Agenda Item 3: **Report on activities carried out since the last meeting of the Coordination Committee**

REPORT ON ACTIVITIES CARRIED OUT SINCE THE LAST MEETING OF THE COORDINATION COMMITTEE

(Presented by the Secretariat)

SUMMARY

This working paper presents information on the progress made in the performance of activities agreed at the last meeting of the Coordination Committee (RCC/21) as part of the 2018 work plan.

REFERENCES

- REDDIG Contract 22501200;
- Report of the Twenty First meeting of the REDDIG Coordination Committee (RCC/21) (Lima, Peru, 14-16 May 2018);
- Twenty Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/22) (Lima, Peru, 19-23 November 2018); and
- Seventh Meeting on the technical-operational implementation of REDDIG II (RTO/7) (Curitiba, Brazil, 5-9 November 2018);

ICAO strategic objectives:	*A – Safety* *B – Air navigation capacity and efficiency*

1. Background

1.1 The main activities that the last meeting of the REDDIG Coordination Committee (RCC/21) agreed to include in the 2018 work plan, in addition to the operation, support and maintenance of the network, were as follows:

a) REDDIG II training programme;
b) Preventive maintenance programme;
c) Operation of REDDIG II and analysis of the implementation of new services.

1.2 This working paper also presents REDDIG logistics during 2018.

2. Description

REDDIG II TRAINING PROGRAMME

2.1 Regarding training activities, the following courses have been delivered since the SAM/IG/21 meeting:

a) Training on the use and applications of the Flue network certifier (Model DTX-1800), for the Manaus NCC personnel;
b) Training on the operation and maintenance of the Maiquetía REDDIG node;
c) Course on the operation, setting up, and maintenance of the Skywan 7000 and 1070 modems, delivered in Germany on 8-12 October 2018;
d) Training on the operation, setting up, and maintenance of the Skywan 1070 modem, for REDDIG node technicians, conducted in Curitiba, Brazil, on 6-9 November 2018.

Training on the use and applications of the Flue network certifier (Model DTX-1800) for the Manaus NCC personnel.

2.2 In May, the REDDIG Administrator provided training at the Manaus NCC on the use of the structured-cable Fluke DTX-1800 certifier. Following this training, all cables interconnecting the various devices of the station were certified.

Training on the operation and maintenance of the Maiquetía REDDIG node

2.3 On 6-10 August 2018, the REDDIG Administrator (Mr. Cristian Javier Vittor) delivered a training course for 17 technicians of Venezuela. On this occasion, the network Administrator prepared the node inventory and reviewed the equipment as well as the settings and condition of cables.

Course on the operation, setting up, and maintenance of the Skywan 7000 and 1070 modems

2.4 A course on the operation, setting up, and maintenance of the Skywan 7000 and 1070 modems was delivered in Germany, on 8-12 October 2018, with the participation of the REDDIG Administrator, one technician from the Manaus NCC, and one technician from the Ezeiza NCC.

Training on the operation, setting up, and maintenance of the Skywan 1070 modem

2.5 In Curitiba (Brazil), on 6-9 November 2018, the network Administrator delivered a training course on the operation, setting up, and maintenance of the Skywan 1070 modem used in the REDDIG, for two technicians of each node.

2.6 Training focused on the description of the equipment and its parts, troubleshooting, and measurement of parameters.

2.7 During training, online tools--Line Up Manager and WhatsUp Gold--, which are used in the network on a daily basis, were run to familiarise the participants with the reading of parameters that are essential for modem operation.

PREVENTIVE MAINTENANCE PROGRAMME

2.8 Throughout 2018, preventive maintenance activities were carried out in all the nodes (**Appendix A**), which helped identify and solve a number of issues that had been left pending since the installation phase. Likewise, a procedure was established to keep a photographic record of tasks carried out in the nodes, in order to create a database at the NCC and, subsequently, at the ICAO/REDDIG website, to be available to REDDIG focal points in all nodes through the respective log-ins and passwords for consultation.

2.9 When conducting this preventive maintenance, the Manaus NCC certified the structured cabling and made some findings. States were urged to replicate this task in their nodes in coordination with the network Administrator.

2.10 The preventive maintenance activities scheduled for 2018 included the verification of node connections. As a result of this activity, differences between the installations and the diagrams provided by INEO were identified. The Administrator requested INEO to provide the diagrams in Autocad format. The request was rejected, arguing that they had no problem in introducing the modifications.

2.11 Using a computer-based tool, the representative of Paraguay, Mr. Víctor Moran, converted the PDF diagrams available in each node to Autocad, and sent them to the REDDIG II Administrator for updating.

2.12 It is noted that the Manaus NCC inserted all REDDIG II IP phone numbers in each telephone in order to facilitate calls among REDDIG personnel. The request was made to check all IP phone numbers.

2.13 The browser established for WhatsUp Gold (WUG) is Opera, which was updated in all nodes following a review made at the NCC that revealed that some nodes were out of date or were using browsers not suitable for use with WUG.

2.14 A folder hosted at the NCC stores all the procedures that were generated by NCC personnel throughout the year, as a result of preventive and corrective activities at the nodes. These procedures will be available to node personnel for review and comments.

2.15 Photographic records were taken of preventive maintenance tasks, enabling visual verification of the status of the nodes. It was noted that some stations had apps that could be managed and monitored--a capacity that is not currently harnessed. It was also noted that there were external devices in the racks, connected to the REDDIG.

2.16 Procedures are available to check serial circuits (AFTN) using router commands and external devices (Hyperterminal and sniffers). They also explain ways to check AMHS communications using Wireshark software and switch port mirroring, or using a hub and Wireshark, as is done in the node in Chile.

2.17 Regarding AFTN circuits, given the difficulties encountered due to its old technology, States are urged to continue striving to migrate to AMHS systems and interconnections.

2.18 Housekeeping was carried out on IBUCs, antennae and RF components, and also on different parts of indoor installations of some stations, in accordance with the preventive maintenance programme.

2.19 The RTO-07 meeting approved a proposal to be submitted to the RCC for this preventive maintenance programme to be repeated in 2019.

Visit to the Maiquetía and La Paz nodes

2.20 The REDDIG II Administrator conducted two service missions in 2018, one to Maiquetía, Venezuela, to solve a problem in the IBUC, in the Skywan modem, to check the installation and condition of the station, and to provide training to the personnel at the node. He also visited the node in La Paz, Bolivia in order to conduct corrective and preventive maintenance, a general review of the station and to support in the solution of a suspected modem failure. In both cases, the issues were resolved.

2.21 The RTO-07 took note of the importance of the visits by the Administrator to the nodes, and agreed on the proposal to conduct at least two yearly visits for purposes of maintenance and to train the technical personnel of the site.

