



REDDIG RTO/08

INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/03/901

**EIGHTH TECHNICAL-
OPERATIONAL MEETING OF THE
REDDIG DIGITAL NETWORK**

(RTO/08)

FINAL REPORT

(Santiago de Chile, Chile 14 to 18 October 2019)

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HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Eighth Technical-Operational Meeting of the REDDIG II (RTO / 8) was held from October 14 to 16, 2019. While the training sessions were held on October 17 and 18, 2019. Both events were developed at the facilities of the Aeronautical Technical School (ETA), located in San Pablo 8411, Pudahuel, Santiago de Chile, Chile.

ii-2 OPENING CEREMONY

The opening of the event was in charge of Ms. Ivonne Leslie Labbé Barria, Head of the International Aeronautical Relations Section of the General Directorate of Civil Aviation of Chile; and of Eng. Cristian Javier Vittor, Administrator of REDDIG.

The participants were welcomed to the RTO/08 meeting, highlighting the great growth that the network has had after 16 years of its implementation and the quality of the work of each of the professionals that make it up, which has been reflected in the high quality of services delivered to international civil aviation. Success was desired in the deliberations, taking the meeting open.

The REDDIG Administrator, thanked the General Directorate of Civil Aviation of Chile and each of the States for the participation of their specialists in the meeting, highlighting the growth of new technologies (AMHS, AIDC, ADS-C/CPDLC, ADS-B, IWXXM), with an undeniable tendency to use REDDIG II as a communication channel, which has allowed the appearance of new participants, such as the FAA (Federal Aviation Administration), SITA and AIREON.

ii-3 AGENDA

Agenda

Item 1: Performance of REDDIG II to date.

Agenda

Item 2: Review and update of REDDIG maintenance and operational procedures

Agenda

Item 3: Analysis of REDDIG II service improvement requirements

Agenda

Item 4: Other business

ii-4 WORKING LANGUAGES

The working languages were Spanish, English and Portuguese.

ii-5 ATTENDANCE AND ORGANIZATION

Eleven member states (Argentina, Bolivia, Brazil, Chile, Guyana, Paraguay, Peru, Suriname, Trinidad & Tobago, Uruguay and Venezuela) participated with a total of 27 participants and the Administrator of REDDIG. The list of participants appears on page iii-1.

Engineer Mr. Cristian Javier Vittor, Administrator of REDDIG II, and the Engineer Mr. Christian Vergara Leyton, representative of Chile, acted as Moderator and speaker of the meeting.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION
South American Regional Office

RLA/03/901 REDDIG
Eighth Technical/Operational Meeting of the REDDIG II Digital Network (RTO/08)

(Santiago de Chile, Chile 14 to 18 October 2019)

LIST OF PARTICIPANT

ARGENTINA

1. Hernán José Antonio Aguirre
2. Hernán Gabriel Canna

BRAZIL

3. Rodolfo Barbosa Dos Santos
4. Ricardson Alexandre Pereira Feitosa
5. Bruno Oliveira Alves Ferreira
6. Jefferson Miecznikowski Cheren
7. Iggo Cesar Malcher Fonseca

BOLIVIA

8. Hernán Tito Huaylla
9. Luis Alberto Mamani Ramos

CHILE

10. Christian Vergara Leiton
11. Pedro Pastroán Céspedes
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22. Shiraz Gopaul
23. Ayana Kishora Le Blanc

URUGUAY

24. Miguel Vera Izeta
25. Leonardo Alfredo Rodríguez

VENEZUELA

26. Luis Benjamín Villegas
27. Josmer Franco

ICAO

28. Cristian Javier Vittor

Agenda Item 1: Performance of REDDIG II to date***Introduction***

1.1 Before starting discussions on the agenda items, a review was made of the topics addressed by the RTO/07 meeting.

1.1 In this sense, a review was made of the conclusions of the RTO/07 meeting, as listed below.

Conclusion RTO/7-1 Study the possibility of upgrading the IOS of routers and replacing equipment

Conclusion RTO/7-2 Study the possibility of replacing the Netgear switches with Cisco switches

1.2 Regarding Conclusion RTO/7-1, the Meeting took note that the IOS of REDDIG routers had been upgraded. The devices had IOS version 15.3 of 2012/3, which was upgraded to IOS version 15.7 of May 2019. The upgrade was carried out in the Cisco 2901 and 2911 routers of the network.

1.3 This upgrade corrected the saturation issue affecting router buffers, especially in the Maiquetía node. **Appendix A** contains “before” and “after” pictures.

1.4 In this regard, and in order to show that this task had been completed, the Meeting made random entries to the network routers via SSH to show IOS upgrades. However, it was noted that one of the routers in La Paz, Bolivia, was not accepting the new version and work was underway to solve the problem.

1.5 Regarding Conclusion RTO/7-2, mention was made again of the need to look for a better-performing switch, especially to capture large volumes of data packages for subsequent or immediate analysis. The reason was that most services were migrating to an IP environment and it should be possible to analyse traffic using a basic tool.

1.6 It was agreed that Netgear switches would be replaced with other Cisco switch models. It was suggested that the Curitiba and Asunción nodes be used for such trials.

Agenda Item 1

1.7 Under this agenda item, the Meeting analysed the performance of REDDIG II to date, including the CenturyLink network, and the resulting considerations.

1.8 It was noted that work was underway on the expected levels of availability and functionality. It was agreed that the results obeyed mainly to the work carried out by the Administration, the technical personnel of the Manaus NCC and the technical personnel of the States.

1.9 Under this item, information was provided on REDDIG services, failures, and availability. Prior to that, a review was made of the discussions held during the RTO/07 meeting. **Appendix B** contains statistics obtained in 2018. It was noted that information would be updated to cover 2019 once this year was over.

Logistics

1.10 On this issue, the Meeting received information about the logistics provided by the Regional Office, delivering spare parts to three nodes in particular (Bogotá, La Paz, and Cayenne).

- 1.11 Records in this regard were also presented. See **Appendix C**.
- 1.12 The delegates were reminded of the process for definitive replacement, using spare parts of the REDDIG spare batch, which dated back to April 2005 (RCC/08), still valid. Considering that REDDIG equipment was halfway its service life, it was possible that problems would start arising, and require logistics for the delivery, repair and replacement of equipment.
- 1.13 In this sense, the Meeting took note of the procedure applicable to this process.
- 1.14 The spare part requested would be delivered provided it was available in the spare batch.
- a) The State Administration would provide details as to whom and to what address the spare part should be sent.
 - b) The spare part would be exported from the State sending the spare part and the forwarding company would be hired.
 - c) The spare part would be definitively imported by the State administration (directly or through a customs agent)
- 1.15 Cost and expenditures
- a) Payment to the factory for the spare part.
 - b) Payment to the forwarding company.
 - c) Payment for the services of the customs agent.
- 1.16 All costs and expenditures would be borne by the State requesting the definitive replacement of the part.
- 1.17 According to the provisions of the RLA/03/901 project document, the State administration would deposit the value of the spare part and all the costs incurred for its replacement in the project account. In case the project made payments agreed with the State administration, such expenditures would be reimbursed, including such payments in the corresponding annual fee of the State.
- 1.18 The Eighth coordination meeting (RCC/8) of Project RLA/03/901, held in Lima, Peru, on 27-29 April 2005, defined and approved the administrative procedures for spare management.
- 1.19 The cost of repairing damaged equipment, as well as the replacement of equipment and parts, would be assumed by the State. Therefore, such costs would not shared with all REDDIG member States, according to consultations made.

Inventory

- 1.20 Information was provided on the inventory available in storage at the Regional Office. See **Appendix D**.

Status of nodes

- 1.21 The Meeting took note of the status of all stations and the work performed. In this regard, some specific cases were highlighted.

1.22 The Meeting took note of equipment failures, underlining repeated failures in 80W IBUC amplifiers. It was also noted that Skywan 1070 modems were starting to have problems. In the latter case, the reason was their service life, and in the case of amplifiers, all problems were due to the source. It was noted that, in the case of 1070 modems, the sources had fuses that were not at plain sight, and were susceptible to voltage variations.

1.23 **Appendix E** contains a summary of the main failures and shows the distribution of network amplifiers.

1.24 It was also noted that, according to requirements, work continued for the use of FXS cards to enable Hotline and administrative circuits between States. These cards had been installed, in particular, in the Lima and Asunción nodes. To this end, the use of GGB routers was proposed.

1.25 The Meeting was informed that work continued for correcting operational failures and preventing problems:

- a. verification of the status of serial cables and operation of chain B;
- b. operational verification of maintenance and administrative voice circuits;
- c. verification of coaxial cabling;
- d. back-up procedure for external disc servers; and
- e. overall, comprehensive operational verification of the station and its components.

1.26 Note was taken of the extended periods of time during which equipment remained in the respective customs, and the importance for focal points to assist with logistics to avoid this problem. Accordingly, a list of REDDIG II focal points was presented for updating, since in some States, individuals that were no longer in office or had retired appeared as focal points.

1.27 In this regard, it was noted that these delays affected equipment repair time and jeopardised other stations, since spare parts were sometimes not available to solve a problem. Accordingly, it was noted that the resulting operational impact should be taken into account.

CenturyLink ground network

1.28 It was noted that the operating speed of all stations was 256 kbps and that CenturyLink had improved management, although efforts continued to be made for further enhancement. The main problem was still the last mile, which involved various operators in each node.

1.29 The Meeting took note that issues discussed with the company at various meetings included the following:

- a. Improving connectivity with Manaus, to which end the last-mile local operator had been changed. The same had been requested for Recife and Cayenne.
- b. Improving the connection in Paramaribo, Suriname. Resolved.
- c. Improving the connection in Maiquetía, Venezuela. Resolved.
- d. Improving the connection in Piarco, Trinidad and Tobago. Resolved.
- e. In some cases, it still took too long to solve problems.
- f. Discrepancies, depending on the last-mile operator.

1.30 It should be noted that, following the change of the local operator in Manaus, latency and other areas have improved significantly.

1.31 Mention was made that a monthly report was sent to Montreal on State service availabilities that fell below 99.5% and 99.7%, as appropriate, with a view to penalising CenturyLink for infringements.

1.32 The Meeting was presented with examples of monthly reports of ground circuit availability obtained using a monitoring tool.

1.33 There were plans to install a CenturyLink MPLS node at the Lima Regional Office to access REDDIG, in order to reduce the cost of telephone coordination between the Regional Office and the various aeronautical administrations of the SAM Region.

1.34 An MPLS node at the Regional Office would restore communication between State nodes and the Regional Office, which was interrupted when the Regional Office moved from the airport premises to the current facilities in San Isidro.

1.35 Once the ground network was stable and reliable, the proposal was to use it as the main network, with the satellite network serving as back-up, or to have a balanced network.

1.36 **Appendix F** shows the availability of Centurylink in 2018.

1.37 Regarding Centurylink issues, the Meeting took note of availability failures of the ground network. The contact matrix was reviewed, noting that everything continued to be centralised at the NCC. Propagation of REDDIG networks in the Centurylink network was shown, together with the tasks envisaged to change the topology and to generate the required redundancy. Mention was also made of the reorganisation that was taking place for better distribution of the networks being propagated.

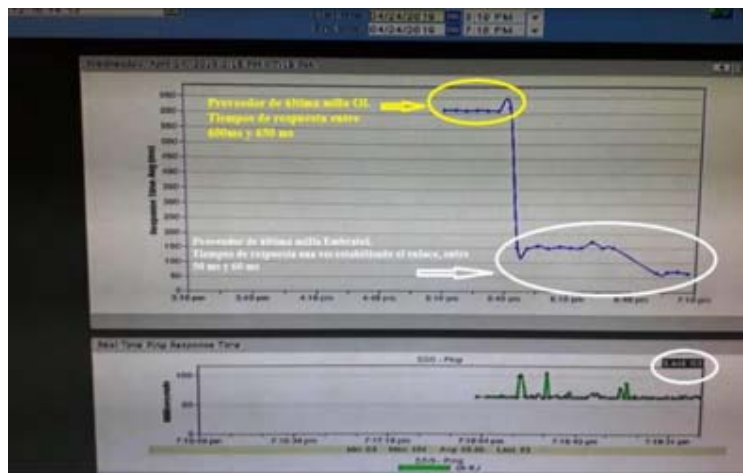


Figure 1 – Latency parameter with the new last-mile MPLS provider in Manaus

1.38 The Meeting was also informed that, thanks to arrangements made by the Regional Office and the Administration, an upgrade of the ground network from 256kbps to 1Mbps was being envisaged at no additional cost to the States. See **Appendix G**.

1.39 Regarding CenturyLink and Intelsat, the Meeting was presented with the way to access the respective websites, and the options available for generating or following up a ticket, or for obtaining important information on aspects related to the satellite and its provider.

Agenda**Item 2: Review and update of REDDIG maintenance and operational procedures**

2.1 Under this agenda item, the Meeting reviewed and updated the maintenance and operational procedures for REDDIG II services, the network information back-up, the regional telephone directory, the voice and data interface numbering tables for each network node, as well as the standardisation of IP native service configurations. The Meeting also reviewed the interconnections of various data exchange systems (regional and inter-regional – AMHS, radar data, AIDC, ADS-B, etc.). It also addressed aspects related to the operational aspects and issues to be taken into account when implementing new systems to be interconnected with REDDIG.

2.2 Regarding equipment performance, the Meeting was presented with graphs showing saturation parameters used by the NCC to ensure proper operation of the equipment, taking into account service life.

2.3 Information was provided on RF parameter measurements conducted at the Manaus NCC and on the importance of replicating such measurements in each station. In this regard, diagrams and graphs were shown to help understand the topology used. And, especially, videos and procedures on the use of RF measuring equipment were shown, highlighting the need for each node to have these instruments. See **Appendix H**.

2.4 In line with the above, information was provided on how to obtain information--especially carrier frequencies--from the station, using the Line Up Manager (LUM). Likewise, station distribution by carrier was shown. Regarding the Lima and Cayenne nodes, once the spare modems were available, the degraded modem would be replaced, and equipment would be relocated to transmit over the same carrier. Their distribution is shown in **Appendix I**.

REDDIG telephone directory

2.5 It was noted that the REDDIG Administration needed the REDDIG (ATS and administrative) telephone directory to be updated every year. In this regard, the States were requested to review this telephone directory, following the regular procedure, and send their updated information to the REDDIG Administration as soon as possible.

2.6 Likewise, arrangements were made to include in the respective nodes the service numbers deemed important for inclusion in the directory.

2.7 The request was made to inform the ACCs of each State about the options they had for calling adjacent ACCs manually in case the primary means of communication was not available.

2.8 The request was made to review and identify the aforementioned options, training ATCs on their use, clearly specifying the voice ATS they could use, the numbers of the adjacent ACC and the way of making the call (backbone connection number, country call sign, and voice ATS number).

2.9 As with the ACCs, the request was made to consider informing other units, such as AMHS, RADAR, AIS, ATFM, etc., of the options they had for calling their counterparts in other States, taking into account REDDIG administrative and voice ATS telephone services. This would permit a fluid and specialised exchange among professionals of different areas in relation to the services they provided.

Improved coordination

2.10 The request was made to inform the REDDIG Administration and the nodes involved about technological and system configuration changes in the States that affected the services carried over the REDDIG, such as PABX, voice switching, MTA, automated systems, data networks, radar data exchange, etc., so that the Administration, as well as the States, could be informed of the operating conditions of the associated nodes and systems involved.

2.11 Regarding logistics, the Meeting was reminded of the agreement reached at the RCC-20 meeting, namely: “...the process for replacing damaged equipment and its delivery to the factory for repair will be the following: from the ICAO SAM Office, the REDDIG Administration will send the equipment or part to the node where the failure occurred. The State of the node will send the damaged equipment or part to the ICAO SAM Office. Upon receipt, it will be sent to the factory for repair. Once repaired, the equipment or part will return to the ICAO SAM Office to be stored in the spare part storage room. All coordination will be between the REDDIG Administration, the REDDIG focal points, and the representatives of the equipment manufacturers...”

2.12 The Meeting highlighted the importance of having valid focal points and an updated list thereof.

Node equipment back-ups

2.13 The Meeting took note of configuration back-ups made for network equipment in each station during the year and which were kept and available at the Manaus NCC.

Security

2.14 It was noted that passwords to station routers and switches were changed regularly to improve the security and integrity of equipment processes and configurations, due to problems faced in some nodes. Switch ports had also been blocked and work was underway to apply filtering using mac-addresses. Due to some irregularities in system interconnections, work was currently underway to configure the Access List until firewalls being purchased by the Project were available. Consequently, if duly trained and rated personnel required to conduct some local procedure or action, the NCC would need to be contacted to inform of such activities and request the corresponding access.

2.15 Regarding the network security study conducted by the *ad hoc* group, note was taken of the issues that had been considered for the vulnerability analysis, *inter alia*: the incorporation of service providers such as SITA (CPDLC and ADS-C) and possibly AIREON (ADS-B) in the future, access available to CenturyLink, INDRA, human factors, external threats from users and equipment connected to the network, interconnections with other Regions. All this had led to the need for firewalls for REDDIG, which were currently being purchased.

Training programme and RTO/09

2.16 By way of introduction, the Meeting was reminded that a laboratory course on operation, maintenance and programming of Skywan 7000/1070 satellite modems, had been conducted in 2018 at the factory for personnel responsible for NCC management.

2.17 Training had also been provided in Curitiba through a laboratory course on operation, maintenance and programming of Skywan 7000/1070 satellite modems for personnel responsible for the maintenance of REDDIG nodes.

- 2.18 The delegates were informed about the development of the activities foreseen for 2019.
- 2.19 In this regard, the following training courses had been provided:
- a. Recurrent training on REDDIG II operation and maintenance.
The REDDIG Administrator normally provided training during annual visits to the nodes. On this occasion, during the visit to the Ezeiza alternate NCC, recurrent training had been provided to technical personnel of EANA S.E. (service provider) and CNS inspectors of ANAC (national civil aviation administration – aeronautical authority).
 - b. Seminar/workshop on the basic concepts of services carried over the REDDIG.
This event was held during the course of the RTO/08 meeting, and covered only the basics, since there was no time to cover everything that had been foreseen. The main reason was that RTO discussions took longer than expected.
 - c. Course on security policies and firewall configuration.
In this regard, refer to information on firewall acquisition.
 - d. Advanced course on firewall management and monitoring. Same as above.
 - e. Training for Manaus NCC personnel on IP package analysis using sniffer.
Delegates took note that it was underway.
 - f. Eighth meeting on the technical and operational implementation of REDDIG (RTO/08). The meeting was held as scheduled.
- 2.20 The following training had also been provided:
- a) On-the-job training in Cayenne
 - b) On-the-job training in Ezeiza
 - c) Workshop on RF measuring tools for Manaus NCC personnel
- 2.21 The Meeting highlighted the importance of training in aviation, especially taking into account its exclusive nature and its decisive and critical importance for safety.
- 2.22 In this regard, it was noted that certificates had been sent to State personnel who had participated in the respective training events. Certificates delivered in 2018 and 2019 are listed below.
- Training on network fundamentals for Manaus NCC personnel (Manaus, Brazil, 2018)
 - Training on structured cabling and certification for Manaus NCC personnel (Manaus, Brazil, 2018)
 - Training on the operation and maintenance of the REDDIG node in Maiquetía (Maiquetía, Venezuela, 6-10 August 2018)
 - Training on operation, configuration and maintenance of the Skywan 1070 modem, REDDIG (Curitiba, Brazil, 7-9 November 2018)
 - Training on the use of RF measuring instruments for Manaus NCC personnel (Manaus, Brazil, 2019)
 - Training on the fundamentals of REDDIG operation (Ezeiza, Argentina, 15-19 July 2019)

Acquisition of spare parts

2.23 Based on information regarding the service life of equipment and the delivery of failed modems to the Regional Office for subsequent delivery to the factory for repair, note was taken of the two modems of La Paz that had not been sent for repair for several months, affecting the other stations due to insufficient stock. No spare parts for Skywan 1070 modems were available at the Lima Regional Office. Based on information provided by the manufacturers, the Meeting agreed to propose the purchase of modems and 40W amplifiers to the RCC.

2.24 The purpose was to have the necessary back-up stock, considering that this equipment would continue to be unavailable in the future, and taking into account modem failures at the Recife, Lima, La Paz nodes, and the aforementioned 80W IBUC failures.

2.25 The REDDIG Administrator showed a list of spare parts in stock, and highlighted the case of the failed modems in La Paz and the difficulties for their delivery to the Regional Office.

2.26 This replacement would be carried out in view of performance difficulties in Netgear switches and taking into account that they were core node components.

2.27 Pictures were shown of racks in some nodes, and of maintenance work carried out on RF node components. These graphical records would be added to a database for reference and consultation.

2.28 The Meeting was also informed that these documents had helped the Administration to identify failures and anomalies and to obtain important information on the nodes.

2.29 It was noted that the technical specifications for the purchase of the firewall had been sent to Montreal for the regular procurement process. It should be noted that the purpose of firewalls was to provide security, equipment standardisation, and to replace boundary routers in each node.

2.30 It was noted that upgrades to IBUC firmware continued to be obtained from the Terrasar web site and installed in all the nodes. This was an on-going procedure carried out by the NCC as often as needed.

2.31 The Meeting considered that it was very important for the Administrator to continue making at least two one-week visits, to two nodes, in order to inspect the facilities and provide training to node personnel. Emphasis was made on the need for the Administrator to assist in the transfer of the Bogota node.

