Sala de Control de Area ACC	55102	Ocupado
	Oficina de la Gerencia de Telecomunicaciones y Electrónica - GTE	55103	Ocupado
	Oficina de la Gerencia de Tránsito Aéreo - GTA	55104	Ocupado
	Secretaría Técnica GTE/GTA	55105	Ocupado
	Centro de Control de Aproximación ASU-APP	55106	Ocupado
	Torre de Control y Servicio de Rodaje ASU	55107	Ocupado
	Centro de Control Automático de Mensaje - CCAM	55108	Ocupado
	Oficina del Servicio Móvil Aeronáutico - SMA	55109	Ocupado
	Oficina del Servicio Meteorológico - MET	55110	Ocupado
	Oficina de Notificación de los Servicios de Tránsito Aéreo - ARO	55111	Ocupado
	Aeropuerto Int'l Guarani, Minga Guasú, Alto Paraná	55113	Ocupado
	Aeropuerto Int'l Dr. Luis M. Argaña, Mcal. Estigarribia, Chaco Paraguayo	55114	Ocupado
Centro de Investigación de Accidentes	55115	Ocupado	

- Notas: 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SPIM	Ciudad:	Lima - PERU	
	Dirección:	Aeropuerto Internacional Jorge Chávez, Callao, Perú			
	Teléfono:	511 5153015 / 511 4141250			
	Fax:	511 5153015			
	E-mail:	reddig@corpac.gob.pe ; lsilva@corpac.gob.pe ; aarango@corpac.gob.pe ; riarteaga@corpac.gob.pe ; mcanicela@corpac.gob.pe			
	Teléfonos Red Administrativa:	6001			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública (1)	Teléfono Red Pública (2)
			ADM		
	Ricardo Arteaga	Técnico	6001	511 5153015	511 4141250
	Junnior Levano	Técnico	6001	511 5153015	511 4141250
Moises Canicela	Técnico	6001	511 5153015	511 4141250	
Mario Kuan	Técnico AMHS	6040 (ATS)	511 5151214		
Jeme Arteaga	Técnico AMHS	6040 (ATS)	511 5151214		
R. Peralta/H. Peñaranda	Sala VSAT	6014 (ATS)	511 5153024		

	USUARIO	Teléfono REDDIG	Observ.
	Hot Line con Santiago	6002	ok
	Hot Line con Bogotá	6003	timbra distinto
	Hot Line con Guayaquil	6004	mudo
	Hot Line con La Paz	6005	ocupado
	ACC-SUR Asistente	6051	timbra distinto
	ACC-NE Asistente	6052	ok (timbra distinto)
A	ACC-NORTE Asistente	6053	ok
	Nuevo ACC-NORTE Ejecutivo	6034	Nuevo ACC-Lima ok
T	Nuevo ACC-NORTE Planificador	6035	Nuevo ACC-Lima ok
	Nuevo ACC-SUR Ejecutivo	6036	Nuevo ACC-Lima timbra
S	Nuevo ACC-SUR Planificador	6037	Nuevo ACC-Lima ok
	Nuevo ACC-NOR ESTE Ejecutivo	6038	Nuevo ACC-Lima ok
	Nuevo ACC-NOR ESTE Planificador	6039	Nuevo ACC-Lima ok
	Supervisor 1 (ACC)	6060	ok
	Tacna TWR	6024	ok
	CCAM AFTN (Supervisor)	6078	ok
	Técnico AFTN	6040	ok
	Tecnico ATS	6044	ok

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

	USUARIO	Teléfono REDDIG	
A	Técnico REDDIG	6001	ok
D	Técnico REDDIG	6001	ok
M	Técnico REDAP	6001	ok
I			
N			

- Notas
1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T A S D E L N O D O	Nodo:	SMPM	Ciudad: Paramaribo - SURINAME		
	Dirección:	J. A. Pengel International Airport Zanderij, District Para			
	Teléfono:	597 325123			
	Fax:	597 498901			
	E-mail:	Mitchell.Themen_mickiano@live.com			
	Teléfonos Red Administrativa:	9401			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Jurguen Cicilson		9401	597 497143	597 879-2810
			9401	597 325123	
			9401	597 325172	

A T S	USUARIO	Teléfono REDDIG	Observ.
	ACC	9451	ok
	ACC	9452	ok

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Technical Maintenance	9401	ok

Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	SUMU	Ciudad:	Montevideo - URUGUAY	
	Dirección:	Aeropuerto Internacional de Carrasco			
	Teléfono:	5982 6040408 / 5982 6010932 INT. 4520			
	Fax:	5982 6040408 / 5982 6010932 INT. 4501			
	E-mail:	miguelvera@vera.com.uy ; wilsonpelayo62@gmail.com			
	Teléfonos Red Administrativa:	5982 6040408 / 5982 6010932			

A T S	USUARIO	Teléfono REDDIG	Observ.
	ATS ACC	6551	ok
	ATS APP	6552	ok
	APP Colonia	6550	timbra

A D M I N	USUARIO	Teléfono REDDIG	Observ.
	Marcar 6541 para contactarse con el operador, y solicitar los números que se listan a continuación		
	Oficina telecomunicações rede AFTN - Edificio Centro de Control	6541	ok
	Director de Circulación Aérea	5102	6541 ok
	Jefe del Departamento Operativo de Tránsito Aéreo	5105	6541 ok
	Director de la División de Telecomunicaciones (AFTN)	5107	6541 ok
	Jefe del Departamento Técnico de Tránsito Aéreo	5109	6541 ok
	Director de la División Comunicaciones / Wilson Pelayo	4519	6541 ok
	Sala de Control Radar ACC y APP Carrasco	5119	6541 ok
	Torre de Control	5250	6541 ok
	Sala de CXK AFTN	5123	6541 ok
	Sala Técnica REDDIG 2	5124	6541 ok
	Area Técnica Comunicaciones / Miguel Vera	4517	6541 ok
	D.G.A.C. Central General	+5982 6040408 +5982 6010932	6040408 ok 6010932 ocupado

1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
- Nota 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
3. Todos los números 45** o los 51** son internos de la Central Telefónica de DGAC nombrada arriba.
(+5982 6040408 / +5982 6010932)

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

A T O S D E L N O D O	Nodo: SVMI		Ciudad: Maiquetía - VENEZUELA		
	Dirección:	Edificio ATC, 2do Piso, Depto de Comunic., Maiquetía, Edo. Vargas, Venezuela			
	Teléfono:	58212 3552143 / 58212 3551412			
	Fax:	58212 3551412			
	E-mail:	v.fiore@inac.gob.ve - l.escobar@inac.gob.ve			
	Teléfonos Red Administrativa:	8001			
		Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública
			8001	58212 3551412 ok	
	Luis Escobar	Coordinador Comunc.	8001	58212 3552143 ok	4265153621

USUARIO	Teléfono REDDIG	Observ.
ACC 5 - TODOS	8001 - 8003	ok
ACC 5 - ATS-W	8003	San Juan
ACC 3 - ATS-W	8002	ok
ACC 4 - ATS-E	8001 - 8003	ok
ACC 6 - ATS-E	8001	ok
ACC 1 - ATS-W	8002	ok
ACC 2 - ATS-E	8001	ok
ACC FD	8002	ok

USUARIO	Teléfono REDDIG	Observ.
Mantenimiento REDDIG	8001	ok

Nota 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

D A T O S D E L N O D O	Nodo:	TTZP	Ciudad: Piarco -TRINIDAD & TOBAGO		
	Dirección:				
	Teléfono:	1-868-669-1859			
	Fax:				
	E-mail:	ttcns@caa.gov.tt			
	Teléfonos Red				
	Administrativa:	9101 - Maintenance; 9140 - DGCA . Technical Support 24 hs: 594 694 916 262			
	Personal Técnico	Cargo	Teléfono REDDIG	Teléfono Red Pública	Celular
	Rupnarine Baboolal			1-868 6694706	1 (868)-774-4249
	Naresh Seeparsad	CNS Supervisor		1-868 6694706	1 (868) 689-4267
Andrew Ramkissoon	CNS Engineer		1-868 6694706	1 (868)-774-4234	

	USUARIO		Teléfono REDDIG	Observ.
A T S	ACC-1	ATSd(Hot Line)	9154	ok
	ACC-2	ATSd(Hot Line)	9152	ok
	ACC-3	ATSd(Hot Line)	9153	ok
	ACC-4	ATSd(Hot Line)	9151	ok