The Recife node

2.22 The Recife node has a degraded RF signal. When measuring all the IDU RF elements, based on the diagram developed by Manaus and the respective attenuation measures, it was noted that a transmission combiner was generating high levels of noise. Since only one modem is available due to the repair of modem A of Recife, modem B was connected directly, thus solving the signal degradation and reduction of the signal/noise ratio that affected the entire network.

2.23 At the Manaus NCC, the personnel verified the equipment and the power sources of the modem A (Skywan 1070) in Recife, concluding that the old power sources of the Linkway modem of the REDDIG I were fully compatible with the power sources of the Skywan 1070 modems. Accordingly, it is suggested that States recover those power sources and keep them as spare parts for the REDDIG II modems.

2.24 The RTO/7 meeting agreed to propose the RCC to conduct a seminar/workshop on the basic concepts of the services provided through REDDIG II, such as: RADAR, AMHS, AIDC, CPDLC, ADS-C, ADS-B, etc. The objective would be to analyse voice and data transmitted through the network in each node, using available computer-based tools, in order to better analyse network service issues. It is suggested that a training workshop be delivered together with the RTO/08 meeting.

2.25 Furthermore, two conclusions were formulated by the RTO/7 meeting:

Conclusion RTO/7-1 Consider the possibility of upgrading the router IOS and replacing the equipment

Upgrade the equipment to a more modern Cisco series, in anticipation to its natural obsolescence.

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

Replace Netgear switches with Cisco switches given performance issues in Netgear switches and taking into account their essential importance for the nodes.

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

2.26 **Appendix B** to this working paper shows the availability of REDDIG II.

Implementation of new AMHS interconnections

2.27 Since the RCC/21 meeting, the following AMHS interconnections (P1) have been implemented and commissioned in REDDIG II:

Asunción – Ezeiza (30/11/2018)
Asunción – Brasilia (30/11/2018)
Brasilia – Paramaribo (11/10/2018)
Brasilia – Atlanta (SITA) (16/08/2018)
Brasilia – Madrid (25/10/2018)
Caracas – Quito (11/10/2018)
Georgetown – Paramaribo (11/10/2018)

RADAR data exchange

2.28 Furthermore, network interconnections were established for the exchange of radar data between:

Corrientes radar – Asunción ACC (operational)
Asunción radar – Resistencia ACC (operational)
Foz de Iguazú – Guaraní APP

REDDIG II security analysis

2.29 The Sixth meeting on the technical-operational implementation of REDDIG II (RTO/6) presented a preliminary action plan to mitigate security threats to REDDIG II.

2.30 On 25 June 2018, a teleconference was held on price quotes for security equipment (firewalls) for REDDIG, with the participation of the REDDIG Administrator and representatives of ENGIE – INEO. The request for quotes for redundant firewall equipment should include:

- Provision of redundant equipment for 17 REDDIG II nodes;
- Provision of 19 switches (1 per node + 2 spare);
- Provision of a centralised monitoring system, using a separate system, or built-in into the NMS WhatsUp Gold system;
- Updating of node diagrams;
- Basic training on general security policies, to be provided in Lima for 20 participants;
- Training on configuration settings, to be provided in Lima for 20 participants, to enable each participant to configure the equipment of its node;
- Training on administration, to be provided in Lima for 3 participants (REDDIG Administrator, one person from the Manaus NCC and one person from the Ezeiza NCC).

2.31 Regarding firewalls, two quotes were submitted:

- CISCO ASA5506 equipment, 38 units: USD 402,417.00;
- FORTINET Fortigate equipment, 38 units: USD 293, 458.00.

2.32 The cost of providing 19 24-port CISCO WS-C2960X-24TS-LL switches would be USD 40,060.00.

2.33 At the RTO/7 meeting (Curitiba, 5-9 November 2018), an *ad-hoc* group was established with representatives of Argentina, Brazil, Chile, Colombia, and Paraguay to assess the quotes. By means of teleconferences, the *ad-hoc* group has discussed this issue and formulated a recommendation to adopt the option based on the **FORTINET Fortigate** equipment.

2.34 Furthermore, the Ad-hoc group members agreed with the followings requirements:

- Equipment for all nodes + Spares.
- Centralized management system.
- All equipment sent to Lima (DAP, no local taxes).
- Basic training on security policies.
- Configuration training in Lima.
- Management training (Administrator and NCC technicians).
- Acquisition of Cisco WS-C2960X-24TS-LL equipment (19 unities - <u>without</u> any associated services, except DAP shipment towards Lima/Peru).

2.35 It should be noted that the purpose of firewalls is to provide security, standardise equipment, and replace border routers in each node.

2.36 In this respect, and due the work done by the Ad-hoc group, the Meeting must consider and approve the recommendation and continues with the necessary actions for equipment acquisition.

2.37 If the purchase of firewalls is approved, it will be proposed that the RCC/22 meeting schedule the associated training, offering two scholarships per node, for the experts responsible for setting up the firewalls in their nodes.

Purchase of a Kaspersky Endpoint Security for Business (Advanced) antivirus licence

2.38 The antivirus licence for all REDDIG nodes was updated at a cost of 1,465.33 euros, as quoted by ORSENNA, as shown in **Appendix C** to this working paper.

Transfer of the REDDIG station in Bogota and installation of the new station in Ezeiza

2.39 Argentina and Colombia already made the payments and the TCB (Technical Cooperation Bureau) will take the necessary steps to hire ENGIE – INEO. After signing the contract, the timetable will be reviewed for approval by the States. Activities related to the installation of the equipment will be scheduled for 2019.

Acquisition of spare parts for REDDIG

2.40 The acquisition by TCB of spare parts for the REDDIG continues. The offer of ENGIE – INEO was approved, as shown in **Appendix D** to this working paper.

Connection to SITA datalink services through the REDDIG

2.41 For the renewal of the CPDLC and ADS-C service contract with SITA, Chile has expressed its interest in using REDDIG to connect to the SITA infrastructure in Brazil, thus saving in last-mile link leasing costs.

2.42 Trials to test this possibility have already been carried out, and the SAM/IG/19 meeting approved a connection setup, shown in **Appendix E** to this working paper. An initial teleconference was held on 26 September with representatives of Brazil, Chile, SITA and the CNS Officer of the Lima Regional Office, where the conclusions and recommendations from previous SAM/IG meetings were briefly reviewed and focal points were designated for this subject matter.

2.43 The current contract between Chile and SITA will expire on 30 April 2019. Consequently, the connection through the REDDIG would be established in early 2019, with all the corresponding activities and trials.

Proposal to add a REDDIG II node to the backup network (MPLS) at the ICAO Regional Office in Lima

2.44 The SAM/IG/22 meeting was presented with working paper WP/12, containing a proposal to add a node to the backup network (MPLS) of REDDIG II at the ICAO Regional Office in Lima, with a view to restoring communication between the nodes in the States and the Regional Office, which was interrupted following the relocation of airport units to the current premises of the Regional Office in San Isidro. The aforementioned working paper included **Appendix F**, which is attached to this working paper.