Conclusion	
RTO/8-1 - ACQUISITION OF SKYWAN (NDSATCOM 1070) MODEMS AND IBUC (TERRASAR 40W) AMPLIFIERS	
<p>That the Secretariat:</p> <p>a) In coordination with the REDDIG Administration, request quotes from the manufacturer and, based on that, submit this issue to the next RCC meeting so that States may decide on how much equipment to purchase.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input checked="" type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Technical/Operational</p>
<p>Why: Equipment service life and failures, in addition to logistical difficulties and time required for delivery to the Regional Office and from there to the factory for repair and the trip back. Furthermore, manufacturers have informed that this equipment will no longer be manufactured and soon will not receive any service support.</p>	
When: Immediately	Status: Proposal by RTO/08 to RCC/24
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	

Creation of a space for consultation about the network

2.32 The Meeting was presented with a web site to be accessed by technical personnel for consultations about network nodes.

<https://sites.google.com/s/1LarX8FhxVPHRzSmfAnH5c5sTvtTKfaRr/p/1aKYq7rVdiF3dWhMLBUoH2JuLVFXcKhCk/edit>

2.33 It was agreed that REDDIG activities should be further promoted through social networks.

It was noted that the creation of WhatsApp groups was being used for easy coordination of activities and emerging problems.

Antivirus software in NMS servers

2.34 The Meeting was presented with various quotes that had been taken into account for renewing the antivirus for 23 NMS servers under a 1-year licence. In this regard, the lowest price quote had been selected as part of a process carried out on a yearly basis. The renewal should become effective on 31 December. Antivirus upgrade procedures would be coordinated with the technical focal points. See **Appendix P**.

Corrective maintenance

2.35 In addition to maintenance carried out during visits, corrective maintenance works performed included, *inter alia*, RF equipment cabling at the Georgetown station, because of the rains; successful replacement of the Ethernet plate in the RX 1+1 equipment at the Asuncion node; maintenance work at the Lima node during the visit of the Administrator, who had identified the failure in the RF stage of the Skywan Alfa modem of the station, which required replacement and was awaiting a spare part. Work had also been done at the Cayenne node to correct failures and keep the node in normal operation.

2.36 It was noted that 40W amplifiers could replace the 80W IBUCs without generating any problem and would even have less failures.

Preventive maintenance

2.37 The Meeting took note that preventive maintenance had been scheduled for 2019 in all the nodes, which had permitted the identification and resolution of a series of problems that had persisted since their installation. Likewise, a photographic recording procedure had been created for all node components in order to create a database to be kept at the NCC and also on the web site, available for consultation by all the nodes through the REDDIG focal points, using the respective user names and passwords.

2.38 Videos and photographs of various preventive maintenance tasks carried out in the nodes and NCCs of the network were also presented.

2.39 An explanation was provided of (AFTN) serial circuit verification procedures using router commands and external equipment (Hyperterminal and serial signal splitters). The representative of Chile, Mr. Christian Vergara, explained ways to verify AMHS communications using Wireshark software and switch port mirroring, or using a hub and Wireshark.

2.40 Regarding the condition of AFTN circuits, the Meeting was urged to continue striving to migrate to AMHS systems and interconnections, in view of the difficulties caused by the old technology. It was noted that once the circuits were no longer in use, they would be removed from the network.

2.41 The Meeting was presented with documents concerning cleanup of IBUCs, RF antennae and components, and different indoor parts of some stations, in accordance with the preventive maintenance programme.

2.42 The Meeting agreed to propose to the RCC a repetition of this preventive maintenance programme in 2020, with special emphasis on the RF component of each station.

2.43 The Meeting also discussed upgrades to navigator versions, IBUC RX 1+1 firmware; switch firmware, and IOS; problems with the Leticia-Tabatinga internal connection; collaborative testing of various services; Peru-Chile, Peru-Ecuador hotlines; issues with local connections (Ethernet and telephony); issues with logistics and extended timelines; issues with Windows in the local NMS; the need for continuous provision of information; coordination with, and claims to, Intelsat; the operator, AMC; the case of the NT server in Ezeiza; issues with management or process changes in the States; issues due to lack of personnel; annual purchase of modems and amplifiers; coordination of services between REDDIG-MEVA, SITA-AIREON; reuse of GBB routers; network rerouting; REDDIG tools, materials and instruments; distribution and multiple addressing lists; last-mile issues in the States; new PBX and letters of operational agreement; Netgear switch firmware; painting and corrosion of antennae (budget).

Visit to the Cayenne and Ezeiza nodes

2.44 The REDDIG II Administrator conducted two missions in 2019. One visit was to Cayenne, French Guiana, to correct several failures in the IBUC and the Skywan modem, to observe the facilities and the condition of the station, and to conduct on-the-job training for the personnel working in the node. In this regard, **Appendix J** contains a summary of the tasks carried out and the conclusions reached, as reported to the Meeting.

2.45 Another visit was made to the Ezeiza node (alternate NCC), Argentina, to conduct corrective and preventive maintenance, a general review of the station, and to assist in the solution of the GPS failure. In both cases, the failures were corrected. Recurrent training was provided on the REDDIG and on the operation of the regional NCC.

2.46 The objectives set for this mission were as follows:

- Within the context of Project RLA/03/901, the reactivation of operational alternation at the network control centre (NCC) of Ezeiza.
- Preparation of the Ezeiza NCC to take on REDDIG operational functions in case of a technical problem in Manaus.

2.47 The REDDIG Administrator gave details of the action taken in both visits and acknowledged the hospitality received in both States. He also highlighted the professionalism of the staff that assisted him in his work in the two nodes.

2.48 The representatives of Argentina acknowledged the visit and the experience obtained in the process of failure identification and the training provided to new personnel working at Ezeiza.

2.49 The Meeting noted that it approved the visits of the Administrator to the nodes and having at least two visits per year for maintenance and on-site training of the technical personnel of the site.

2.50 Regarding VPN access, the proposal of the RTO/07 meeting remained valid in the sense that pending VPN connections should be deferred until after the installation of the firewalls.

2.51 The Meeting also took note of maintenance carried out in the Recife node with the participation of technical personnel of the Manaus NCC. The assistance of DECEA and CINDACTA in this regard was highlighted.

2.52 The Meeting was informed about the support given to the analysis of AFTN traffic between Cayenne and Manaus, because of an issue with lost messages.

2.53 Information was provided to the delegates on the RF equipment certification normally required for registration before State entities for station regularisation purposes. This would facilitate the delivery of failed equipment to the factory, among other things.

Conclusion	
RTO/8-2 - TECHNICAL VISITS OF THE REDDIG ADMINISTRATOR TO NETWORK NODES	
That the Secretariat: a) Make the necessary arrangements to allow the REDDIG Administrator to visit at least two network nodes per year.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: The delegates of the States highlighted the importance of the visits for corrective and preventive maintenance, general review of the station, equipment stocktaking, and review of the main operational and maintenance concepts with the technical personnel of the nodes.	
When: Immediately	Status: RTO/08 proposal to the RCC/24 meeting
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	

Agenda**Item 3: Analysis of REDDIG II service improvement requirements**

3.1 Under this agenda item, based on the analysis of REDDIG II performance since its commissioning, and on the review of REDDIG II maintenance and operational procedures, the Meeting analysed short- and medium-term REDDIG II service improvement requirements. In this regard, the Meeting addressed issues related to security, the inclusion of additional nodes from inside and outside of the Region, the incorporation of new services, ground network bandwidth upgrades, etc., together with aspects related to a future network, the service life of existing REDDIG equipment and possible actions.

REDDIG II interconnections

3.2 The Administrator provided general information about REDDIG interconnections at the internal level and with other satellite networks and service providers, such as:

- AMHS interconnection
- Radar data exchange
- AIDC interconnection
- REDDIG and SITA
- REDDIG and MEVA
- REDDIG and CAFSAT
- REDDIG and EUROCONTROL
- REDDIG and FAA

3.3 A brief description was provided of AMHS interconnection in the region and progress made by the States in this regard, including some issues that prevented a more expeditious AMHS implementation.

3.4 The Administrator clarified some concerns regarding AMHS operation and its communication protocols, and addressed some issues previously discussed regarding AFTN and AMHS message verification procedures.

3.5 Mention was made of the designation and functions of AMC external operators, and an explanation was given of internal procedures for monitoring failures involving information delivery or missing information issues in the AFTN and AMHS networks carried over REDDIG. The Meeting was informed that, in case of any failure or missing message report, the first thing to rule out was a connectivity issue in REDDIG or its local AMHS or AFTN systems. Then, the AMC external operator of the States involved in the transmission of the messages should be contacted in order to better identify the location of the failure and thus expedite actions to solve the problem.

3.6 The need to keep in close contact with AMC external operators of the respective State was highlighted.

3.7 The Administrator gave a brief explanation of the AIDC and its scope within the operational functions of control centres and their automated systems.

3.8 The Administrator requested the representative of Chile and technical focal point of AIDC in Chile, Eng. Pedro PASTRIÁN, to provide information about the status of AIDC and its operation. A detailed description of system operation was provided, with its three phases or groups of messages: reporting, coordination and transfer messages.

3.9 The Administrator explained the process in Chile and the future connection of SITA via REDDIG for the provision of CPDLC and ADS-C services to the State. Note was taken of the need identified by Chile and ICAO regarding the installation of a SITA router at the facilities of the ANSP of Chile, after the boundary router, in order to define SITA and REDDIG responsibilities.

3.10 Regarding the exchange of surveillance data (using REDDIG as the means of transportation), Argentina, Paraguay and Uruguay were exchanging surveillance data, tests had been conducted between Chile and Argentina, and surveillance data had been sent from Manaus to Maiquetía.

Operationally:

- 1) Paraguay was sending radar data through REDDIG from Asunción to Ezeiza, and from there, to the automated system of the Resistencia ACC.
- 2) Argentina was sending radar data from Corrientes to the Asunción ACC through REDDIG.
- 3) Argentina was sending radar data from Posadas to Asunción.

On trial:

- 1) Paraguay was sending data from an ADS-B station in Asunción to Resistencia, and the data was being assessed at the destination.

3.11 Likewise, the Guaraní airport in Ciudad del Este was receiving radar data from Foz de Iguazú (Brazil) through the Curitiba REDDIG node, as technically verified by the Asunción personnel. ATECH personnel had installed a console at the aforementioned airport for APP use.

3.12 The Meeting took note that radar data was being sent from Carrasco (Asterix) to Ezeiza, under assessment. These activities were in addition to the radar data being sent from Ezeiza (Argentina) to Carrasco (Uruguay); and radar data being sent from Durazno (Uruguay) to Ezeiza, currently on trial.

3.13 Note was taken of the work carried out between Chile and Argentina for the exchange of surveillance data (filtered, at the request of the military authorities of Chile), with the participation of the REDDIG Administrator, who provide information about the analysis of the Asterix radar protocol using *wireshark* and radar analysis software. The reason being that exchange trials had been carried out at IP level, which had been satisfactory in terms of connectivity, but there were still some issues with the SIC and SAC in radar information from Chile that needed to be solved. Trials were expected to continue.

3.14 Finally, it was noted that Brazil and Venezuela were coordinating the delivery of radar data from Manaus to Maiquetía.

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

3.15 Note was taken of the work done in Paraguay for sharing surveillance data with Argentina, using radar data analysis software, and for IP conversion from unicast to multicast (free applications). The delegate of Paraguay described the work done to this end, and noted that this had been possible thanks to the joint work of the two States involved.

3.16 Regarding other issues, the Administrator showed the interconnection between the REDDIG II and MEVA III networks, detailing how information was being transmitted.

Follow-up to AMHS interconnections in the Region

3.17 Regarding AMHS interconnections in the Region, a presentation was made on their evolution and the importance of REDDIG in this sense, especially regarding attainment of the goals proposed in the Declaration of Bogotá.

Appendix O contains details of the interconnections and the map of manufacturers in the Region and in other regions of interest.

Solar flares

3.18 Information was provided to the delegates on the process for reporting solar flares affecting the satellite network. The Intelsat web site was accessed to show the origin of the data. It was also noted that the station was completely affected at the time of highest intensity, reason why there were two NCCs.

New REDDIG node in Ezeiza

3.19 The Meeting was informed that, although the process had been started and was underway, the civil aviation service provider of Argentina, EANA SE (*Empresa Argentina de Navegación Aérea Sociedad del Estado*) had requested its temporary suspension. In that sense, the delegate of Argentina briefly outlined the situation.

Transfer of the REDDIG node of Bogotá

3.20 The Meeting was informed about the transfer of the Bogota node.

3.21 It was noted that, according to amendment VII to the contract concerning the new node of Ezeiza and the transfer of the Bogotá node, both processes had been agreed in May 2019. In the case of the transfer of the Bogotá node, the amendment had been signed on 28 June 2019.

3.22 It was noted that a teleconference had been held on 24 July 2019 with the representatives of INEO, the Colombian Administration, and ICAO. On that occasion, INEO had introduced the staff designated for the project, as well as the provisional schedule. Also, the points of contact of the intervening parties were defined, and details related to the transfer of the node were discussed. See **Appendix K**.

3.23 Since then, monthly teleconferences were being held to follow up on the scheduled actions.

3.24 It was agreed that any coordination, communication, doubt or issue related to the migration should be transmitted by e-mail, with copy to the parties involved (INEO, Colombian Administration, and ICAO). In case any other type of document was required, it would be coordinated with the parties.

3.25 According to the contract, the Provisional Schedule cannot be modified. However, it was agreed that, based on effective implementation, communication, coordination and follow-up, the transfer could be completed by month 7 or 8 (instead of month 13 as scheduled).

3.26 The Meeting took note that the CenturyLink node would be the first to be transferred in order to ensure voice and data traffic between Colombia and users in the SAM Region. This task was to be coordinated by the REDDIG Administration and the Regional Office with CenturyLink, in coordination with the focal points of the Colombian Administration. It should be noted that the fibre connection between the CenturyLink access point and the REDDIG rack was to be provided by the Colombian Administration.

3.27 Data traffic with the CAR and NAM Regions would be alternated through Maiquetía (the other regional hub). If the additional nodes in the United States were available, that would be another option for alternating data traffic. Another option to consider for alternating traffic would be Brasilia.

3.28 Regarding voice services, users coordinating with the CAR Region and using MEVA would be requested to use IDD (international direct dialing) until the transfer had been completed. It was expected that this would take just a few hours. In due time, the Administration of Colombia would inform all regional and international users by aeronautical message or NOTAM.

3.29 Regarding MEVA, the REDDIG Administration and the Regional Office would coordinate the transfer.

3.30 INEO had committed to replace the TX and RX RF cables between the new antenna and the rack, and would also change the waveguide according to the agreed characteristics.

3.31 The Administration of Colombia expressed its willingness to give all the facilities for the transfer.

3.32 It was noted that INEO had confirmed down payment by ICAO in October for the purchase of the antenna.

3.33 The INEO logistics department was working to send all the material to Bogotá so that it would reach its destination before the end of this year.

3.34 In order to avoid an unnecessary transfer of tools, INEO had sent a list of the required tools to make sure they were available on the site.

3.35 Regarding the entry of equipment and accessories into Colombia, it was clear that the State would take care of dispatch arrangements and costs. In this regard, Colombia requested that the invoice to be issued by INEO make reference to ICAO in order to expedite such arrangements. In due time, a model would be sent to INEO to facilitate entry procedures, as expressed by the representative of Colombia.

Additional ground network nodes (MPLS)

3.36 The Twenty-third (extraordinary) meeting of the Coordination Committee of Regional Project RLA/03/901 (REDDIG) was held on 26 August 2019 via teleconference to discuss the request by the Federal Aviation Administration (FAA) to incorporate additional nodes (MPLS) into the REDDIG II ground network, directly contracting the provider, CenturyLink, to access REDDIG, at no cost for the participants of Regional Project RLA/03/901.

3.37 It was noted that at the extraordinary RCC meeting (RCC/23), the States participating in Project RLA/03/901 agreed that the SAM Regional Office would start coordinating at the administrative and technical level for the addition of the Atlanta and Salt Lake City nodes into REDDIG II. Figure 1 illustrates the implementation of additional nodes in the REDDIG ground network. See **Appendix Q**.

3.38 It was noted that this concept was valid for locations both within and without the Region, as in the aforementioned cases, or in the case of COCESNA, and also for locations within the States themselves. Examples were given of possible additional nodes: Córdoba, Resistencia, Iquique, Cochabamba, Iquitos, Barranquilla, Río de Janeiro, Guaraní, Quito, etc.

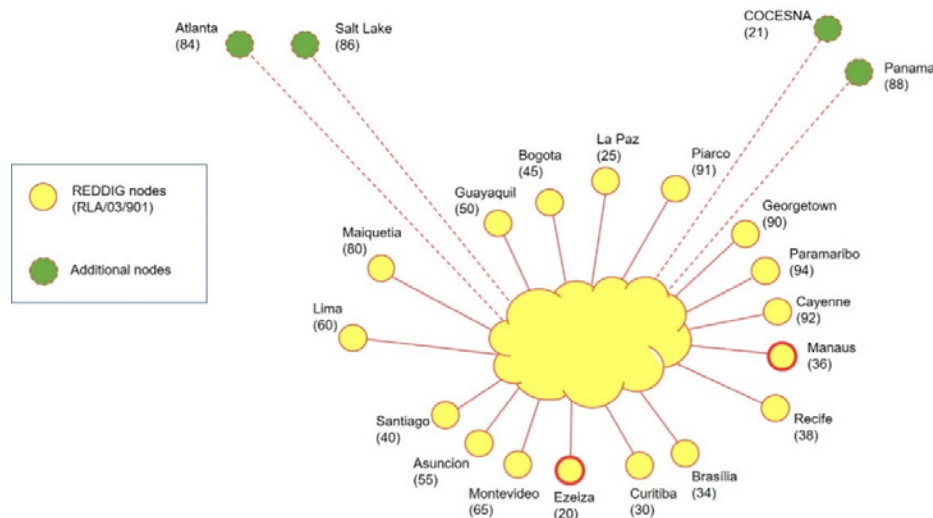


Figure 2 – Additional nodes of the REDDIG II ground network

(Diagram prepared by Mr. Francisco Almeida)

REDDIG II (MPLS) ground network bandwidth upgrade

3.39 Following a meeting at the SAM Regional Office among the representatives of CenturyLink, the REDDIG Administrator, and the SAM CNS Officer regarding the possibility of increasing the bandwidth of ground network nodes from 256 kbps to 1 Mbps, at no additional cost, CenturyLink sent a letter confirming the possibility of the upgrade, as shown in **Appendix G**.

3.40 At the RCC/23 (extraordinary) meeting, the States had taken note of, and approved, the upgrade, and had requested the SAM Regional Office to make the necessary arrangements.

3.41 In this regard, the TCB had prepared Amendment VIII to Contract 22501200. Once the aforementioned amendment had been signed, CenturyLink would proceed with the upgrade, in coordination with the REDDIG Administrator.

Procurement of firewall equipment for REDDIG

3.42 The SAM Regional Office had forwarded to the Technical Cooperation Bureau (TCB) the initial specifications for the procurement of firewall equipment, as established in Conclusion RCC/22-4 of the Coordination Committee of Regional Project RLA/03/901. **Appendix M** contains the initial specifications for the procurement of the firewall equipment.

Agenda**Item 4: Other business**

4.1 Under this agenda item, the Meeting reviewed other matters related to the aspects discussed, and which were deemed appropriate.

Interference

4.2 The Meeting discussed the interference that, according to the records, had affected the network since 2016.

4.3 In this regard, it was recalled that several tasks had been agreed and were being performed, especially procedures related to individual shutdown of stations and the general shutdown performed when significant interference had been experienced.

4.4 **Appendix N** summarises and illustrates the aforementioned interference.

4.5 Work was carried out at all times with the technicians of the nodes, in coordination with the MEVA Administrator and those responsible for the services exchanged among States.

4.6 Based on the issues encountered in MEVA, and after a lengthy analysis trying to find the source of this issue, it was inferred that the possible cause was in Tegucigalpa, Honduras, since after correcting the interference generated from this site, all interference had disappeared. See **Appendix N** for references.

4.7 The delegates were also presented with videos showing how the interference affected network carriers.

The Recife node

4.8 The Meeting took note of the problems encountered in the Recife node, involving RF signal degradation. When measuring the RF elements in the IDU based on the diagram developed by Manaus and its corresponding attenuation measurements, it had been found that a transmission combiner was generating high levels of noise. Since there was only one modem because modem A of Recife needed repair, modem B had been connected directly, thus solving the signal degradation problem and reducing the signal/noise ratio that was affecting the network. Preventive maintenance had also been conducted in the entire facility.

4.9 The Meeting was reminded that, upon examining modem A of Recife, a condenser had been found with a dye mark, which could mean that the equipment had been intervened before. Likewise, some motherboard elements had been found deteriorated.

4.10 The Administrator noted that the personnel at the Manaus NCC had examined the equipment and the power supply of modem A (Skywan 1070) of Recife, and had concluded that the old power sources of the REDDIG I Linkway modems were fully compatible with the power sources of the Skywan 1070 modems. Accordingly, the States were reminded that such power sources should be recovered to serve as spare parts for REDDIG II modems.

4.11 This experience provided two lessons to be replicated in other stations, namely:

4.12 In all stations, the signal of modem A was lower than that of modem B, because only the RF signal of modem A run through the redundancy module, thus causing attenuation. A high level of noise in one station affected the remaining stations, thus the importance of this verification.

4.13 Based on the above, the Administrator recalled a series of recommendations for the personnel in each node:

- Keep the old REDDIG I Linkway modems available for use as spare parts of power sources;
- Acquire RF connectors for the ODU, for replacement when needed.