	USUARIO		Teléfono REDDIG	Observ.
A D M I N	Maintenance		9101	ok
	Estación Antena REDDIG (presencia, sólo a demanda)		9202	timbra
	DGCA Office		9140	timbra

- Notas 1. Para ATS, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada
 2. Para ADMIN, marcar el prefijo de habilitación de salida correspondiente del nodo que inicia llamada

Johannesburgo - SUDÁFRICA

Service	PLAR number (autodial)	#of difgits forwarded	Usual dial number	Router name	Slot/port	Type	Cable number	Plug
<i>ATS Switched</i>		0	2301	<i>FAJO-CISCO-REDDIG-A</i>	<i>0/0/0</i>	<i>FXS</i>	<i>OK</i>	
<i>ATS Switched</i>		0	2302	<i>FAJO-CISCO-REDDIG-A</i>	<i>0/0/1</i>	<i>FXS</i>	<i>OCUPADO</i>	

APÉNDICE K / APPENDIX K

Directorio REDDIG / REDDIG Directory

RÍO DE JANEIRO - BRASIL

Service	PLAR number (autodial)	#of difgits forwarded	Usual dial number	Router name	Slot/port	Type	Cable number	Plug
<i>ATS Switched</i>		0	3251	<i>SBRJ-CISCO-SVC-V15</i>	1/0/0	<i>FXS</i>	<i>CGNA</i>	
<i>ATS Switched</i>		0	3252	<i>SBRJ-CISCO-SVC-V15</i>	1/0/1	<i>FXS</i>	<i>Ringling</i>	
<i>ATS Switched</i>		0	3253	<i>SBRJ-CISCO-SVC-V15</i>	1/0/2	<i>FXS</i>	<i>Ringling</i>	
<i>ATS Switched</i>		0	3254	<i>SBRJ-CISCO-SVC-V15</i>	1/0/3	<i>FXS</i>	<i>Ringling</i>	
Admin		0	3201	<i>SBRJ-CISCO-SVC-V15</i>	1/0/4	<i>FXS</i>	<i>Ringling</i>	
Admin		0	3202	<i>SBRJ-CISCO-SVC-V15</i>	1/0/5	<i>FXS</i>	<i>Ringling</i>	
Admin		0	3203	<i>SBRJ-CISCO-SVC-V15</i>	1/0/6	<i>FXS</i>	<i>Ringling</i>	
Admin			3204	<i>SBRJ-CISCO-SVC-V15</i>	1/0/7	<i>FXS</i>	<i>Ringling</i>	

APÉNDICE L / APPENDIX L

Programación de mantenimiento preventivo REDDIG II 2023 / REDDIG II 2023 preventive maintenance schedule

Diagramación tareas REDDIG para
2023

Feb 15, 2023

Administración REDDIG - CNS - ICAO
SAM

<http://icao.int>

Project manager

Project dates

Apr 3, 2023 - Dec 2, 2023

Completion

0%

Tasks

76

Resources

0

Tareas programadas para ser desarrolladas durante el año 2023 en NCCs y estaciones de la REDDIG.

APÉNDICE L / APPENDIX L

Programación de mantenimiento preventivo REDDIG II 2023 / REDDIG II 2023 preventive maintenance schedule

Diagramación tareas REDDIG para 2023

Feb 15, 2023

Tasks

2

Name	Begin date	End date
NCC	4/3/23	12/1/23
Routers	4/3/23	6/2/23
Backup configuraciones // Backup configurations	4/3/23	4/21/23
Verificar configuraciones // Verify configurations	4/24/23	5/12/23
Verificar diagramas y cableado // Verify diagrams and cabling	5/15/23	6/2/23
Verificar identificaciones // Verify identifications	5/15/23	6/2/23
Capacitación // Training	4/3/23	12/1/23
VERIFICAR NROS DE SERIE DE EQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory status	4/3/23	6/1/23
Switches	6/5/23	6/23/23
Backup configuraciones // Backup configurations	6/5/23	6/9/23
Verificar configuraciones // Verify configurations	6/12/23	6/16/23
Verificar diagramas y cableado // Verify diagrams and cabling	6/19/23	6/23/23
Verificar identificaciones // Verify identifications	6/19/23	6/23/23
AMHS -AFTN - AIDC Check	6/26/23	6/30/23
ATS - ADMIN - MANT Check	7/3/23	7/7/23
Verificar WUG // Verify WUG	7/10/23	7/14/23
Externos (ADS-C, otros) // External (ADS-C, others)	7/17/23	7/21/23
VERIFICACIÓN EQUIPOS INDOOR // Indoor equipment verification	7/24/23	8/4/23
Registro fotográfico // Photographic record	7/24/23	8/4/23
Cotejo de diagramas // Compare diagrams	7/24/23	8/4/23
Backup	8/1/23	8/4/23
Servers Local y Global	8/7/23	8/11/23
GPS	8/14/23	8/18/23
MODEM SKWAN A	8/21/23	8/25/23
MODEM SKYWAN B	8/28/23	9/1/23