Level 3 (now CenturyLink) *ground network*

2.45 Level 3 changes its name to CenturyLink.

2.46 It is recalled that all stations operate at a speed of 256 kbps and that CenturyLink has improved its management, although not perfect yet. The big problem continues to be the last mile, which involves different operators in each node, mainly in Manaus.

2.47 CenturyLink has upgraded the website, where a ticket is now automatically generated when a problem is detected at the node.

2.48 The requirements presented by the ICAO SAM Regional Office to CenturyLink were as follows:

a) Improved connectivity with Manaus through a VSAT backup for connecting the local last-mile operator, and change of operator in Recife.
b) Improved connection in Paramaribo, Suriname. Already solved.
c) Improved connection in Maiquetía, Venezuela. Already solved.
d) Improved connection in Piarco, Trinidad and Tobago. Already solved.
e) Not all nodes were listed in the website options. Already solved.
f) Availability discrepancies. Already solved.
g) Some failures were not recorded. Already solved.

REDDIG logistics

2.49 The Meeting should note the extensive period of time that the equipment remains in the respective customs and the importance for focal points to support logistic activities in order to avoid this. Accordingly, the list of REDDIG II focal points (**Appendix G**) must be updated, since some States still show as focal points persons who are no longer in that position due to termination of office or retirement.

2.50 Logistic operations, mainly for resolving failures at the nodes, include the delivery of equipment or parts from the REDDIG spare parts stock stored at the ICAO Regional Office in Lima, or from any other node to the nodes that so require it. This includes coordination with factories for equipment repairs, payment for transportation and other associated costs, as well as coordination and support to States for the import and export operations involved.

2.51 Since the RCC/21 meeting, two (2) logistic operations have been carried out with the new REDDIG II. Failures and equipment parts are summarised in **Appendix H** to this working paper.

2.52 **Appendix I** presents statistical information on the main actions taken in response to failures in network nodes, as well as their distribution by type of equipment that required such action, since the RCC/21 meeting.

2.53 **Appendix J** shows the availability of the MPLS network (CenturyLink) in 2018.

3 Suggested action

3.1 The Coordination Committee is invited to:

a) take note of the information provided herein;
b) review the activities carried out since the RCC/21 meeting as shown in section 2 and in the corresponding appendices to this working paper.

Diagramación tareas REDDIG para 2018

20-feb-2018

http://icao.int

Administración REDDIG - CNS - ICAO SAM

Encargado del proyecto	
Fechas de inicio y fin del proyecto	02-abr-2018 - 01-dic-2018
Progreso	0%
Tarea	76
Recursos	0

Tareas programadas para ser desarrolladas durante el año 2018 en NCCs y estaciones de la REDDIG.

Tarea

Nombre	Fecha de inicio	Fecha de fin
NCC	2/04/18	30/11/18
Routers	2/04/18	1/06/18
Backup configuraciones // Backup configurations	2/04/18	20/04/18
Verificar configuraciones // Verify configurations	23/04/18	11/05/18
Verificar diagramas y cableado // Verify diagrams and cabling	14/05/18	1/06/18
Verificar identificaciones // Verify identifications	14/05/18	1/06/18
Switches	4/06/18	22/06/18
Backup configuraciones // Backup configurations	4/06/18	8/06/18
Verificar configuraciones // Verify configurations	11/06/18	15/06/18
Verificar diagramas y cableado // Verify diagrams and cabling	18/06/18	22/06/18
Verificar identificaciones // Verify identifications	18/06/18	22/06/18
AMHS -AFTN - AIDC Check	25/06/18	29/06/18
ATS - ADMIN - MANT Check	2/07/18	6/07/18
Verificar WUG // Verify WUG	9/07/18	13/07/18
Externos (ADS-C, otros) // External (ADS-C, others)	16/07/18	20/07/18
Capacitación // Training	2/04/18	30/11/18
VERIFICACIÓN EQUIPOS INDOOR // Indoor equipment verification	23/07/18	3/08/18
Registro fotográfico // Photographic record	23/07/18	3/08/18
Cotejo de diagramas // Compare diagrams	23/07/18	3/08/18
Backup	31/07/18	3/08/18
Servers Local y Global	6/08/18	10/08/18
GPS	13/08/18	17/08/18
MODEM SKWAN A	20/08/18	24/08/18
MODEM SKYWAN B	27/08/18	31/08/18
LINE-UP-MANAGER	3/09/18	7/09/18
ANTENA	10/09/18	2/11/18
Registro fotográfico // Photographic record	10/09/18	14/09/18
Cotejo de diagramas // Compare Diagrams	17/09/18	21/09/18
Backup	17/09/18	21/09/18
LNB A	24/09/18	28/09/18
LNB B	1/10/18	5/10/18
RX 1+1	8/10/18	12/10/18
IBUC A	15/10/18	19/10/18
IBUC B	22/10/18	26/10/18
TX 1+1	29/10/18	2/11/18
VERIFICAR NROS DE SERIE DE EQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory status	2/04/18	31/05/18
LEVEL 3	5/11/18	9/11/18
Identificar equipos // Equipment identification	5/11/18	9/11/18
Verificar cableado // Verify cabling	5/11/18	9/11/18
Nodos // Nodes	2/04/18	2/11/18
Routers	2/04/18	27/04/18
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	2/04/18	6/04/18
Verificar Diagramas y cableado // Verify diagrams an cabling	2/04/18	13/04/18
Verificar Identificaciones // Verify identifications	16/04/18	27/04/18
SWITCHES	30/04/18	25/05/18
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	30/04/18	4/05/18
Verificar Diagramas y Cableado // Verify diagram and cabling	2/05/18	18/05/18
Verificar Identificaciones // Verify identifications	21/05/18	25/05/18
ATS -ADMIN - MANT	28/05/18	1/06/18
AMHS - AFTN - AIDC Check	4/06/18	8/06/18
Verificar WUG // Verify WUG	11/06/18	15/06/18
Externos // External	18/06/18	22/06/18
VERIFICACIÓN EQUIPOS INDOOR // Indoor equipment verification	2/04/18	27/04/18
Registro Fotográfico // Photographic record	2/04/18	6/04/18
Cotejo de diagramas // Compare diagrams	2/04/18	13/04/18
BackUp	16/04/18	27/04/18
Server NMS Local	25/06/18	29/06/18
GPS	2/07/18	6/07/18
MODEM A	9/07/18	13/07/18
MODEM B	16/04/18	20/04/18
LINE-UP-MANAGER	23/07/18	27/07/18
ANTENA	10/09/18	19/10/18
Registro Fotográfico // Photographic record	10/09/18	14/09/18