Interoperability task force – GT Interop

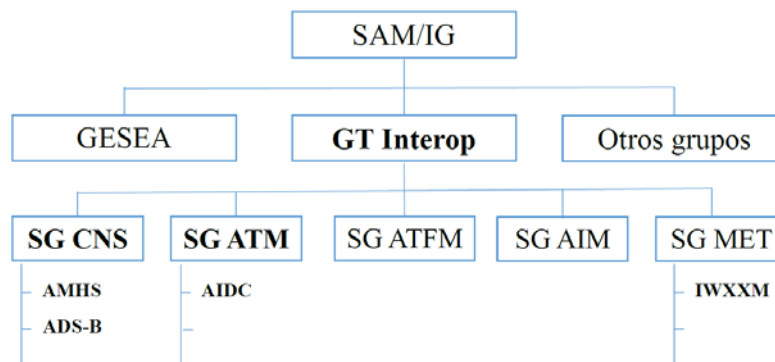
4.14 The Meeting took note of the creation of the Interoperability Task Force.

4.15 The purpose of the GT Interop was to ensure the interoperability of systems implemented in the Region, based on the experience gained in the implementation of aeronautical message handling systems (AMHS) and ATS interfacility data communication (AIDC), and on the emergence of various systems such as automated aeronautical information management (AIM), the system-wide information management (SWIM) concept, air traffic management (ATM), air traffic flow management (ATFM), communications, navigation and surveillance (CNS) and meteorology (MET).

4.16 The Meeting took note of the composition of this group and its subgroups, consisting of an interdisciplinary group of professionals.

Delegates were urged to ensure that experts from different areas participate in these subgroups, given their significance for the Region. Special emphasis was placed on harmonising implementations and integrating the various systems.

4.17 The following diagram was presented to the delegates.



Initially, 3 subgroups would be activated to cover 4 interoperability areas:

- CNS Subgroup
-AMHS; and
-ADS-B
- ATM Subgroup
-AIDC
- MET Subgroup
-IWXXM

ADS-B, IWXXM

4.18 The delegates were provided with information on the process of implementation of (ground- and satellite-based) ADS-B systems, the IWXXM MET format, and other data on these services that would be useful for technical personnel.

Support for coordination of extra-regional interconnections

4.19 The Meeting took note that support had been provided to Venezuela, Peru, and Brazil concerning the P1/AMHS interconnection with the Federal Aviation Administration (FAA).

4.20 It was noted that the REDDIG Administration was actively participating in the process of interconnection of AMHS systems in the Region, as well as in different services exchanged between States. Likewise, assistance had been provided on various issues arising in each State in relation to services and systems that were external to REDDIG.

4.21 Normally, the REDDIG Administration used all the tools available to assist in any actions aimed at achieving the interconnection, exchange, transport of different services and information. It also provided support in information analyses, traffic capture, etc., in order to find solutions to the problems arising in the services exchanged. In this regard, mention should also be made of the analysis of data between Cayenne and Manaus, the exchange of surveillance data between Uruguay and Argentina, trials between Cayenne and Brasilia, Cayenne and Maiquetía, coordination and joint work with the MEVA Administrator, etc.

REDDIG III

4.22 Based on the service life of the network, and taking into account the recurrent failures of some units in particular and the expected life of the current network, the Meeting considered that it would be necessary to start analysing the design of REDDIG III.

4.23 In this new network, consideration should be given to whether the topology would be the same, whether the satellite network would continue to be the main one, what does the market offer, etc.

4.24 It was proposed that these issues be discussed in order to have a project defined in the next 5 years. Also, consideration should be given to the options available in the market, inviting companies, integrators, etc., to submit solutions and new technologies, and, especially, to the creation of an *ad hoc* group to start working on this issue.

4.25 In this sense, the decision was made to protect the service life of the existing equipment, proposing that a single chain remain in operation, thus extending the life of at least one modem and one amplifier.

4.26 It was also noted that Terrasat and NDSatcom had received a list of all the components provided by these company to see if there was any warranty that could be applied. The answer had been that the warranty did not apply to the equipment of the current network.

Conclusion	
RTO/8-3 - CREATION OF THE REDDIG III <i>AD HOC</i> GROUP	
That: The next RCC meeting address this issue and establish this working group.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: Based on the service life of the network and taking into account the recurrent failures of some units in particular, and the expected life of the current network, there is a need to start analysing the design of REDDIG III.	
When: Immediately	Status: Underway
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	

Requests to the delegates

4.27 In summary, the following was requested from the delegates:

- a) The delegates were requested that, once they returned to their respective State, they should make sure that stations were registered before the bodies that regulated the frequency spectrum, and report the status.
- b) The aeronautical administrations of each State should update the information of REDDIG II focal points, since the ICAO registry shows staff that have been transferred, have retired or no longer work in the administration.
- c) The State representatives were requested to make sure that the personnel responsible for electrical aspects in their respective administrations verify the status of the UPS in each REDDIG II node and the grounding system.
- d) The REDDIG II Administrator was requested to study the possibility of obtaining audio-visual material on procedures, supplemented with teleconferences, to improve maintenance, information transfer, and training of the personnel working in each node.
- e) Conduction of trials in the Curitiba and Asunción nodes, replacing Netgear switches for a more robust type of switch in order to improve performance.
- f) The training activities mentioned at the beginning of this report were carried out. Training involved practical activities to show the personnel how to recognise the type of traffic, how to capture traffic, and how to use at least one analytical tool.

Suggestions made during the RTO/08 meeting

4.28 States were urged to purchase spare parts and/or back-up equipment for REDDIG II, and to request the assistance or technical support of the ICAO Regional Office to maintain the uniformity of systems in all nodes and act accordingly.

4.29 It was suggested that, at the next RCC meeting, the ICAO Regional Office underscore the fact that logistics continued to be a big issue when spare parts arrived to the States. And the same thing happened when the State had to send the equipment to the Regional Office. In general, this was due to logistical issues in some aeronautical administrations, which delayed the transfer of damaged or replacement equipment, thus degrading REDDIG II and affecting safety.

4.30 The delegates took note of the need to verify the existence of appropriate RF measuring equipment for L-band measurements. After confirming their existence, an RF diagram of the node in both chains would be requested, for use as future reference for identifying equipment degradation, all in coordination with the REDDIG Administration.

4.31 It was suggested that the Meeting start thinking about creating an *ad hoc* group to define the requirements of a future REDDIG III, taking into account equipment and spare part procurement issues due to different manufacturing and technical support schedules, as well as the new requirements. This request should be submitted to the RCC/24 meeting.

4.32 It was suggested that States review nodal access to the assets of the aeronautical administration, and correct any irregularities.

4.33 Regarding the installation of a new MPLS node at the ICAO Regional Office, it was suggested that this issue be discussed at the corresponding forum.

4.35 The invitation was made to analyse the future addition of nodes in each State to improve network redundancy and robustness at a lower cost.

4.36 The Meeting suggested that the Administration ask Century link about the technical feasibility and cost of two last-mile links in some nodes, in order to consider a future shift to the ground network as the main means of communication.

4.37 Mention was made of the need to invite different companies to submit new technological solutions applicable to the network, and to make presentations at the coming RCC and RTO meetings.

4.38 It was suggested that the Administrator ask Terrasat and NDSatcom about the cost of a technical support contract, especially in case of equipment failure, and if that operation could take place directly between the State and the company. Prior to that, corrective maintenance would be required by the REDDIG Administration and the technical personnel of the State, to determine such requirement.

4.39 The Meeting took note that Terrasat y NDSatcom had been consulted about the warranties covering their equipment, and they had responded that warranties for all the equipment, including spare parts, had already expired.

4.40 The delegates of Argentina offered to work towards improved monitoring of the WhatsUp Gold application in NMS servers.

4.41 Delegates were presented with a budget for renewing the antennae and accessories, as a result of the concern of the REDDIG Administration about corrosion in antenna parts and accessories, and the need for States to take action accordingly.

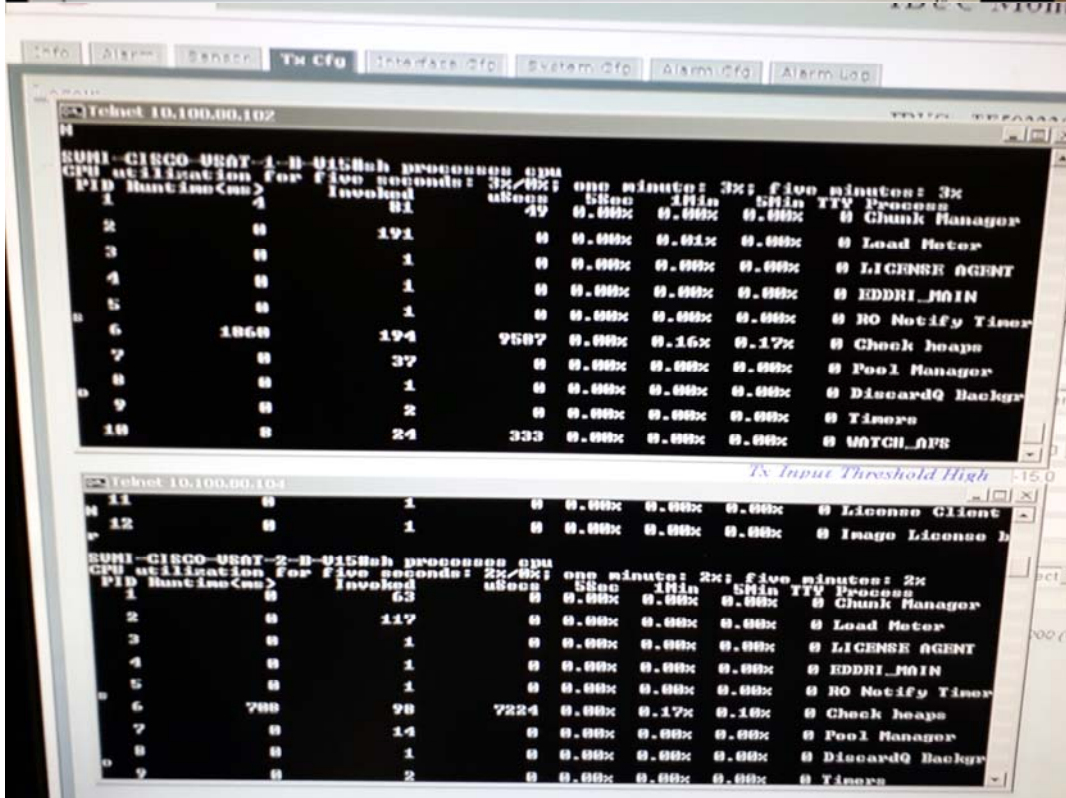
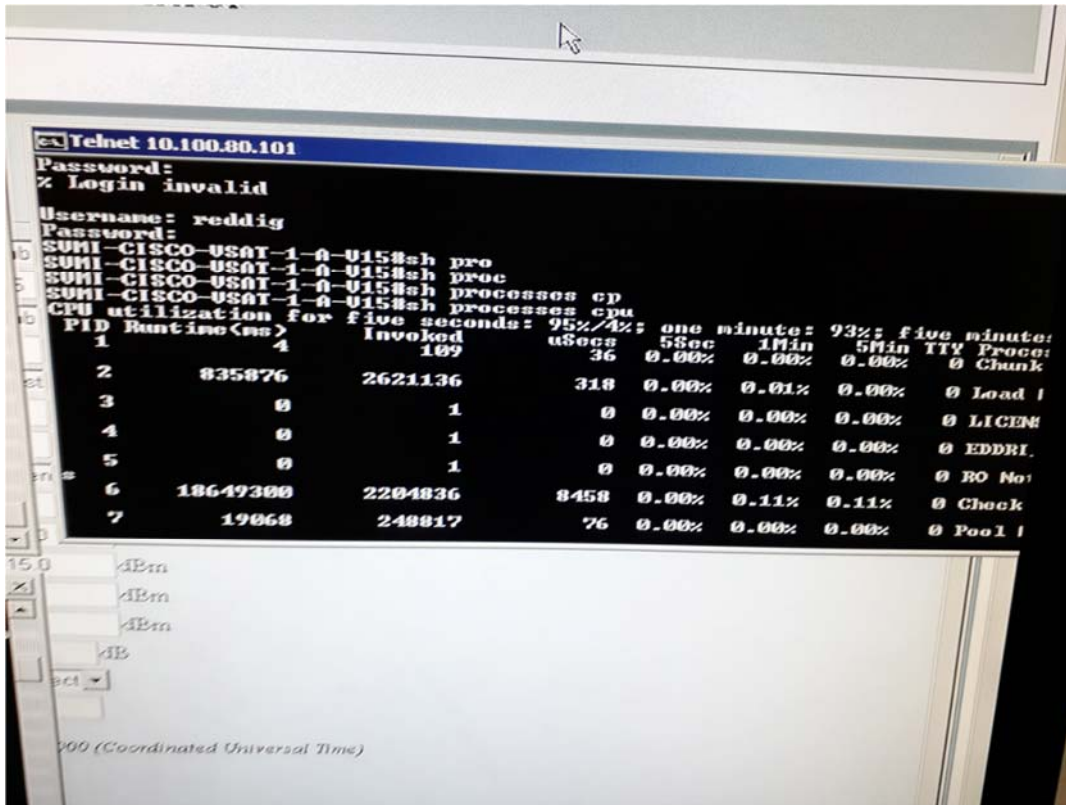
4.42 The Meeting was presented with a budget for renewing all the antennae of the network, showing the cost for each node structure. States were urged to take steps towards accomplishing this task, based on the corrosion status of each case. See **Appendix L**.

Conclusion	
RTO/8-4 RENEWAL OF ANTENNAE	
That the Secretariat: Take note of this action.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: Because the condition of the antennae in some nodes significantly affects performance and thus requires immediate attention. This has a direct impact on services and other components of the satellite station. Each State is responsible for addressing this issue.	
When: Immediately	Status: underway
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	

Conclusion RTO/8-5 - CUSTOMISATION OF WHATSUP GOLD	
That the Secretariat: Take note of this issue.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/operational
Why: so that the personnel of the Ezeiza node may study and customise Whatsup Gold, following validation by the REDDIG Administrator, and the solution be presented at the next RTO/09 meeting.	
When: Immediately	Status: Underway
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	

Pursuant to Conclusion 2 of the RTO/07 meeting, which is still valid, the delegates of Brazil and Paraguay offered to conduct the study on the switches to select the one with the best characteristics and benefits for REDDIG II.

Conclusion RTO/8-6 – REPLACEMENT OF NETGEAR SWITCHES	
That the Secretariat: a) Take note of this action.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: For the personnel of the Brazil and Paraguay nodes to study the best switch option to replace the existing NETGEAR switches, for a future procurement process. Such solution to be presented at the RCC/24 meeting.	
When: Immediately	Status: Underway
Who: <input type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Users/industry	



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User Access Verification
Username: reddig
Password:
SUN1 - CISCO-US0T-1-0-U158sh proc
SUN1 - CISCO-US0T-1-0-U158sh processes cp
SUN1 - CISCO-US0T-1-0-U158sh processes cpu
CPU utilization for five seconds: 2%/0%; one minute: 1%; five minutes: 1%
PID Runtime Cms > Invoked uSecs 5Sec 1Min 5Min TTY Process
 1 12 61 196 0.00% 0.00% 0.00% 0 Chunk Manager
 2 0 17 0 0.00% 0.01% 0.00% 0 Load Meter
 3 0 1 0 0.00% 0.00% 0.00% 0 LICENSE AGENT
 4 0 1 0 0.00% 0.00% 0.00% 0 EDDRI_MAIN
 5 0 1 0 0.00% 0.00% 0.00% 0 RO Notify Timer
 6 112 14 8000 0.00% 0.10% 0.03% 0 Check heaps
 7 4 10 400 0.00% 0.00% 0.00% 0 Pool Manager
    
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Tx Output Threshold Low dBm

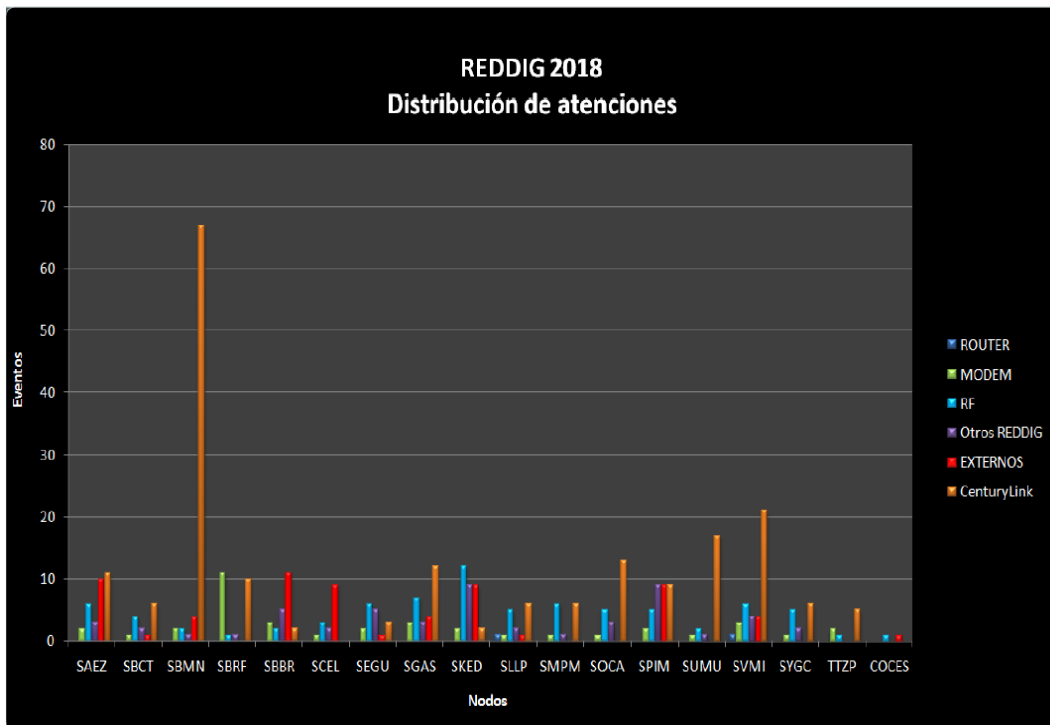
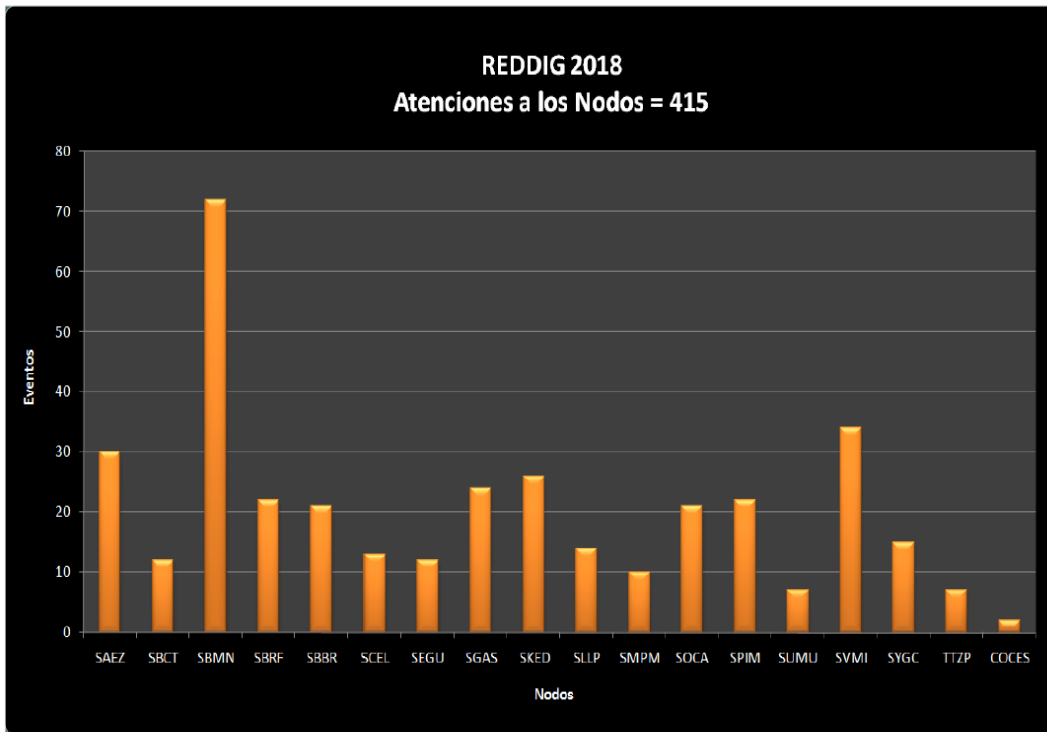
Tx Output Threshold High dBm