APÉNDICE L / APPENDIX L

Programación de mantenimiento preventivo REDDIG II 2023 / REDDIG II 2023 preventive maintenance schedule

Diagramación tareas REDDIG para 2023

Feb 15, 2023

Tasks

3

Name	Begin date	End date
LINE-UP-MANAGER	9/4/23	9/8/23
ANTENA	9/11/23	11/3/23
Registro fotográfico // Photographic record	9/11/23	9/15/23
Cotejo de diagramas // Compare Diagrams	9/18/23	9/22/23
Backup	9/18/23	9/22/23
LNB A	9/25/23	9/29/23
LNB B	10/2/23	10/6/23
RX 1+1	10/9/23	10/13/23
IBUC A	10/16/23	10/20/23
IBUC B	10/23/23	10/27/23
TX 1+1	10/30/23	11/3/23
LEVEL 3	11/6/23	11/10/23
Identificar equipos // Equipment identification	11/6/23	11/10/23
Verificar cableado // Verify cabling	11/6/23	11/10/23
Nodos // Nodes	4/3/23	11/3/23
Routers	4/3/23	4/28/23
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	4/3/23	4/7/23
Verificar Diagramas y cableado // Verify diagrams and cabling	4/3/23	4/14/23
Verificar Identificaciones // Verify identifications	4/17/23	4/28/23
VERIFICACIÓN EQUIPOS INDOOR // Indoor equipment verification	4/3/23	4/28/23
Registro Fotográfico // Photographic record	4/3/23	4/7/23
Cotejo de diagramas // Compare diagrams	4/3/23	4/14/23
BackUp	4/17/23	4/28/23
MODEM B	4/17/23	4/21/23
SWITCHES	5/1/23	5/26/23

APÉNDICE L / APPENDIX L

Programación de mantenimiento preventivo REDDIG II 2023 / REDDIG II 2023 preventive maintenance schedule

Diagramación tareas REDDIG para 2023

Feb 15, 2023

Tasks

4

Name	Begin date	End date
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	5/1/23	5/5/23
Verificar Diagramas y Cableado // Verify diagram and cabling	5/3/23	5/19/23
Verificar Identificaciones // Verify identifications	5/22/23	5/26/23
ATS -ADMIN - MANT	5/29/23	6/2/23
AMHS - AFTN - AIDC Check	6/5/23	6/9/23
Verificar WUG // Verify WUG	6/12/23	6/16/23
Externos // External	6/19/23	6/23/23
Server NMS Local	6/26/23	6/30/23
GPS	7/3/23	7/7/23
MODEM A	7/10/23	7/14/23
LINE-UP-MANAGER	7/24/23	7/28/23
LEVEL 3	7/31/23	8/11/23
Identificar equipos // Equipment identification	7/31/23	8/4/23
Verificar cableado // Verify cabling	8/7/23	8/11/23
ANTENA	9/11/23	10/20/23
Registro Fotográfico // Photographic record	9/11/23	9/15/23
Cotejo de Diagramas // Compare diagrams	9/11/23	9/22/23
Limpieza de antena // Antenna cleaning	9/18/23	9/22/23
Backup	9/25/23	9/29/23
LNB A	10/2/23	10/4/23
LNB B	10/4/23	10/6/23
RX 1+1	10/9/23	10/11/23
IBUC A	10/11/23	10/13/23
IBUC B	10/16/23	10/18/23
TX 1+1	10/18/23	10/20/23
VERIFICACIÓN NROS DE SERIE DEEQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory status	10/23/23	11/3/23