Tarea

Nombre	Fecha de inicio	Fecha de fin
Limpieza de antena // Antenna cleaning	17/09/18	21/09/18
Cotejo de Diagramas // Compare diagrams	10/09/18	21/09/18
Backup	24/09/18	28/09/18
LNB A	1/10/18	3/10/18
LNB B	3/10/18	5/10/18
RX 1+1	8/10/18	10/10/18
IBUC A	10/10/18	12/10/18
IBUC B	15/10/18	17/10/18
TX 1+1	17/10/18	19/10/18
VERIFICACIÓN NROS DE SERIE DEEQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory status	22/10/18	2/11/18
LEVEL 3	30/07/18	10/08/18
Identificar equipos // Equipment identification	30/07/18	3/08/18
Verificar cableado // Verify cabling	6/08/18	10/08/18

Diagrama de Gantt

Nombre	Fecha de inicio	Fecha de fin
NCC	2/04/18	30/11/18
Routers	2/04/18	1/06/18
Backup configuraciones // Backup configurations	2/04/18	20/04/18
Verificar configuraciones // Verify configurations	23/04/18	11/05/18
Verificar diagramas y cableado // Verify diagrams and cabling	14/05/18	1/06/18
Verificar identificaciones // Verify identifications	14/05/18	1/06/18
Switches	4/06/18	22/06/18
Backup configuraciones // Backup configurations	4/06/18	8/06/18
Verificar configuraciones // Verify configurations	11/06/18	15/06/18
Verificar diagramas y cableado // Verify diagrams and cabling	18/06/18	22/06/18
Verificar identificaciones // Verify identifications	18/06/18	22/06/18
AMHS -AFTN - AIDC Check	25/06/18	29/06/18
ATS - ADMIN - MANT Check	2/07/18	6/07/18
Verificar WUG // Verify WUG	9/07/18	13/07/18
Externos (ADS-C, otros) // External (ADS-C, others)	16/07/18	20/07/18
Capacitación // Training	2/04/18	30/11/18
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TX 1+1	29/10/18	2/11/18
VERIFICAR NROS DE SERIE DE EQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory status	2/04/18	31/05/18
LEVEL 3	5/11/18	9/11/18
Identificar equipos // Equipment identification	5/11/18	9/11/18
Verificar cableado // Verify cabling	5/11/18	9/11/18
Nodos // Nodes	2/04/18	2/11/18
Routers	2/04/18	27/04/18
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	2/04/18	6/04/18
Verificar Diagramas y cableado // Verify diagrams an cabling	2/04/18	13/04/18
Verificar Identificaciones // Verify identifications	16/04/18	27/04/18
SWITCHES	30/04/18	25/05/18
Verificar Configuraciones físicas y lógicas // Verify physical and logical configurations	30/04/18	4/05/18
Verificar Diagramas y Cableado // Verify diagram and cabling	2/05/18	18/05/18
Verificar Identificaciones // Verify identifications	21/05/18	25/05/18
ATS -ADMIN - MANT	28/05/18	1/06/18
AMHS - AFTN - AIDC Check	4/06/18	8/06/18
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IBUC B	15/10/18	17/10/18
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VERIFICACIÓN NROS DE SERIE DEEQUIPOS Y ESTADO DE INVENTARIO // Verify serial numbers of equipment and inventory st...	22/10/18	2/11/18
LEVEL 3	30/07/18	10/08/18
Identificar equipos // Equipment identification	30/07/18	3/08/18
Verificar cableado // Verify cabling	6/08/18	10/08/18