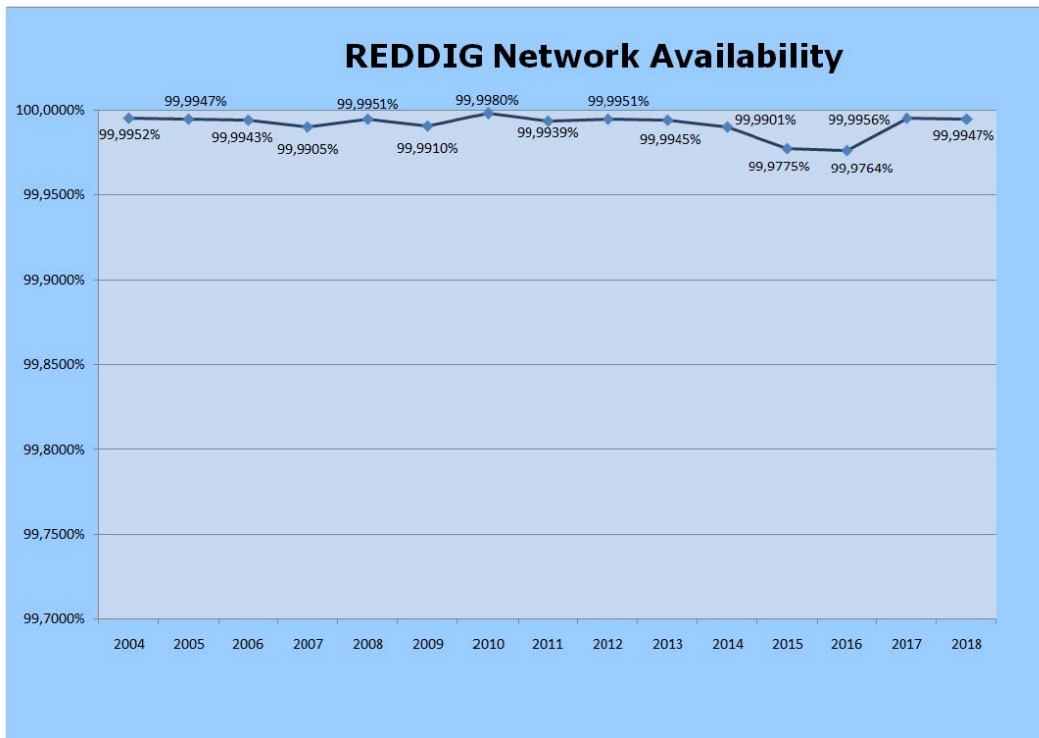
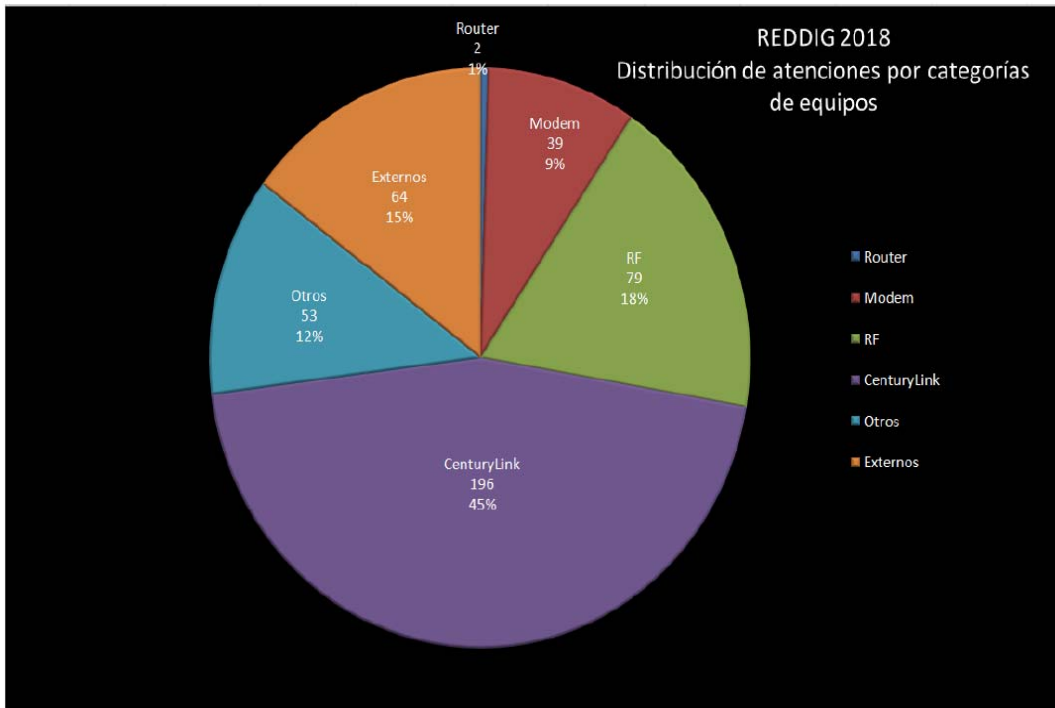
Current Gain Control dB

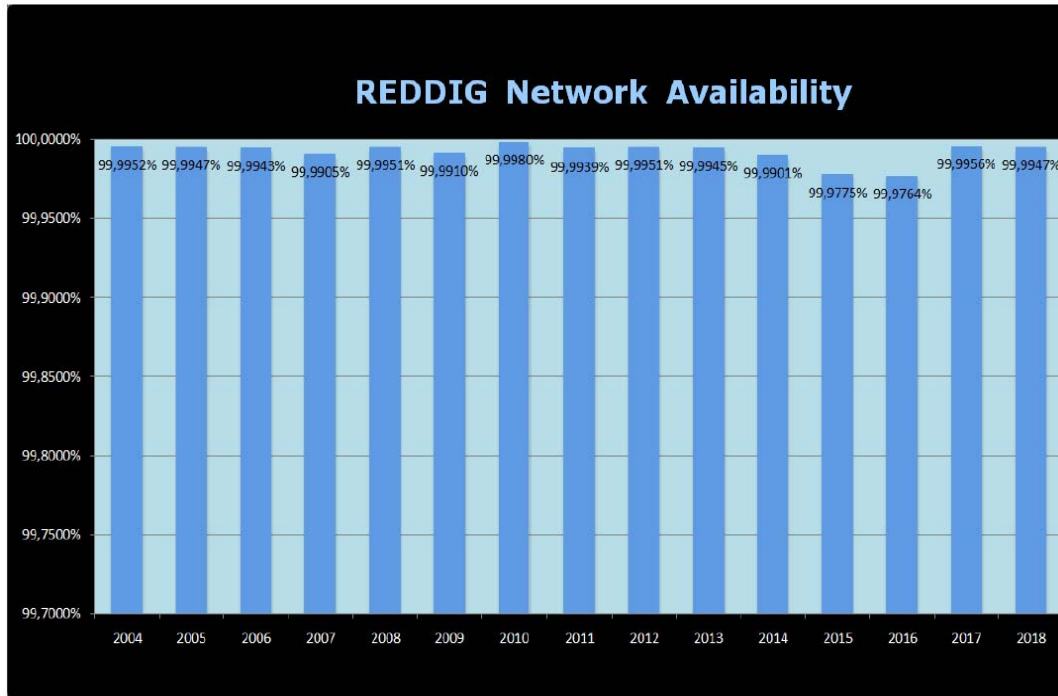
Gain Control Reset

Internal 10MHz Trim

This page generated: Mon Sep 16 2019 20:36:37 GMT+0000 (Coordinated Univers







EVENTO	NODO	EQUIPO/PARTE	DOC EMBARQUE
OR-19001	SKED	IBUC 40w	SAMRO-80
OR-19002	SLLP	IDU 1070	SAMRO-81
OR-1903	SOCA	LNB with external 10MHz refe	SAMRO-82
		IBUC 40W	
		Rx 1+1	
		Accesorios para RX 1+1	
		Cables de energía	
		Cable Coaxial de RF con conectores tipo N	
		LNB	
		Cable Coaxial de RF con conectores tipo N	

REGISTRO DE SERVICIOS - ADMINISTRACIÓN Y LOGÍSTICA DE EQUIPOS Y PARTES

EVENTO	NODO	EQUIPO/PARTE	DOC EMBARQUE	CARTA SAM	SERVICIO ADM	STATUS	DOC PROVEEDOR	ICAO HQ	COSTO EQUIPART US\$	ENVIO DE	HASTA	GASTOS ENVIO US\$
OR-15001	COCESNA (spare)	(1) SKW 1070	SAMRO-67	SAM 67						Lima, PE	Teguc, HONDURAS	
OR-15002	SBCI	RX 1+1 (cambio)								Curitiba, BR		
OR-15003	SPM	(1) SKW 1070 (reparac)								Lima, PE		
OR-15004	COCESNA	(1) SKW 1070 (reparac)								Tegucig, HOND		
OR-16001	SVMII	IBUC 80 W	SAMRO-68			Completado				Lima, PE	Maiquetía, VE	p/Venezuela
OR-16002	SVMII	SKW-7000	SAMRO-69			Completado				Lima, PE	Manaus, BR	p/Brasil
OR-16003	SVMII	SKW-1070	SAMRO-70			Anulado						
OR-16004	SBBR	Tx 1+1 Module	SAMRO-71			Completado				Lima, PE	Brasilia, BR	
OR-16005	SVMII	IBUC 80 W	SAMRO-72			Completado				Lima, PE	Maiquetía, VE	
OR-17001	SLLP	GPS Receiver	SAMRO-73		NO ENVIADO					Lima RO	La Paz, Bolivia	p/ Bolivia (NEO)
OR-17002	SBBR	Netgear Switch	SAMRO-74							Lima RO	Brasilia, BR	p/Brasil (NEO)
OR-17003	SLLP	SKW 1070	SAMRO-75							Lima RO	La Paz, Bolivia	p/Bolivia (NEO)
OR-17004	SAEZ	GPS Receiver	SAMRO-76							Lima RO	Ezeiza, Argentina	p/Argentina (NEO)
OR-17005	SMPM	IBUC 80W	SAMRO-77							Lima RO	Paramaribo, Surinam	p/Surinam (NEO)
OR-18001	SMPM	IBUC 80W	SAMRO-78							Lima RO	Paramaribo, Surinam	p/Surinam (NEO)
OR-18002	SVMII	IBUC 80W	SAMRO-79							Lima RO	Maiquetía, Venezuela	p/Venezuela (REDDIG)
OR-19001	SKED	IBUC 40w	SAMRO-80							Lima RO	Bogotá, Colombia	p/Colombia (REDDIG)
OR-19002	SLLP	IDU 1070	SAMRO-81							Lima RO	La Paz, Bolivia	p/Bolivia (NEO)
OR-1903	SOCA	LNB with external 10	SAMRO-82							Lima RO	Jayena, Guyana Fra	p/Francia
		IBUC 40W										
		Rx 1+1										
		Accesorios para RX										
		Cables de energía										
		Cable Coaxial de RF con conectores tipo N										
Cable de Gestión para LNB												
Cable Coaxial de RF con conectores tipo												

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
Lista A							
REPUESTOS REDDIG II ENVIADOS DESDE BRASIL							
EQUIPOS Y PIEZAS DE REPUESTO EN GENERAL							
1	A4	1	1.1 Modem Satelital	NDSatcom	skywan 7000	1	730289
2			1.2 Cable de energia			1	-
3			1.3 Tarjeta MOD	NDSatcom		1	-
4			1.4 Tarjeta SIC/DEMOM	NDSatcom		1	-
5			1.5 Tarjeta FPG	SBMN		1	-
6			1.6 Tarjeta UIM	NDSatcom		1	-
7			1.7 Cable de consola	NDSatcom		1	-
8			1.8 Cable de RF N-SMA Macho	NDSatcom		1	-
9	C2	2	2.1 ROUTER Cisco 2901	CISCO	2901	1	FCZ1719C1BR
10			2.2 Two port Async-Sync Serial WAN interface card	CISCO	HWIC	1	FOC17173XNG
11			2.3 Two port Async-Sync Serial WAN interface card	CISCO	HWIC	1	FOC17427CCS
12			2.4 two port voice interface card FXS	CISCO	VIC3	1	FOC16450PGJ
13	C2	3	3.1 ROUTER Cisco 2911	CISCO	2911	1	FCZ175060LX
14			3.2 24 PORT RJ45 PATCH PANEL	CISCO		1	-
15			3.3 01 TARJETA EVM-HD TELEFONICO	CISCO		1	-
16			3.4 Cable serial CISCO V.24 DTE DB25	CISCO		1	-
17			3.5 Cable serial CISCO V.24 DCE DB25	CISCO		1	-
18			3.6 Cable telefonico RJ11 cross over	CISCO		1	-
19		3.7 High density 8 port analog and digital extension module	CISCO		1	FOC180475BH	
20	C2	4	4.1 ROUTER Cisco 2901	CISCO		1	FCZ175092L8
21			4.2 Two port Async-Sync Serial WAN interface card	CISCO		1	FOC17427CQP
22			4.3 two port voice interface card FXS	CISCO		1	FOC17224X7C
23			4.4 Cable serial CISCO V.24 DCE DB25	CISCO		1	-
24	A2	5	5.1 Rx 1+1	Terrasat		1	TE6010431
25			5.2 Handheld Terminal with 2 m cable	Terrasat		1	439318
26			5.3 Accesorios para RX 1+1	Terrasat		1	-
27			5.4 Cables de energia	Terrasat		2	-
28			5.5 Cable Coaxial de RF con conectores tipo N 6m.	Terrasat		1	-
29			5.6 Cable de Gestion para LNB	Terrasat		1	-
30			5.7 Cable Coaxial de RF con conectores tipo N 30 cm.	Terrasat		2	-

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
31	A3	6	6.1	Wave Guide Switch for LNB	Logus		1	0244
32			6.2	LNB Banda C			1	2386
33			6.3	LNB Banda C			1	2381
34	B2	7	7.1	Switch Netgear de 26 Puertos	Netgear		1	39223CSU0036F
35			7.2	Cable USB			1	-
36	B2	8	8.1	Switch Netgear de 26 Puertos	Netgear		1	39223CSU00378
37	A1	9	9.1	IBUC 40W	Terrasat		1	TE5022340
38			9.2	IBUC 40W	Terrasat		1	TE5022352
39			9.3	1+1 Interface	Terrasat		1	6410574
40			9.4	Switch de Guia de Onda	Logus		1	0363
41			9.5	Cable Coaxial con conectores tipo N 30cm			2	-
42			9.6	Cables de gestion con conector tipo Militar			2	-
43			9.7	Cable de gestion tipo ethernet			1	-
44			9.8	Cable de Energia			2	-
45	D1	10	10.1	Manuales de Curso de Rio de Janeiro				-
46	D2	11	11.1	Documentos Oficiales REDDIG II				-
47	D1	12	12.1	Manuales REDIG II				-
48	D1	13	13.1	Documentos Oficiales REDDIG II				-

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
	Lista B			REPUESTOS REDDIG II ENVIADOS DESDE FRANCIA				
				IBUC Terrasat 80 W				
				IBUC Terrasat 80 W				
				NO ASIGNADO EM DEPOSITO EL NT SERVER ENVIADO A EZEIZA				
	X			EQUIPOS Y PIEZAS DE REPUESTO EN GENERAL				
49	B3	14	14.1	Tarjeta Serial MOXA de 8 Puertos RS-232 PCI	MOXA		1	TADBB1062386
50			15.1	Disco Duro Externo IOMEGA NAS 2 Tb	LENOVO		1	V9AP370005
51	B3	15	15.2	Fuente para Disco Duro	LENOVO		1	-
52			15.3	Manuales	LENOVO		1	-
53	B3	16	16.1	UPS Eaton Eclipse ECO 1200 VA	EATON		1	G030D43420
54			17.1	Cable Multipuerto Moxa 8 puertos	MOXA		1	-
55			17.2	Cable Cisco V.24 DTE	CISCO		5	-
56	B3	17	17.3	Cable Cisco V.24 DCE	CISCO		11	-
57			17.4	Cable DB25 Male-Female			6	-
58			17.5	Cable Patch Cord ethernet RJ45			6	-
59			18.01	Cable Multiple Cisco 8 puertos ethernet con adaptadores a DB25	CISCO		2	-
60			18.02	Two port Async-Sync Serial WAN interface card	CISCO		1	FOC17173XSA
61			18.03	Four port Async-Sync Serial HWIC	CISCO		1	FOC17056CG2
62			18.04	Four port Async-Sync Serial HWIC	CISCO		1	FOC17405CTK
63			18.05	Eight port Async interface card	CISCO		1	FOC174673WU
64			18.06	Two Port Voice Interface Card FXS.	CISCO		1	FOC1747821Q
65			18.07	Two Port Voice Interface Card FXS.	CISCO		1	FOC18073ZCY
66			18.08	Two Port Voice Interface Card FXS.	CISCO		1	FOC1747823M
67			18.09	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WJ8
68			18.10	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WD0
69			18.11	Two Port Voice Interface Card FXS.	CISCO		1	FOC174781UF
70	C3	18	18.12	Two Port Voice Interface Card FXS.	CISCO		1	FOC18073ZJL
71			18.13	Two Port Voice Interface Card FXS.	CISCO		1	FOC17461BL9
72			18.14	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WGP
73			18.15	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WH7
74			18.16	Four Port Voice Interface Card FXS	CISCO		1	FOC1747523F
75			18.17	Four Port Voice Interface Card FXS	CISCO		1	FOC174752RT
76			18.18	Four Port Voice Interface Card FXS	CISCO		1	FOC174751RP
77			18.19	Four Port Voice Interface Card FXO	CISCO		1	FOC1746833R
78			18.20	One Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	CISCO		1	FOC17451Q66
79			18.21	High Density voice/fax external Module	CISCO		1	FOC17443E08
80			18.22	Two Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	CISCO		1	FOC17479P39
81			18.23	Eight port Async-Sync interface card	CISCO		1	FOC17446GYD

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
82	C3	19	19.1	Module Adapter for SM Slot on CI	CISCO		1	FOC17516V0F
83	C3	20	20.1	Module Adapter for SM Slot on CI	CISCO		1	FOC17516UU5
84	B1	21	21.1	Impresora Laser Jet Pro 400 M401dn	Hewlett Packard		1	VNH4222944
85			21.2	Cables de Energia			1	-
86	A3	22	22.1	8 Port Device Server 10/100 eth	MOXA		1	TADAE101113
87	B1	23	23.1	RSS 16 SLOT 4U Chasis	DATAPROBE		1	115010100300024
88			23.2	Power Module	DATAPROBE		1	193008400000128
89			23.3	Network Control Card	DATAPROBE		1	134006500400093
90			23.4	Dual 8 wire Module Jack A/B card	DATAPROBE		1	111020200200892
91			23.5	Dual 8 wire Module Jack A/B card	DATAPROBE		1	111020200200893
92			23.6	D25 A/B Card	DATAPROBE		1	111020000100593
93			23.7	D25 A/B Card	DATAPROBE		1	111020000100594
94			23.8	D25 A/B Card	DATAPROBE		1	111020000100643
95			23.9	D25 A/B Card	DATAPROBE		1	111020000100667
96	B1	24	24.1	RSS 16 SLOT 4U Chasis	DATAPROBE		1	115010100300011
97			24.2	Power Module	DATAPROBE		1	193008400000115
98			24.3	Network Control Card	DATAPROBE		1	134006500400080
99			24.4	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200889
100			24.5	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200890
101			24.6	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200891
102			24.7	D25 A/B Card	DATAPROBE		1	111020000100629
103			24.8	D25 A/B Card	DATAPROBE		1	111020000100630
104	C3	25	25.1	High density 8 port analog and digital extension module	CISCO		1	FOC174049WM
105			25.2	High density 8 port analog and digital extension module	CISCO		1	FOC174049YH
106			25.3	Cable de consola de Cisco			2	-
107			25.4	KVM Extender			1	F3D46058D140097
108			25.5	Convertidor USB - Serial			1	-
109			25.6	Telefono IP DEPAEPE		DEPAEPE	1	PE02001120001826
110			25.7	Mouse Optico USB Negro			1	-
111			25.8	Regleta electrica con 05 tomas			2	-
112			25.9	Teclado Estandar K120		Logitech	1	-

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
113	B2	26	26.1	Filtro RF	NORSAT		1	C001128132
114			26.2	Filtro RF	NORSAT		1	C001128140
115			26.3	Barras de Anclaje de acero			3	-
116			26.4	Bloques de anclaje de plastico negro			6	-
117			26.5	Tornillos de sujecion de acero			20	-
118			26.6	Blank panel para RSS			3	-
119			26.7	Regleta electrica con 05 tomas			2	-
120			26.8	Adaptadores Cambia genero DB25			15	-
121			C1	27	27.1	Pantalla LCD 27"	SAMSUNG	
122	C1	28	28.1	HP ProLiant DL160 Gen8 Base - Server	Hewlet Packard		1	CZJ34500JZ
123	A1	29	29.1	NTP Time Server Master Clock	Gorgy Timing		1	138176
124			29.2	GPS Antenna + Cable	Gorgy Timing		1	138389
125	C2	30	30.1	Router Cisco 2901	CISCO	2901	1	FCZ175092KM
126	C2	31	31.1	Router Cisco 2901	CISCO	2901	1	FCZ170391DX
127	C2	32	32.1	Router Cisco 2901	CISCO	2901	1	FCZ170592LK
128	C1	33	33.1	IBUC Terrasat 80 W	Terrasat		1	TE5022355
245	A3	61	61.1	Firewall NETGEAR Prosafe VPN Dual Wan Gigabit	Netgear		1	2CH23A3W501B3
246	A3	62	62.1	VSAT Terminal IDU SkyWan 1070 19"	NDSatCom		1	00:40:71:F0:50:F0

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
REPUESTOS REDDIG I								
	X			EQUIPOS Y PIEZAS DE REPUESTO EN GENERAL				
129	E2	34	34.1	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	2634
130			34.2	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	2604
131			34.3	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	1063
132			34.4	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	2434
133			34.5	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	1005
134			34.6	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	1061
135			34.7	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	1067
136			34.8	Fuente de Poder para CX950	Memotec	VLT130-3000S1	1	1088
137	E2	35	35.1	Dual Analog Voice Card	Memotec	AZ004010	1	052171060
138			35.2	Dual Analog Voice Card	Memotec	AZ004010	1	052172487
139			35.3	Dual Analog Voice Card	Memotec	AZ004010	1	052172484
140			35.4	Dual Analog Voice Card	Memotec	AZ004010	1	052172486
141			35.5	Dual Analog Voice Card	Memotec	AZ004010	1	1000339848
142			35.6	Dual Analog Voice Card	Memotec	AZ004010	1	90030009411
143			35.7	Dual Analog Voice Card	Memotec	AZ004010	1	9003000738
144	E2	36	36.1	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	081830913
145			36.2	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	052173027
146			36.3	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	052173028
147			36.4	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	05273174
148			36.5	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	052173175
149			36.6	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	061082686
150			36.7	Fast Ethernet 10/100 Card	Memotec	AZ001011	1	061082680
151	E2	37	37.01	10 Base-T Ethernet Card	Memotec	AC004150	1	9002000306
152			37.02	10 Base-T Ethernet Card	Memotec	AC004150	1	9002000285
153			37.03	ISDN Card	Memotec	AC004060	1	1000328415
154			37.04	Digital Voice Processor	Memotec	AZ004114	1	1000315047
155			37.05	Digital Voice Processor	Memotec	AZ004114	1	1000315043
156			37.06	Digital Voice Processor	Memotec	AZ004114	1	061092235
157			37.07	Digital Voice Processor	Memotec	AZ004114	1	061091982
158			37.08	Digital Voice Processor	Memotec	AZ004114	1	052169078
159			37.09	Digital Voice Processor	Memotec	AZ004114	1	052169066
160			37.10	E1 Expansion	Memotec	AZ004120	1	052169024
161			37.11	V.35 H	Memotec	AZ002312	1	081807596

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
162	E2	38	38.1	Multi I/O V.24	Memotec	AZ002325	1	062236450
163			38.2	Multi I/O V.24	Memotec	AZ002325	1	9002000160
164			38.3	Multi I/O V.24	Memotec	AZ002325	1	9002001222
165			38.4	Multi I/O V.24	Memotec	AZ002325	1	9002001230
166			38.5	Multi I/O V.24	Memotec	AZ002325	1	062236456
167			38.6	Multi I/O V.24	Memotec	AZ002325	1	9002000250
168	E2	39	39.01	Modulo Ram 32 MB			1	040525
169			39.02	Modulo Ram 32 MB			1	045385
170			39.03	Modulo Ram 64 MB			1	07AD00134
171			39.04	Modulo Ram 64 MB			1	07AD00114
172			39.05	Modulo Ram 64 MB			1	07AD00113
173			39.06	Modulo Ram 64 MB			1	07AD00135
174			39.07	Slim Card E&M	Memotec	AZ004025	1	1000370325
175			39.08	Slim Card E&M	Memotec	AZ004025	1	1000370752
176			39.09	Slim Card E&M	Memotec	AZ004025	1	1000370677
177			39.10	Slim Card E&M	Memotec	AZ004025	1	1000328561
178			39.11	Slim Card E&M	Memotec	AZ004025	1	1000328572
179			39.12	Slim Card E&M	Memotec	AZ004025	1	052167044
180			39.13	Slim Card E&M	Memotec	AZ004025	1	052167058
181			39.14	Slim Card E&M	Memotec	AZ004025	1	052167029
182			39.15	Slim Card E&M	Memotec	AZ004025	1	052167041
183	E2	40	40.1	Universal I/O	Memotec	AZ002320	1	082389450
184			40.2	Universal I/O	Memotec	AZ002320	1	082389447
185			40.3	Universal I/O	Memotec	AZ002320	1	092427151
186			40.4	Universal I/O	Memotec	AZ002320	1	092427153
187			40.5	Universal I/O	Memotec	AZ002320	1	92427152
188			40.6	Universal I/O	Memotec	AZ002320	1	92427154
189	E2	41	41.1	Ring Generator	Memotec	AZ009050	1	072294201
190			41.2	Ring Generator	Memotec	AZ009050	1	082388103
191			41.3	Ring Generator	Memotec	AZ009050	1	92425216
192			41.4	Ring Generator	Memotec	AZ009050	1	92425217
193			41.5	Ring Generator	Memotec	AZ009050	1	92425210
194			41.6	Ring Generator	Memotec	AZ009050	1	052174923

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REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
195	C4	42	42.1	Chasis CX950	Memotec	AC001360	1	CA2508
196	B4	43	43.1	Multiplexor CX950e Chasis+Placa Madre	Memotec	AC002010	1	092425306
197			43.2	Cable de consola Memotec	Memotec		1	-
198	E3	44	44.1	Chasis CX950	Memotec	AC001360	1	CA02740
199	E4	45	45.1	Multiplexor CX950e Chasis+Placa Madre	Memotec	AC002010	1	072298778
200	C4	46	46.1	Multiplexor CX950e Chasis+Placa Madre	Memotec	AC002010	1	082389428
201	E3	47	47.1	Modem Linkway 2100	Viasat	2100	1	B6885
202			47.2	Tarjeta MODEM	Viasat		1	31910
203			47.3	Tarjeta Ethernet	Viasat		1	00A09400599A
204			47.4	FR TIA	Viasat		1	CL000225701
205	D4	48	48.1	Fax CANON H12130			1	DRT0671
206			48.2	Telefono analogico CONAIRPHONE			1	-
207	D3	49	49.1	SSPA 40 W	Paradise Datacom	HPAC2040ACBX001	1	2360
208	D4	50	50.1	SSPA 40 W	Paradise Datacom	HPAC2040ACBX001	1	2359
209	E3	51	51.1	Fuente para Modem Linkway		CL0003192-01	1	RU140400198
210			51.2	Fuente para Modem Linkway		CL0003192-01	1	RU140400196
211			51.3	Fuente para Modem Linkway		CL0003192-01	1	RU140400197
212			51.4	Fuente para Modem Linkway		CL0003192-01	1	RU140400193
213			51.5	Fuente para Modem Linkway		CL0003192-01	1	RU140400194
214			51.6	Fuente para Modem Linkway		CL0003192-01	1	RU140400195
215	E3	52	52.1	Fuente para Modem Linkway		AM-120U-S4-916	1	RU082503487
216			52.2	Fuente para Modem Linkway		AM-120U-S4-916	1	RU082503484
217			52.3	Fuente para Modem Linkway		AM-120U-S4-916	1	RU134100215
218			52.4	Fuente para Modem Linkway		AM-120U-S4-916	1	RU134100212
219			52.5	Fuente para Modem Linkway		AM-120U-S4-916	1	RU134100213
220	D2	53	53.1	Rollo de cable ASSy 3 x 2.5 50 m			1	-
221	D2	54	54.1	Rollo de cable Multipar 50 m			1	-
222	D2	55	55.1	Rollo de cable Multipar 50 m			1	-
223	E2	56	56.1	LNB Banda C	NJS	NJS8477EN	1	00870
224	E2	57	57.1	Cables Patch Cord Ethernet 3m			9	-
225			57.2	Cables DB9-DB25 3m			2	-
226	E4	58	58.1	Rollo de Cable Coaxial 50R 50m			1	-
227	E1	59	59.1	SSPA 40 W	Paradise Datacom	HPAC2040ACBX001	1	2346

ALMACEN OACI

REPUESTOS REDDIG I Y REDDIG II - 2018

Desc: Repuestos Reddig

	Ubicación	Caja#	Item#	Descripcion	Proveedor	Modelo	Cantidad	Numero de Serie
228	D3	60	60.01	GPS Datum	Datum	ET6000-RB1	1	5823
229			60.02	Cable de consola Cisco	Cisco		1	-
230			60.03	Cable de Gestion SSPA Paradise	Paradise Datacom		1	-
231			60.04	Conectores Tipo N 50R sin ensamblar			4	-
232			60.05	Pulsera anti estatica			1	-
233			60.06	Paquete de Placas vacias para equipos Memotec.			1	-
234			60.07	Combinador-Divisor de RF	Global Profesional		1	-
235			60.08	Convertidos RS232-RS485	Lindy		1	78680221KGZ0071
236			60.09	Paquete de instalacion SUN SOLARIS	SUN Microsystems		2	-
237			60.10	Tarjeta Multipuerto Serial	COMTROL		1	5850-075665
238			60.11	Cable multipuerto DB25 para Multi I/O Memotec	Memotec		2	-
239			60.12	Cable Patch Cord Ethernet RJ45 5m			2	-
240			60.13	Cable de consola Memotec			1	-
241			60.14	Adaptador DB9-DB25			2	-
242			60.15	Adaptador DB25-M34			1	-
243			60.16	Cable de energia			1	-
244			60.17	Cable RF Coaxial N-SMA Male			3	-

Historial de fallas

- IBUC 80W ----- 2(Surinam) 3(Maiquetía) 1 (Bogotá) 2 (Manaus) 1(Cayena)
- SKYWAN 1070 -----3 (La Paz) 1(Recife) 1(Guayaquil) 1 (Asunción) 1(Lima)
- Rx 1+1 ----- 1(Asunción), 1 (Carrasco) Placas de red
- Switch de guía de onda -----1(Georgetown)
- Netgear 1 -----1 (Carrasco)
- GPS ----- 1 (Ezeiza)
- LNB -----1 (Asunción) 1 (Cayena)
- IBUC 40 W ----- 1(Ezeiza)

Distribución de IBUCs

- 80 W: SBMN, SBRF, SKED, SOCA, SMPM, SVMI (6 nodos, 12 IBUCs) Hasta la fecha fallaron 10
- 40 W: EZE(1 EN OBS), SLLP, SBCT, SCEL, SEGU, SYGC, SGAS, SPIM, TTZP, SUMU, SBBR
- LOS QUE FALLARON, TODOS CON PROBLEMAS DE FUENTE

**AVAILABILITY OF THE MPLS NETWORK (CENTURYLINK) IN 2018
DISPONIBILIDAD DE LA RED MPLS (CENTURYLINK) PARA AÑO DE 2018**

	January 2018		February 2018		March 2018		April 2018		May 2018		June 2018		July 2018		August 2018		September 2018		October 2018		November 2018		December 2018		TOTAL		
	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	Availability	USD Credit	USD Credit		
SAEZ					98,52%	\$ 9,79																				9,79	
SBBR																											0
SBCT																		99,17%	2,73	97,19 %	20,83					20,83	
SBMN	98,30%	\$ 17,98	96,36%	\$ 47,14	88,92%	\$ 158,70	78,32%	317,64	98,39%	16,70	84,95%	218,00	91,20%	124,55	90,61%	133,43	97,24%	33,98			97,97 %	22,95	95,80 %	55,50	1146,57		
SBRF	99,37%	\$ 3,50	99,41%	\$ 3,08			99,37%	3,50			99,65%	0,56	99,17%	5,61			99,12%	6,1	95,73%	41,64	96,85 %	29,93			52,28		
SCEL																										0	
SEGU																							99,39%	2,57		2,57	
SGAS										99,68%	0,45			99,41%	5,17	98,53%	21,11									26,73	
SKED																										0	
SLLP													99,47%	6,13												6,13	
SMPM	99,22%	\$ 27,84													98,59%	64,15										91,99	
SOCA					83,76%	\$ 860,98			95,46%	228,85				99,64%	3,51	98,86%	45,20									1138,54	
SPIM					97,06%	\$ 21,95	99,63%	0,61						94,79%	40,72											63,28	
SUMU			99,47%	\$ 4,19																						4,19	
SVMI	93,82%	\$ 128,77					99,69%	0,26	97,23%	54,03			99,55%	3,24	98,90%	17,61	99,47%	5,08							208,99		
SYGC	99,34%	\$ 13,71			99,35%	\$ 13,32											99,63%	2,66								29,69	
TTZP			97,40%	\$ 37,89													98,97%	9,58								47,47	

Note: SLA-Availability for all nodes: 99.70%
Except for SBMN and TTZP : 99.50%

TOTAL USD 2849,05



Lima, 2 de agosto del 2019

Para:
Fabio Faizí Rahnemay Rabbani
Regional Director
ICAO South American Office

Estimado Señor

CenturyLink está comprometido en convertirse en un aliado estratégico para nuestros clientes, para ello nos mantenemos siempre atento a las necesidades y requerimientos, como parte de este compromiso el día 04 de marzo del presente realizamos una reunión en la Oficina Regional Sudamericana de OACI con el Sr. Francisco Almeida y conversamos sobre la necesidad actual de realizar una modificación (upgrade) del ancho de banda actual de los enlaces pertenecientes a la REDDIG.

Entendiendo la necesidad de OACI y llegando al entendimiento común que esto contribuiría a mejorar la comunicación y monitoreo de REDDIG, ofrecemos por medio de este documento la propuesta de realizar un UPGRADE del ancho de banda de 256K a 1Mbps en cada uno de los puntos que conforman REDDIG; esto sin involucrar costos adicionales o extensión de contratos para los participantes del Proyecto Regional RLA/03/901.

En tal sentido quedamos a la espera que OACI remita la adenda respectiva al contrato que rige nuestra relación contractual a fin de formalizar nuestro ofrecimiento.

Agradecemos la confianza en nuestros servicios y esperamos este ofrecimiento pueda tener su aprobación para poder iniciar el proceso de upgrade a la brevedad posible.

Atentamente

Gianni Hanawa Makabe
REPRESENTANTE LEGAL
CenturyLink Perú S.A.

A handwritten signature in purple ink, appearing to read "Gianni Hanawa".

Gianni M. Hanawa
Representante Legal
CenturyLink Perú

Instrumental indicado a los Estados para realizar mediciones de RF

In order to be able to make measurements in the transmission and reception stages of the station, and in order to be able to read the attenuations at each point, I wanted to know if you can count on: a signal generator to achieve 1.35 Ghz, and a power sensor or field fox test equipment or network analyzer portatil



Signal Generator



power sensor



Network spectrum analyzer portatil



ofield fox test equipment

Carrier ID	Uplink Freq. [MHz]	Downlink Freq. [MHz]	Status	Service Type	Info Rate [Mbps]	Alloc. BW [MHz]	Coding Rate	Tx Antenna (Reference)	Rx Antenna (Reference)
18663197	6014.4960	3789.4960	Operational	DIG	2.4320	1.4591	2/3	P+4858	P+4848
18663200	6015.8935	3790.8935	Operational	DIG	2.2160	1.3295	2/3	P+4858	P+4848
19795010	6017.1870	3792.1870	Operational	DIG	2.0800	1.2479	2/3	RCF+0CF1	P+4848

Carrier 1
 MANAOS
 EZEIZA
 SANTIAGO
 MONTEVIDEO
 CURITIBA
 1360504000hz

Carrier 2
 LIMA
 GUAYAQUIL
 LA PAZ
 BOGOTÁ
 ASUNCIÓN
 1359106500hz

Carrier 3
 MAIQUETÍA
 CAYENA
 GEORGETOWN
 PARAMARIBO
 PIARCO
 BRASILIA
 RECIFE
 LIMA
 TEGUCIGALPA
 1357813000hz



VISITA AL NODO CAYENA

Desde diciembre de 2018, la estación Cayenne ha estado experimentando problemas con el enlace satelital (tres fallas este año con dos semanas de tiempo medio de reparación).

La Admin de Francia agradeció la visita del Ing. Javier Vittor para revisar la estación y tratar de resolver los problemas de la estación satelital. El resultado de esa semana fue prometedor ya que se pudieron localizar las causa del problema en el equipo de módem y el IBUC. Para terminar de resolver estos problemas, SAM / ICAO debería enviar los repuestos necesarios.

En relación a los párrafos anteriores hay que remitirse a las observaciones que se realizaron durante la visita al nodo.

Se realizó en primera instancia, una revisión visual y a nivel software de la estación. Se destaca que las condiciones meteorológicas, durante la semana de trabajo, no fueron óptimas, presentándose precipitaciones, prácticamente todos los días.



Durante la revisión se observaron novedades en el cableado y la funcionalidad de los equipos de la estación, tanto en la parte indoor como outdoor. Se verificó el funcionamiento mecánico de las llaves de conmutación del switch de los amplificadores y del switch de la guía de onda. Se reestablecieron las conexiones del cableado que estaba alternado por trabajos anteriores con el NCC.



Coolers Ibucs después mantenimiento



Mantenimiento componentes interior antenna (outdoor) – presencia de insectos



Limpieza componentes antenna



Verificación componentes Rx antenna



Verificación antenna



Instalación filtro



Instalación cooler IBUCs



Mediciones cables antenna



Rearmado de conectores

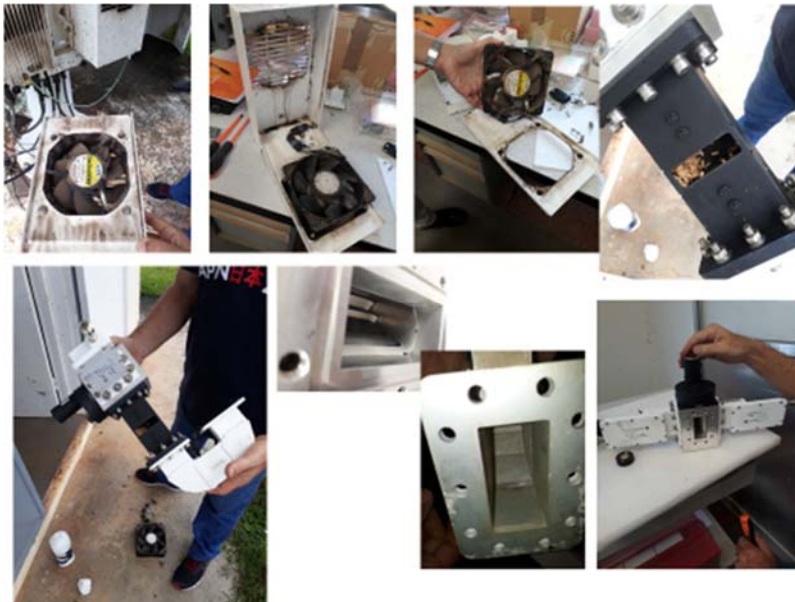


A efecto de poder verificar si la estación sufrió degradaciones por atenuaciones, se procedió a simular la inyección de una frecuencia tanto en recepción como en transmisión y la posterior lectura en las salidas de las etapas comentadas. Se registraron valores aceptables. Se hizo lo propio con los cables de transmisión y recepción que van del rack hasta la antena. Se obtuvieron resultados aceptables.





Se realizaron tareas de mantenimiento preventivo y limpieza en los IBUCs y en el plato de la antena, como también en otras partes de la estación.









Conectores con novedades



conector mal armado



Reconexión de cables



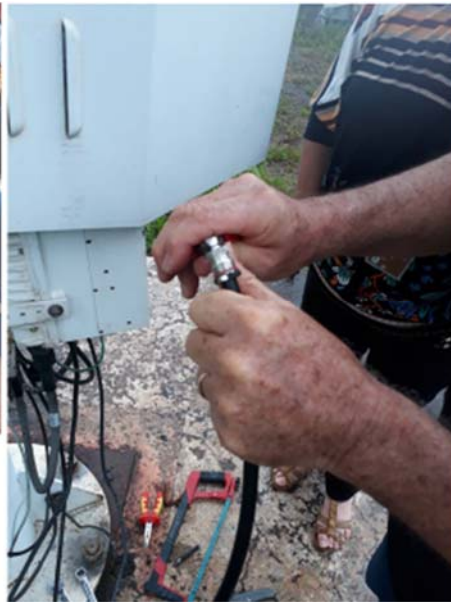
Vista de antena

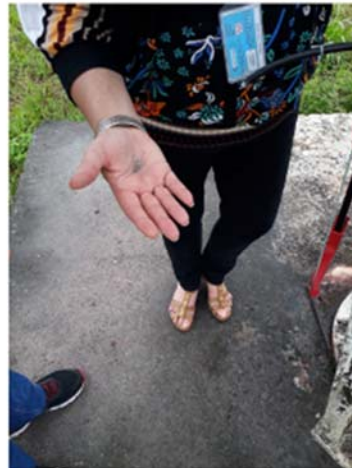


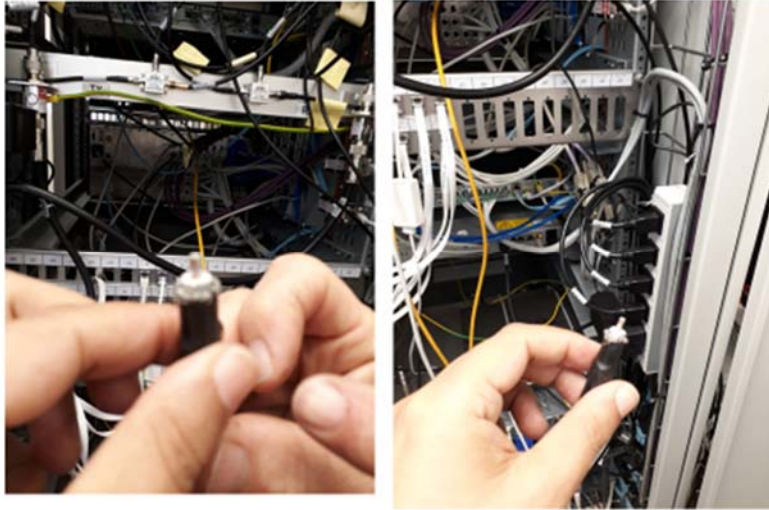
Reconexión de cables



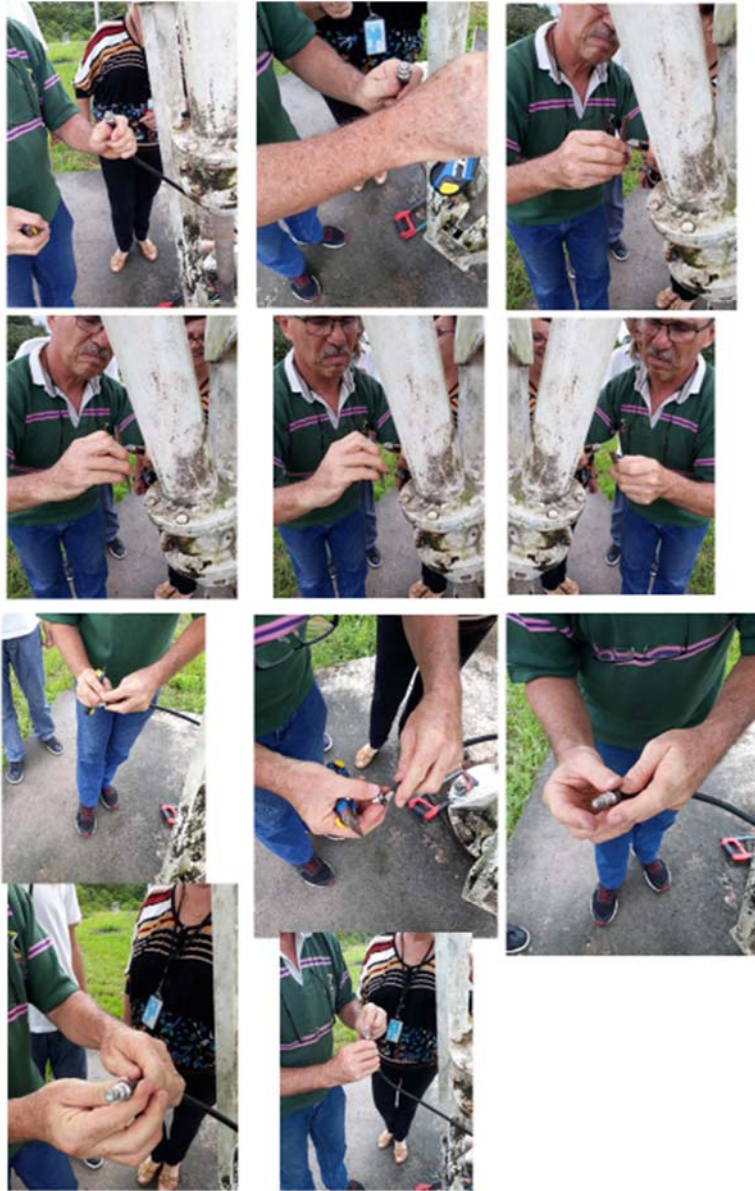






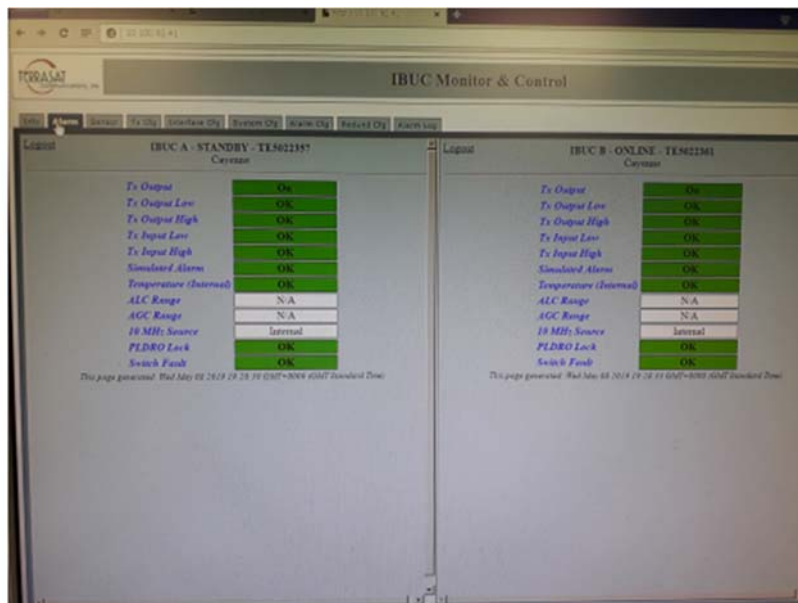








Se revisaron las configuraciones y parámetros de routers, switches, conectores, cables, circuitos DC Blocks, etc. Se hicieron mediciones de tensión y señales.