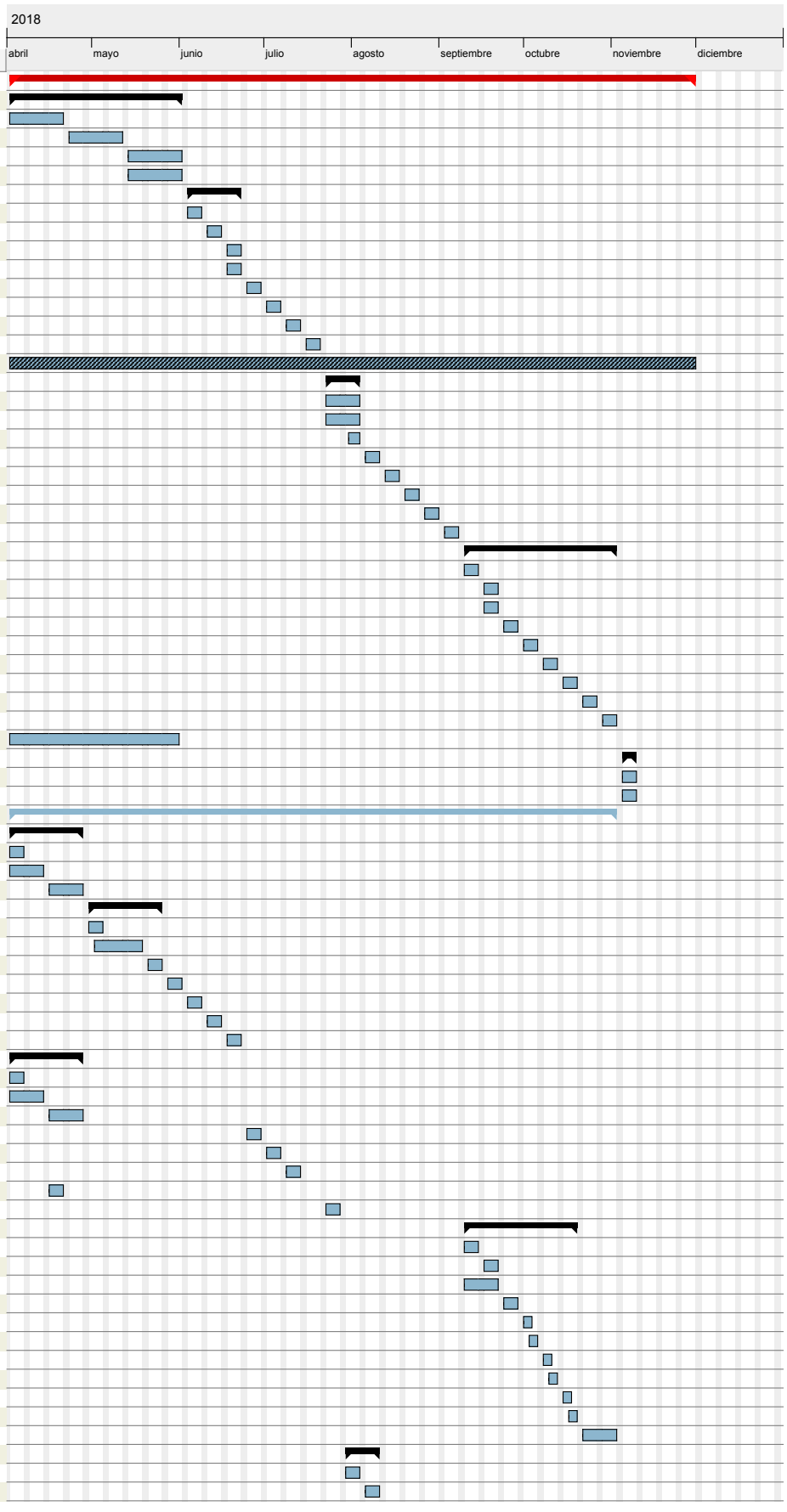
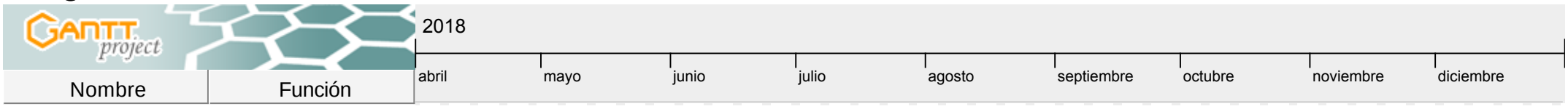
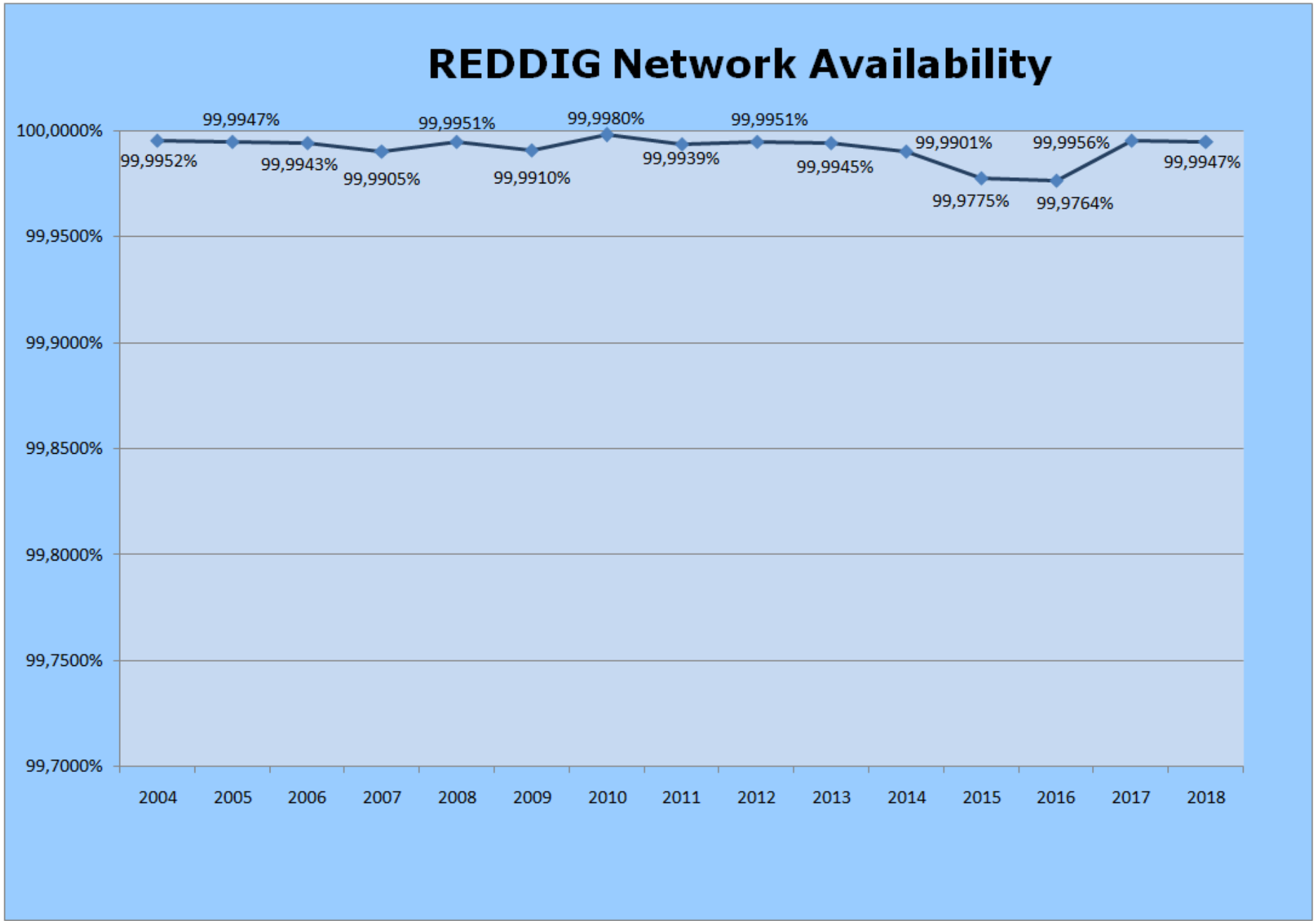


Diagrama de recursos




REDDIG Network Availability
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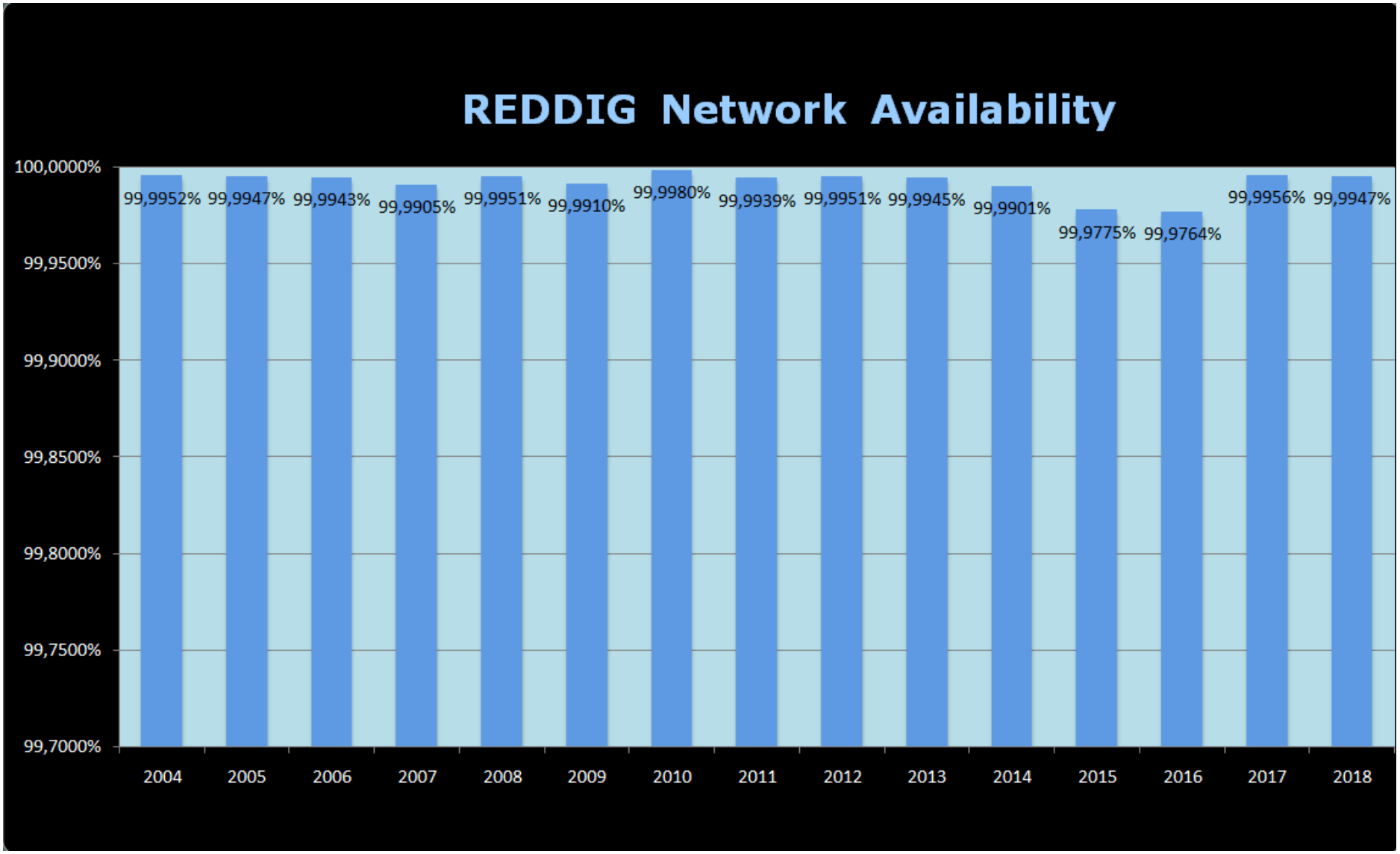
REDDIG Network Availability
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99,9943%
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APÉNDICE C / APPENDIX C