Se verificó la topología del backup terrestre, de lo cual surgió la necesidad, por parte del personal de Cayena que se analice cambiar el proveedor de última milla.



Se destaca la participación, colaboración y excelente predisposición del personal técnico de Cayena.

Debido a los inconvenientes que presenta uno de los módems y degradación de la performance de los amplificadores, se recomienda reemplazar uno de los módems, reemplazar uno de los amplificadores, terminar de verificar otros conectores, el Tx 1+1, el Rx 1+1, y coordinar con Intelsat para verificar como está trabajando la estación en relación al transponder satelital.

También se verificó que la infraestructura de la antena se encuentra en un estado que amerita una revitalización. En tal sentido, se adjunta un presupuesto para tener una referencia sobre los costos. Y se presentan a continuación fotografías que ilustran la situación.







Actualmente se está en proceso de envío de repuestos a Cayena.

Se destacó que desde las tareas de mantenimiento preventivo y correctivo, nunca se perdió la conexión con los otros sitios, pero la probabilidad aumenta cada día y se deben mitigar esos problemas antes de que sea demasiado tarde.

En tal sentido, se acordó enviar un Rx1 + 1 con cables y un IBUC de 40W por el momento, pero esperamos contar con un módem a la brevedad. Cayena se comprometió a reemplazar el coaxial que se instaló en 2003.

Respecto a lo que se menciona arriba, que el cable coaxial no se haya reemplazado durante la instalación de la REDDIG II, esto solo puede obedecer a que oportunamente se haya considerado que no era necesario y en consecuencia no se haya reclamado a INEO. No obstante es importante la acción de reemplazar al mismo, ya que es una posible causa en la degradación de la estación y el impacto sobre los equipos que operan en la misma.

Sobre el envío de repuestos, se aclara previamente que se ha instado a los Estados a tener la libertad de realizar la compra de spares para sus estaciones a fin de, entre otras cuestiones, evitar los inconvenientes logísticos que se ocasionan durante los procesos de envío de los repuestos. Asimismo, es importante destacar que las estaciones son de los Estados.

A continuación se transcribe el detalle de lo que se está enviando a Cayena. Lo único que no estamos enviando es un módem. Se hace una acotación, la falta de envío de los equipos con falla

de parte de los Estados a la Oficina Regional, ocasiona que no se tengan los repuestos suficientes para poder enviar los mismos a un lugar donde faltan. (Caso nodo La Paz que debe enviar los equipos con falla que se envíen a fábrica para su reparación y estamos a la espera) Además de la insistencia que se le hace a los Estados para que incluyan en sus patrimonios la estación y sus componentes, ya que la irregularidad de esto genera problemas al momento de tener que enviar un equipo a reparar o proceso similar.

A1	9						
		9,2	IBUC 40W	Terrasat		1	TE5022352
A2	5	5,1	Rx 1+1	Terrasat		1	TE6010431
		5,3	Accesorios para RX 1+1	Terrasat		1	-
		5,4	Cables de energía	Terrasat		2	-
		5,5	Cable Coaxial de RF con conectores tipo N 6m.	Terrasat		1	-
		5,6	Cable de Gestión para LNB	Terrasat		1	-
		5,7	Cable Coaxial de RF con conectores tipo N 30 cm.	Terrasat		2	-

Como se aprecia en el listado de arriba, no sólo se envía un IBUC, sino también un RX1+1, y además accesorios que se consideraron importantes para sumar al reemplazo de componentes que se consideran con novedades como cables coaxiales de RF, cable de gestión para LNB, cables de energía. Lo único que no se pudo enviar fue un modem porque no se cuenta con repuestos y porque oportunamente se envió a La Paz el único disponible y atendiendo a la situación crítica del mismo.

Se debe mencionar que hace un mes atrás se estuvo trabajando con intensidad por una falla en el cableado que en principio se penso fueran los amplificadores. Pero finalmente, gracias al trabajo coordinado con el personal de Cayena se pudo solventar la novedad.

Con respecto a los problemas de la red terrestre, creemos que es necesario cambiar la conexión de la última milla. Canal +, que trabaja con Intelglobe, utiliza un viejo cable de cobre. Alquilan este cable a OBS (Orange Business Service) y cuando hay un problema, Intelglobe necesita administrarlo con OBS y Canal +. Creemos que es necesario actualizar la conexión de la última milla a la fibra óptica y sugerimos que OBS reemplace a Canal +. Sería más fácil y más confiable. Sobre el tema mencionado arriba, ya se ha planteado esta situación a Centurylink en reuniones que se han mantenido donde también se incluían los inconvenientes en los nodos Manaus, Recife, Maiquetía y Cayena. Se sigue insistiendo sobre la cuestión de Cayena para el cambio del proveedor de última milla según consta en lo expresado en diferentes Notas de Estudios y correos electrónicos intercambiados con Centurylink.

PROJECT REDDIG II – Bogotá relocation

Conf-call 24/07/2019 – Kick-off meeting



Confidentiel

Restreint

Libre

Interne

AGENDA



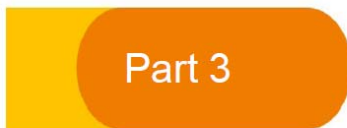
Part 1

Context



Part 2

INEO Organization for REDDIG II



Part 3

Provisional schedule



Part 4

General Information

CONTEXT

- **REDDIG II Project:**

- Delivery of Spare parts
- Separation of the Amendment VII between Ezeiza & Bogota Relocations (May 2019)

- **Amendment VII:**

- Signed by all parties on 28th of June 2019
- Official start date to be determined

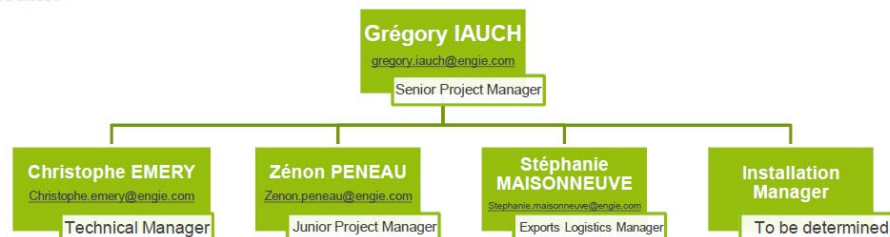
- **Bogotá relocation:**

- Transfer the VSAT node to the new ACC building
- Reuse the existing equipment when possible

New TEAM

- Thierry SU → Retired
- Clément CHEVALLIER → New job at INEO

- **New team:**



Provisional Schedule

Item	Month Number	août-19		sept-19		oct-19		nov-19		déc-19		janv-20		févr-20		mars-20		avr-20		mai-20		juin-20		juil-20		août-20			
		Mth 01	Mth 02	Mth 03	Mth 04	Mth 05	Mth 06	Mth 07	Mth 08	Mth 09	Mth 10	Mth 11	Mth 12	Mth 13	Mth 14	Mth 15	Mth 16	Mth 17	Mth 18	Mth 19	Mth 20	Mth 21	Mth 22	Mth 23	Mth 24	Mth 25	Mth 26	Mth 27	Mth 28
Bogota New Node tentative schedule																													
1	Amendement for Bogota (contract signature)	TO																											
2	Bogota new node Factory studies and preparation	[Blue bar from Mth 01 to Mth 04]																											
3	Bogota new equipment ready for shipment	[Blue bar from Mth 01 to Mth 04]																											
4	Shipment of Equipment from France and USA/antenna	[Blue bar from Mth 05 to Mth 06]																											
5	Colombia Customs clearance	[Red dashed bar from Mth 06 to Mth 18]																											
6	Concrete block construction for Antenna ballast on roof	[Blue bar from Mth 09 to Mth 11]																											
7	Bogota new node installation	[Blue bar from Mth 10 to Mth 12]																											
8	Availability of all services at Bogota new ACC	[Blue bar from Mth 11 to Mth 13]																											
9	Bogota new node commissioning	[Blue bar from Mth 12 to Mth 14]																											
10	Bogota new node PSAT signature	[Blue bar from Mth 13 to Mth 15]																											
11	Bogota new node Operational observation period	[Blue bar from Mth 14 to Mth 16]																											
12	Bogota new node FSAT signature	[Blue bar from Mth 15 to Mth 17]																											

----- Colombia Customs dependent-----



General Information

- Local contacts:
 - Andres Colmenares
 - Robinson Quintero
 - Javier Vittor (REDDIG Administrator)
 - Francisco Almeida (CNS Regional Officer)

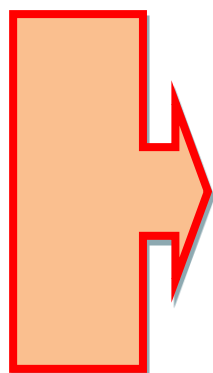
- First steps:
 - Studies and analysis of site survey
 - Purchase of Antenna and accessories

- Support of the Bogota team during installation:
 - Supply of the truck to transport the equipment
 - Support with the dismantling, packing and transport of cabinet, racks and equipment





Proposta Comercial nº: 071/19-RSA



Serviço de Revitalização do
Sistema Irradiante (REDDIG).

Atenção:
Setor:
E-mail:

Sr. Ing. Cristian Javier Vittor
REDDIG Administrador
jvittor@icao.int

Rio de Janeiro (RJ), 01 de outubro de 2019.

1. OBJETO

Apresentamos à V.Sa. a nossa proposta comercial para os serviços de revitalização de 17 (dezessete) Sistemas irradiante de 3,7m de diâmetro do Sistema REDDIG, conforme listado abaixo:

1. EZEIZA (SAEZ)
2. LA PAZ (SLLP)
3. MANAUS (SBMN)
4. RECIFE (SBRF)
5. CURITIBA (SBCT)
6. SANTIAGO (SCEL)
7. BOGOTÁ (SKED)
8. GUAYAQUIL (SEGU)
9. GEORGETOWN (SYGC)
10. CAYENNE (SOCA)
11. ASUNCION (SGAS)
12. LIMA (SPM)
13. PARAMARIBO (SMPM)
14. PIARCO (TTZP)
15. MONTEVIDEO (SUMU)
16. MAIQUETIA (SVMU)
17. BRASÍLIA (SBBR)

Desde já agradecemos à oportunidade, e nos colocamos a disposição para quaisquer esclarecimentos.

2. ESCOPO

O objeto apresentado nesta proposta comercial envolve os seguintes itens:

- 2.1 – Levantamento técnico das informações necessárias para executar o serviço;
- 2.2 – Lavagem da Antena;
- 2.3 – Pintura da Antena;
- 2.4 – Lubrificação das partes mecânicas;
- 2.5 – Substituição da mangueira de ar;
- 2.6 – Revitalização do pedestal;
- 2.7 – Substituição do Mailler;
- 2.8 – Reaperto dos parafusos e substituição caso haja necessidade;
- 2.9 – Reapontamento da antena;
- 2.10 – Levantamento do diagrama de níveis do sistema;
- 2.11 – Testes de Comissionamento.

3. OBSERVAÇÕES

- 3.1 – Está incluso no escopo desta proposta o fornecimento de miscelânea de materiais, como: Fita isolante comum, fita isolante de auto-fusão, terminais de cabos elétricos, identificadores de cabos, abraçadeiras, parafusos, arruelas, etc.
- 3.2 – Está fora do escopo desta proposta quaisquer taxas ou emolumentos cobrados no processo pelos Órgãos competentes;
- 3.3 – Está fora do escopo desta proposta o fornecimento de equipamentos e quaisquer tipos de cabos necessários para a instalação do objeto;
- 3.4 – Está incluso todos os gastos com descolamento, estadia e alimentação.

4. PLANILHA DE PREÇO

ITEM	DESCRIÇÃO	QTD	PREÇO UNIT.	TOTAL
01	Revitalização do Sistema Irradiante REDDIG.	17	USD 24.900,00	USD 423.300,00

5. INVESTIMENTO

O investimento para a execução do objeto supracitado corresponde ao valor de USD 423.300,00 (Quatrocentos e vinte e três mil e trezentos dólares americanos).

Todos os impostos estão inclusos.

6. PRAZOS

O prazo total para execução do serviço supracitado é de 300 (trezentos) dias corridos.

7. GARANTIAS

Os serviços possuem garantia de um ano.

8. PAGAMENTOS

Através de medições mensais.

9. VALIDADE DA PROPOSTA

Esta proposta comercial tem uma validade de 30 (trinta) dias.

A handwritten signature in black ink, appearing to be "Rivaldo", written in a cursive style.

Engº Eletrônico RIVALDO DA SILVA ALVES JÚNIOR
CEO – Chief Executive Officer
CREA-RJ: 1998103238 – RNP: 200242531-0
rivaldo@rsaengenharia.com.br

SECCIÓN A - INTENCIÓN Y NORMAS

1. Este documento incluye los requisitos mínimos para la provisión de 36 equipos firewall y 18 switches que la Organización de Aviación Civil Internacional tiene la intención de adquirir en nombre de Proyecto RLA/03/901, Sistema de Gestión de la REDDIG y Administración del Segmento Satelital.

2. Se invita al licitador a ofrecer cualquier equipo que, en su opinión, sea igual o superior a los requisitos de esta especificación. Cualquier alternativa o variación de este tipo debe definirse y apoyarse completa y claramente para que se pueda determinar fácilmente la equivalencia o superioridad.

SECCIÓN B - REQUISITOS GENERALES

Los firewalls deben ofrecer capacidades de firewall de próxima generación con la flexibilidad de implementarse en las diferentes nubes de servicios que involucra a los nodos de la Red Digital Sudamericana (REDDIG SAM) y relacionadas directamente con esta red. Proteger contra las amenazas cibernéticas con procesador de seguridad de alto rendimiento, eficacia de seguridad y visibilidad profunda.

El sistema operativo de seguridad utilizado por el firewall debe poder controlar todas las capacidades de seguridad y de red con la plataforma que trabajen, la cual debe contener un sistema operativo intuitivo. Debe reducir gastos operativos y de tiempo con una herramienta de nueva generación consolidada como plataforma de seguridad.

1. Debe contar con:

- Una plataforma consolidada con un sistema operativo para toda la seguridad y servicios de red para todas las plataformas que se apliquen en el equipo.
- Protección líder del sector: debe tener la recomendación de NSS Labs
- AV Comparatives (Independent Tests of Anti-Virus Software), y validado en seguridad y rendimiento por ICSA Labs.
- Control de aplicaciones, bloqueador de los últimos exploits y filtrar el tráfico web en función de valoraciones de URL en tiempo real.
- Prevención, detección y mitigación de ataques avanzados, automáticamente, en minutos, con protección de amenazas avanzada integrada.
- Cumplir con las necesidades de red, enrutamiento, conmutación, y capacidades SD-WAN.
- Utilización de aceleración de hardware SPU (Unidad de Procesamiento de Seguridad) para aumentar la capacidad de seguridad

La solución debe ofrecer la inteligencia en tiempo real sobre actualización de amenazas a nivel mundial, ofreciendo actualizaciones de seguridad completas en toda la gama de soluciones del producto.

Debe contar con un equipo de atención al cliente que brinde soporte técnico para los productos adquiridos.

Los switches deben ser de acceso seguro para una solución Ethernet, simples y escalables con seguridad, rendimiento y capacidad de gestión que permitan minimizar las amenazas. Deben poder integrarse en una plataforma de seguridad de red de firewalls, ser administrables

directamente desde una interfaz amigable. Debe proporcionar visibilidad y control completos de todos los usuarios y dispositivos en la red, independiente de cómo se conecten.

2. Cantidad de nodos contemplados: 17

Incluye:

- Equipo para todos los nodos + Repuestos.
- Sistema de monitoreo centralizado.
- Envío de los equipos y accesorios hasta Lima (DAP, sin impuestos locales)
- Formación básica sobre políticas de seguridad.
- Formación sobre configuración en Lima.
- Capacitación avanzada en administración de firewall

3. Los cursos de capacitación sobre la implementación de políticas de seguridad estarán basados en el tipo de equipo provisto.

4. Estos firewalls serán frontera entre las conexiones externas y la red propia de cada nodo que integra la REDDIG SAM. Conexiones externas se consideran a todas las conexiones a nivel LAN, que se presentan en cada nodo, por parte de los usuarios que se conectan a esta red.

5. Que los switches tengan la capacidad de dar redundancia entre los equipos firewalls en cada Estado.

SECCIÓN C - REQUISITOS TÉCNICOS

1. Este requisito es para la adquisición de los siguientes equipos:

1.1 EQUIPOS, CARACTERÍSTICAS TÉCNICAS SOLICITADAS

- Provisión de equipos redundantes para 17 nodos REDDIG II, 36 firewall en total (36 para nodos operativos + 2 repuestos);

- De los 36 firewall, 2 firewall deben contar con características específicas para adicionar la funcionalidad de monitoría y gestión de toda la red de firewalls que se constituirán en la REDDIG. Las especificaciones de estos dos firewall, que estarán en el NCC principal, se detallan en el apartado “1.2 Sistema de monitoreo”.

- Provisión de 18 switches (1 por nodo + 3 de repuesto), L2 (VLAN compatibles, 24 puertos de cobre);

- El equipo de firewall debe poder realizar enrutamiento, NAT, funcionalidades DMZ, sesiones VPN (máx. 10), mirroring;

- Cada nodo REDDIG-II estará equipado con sus propios equipos firewall.

- El equipo firewall dedicado a todos los nodos REDDIG-II debe ser monitoreado por un único centralizado

Cada nodo contará con equipos firewall de próxima generación para medianas y empresas de mayor tamaño, con la flexibilidad de implementarse en la sede principal o en sus sedes dependientes. Debe proteger contra las amenazas cibernéticas con procesador de seguridad de alto rendimiento, eficacia de seguridad y visibilidad profunda.

Firewall

- Capacidad de Protección contra exploits conocidos, malware y sitios web maliciosos que utilizan la inteligencia de amenazas.
- Mínimamente debe contener 2 x GE RJ45 WAN Ports; 1 x GE RJ45 DMZ Port; 7 x GE RJ45 Ports; 3 Gbps de Firewall throughput; 1.3 millones de concurrent sessions; 30.000 New Sessions/Sec; 400 Mbps de IPS Throughput; 250 Mbps de NGFW Throughput; 200 Mbps de Threat Protection Throughput; internal storage de 1 x 128 Gb SSD.
- Tiene que identificar aplicaciones, incluidas aplicaciones en la nube para una inspección profunda del tráfico de la red.
- Deben detectar ataques desconocidos usando análisis dinámico y proporcionando mitigación automática para detener ataques dirigidos.
- En cuanto a su performance, debe ofrecer el mejor rendimiento de protección contra amenazas a los sistemas de la Aviación Civil y baja latencia con procesador de seguridad incorporado (SPU).
- Proporcionar rendimiento y protección para tráfico SSL encriptado.
- En cuanto a Networking, debe ofrecer una amplia capacidad de enrutamiento, conmutación, y capacidades VPN IPsec de alto rendimiento para consolidar funcionalidad de redes y seguridad.
- Permitir una implementación flexible como firewall de próxima generación y Secure SD-WAN.
- Tener la capacidad de ser controladora de APs, sin necesidad de utilizar algún otro hardware para controlarlos, sino que por medio del mismo equipo puede gestionarlos.