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

No Devis : 11662202018
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 VALIDITÉ MAXIMALE DE CE DEVIS EST au 17/10/2018

Proposition Commerciale

Qté	Référence	Description	Prix Public EUR		Prix Vente EUR	Total EUR	Stock	Délais
1	KL4867XANFS	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 :

APÉNDICE D / APPENDIX D

INEO-ES Price List for Procurement of Satelitte Equipment Spare Parts

Items	Unit	Description	Qty	Unit Price US$	Total Price US$
		INDOOR Equipment			
		Satellite modem, including:			
1	set	IDU 1070 19" NS + PS AC	1	20 664,00	**20 664,00**
2		*License Key Mesh Topology*		*included*	
		GORGY TIMING Equipment			
3	set	GPS Master Clock - RT9s including one outdoor GPS Antenna and cable	1	3 289,00	**3 289,00**
4	unit	GPS standalone outdoor Antenna for RT9s (without cable)	1	937,00	**937,00**
		LAN Port Server			
5	unit	NPORT 5610-8	1	1 230,00	**1 230,00**
		10 MHz Redundancy Equipment			
6	unit	BIAS-T switch (10MHz redundancy system)	1	2 125,00	**2 125,00**
7	unit	Passive DC-Block (Power injector 10MHz pass)	4	542,00	**2 168,00**
8	unit	Passive DC-Block (RF Bandwidth)	4	130,00	**520,00**
9	unit	Passive Splitter (2 Port RF Bandwidth)	2	265,00	**530,00**
		Spare Parts for HPE PROLIANT DL160 Server			
10	unit	Fans for HPE PROLIANT DL160 Server	10	124,00	**1 240,00**
11	unit	Hot-Plug HP Midline HDD 500GB 7.2k SATA	2	405,00	**810,00**
		OUTDOOR Equipment			
		RF Equipment			
12	unit	IBUC 80W	1	18 653,00	**18 653,00**
13	unit	Tx 1+1 switching system	1	8 707,00	**8 707,00**
14	unit	Rx 1+1 switching system	1	9 523,00	**9 523,00**
15	set	Waveguide Switch (CPRG flange) + Control cable	1	3 528,00	**3 528,00**
16	unit	LNB with external 10MHz reference	1	804,00	**804,00**
17	unit	RF Filter (for LNB path)	1	676,00	**676,00**
18	unit	N-Female Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	45,00	**180,00**
19	unit	N-Male Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	44,00	**176,00**
20	unit	N-Male Type coaxial connector (for CNT/LRM-600 Type coaxial cable)	4	67,00	**268,00**
		SUB-TOTAL SPARES			**76 028,00**
		ACCESSORIES			
21	Lot	Technical Documentation (applicable for documentation not previously provided)		*included*	
		SUB-TOTAL ACCESSORIES			**0,00**
		SERVICES			
22	Lot	2-Year Warranty	1	7 036,00	**7 036,00**
		SUB-TOTAL SERVICES			**7 036,00**
Grand Total					**83 064,00**
Insurance and Freight charges to Lima, Peru			1	6 658,00	6 658,00
TOTAL PRICE Up to site acceptance on site(s), on a DAP Lima, Peru, basis (Delivered at Place – Incoterms® 2010) The prices for the services, civil works and supplies subcontracted and carried out in Peru include all applicable taxes.					**89 722,00**

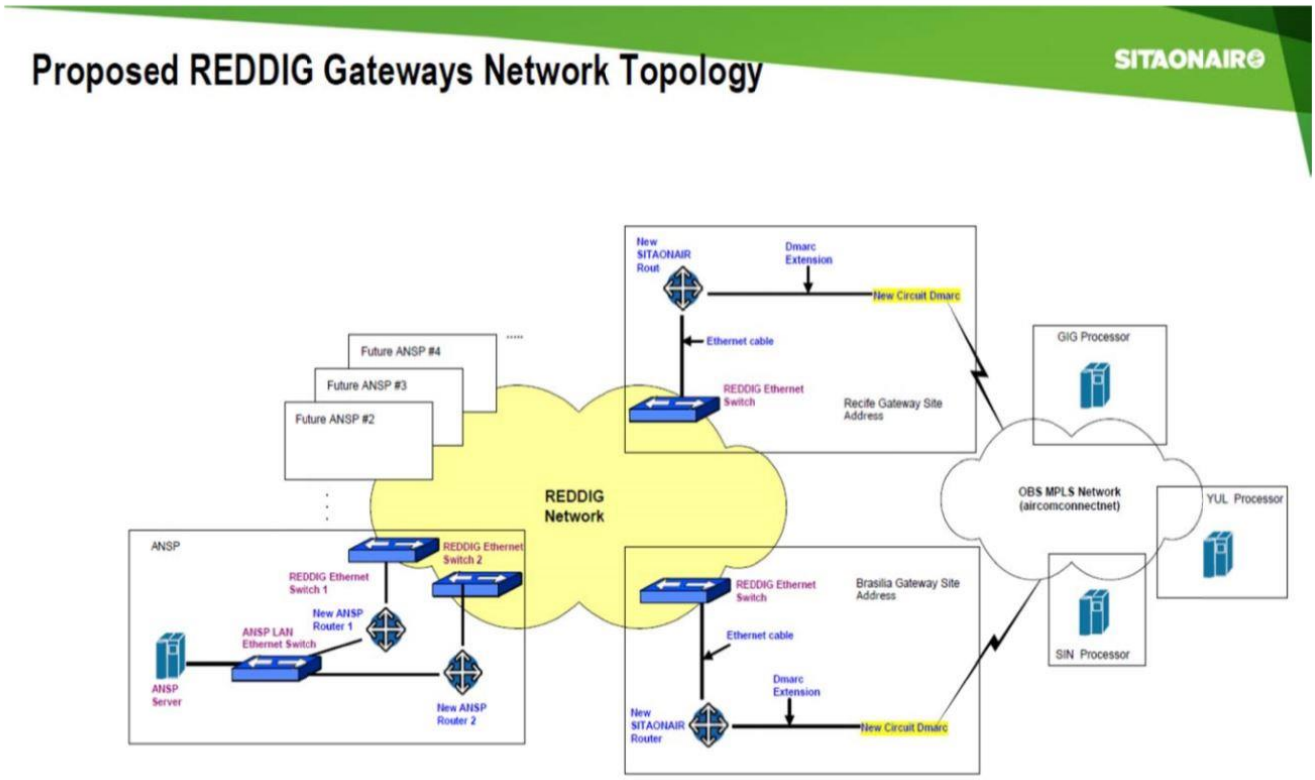
Augustin BAREAU
Head of Aeronautical Export Department

Suggested Payment terms and conditions
70% on Proof of Purchase Order of the Equipment
30% upon Proof of Delivery (POD to be received from the Freight Forwarder)

Validity of the offer: **6 months**

Delivery delay after PO: Usually **4 months** (for delivery at final destination, excluding Customs Clearance delay)

APÉNDICE E / APPENDIX E



APPENDIX F

International Civil Aviation Organization SAM/IG/22-WP/12
South American Regional Office - Regional Project RLA/03/901 19/11/2018
Twenty-Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/22) - Regional Project RLA/06/901
(Lima, Peru, 19 to 23 November 2018)

Agenda Item 4: **Assessment of operational requirements to determine the implementation of improvements in communications, navigation and surveillance (CNS) capabilities for operations in route and terminal area**

PROPOSAL TO ADD A REDDIG II NODE OF THE BACKUP NETWORK (MPLS) AT THE ICAO LIMA REGIONAL OFFICE

(Presented by the Secretariat)

SUMMARY

This working paper presents a proposal to add a REDDIG II backup node (MPLS) at the ICAO Lima Regional Office REDDIG II to use the network infrastructure for voice and data communications between Office sectors and administrative/maintenance users of the network.

References

- Contract REDDIG 22501200;
- Report of the Twentieth meeting of the REDDIG Coordination Committee (RCC/20) (Lima, Peru, 21-23 March 2017);

ICAO strategic objectives:	*A – Safety* *B – Air navigation capacity and efficiency*

1. Background

1.1 The Digital Network of the South American Region (REDDIG I) was implemented in September 2003, and the node of Peru was installed at CORPAC facilities in the Jorge Chávez international airport, providing connectivity to the ICAO Lima Regional Office, which at that time was located at said airport.

1.2 At that time, the telephone switch of the Office was connected to the administrative and maintenance network of REDDIG I, allowing the Office sectors (Director, Deputy Director, Officers and support personnel) to communicate with the administrative and maintenance users of the network. The Office also used its AFTN addresses to communicate with any user of the Aeronautical Fixed Telecommunication Network.

1.3 When the ICAO Regional Office in Lima moved to the San Isidro premises in February 2007, the connection was interrupted, and the Office started communicating with the administrations of the Region mainly through public telephony (DDI) and Internet applications.

1.4 In 2015, the SAM Digital Network was modernised with the installation of a satellite network as the main means of communication and a backup network, where MPLS links were hired for all network nodes. Figure 1 shows the current configuration of REDDIG II.

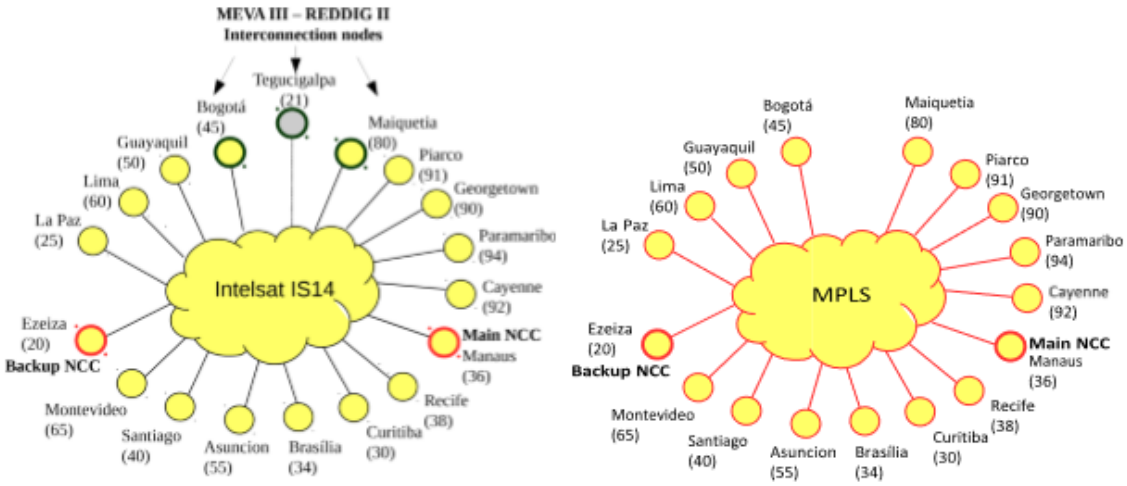


Fig. 2

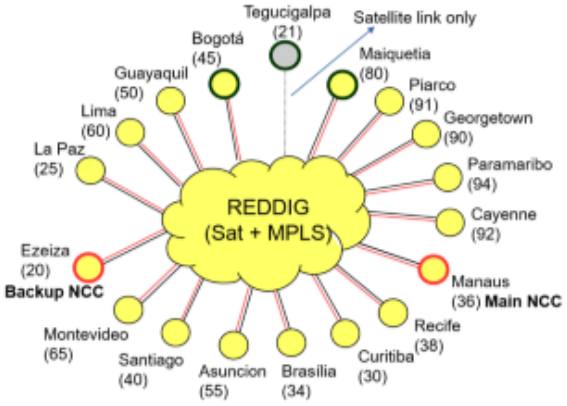


Figure 1 – REDDIG II primary and back up networks

2. Discussion

2.1 The reconnection of the ICAO Lima Regional Office would take place under Technical Cooperation Project RLA/03/901, by hiring a 256-kbps MPLS link connecting the Regional Office to the REDDIG II MPLS backup network. Figure 2 illustrates this concept.