Switch

- Mínimamente debe suministrar una capacidad de 56 Gbps, 8 K MAC Address Storage (64bytes), 4 ms de Network Latency (64bytes), 4K VLANs Supported, más de 8 puertos de Max LAG Size, 370 W PoE Power Budget, Single PS Power Supply.
- Para poder integrarse con el firewall, debe reducir la complejidad y disminuir los costos de administración con las funciones de seguridad de red administradas a través de una única consola.
Esta integración debe permitir que todos los usuarios se autenticuen en la misma base de datos, independiente de cómo o dónde se conecten a la red.
- Los switches deben simplificar la implementación de la red, con capacidad de alimentación a través de Ethernet (PoE), que eventualmente permita puntos de acceso inalámbricos y teléfonos IP en la red.
- En cuanto al modo de enlace, este secure Access Switch debe integrarse al firewall pudiendo ser configurado con la administración del switch y la seguridad de los puertos de acceso, administrados desde una interfaz amigable. Independiente de cómo los usuarios y los dispositivos se conectan a la red, debe tener visibilidad y completo control sobre la seguridad de la red y el acceso a través de este único modo de gestión, que se debe adaptar a las amenazas del entorno.
- En referencia a la virtualización y la conmutación en la nube, se requieren cumplimentar requisitos de redes de Ethernet de gran demanda de ancho de banda. Los switches deben proporcionar una plataforma de conmutación capaz de 10 o 40 GE, de alto rendimiento, con un bajo costo total. Ideales para las aplicaciones de agregación de servidor o servidor de seguridad

Top of Rack, así como para despliegues de distribución o de núcleo de red, estos switches deben estar diseñados específicamente para satisfacer las necesidades de los entornos actuales de gran demanda de ancho de banda.

1.2 Sistema de monitoreo.

- El equipo firewall se conectará al sistema REDDIG-II. Esto requerirá una actualización de los diagramas de interconexión de cada nodo.
- Provisión de un sistema de monitoreo centralizado, a través de un sistema separado, o integrado en el sistema WhatsUp Gold del NMS que utiliza la REDDIG.
- La administración de los equipos debe tener opción de interface web.
- Para monitoreo centralizado, el equipo tiene que contar con las capacidades de visibilidad, gestión de alarmas y eventos de las plataformas del demás firewall, aplicaciones, servicios, entornos Web, Mail, Cache, Sandbox, Manager, DDOS y Client, así como de otros dispositivos de terceros compatibles con Syslog.
- Debe facilitar la disponibilidad de un conjunto de informes fácilmente configurables, que permita analizar, reportar y almacenar eventos de seguridad, tráfico de red, contenido web y mensajes para medir el cumplimiento de políticas de la organización.
- Debe ofrecer un equipo centralizado para la recolección y manejo de logs de la plataforma ofertada.
- Tiene que brindar la facilidad de búsqueda centralizada y presentación de reportes; Vistas en tiempo real y muestra de históricos de la actividad de red; Escaneo de los registros de seguridad utilizando servicio de IOC (Indicator Of Compromise Service) para la detección de APT (Advanced Persistent Threat); Gestión de eventos rápida y fácil; perfecta integración con los demás firewalls de la red.
- Entre las características, mínimamente, debe soportar 150 GB/day; Analytic Sustained Rate de 4500 logs/sec; Collector Sustained Rate de 6750 logs/sec; Max. Devices/ADOMs de 180; Max Number of Days Analytics de 28; Total de interfaces mínimo 2 puertos GE RJ45, 2 puertos GE SFP; Capacidad de almacenamiento mínimo de 2x4TB; RAID Support 0,1;

1.3 Licenciamiento:

Brindar las opciones con las siguientes opciones de Licenciamiento.

- Licenciamiento (BUNDLE) por la compra de los equipos debe venir incluido por un año y después debe renovarse anualmente:
 - Antivirus
 - IPS
 - Application Control
 - Detección de Malware
 - Filtrado Web
 - Antispan
 - SandBox Cloud
- Licenciamiento free que no requiera renovación
 - 10 licencias por nodo (para instalar en equipos cliente con sincronización a la consola central del nodo, incluye antivirus)
 - VPN ilimitadas “SITE to SITE” y “CLIENT to SITE”
 - Compatibilidad de routing avanzado
 - Balanceo de canales de red

- Actualización de los equipos

Debe brindar la posibilidad de utilizar tres métodos para actualizar la base de datos de firmas de ataques de seguridad:

- Actualización Directa – Requiere conexión a internet y la actualización es automática
- Actualización Manual – Se debe descargar la última versión de firmas de ataques y cargarla a cada uno de los dispositivos
- Actualización delegada – una sola maquina se conecta a internet para hacer la actualización y los otros dispositivos se conectan a la primera máquina para actualizarse

1.4 Los equipos ofrecidos deben brindarnos, como mínimo, un throughput de 950Mbps para esta red.

1.5 El módulo IPS (Sistema de Prevención de Intrusos) debe proporcionar a los clientes las últimas defensas contra amenazas en tiempo real. El equipo debe proporcionar actualizaciones continuas del motor y la base de datos de firmas en los equipos adquiridos. La búsqueda recurrente de actualizaciones puede programarse de acuerdo con la elección del administrador o activarse manualmente (modo pull). Debe brindar la posibilidad de configurar al equipo para que la red o sistema de monitoria centralizada alerte en caso de una actualización crítica para que se descargue inmediatamente la actualización. Debe permitir proteger de manera muy efectiva de amenazas desconocidas al actualizar la base IPS lo antes posible, idealmente antes de la aparición de los primeros ataques.

1.6 Se debe tener la posibilidad de descargar las actualizaciones en el sitio web del fabricante e instalarlas desde una ubicación centralizada sin que el firewall esté conectado a Internet.

1.7 Debe brindar una solución IPS.

1.8 En función del tipo de alimentación eléctrica, deberá suministrar los conectores adecuados para cada nodo, teniendo que ser compatibles con el tipo de tomada con el que cuenta cada nodo. Esta información deberá ser releva por el contratista y ser tomada en cuenta la momento de la provisión de los equipos.

SECCION D - SOPORTE LOGISTICO

a. La compra/transacción comercial, se realizará a través de una licitación, desde la Oficina de ICAO en Montreal, Canadá. Las coordinaciones se realizan desde la Oficina Regional de Lima, Perú.

b. Respecto de la entrega, debe considerarse en un solo punto, en la Oficina Regional de la OACI en Lima, Perú. Y se debe considerar una capacitación que incluya la configuración de estos equipos en función de las necesidades de la red. Una capacitación para 20 personas, y una capacitación avanzada para 3 personas.

c. El contratista deberá proporcionar los manuales de operación y los manuales de resolución de problemas en inglés ó español de todos los equipos y soluciones entregadas como parte de este proyecto.

d. **Suministro:** El tiempo de entrega será de cuatro (4) a seis (6) semanas contadas a partir de la recepción de la orden de compra. Estos tiempos dependen exclusivamente del stock del fabricante al momento de colocar la orden de compra. Los equipos serán suministrados acorde a las especificaciones dadas en las presentes condiciones comerciales.

SECCIÓN E - SERVICIOS, PRUEBAS Y ACEPTACIÓN

1. Entrega: DAP - Oficina Regional de la OACI en Lima, Perú- Incoterms 2010. Licitador para indicar el tiempo de entrega dentro de la propuesta.

2. Al momento de la entrega / instalación, personal, que es parte del Proyecto RLA/03/901, Sistema de Gestión de la REDDIG y Administración del Segmento Satelital realizará una prueba del equipo. Dichas pruebas deberán confirmar las características del equipo. El contratista deberá corregir las deficiencias identificadas sin costo adicional para Proyecto RLA/03/901, Sistema de Gestión de la REDDIG y Administración del Segmento Satelital / ICAO.

3. Garantía mínima del fabricante de 2/5 AÑOS en todos los equipos solicitados.

4. Se requiere soporte a través de comunicación directa con el oferente por un período de 2 años. Esta información deberá ser suministrada al momento de la entrega del equipo. El licitador deberá indicar el nombre, la ubicación de la garantía y el representante de soporte.

- Un pago anticipado por el 50% del valor de la Orden de Compra y la diferencia a la entrega a satisfacción de los bienes y/o servicios y presentada la respectiva factura.
- La empresa deberá brindar actividades que conlleven a la prestación de servicios profesionales para la capacitación sobre la configuración de los equipos de seguridad perimetral (firewall) cumplimentando mínimamente las siguientes actividades:

- Implementación, configuración e integración de la plataforma del firewall central y los firewalls de cada nodo
- Transferencia de conocimiento – Primera Sesión (80) horas para (20) funcionarios en la teoría y configuración de los firewalls y switches a adquirir.
- Segunda Sesión para capacitación sobre monitoría, generación de reportes, e integración de informes al NCC Principal.
- Servicio de soporte de 7x24.

El alcance de la propuesta a presentar debe contemplar la capacitación del personal que administrará la plataforma de firewall, donde el objetivo es configurar e implementar los diferentes equipos, garantizando la integración de los mismos a la infraestructura tecnológica que implica la REDDIG SAM.

5. ENTRENAMIENTO.

a) Entrenamiento básico sobre políticas generales de seguridad, a ser suministrado en Lima para 20 personas;

b) Entrenamiento sobre configuración, en Lima para 20 personas, de manera que sea posible que cada participante configure el equipo de su nodo; y

c) Entrenamiento sobre administración para 3 personas (Administrador REDDIG, una persona del NCC Manaos y una persona del NCC Ezeiza).

3. Equipamiento / Licencias

a. Los servicios y garantías, como mínimo, deberán considerar plazos de 2 años a 5 años. En tal caso, presentar las dos opciones para poder definirlo en relación a los costos finales.

b. Sobre los servicios de soporte técnico y sus alcances se entiende que, con la capacitación, esta deberá contemplar un plazo de tiempo prudencial a partir de la compra de los equipos.

4. Capacitación

a. Se define que se realizará en, primera instancia, en Lima, con temario a definir en función del equipamiento adquirido. La cantidad de participantes sería para: 20 personas, y abarcaría tres partes.

b. Primera: una introducción a firewall y dirigido a los equipos a adquirir.

c. Segundo: consistiría en configurar los firewalls que irán instalados en cada nodo, tarea que debieran realizar los técnicos de cada sitio para que, una vez finalizada la capacitación, los equipos queden configurados y listos para instalar.

d. Tercero: un curso avanzado, destinado a 3 personas, que deberán recibir una capacitación sobre gestión y monitoria de los equipos instalados. La intención es que la primera y segunda parte se den en un mismo período.

e. El licitador deberá otorgar los respectivos certificados al personal técnico que reciba la capacitación, una vez finalizada la misma.

5. Ubicaciones

a. Detalle del lugar exacto donde se instalarán los equipos. Ezeiza (Argentina), Montevideo (Uruguay), Santiago de Chile (Chile), Asunción (Paraguay), La Paz (Bolivia), Curitiba (Brasil), Brasilia (Brasil), Recife (Brasil), Guayaquil (Ecuador), Bogotá (Colombia), Maiquetía (Venezuela), Piarco (Trinidad & Tobago), Paramaribo (Surinam), Manaus (Brasil), Cayena (Guyana Francesa), Georgetown (Guyana), Lima (Perú).

6. Gestión de equipamiento y reportes

a. Provisión de un sistema de monitoreo centralizado, a través de un sistema separado, o integrado en el sistema WhatsUp Gold del NMS.

b. Para librar la carga en la red, si fuera el caso, considerar logs y reportes en cada sitio.

c. El personal técnico que recibirá capacitación y certificación por parte del proveedor, será el responsable de la instalación en cada uno de los nodos.

INTERFERENCIAS

Por el presente informo a todos Uds. que el día 25 de marzo de 2019, entre las 12:00 hs UTC hasta las 16:00 hs UTC, y por un período de quince (15) minutos, procederemos a apagar la red satelital, a partir de la aparición de la interferencia que afecta la misma.

Esto implica que:

Las estaciones de la REDDIG pasaran a transportar los servicios por la red terrestre.

Para los casos donde tenemos interconexiones con MEVA (Bogotá y Maiquetía), las mismas seguirán funcionando ya que no apagaremos los módems que entregan los 10Mhz que necesita el modem de MEVA para seguir sincronizado. Por lo cual, los servicios debería seguir operando con normalidad.

El motivo de esta acción es trabajar en coordinación con Intelsat para que ellos puedan ver y registrar la interferencia y tomar acciones al respecto.

En tal sentido, se procederá a apagar la transmisión de los masters Ezeiza y Manaus, y se trabajará con el NOC de Intelsat para observar esta interferencia.

Finalizada la tarea, se procederá a restablecer la red satelital.

En tal sentido, requiero dos acciones de parte de Uds.:

Para el período de pruebas prever alternativas al uso de los servicios.

Tener personal presente en los sitios con el objetivo de colaborar durante el desarrollo de la acción y monitorear el funcionamiento de los servicios.

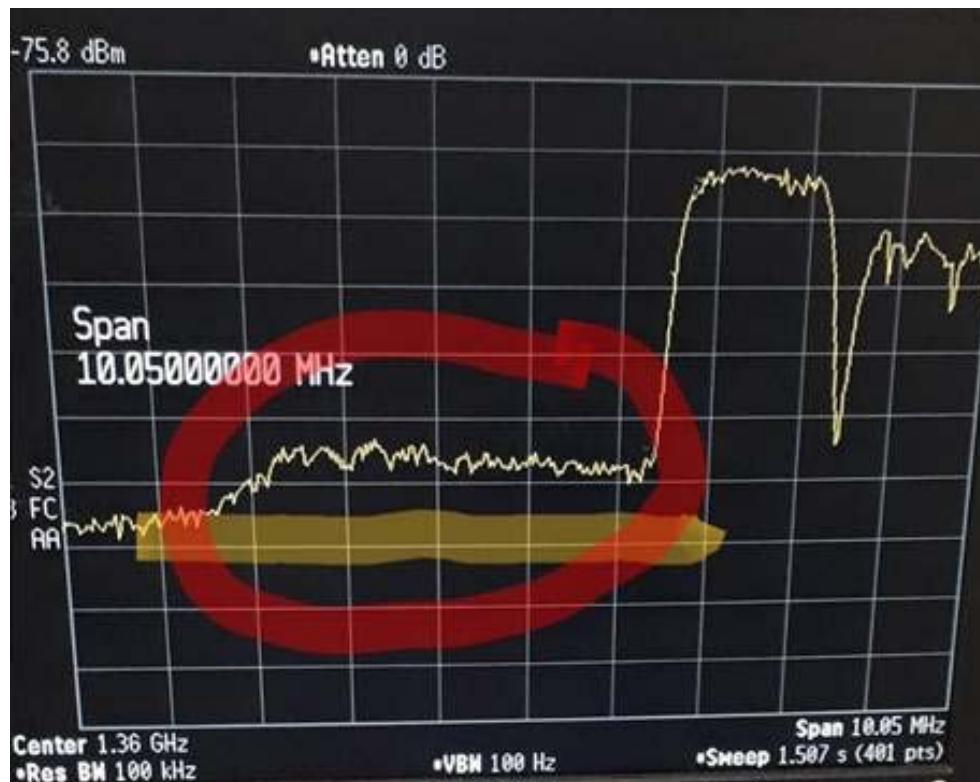
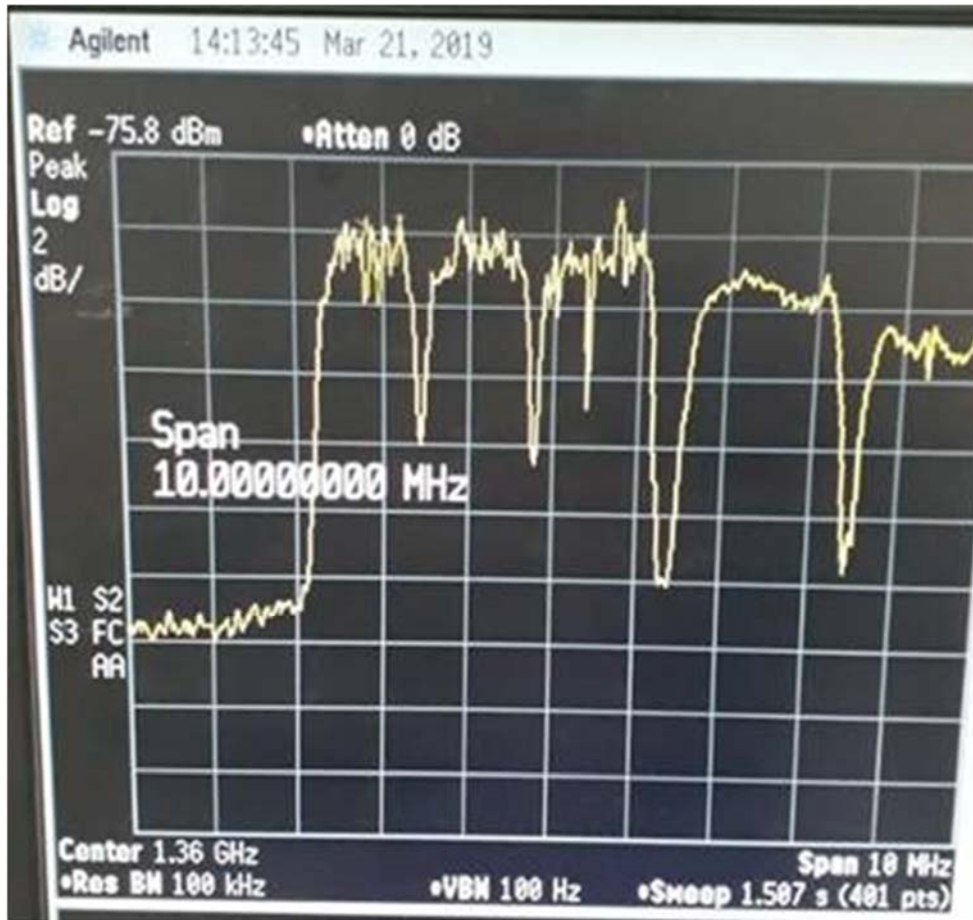
Si esta oportunidad fuera aprovechada por algún Estado para realizar alguna acción relacionada con los sistemas o servicios, por favor, informar al respecto.

Debo mencionarles que oportunamente se hizo este procedimiento pero sólo por parte esta administración para registrar esta interferencia y realizar los reclamos con fundamento a Intelsat. A Intelsat se le reclamó en varias oportunidades pero la respuesta fue siempre que ellos no observaban esta interferencia. Hemos concluido con ellos que no pueden ver la interferencia porque al estar las portadoras de la REDDIG en el aire no lo permiten.

También, al aparecer la interferencia, fuimos apagando estación por estación para identificar si alguna de las mismas era la que generaba la interferencia. El resultado fue negativo.

Es por eso que volvimos a realizar el reclamo a Intelsat y también para informar por qué nos vemos en la obligación de aumentar la potencia de Tx de las estaciones.

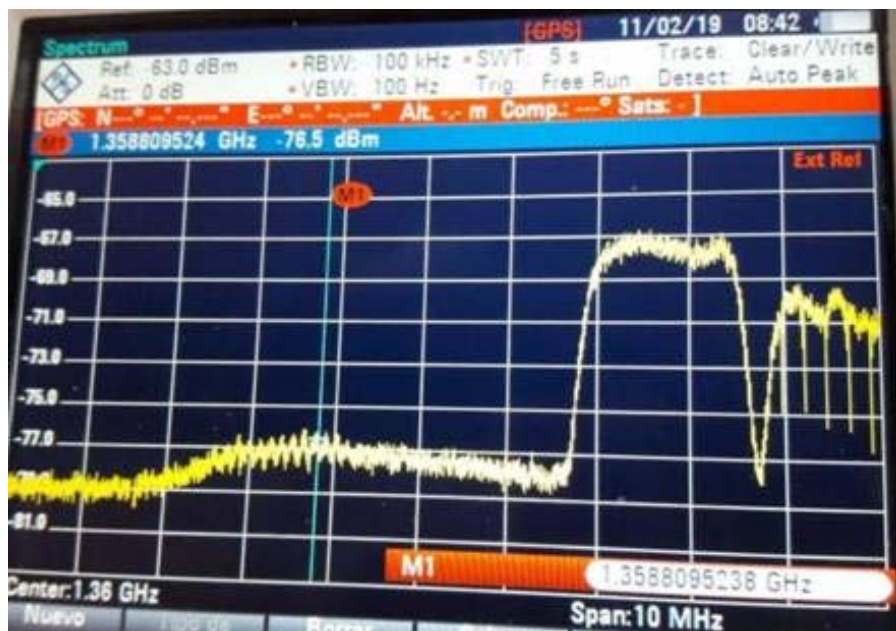
Interferencias.



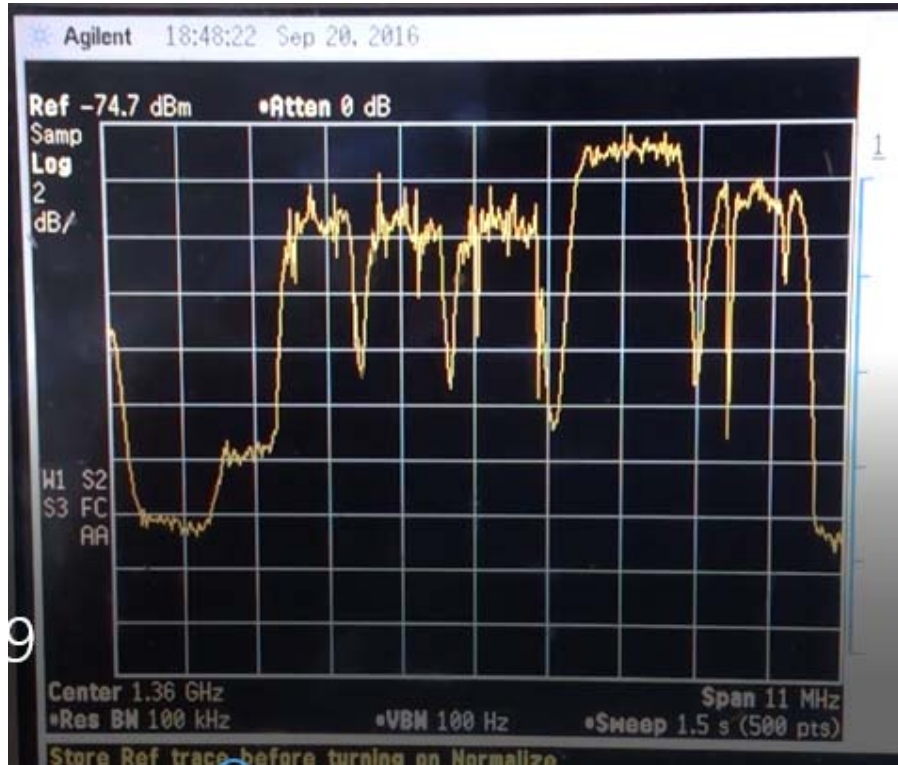
Cuando se apaga la transmisión de la red se observa la interferencia con 2 dB de incidencia



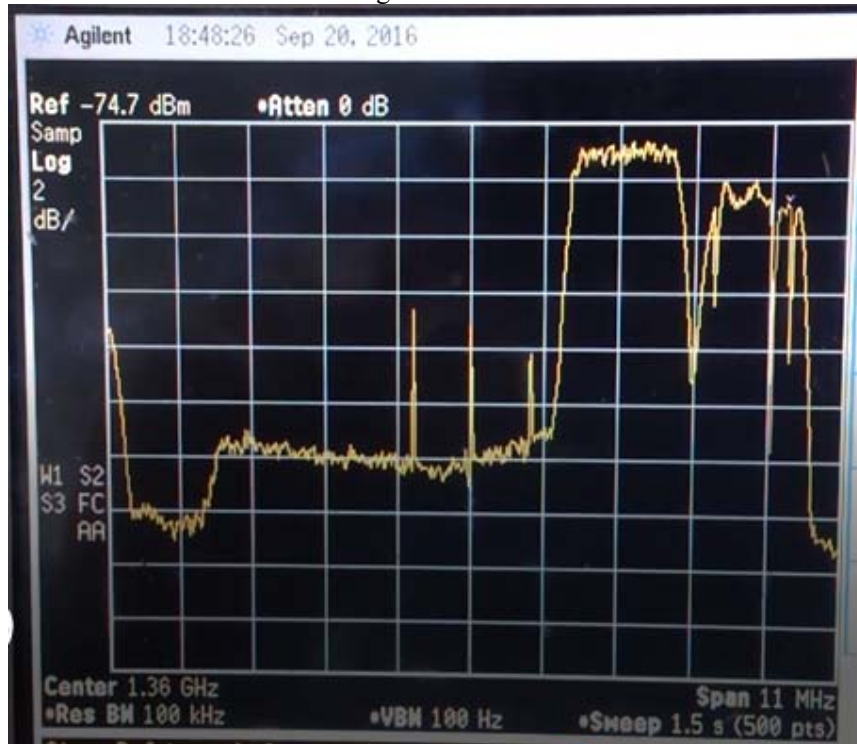
Picos que presenta la interferencia



Misma incidencia observada desde Bogotá



Imágenes del 2016



Mail de Markus, Adm de MEVA por interferencias

Dear all,

today we have finished the scheduled 24hrs shut-down for COCESNA. The site is up and running again.

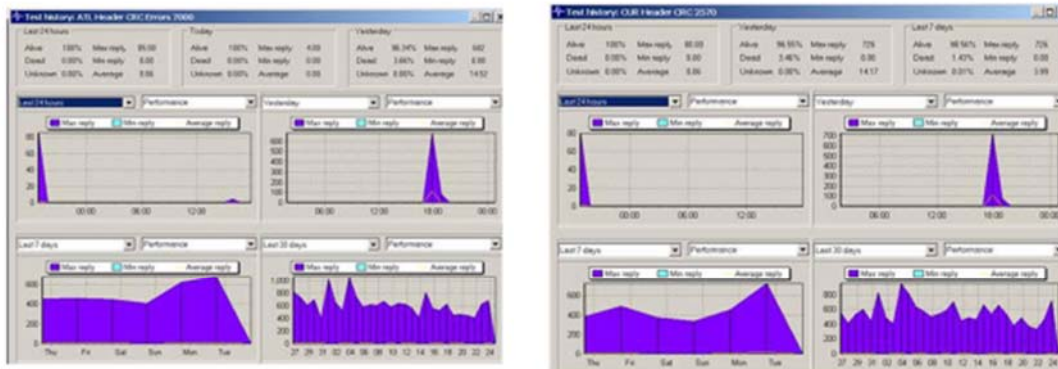
I would like to thank all of you for united support and patience. I know it is hard to re-route traffic and related inconveniences thereto.

RESULTS:

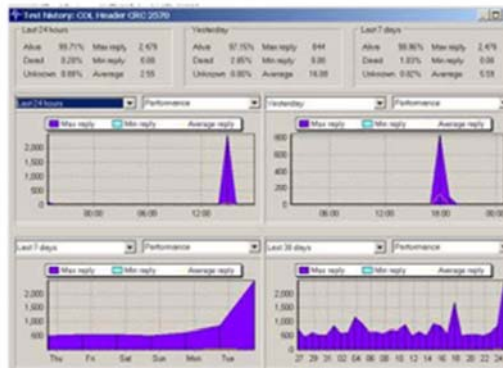
- 1) For the 24hrs period while the COCESNA station was switched off, we did not measure any notable errors in the MEVA network. That leads me into the assumption that COCESNA is root cause for network wide errors caused by transmit path injections.
- 2) Colombia (Bogota) had a short period of signal loss at UTC 2019-09-24 14:33:13. That was caused by a local receive problem.
@Javier: pls investigate if REDDIG modem had seen same behaviour at time and check receive path.

Measurements:

- 1) COCESNA shut-down.
Exemplarily I will show statistics from two stations (Atlanta and Curacao), but same applies for all others.



2) Colombia (Bogota) outage.



2019-09-24 14:33:13 info TDMA (1.02626) SlotSync lost
 2019-09-24 14:33:19 info TDMA (1.04336) Started receiving good reference bursts
 2019-09-24 14:33:20 info TDMA (1.02537) SlotSync acquired
 2019-09-24 14:33:22 info TDMA (1.02626) SlotSync lost
 2019-09-24 14:33:22 info TDMA (1.04496) Too many consecutive Reference Bursts missed
 2019-09-24 14:33:22 info TDMA (1.04336) Started receiving good reference bursts
 2019-09-24 14:33:23 info TDMA (1.02537) SlotSync acquired
 2019-09-24 14:33:25 info TDMA (1.02626) SlotSync lost
 2019-09-24 14:33:25 info TDMA (1.04496) Too many consecutive Reference Bursts missed
 2019-09-24 14:33:29 info TDMA (1.04336) Started receiving good reference bursts
 2019-09-24 14:33:29 info TDMA (1.02537) SlotSync acquired

Further steps:

As of my recommendations we **do not** need further shut-down to be scheduled for remaining MEVA stations.

I will further monitor the network and hope that until tomorrow the errors will appear again, since COCESNA is online again.

I will request a telcon with COCESNA (request will be send out tomorrow) in order to align on-site visit and request locals to provide a measurement facility to measure out-side frequency spectrum (1GHz and 6 GHz band).

Again, please accept my pardon for any inconvenience.

BR,
 Markus

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
SKBO – SPIM 15/11/2010		SEQU – SPIM 14/07/2012			SBBR – SPIM 14/12/2015		SBBR – SKBO 22/05/2017	SAEZ – SBBR 04/04/2018	SLLP-SPIM 10/05/2019
		SAEZ – SGAS /2012			SCSC – SPIM 14/12/2015		SBBR – SYCJ 16/07/2017	SAEZ – SGAS 30/11/2018	SBBR-KATL 06/08/2019
							SKBO – SVCA 01/12/2017	SBBR – SGAS 30/11/2018	SVCA-SYCJ 27/08/2019
							SPIM – SVCA 01/12/2017	SBBR – SMJP 11/10/2018	SLLP-SBBR 30/07/2019
								SBBR – SVCA 28/02/2018	SAEZ-SPIM 10/05/2019
								SEQU – SVCA 11/10/2018	SAEZ-SITA 18/07/2019
								SMJP – SYCJ 11/10/2018	SVCA-SMJP 21/03/2019
								SBBR - SITA /04/2018	SBBR-LETO /05/2019
1		1			2		4	8	8

1	SBBR	11	SBMN-SBRF-SBCT
2	SPIM	7	
3	SVMI	6	
4	SAEZ	4	
5	SKBO	3	
6	SYCJ	3	
7	SMJP	3	
8	SEGU	2	
9	SGAS	2	
10	SLLP	2	
11	SCSC	1	
12	SITA	2	
13	LETO	1	
14	KATL	1	
15	TTZP	0	
16	SOCA	0	
17	SUMU	0	
		48	

			SAEZ	SBBR	SLLP	SCEL	SKED	SEGU	SYGC	SOCA	SGAS	SPIM	SMPM	TTZP	SUMU	SVMI	LETO	KATL	FAJO	SITA	
Network			10.0.0.0	10.0.88.0	10.0.160.0	10.0.34.0	10.1.0.0	10.0.224.0	10.1.64.0	10.1.128.0	10.0.128.0	10.0.192.0	10.1.96.0	10.18.96.0	10.0.96.0	10.1.32.0		10.1.0.100/1/2			
1	Ezeiza	SAEZ	10.0.0.0	mag 2018	AFTN	AFTN **					mar 2012	mag 2019			AFTN **	AMHS*				jul 2019	
2	Brasilia	SBBR	10.0.88.0	mag 2018	jul 2019		mag 2017		jul 2017	AFTN *	nov 2018	dic 2015	oct 2018		AFTN **	feb 2018	MAY 2019	Ago-19		abr 2018	
3	La Paz	SLLP	10.0.160.0	AFTN	jul 2019							mag 2019									
4	Santiago	SCEL	10.0.34.0	AFTN **								dic 2016									
5	Bogotá	SKED	10.1.0.0		mag 2017			AFTN				sept 2010								dic 2017	
6	Guayaquil	SEGU	10.0.224.0					AFTN				jul 2012								oct 2018	
7	Georgetown	SYGC	10.1.64.0		jul 2017								OCT 2018	AFTN						ago 2019	
8	Cayenne	SOCA	10.1.128.0		AFTN *															AFTN*	
9	Asunción	SGAS	10.0.128.0	mar 2012	nov 2018																
10	Lima	SPIM	10.0.192.0	mag 2019	dic 2015	mag 2019	dic 2015	sept 2010	jul 2012											dic 2017	AFTN
11	Paramaribo	SMPM	10.1.96.0		oct 2018				OCT 2018											MAR 2019	
12	Piarco	TTZP	10.18.96.0						AFTN											AFTN**	
13	Montevideo	SUMU	10.0.96.0	AFTN **	AFTN **																
14	Maiquetía	SVMI	10.1.32.0	AMHS*	feb 2018			dic 2017	oct 2018	ago 2019	AFTN *		dic 2017	MAR 2019	AFTN **					AFTN	
15	España	LETO			MAY 2019																
16	USA	KATL	10.1.0.100/1/2		Ago-19							AFTN								AFTN	
17	Sudáfrica	FAJO																			
18		SITA		jul 2019	abr 2018																
Total interconexiones			4 3	11 2	2 1	1 1	3 1	2 1	3 1	2	2	7 1	3	2	2	6 3	1	1	2	2	

Total interconexiones SAM:

AMHS 48
AFTN 22

* En pruebas
** Pendiente pruebas AMHS oper

1: 27 AGO 2019 CONEXIÓN OPERACIONAL

DISTRIBUCIÓN DE PROVEEDORES DE DISTEMAS AMHS EN LA REGIÓN SAM



DISTRIBUCIÓN DE PROVEEDORES DE SISTEMAS AMHS EN AMERICA

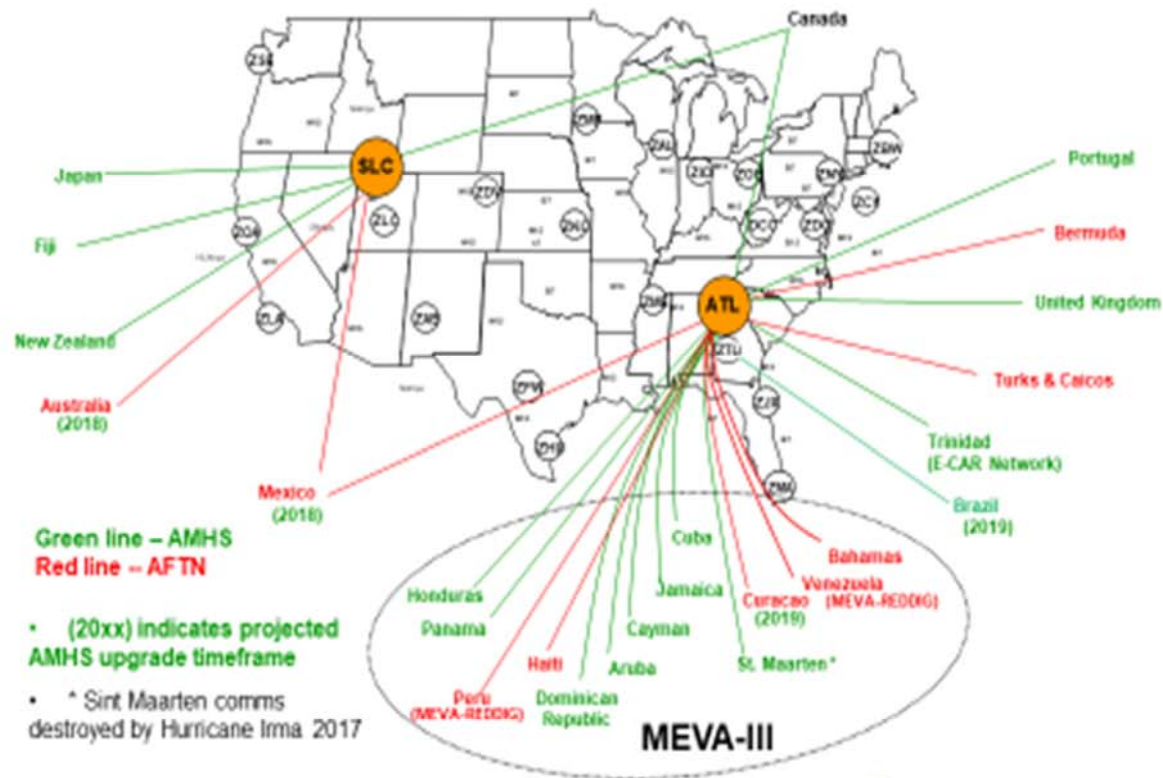


DISTRIBUCIÓN DE PROVEEDORES DE SISTEMAS AMHS EN AMÉRICA CENTRAL





AMHS/IP Upgrades from AFTN/X.25



ESTADOS EN PROCESO DE IPLEMENTACIÓN DE AIDC EN SAM






P-PRO-140-F11 – Rev. 1

DIRECT PURCHASE ORDER SUMMARY FILE FOR FIELD
 (to be attached in Agresso when creating the DPO)

10 September 2019

Procurement of:		Antivirus License Kaspersky Endpoint Security for Business (Advanced) for REDDIG nodes	
REQUIREMENT DEFINITION [ENTER DETAILED DESCRIPTION OF GOODS AND/OR SERVICES NEEDED]			
<input type="checkbox"/> Requirements attached (if applicable)			
SOURCING List of suppliers identified:			
<ol style="list-style-type: none"> 1. Orsenna 2. Bechtle 3. Insight 			
SOLICITATION List of quotations received:			
Supplier	Price		Comments (if applicable)
	in local currency	in \$	
Orsenna	EUR 1,026.00	USD 1,134.95	Selected
Bechtle	EUR 1,493.97	USD 1,350.54	
Insight	EUR 1,490.12	USD 1,347.06	
Quotations received shall be attached or, in case of informal solicitations, note for file with explanation of how and when quotations were sought.			
EVALUATION Quotations were evaluated for compliance with the requirements and lowest price technically compliant quotation is recommended. YES <input checked="" type="checkbox"/>			
If the lowest price quotation was not selected please provide justification:			
CONTRACT AWARD RECOMMENDATION			
Recommended Supplier:	Orsenna		
Total price:	EUR 1,026.00 (USD 1,134.95)		
Attestation: Absence of conflict of interest			



Responsable Compte : Jean Philippe SENCKEISEN
 Ligne Directe : 33134933535
 Fax : 33134939575
 Client : ICAO
 Contact : Javier Vittor
 Email : jvittor@icao.int
 Téléphone :

No Devis : 116222018
 Projet : ORSENNA
 Emetteur de l'offre : Florence LAPREVOTE
 Date d'émission : 17/09/18
 Date d'expiration : 17/10/18
 Conditions de Paiement : Standard

MERCI BIEN VOULOIR NOUS COMMUNIQUER LE NUMERO DE DEVIS LORS DU PASSAGE DE VOTRE COMMANDE.
 CE DEVIS EST SOUMIS AUX CONDITIONS GÉNÉRALES DE VENTE, DISPONIBLES SUR DEMANDE. LA DATE DE VALOIRITÉ MAXIMALE DE CE DEVIS EST au 17/10/2018


Proposition Commerciale

Qté	Référence	Description	Prix Public EUR	Prix Vente EUR	Total EUR	Stock	Déails
1	KL487XANFS	Kaspersky Endpoint Security for Business - Advanced new license 23 postes with 1 year maintenance	€ 1 465,33	€ 1 465,33	€ 1 465,33	Y	

Total H.T. EUR	€ 1 465,33
TVA	
Total EUR	€ 1 465,33

Notes :

ORSENNA: 15 Rue Croix Castel - 78600 MAISONS LAFFITTE - Tel (33) 1 34 93 35 35 Fax : (33) 1 34 93 95 75 E-Mail : Sales@orsenna.fr S.A.R.L au Capital de 96 042 Euros - RCS 338 866 775 Versailles B - APE 722 Z - Siret 338 866 775 00061 VAT FR 82 338 866 775 Numéro Agrément Formation 11 78 028178



Orsenna : Electronic Delivery - Purchase Order n° 22202934

Florence LAPREVOTE [flaprevote@orsenna.fr]

To: Orsenna, Ricardo Almeida, Francisco Javier Vittor Chavez, Veronica Muiaman, Elizabeth TC Aguilera
 Cc: ADN@orsenna.fr

Attachments: [Download all attachments](#)
[File: RL_VL.PDF \(131 KB\) \[Open in Web Viewer\]](#) | [1484-181011-152813-527-357.zip \(61 KB\)](#)

Monday, October 14, 2018 8:48 AM


Hi,

Please find attached delivery about license certificate for :

- Kaspersky Endpoint Security for Business – Advanced renewal license 23 users with 1 year maintenance until 29 December 2020.

I confirm the bank information.

Regards



Florence LAPREVOTE
 Responsable Commerciale
 01 34 93 35 30
flaprevote@orsenna.fr
 15 rue Croix Castel | Maisons-Laffitte (78600) | France



**Federal Aviation
Administration**

William J. Hughes
Technical Center
Atlantic City Int'l Airport,
NJ 08405

Date: June 17, 2019

To: Fabio Faizi Rahnemay Rabbani, Regional Director, ICAO SAM

Cc: Melvin Cintron, Regional Director, ICAO NACC

Cc: Francisco Almeida, CNS Officer, ICAO SAM

Cc: Mayda Avila, CNS Officer, ICAO NACC

With reference to the proposal made during SAM/IG/23 (WP/10), that the REDDIG MPLS network be used as a backup for the MEVA-REDDIG AMHS connections from Atlanta to Brasilia and Lima, the FAA is very interested in pursuing this concept.

Brasil and Peru are the heaviest AMHS users in the CAR/SAM area. They act for each other as alternate routes to Atlanta, and can optionally route via Venezuela. Under AFTN there was diverse routing to S. America; a terrestrial line to Brasila and the MEVA-REDDIG connection to Lima. With AMHS the intent is to use the MEVA-REDDIG connection at Bogota, Columbia for both Brasilia and Lima traffic. There are two common failure points: the MEVA system and the Bogota interconnection. A terrestrial connection to the REDDIG MPLS network will provide the necessary backup connections.

Direct connection to the REDDIG network has additional advantages for the FAA. It provides a backup route to Venezuela avoiding MEVA, and a backup route to Trinidad and Tobago avoiding the ECAR network.

The FAA understands that this will involve no costs for the States participating in the Regional Project RLA / 03/901 (REDDIG). Likewise, the FAA will have no role in, or be part of the management or direction of the REDDIG network.

Naturally, all necessary security measures will be taken to prevent intrusion into the REDDIG network from FAA connections.

A handwritten signature in black ink, appearing to read "Andy Isaksen".

Andy Isaksen, Manager, Enterprise Product Support Team, FAA/AJM-3122