2.2 The estimated cost of an MPLS link to add a node in Lima to the backup network would be between USD 800 and USD 1,200 per month, to be shared by all States participating in Project RLA/03/901.

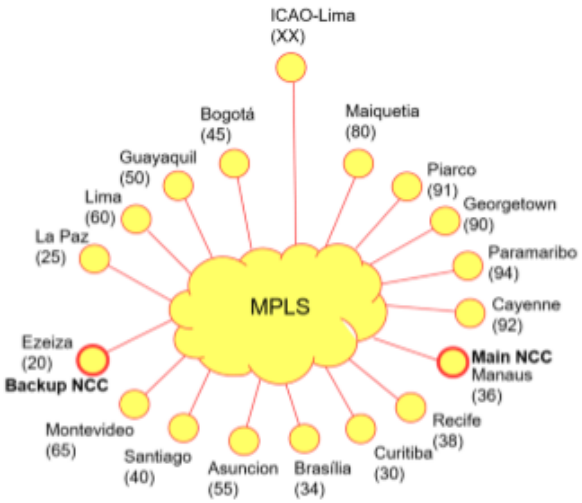


Figure 2 – Backup network with a node in the Lima Regional Office

2.3 The implementation of national IP networks will contribute to the use of REDDIG for communications between State sectors and the Lima Regional Office once it is integrated with the network through an MPLS node.

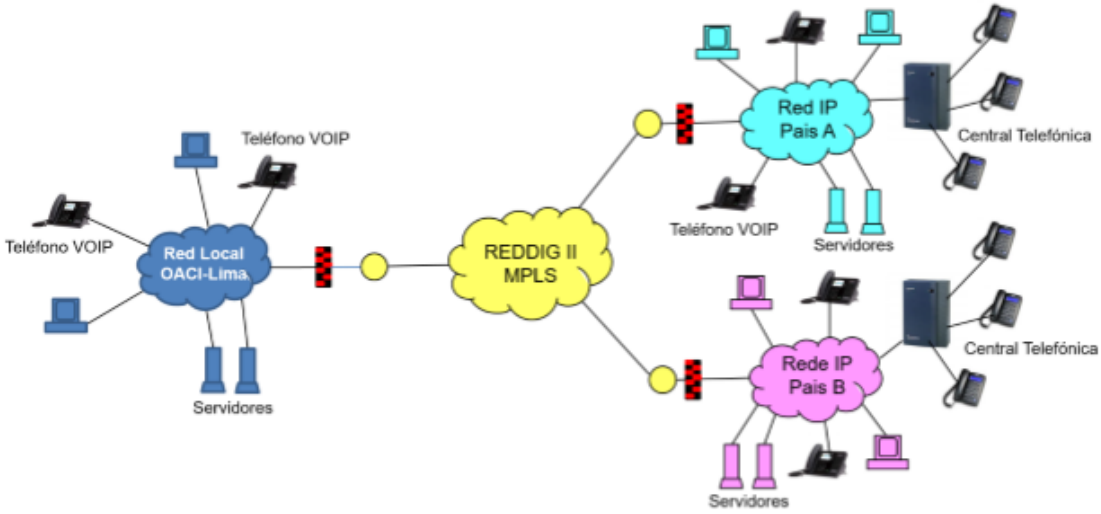


Figure 3 – Regional Office integrated with the backup network

2.4 The connection of the Regional Office with the backup network (MPLS) would provide the following benefits:

- Communication between civil aviation authorities and their representatives with the ICAO Lima Regional Office, without the cost of DDI calls;
- Communication between the AGA, AIM, ATM, ATFM, AVSEC, CNS, MET, and SAR sectors with ICAO regional officers in Lima, without the cost of DDI calls;
- Communication between State administrative sectors and the ICAO Lima Regional Office staff;

- Better coordination between the CNS regional officer and the network administrator, State technicians and the operational sectors responsible for the establishment of AIDC and AMHS interconnections;
- Use of the aeronautical message handling system (AMHS) y regional officers to access AIM, ATM, ATFM, CNS, MET, and SAR information available in the network, and exchange messages with AMHS users in the States; and
- Possibility of accessing the future SWIM infrastructure by Regional Office officers.

2.4 In addition to the aforementioned benefits, the Regional Office node will be able to use the teleconferencing function available in REDDIG II to coordinate with the administrative, operational and maintenance users of the States.

2.5 It is important to note that all the aforementioned benefits will depend on the connection of national IP networks of the States with REDDIG II. Therefore, States that have implemented national IP networks are urged to establish such connections, and those States that have not implemented IP networks are urged to implement other solutions to connect to REDDIG II.

3 Suggested action

3.1 The Meeting is invited to:

a) take note of the information provided herein;

b) discuss the convenience and feasibility of installing a REDDIG node of the backup network at the Regional Office;

c) agree to discuss the feasibility of implementation and implementation procedures at the next meeting of the Coordination Committee, in case the proposal is approved; and

d) discuss any other issues it may deem appropriate.

APPENDIX G / APENDICE G

REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

STATE / ESTADO	Name / Nombre	Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
ARG	Moira Lidia Callegare, ANAC	Jefe Departamento Proyectos – DNSA	mcallegare@anac.gov.ar	(5411) 594-13097	Edificio ANAC Central Paseo Colón 1452, Ciudad Autónoma de Buenos Aires, CP 1063
	Sergio Alberto Vallone, AN	Inspector de Navegación Aérea, Depto. Regional Noroeste de Inspecciones de la Dirección Nacional de Inspecciones de Navegación Aérea	svallone@anac.gov.ar	(54351) 475-6414	Dirección Regional Noroeste Camino Pajas Blancas Km. 8.5, CP 5000, Córdoba Capital
	Javier Shenk	Gerente CNS (Communication, Navigation and Surveillance) EANA	Jschenk@eana.com.ar	54911 28370135	EANA S.E. Av. Rivadavia 578, Piso 3 Buenos Aires, Argentina
BRA	Eduardo Alberto do Nascimento Fontes DECEA	Jefe de TIC DECEA Avenida General Justo, 160 Rio de Janeiro, Brasil	eduardeanf@decea.gov.br	55 21 21016620	Av. General Justo 160, Rio de Janeiro, Brasil
	Renata Rodrigues Frias	Asesora de Comunicaciones DECEA	renatarrf@decea.gov.br	+55 21 21016869	Avenida General Justo, 160 Rio de Janeiro, Brasil
BOL	Hernando Lara, AASANA	Jefe Unidad Nacional CNS AASANA	nanos_24@hotmail.com	(5912) 212-7959	Aeropuerto Internacional El Alto, Bloque Técnico AASANA
	Remigio Blanco, AASANA	Responsable de Telecomunicaciones AASANA	rblanco@aasana.bo	(5912) 237-0340	Aeropuerto Internacional El Alto, Bloque Técnico AASANA

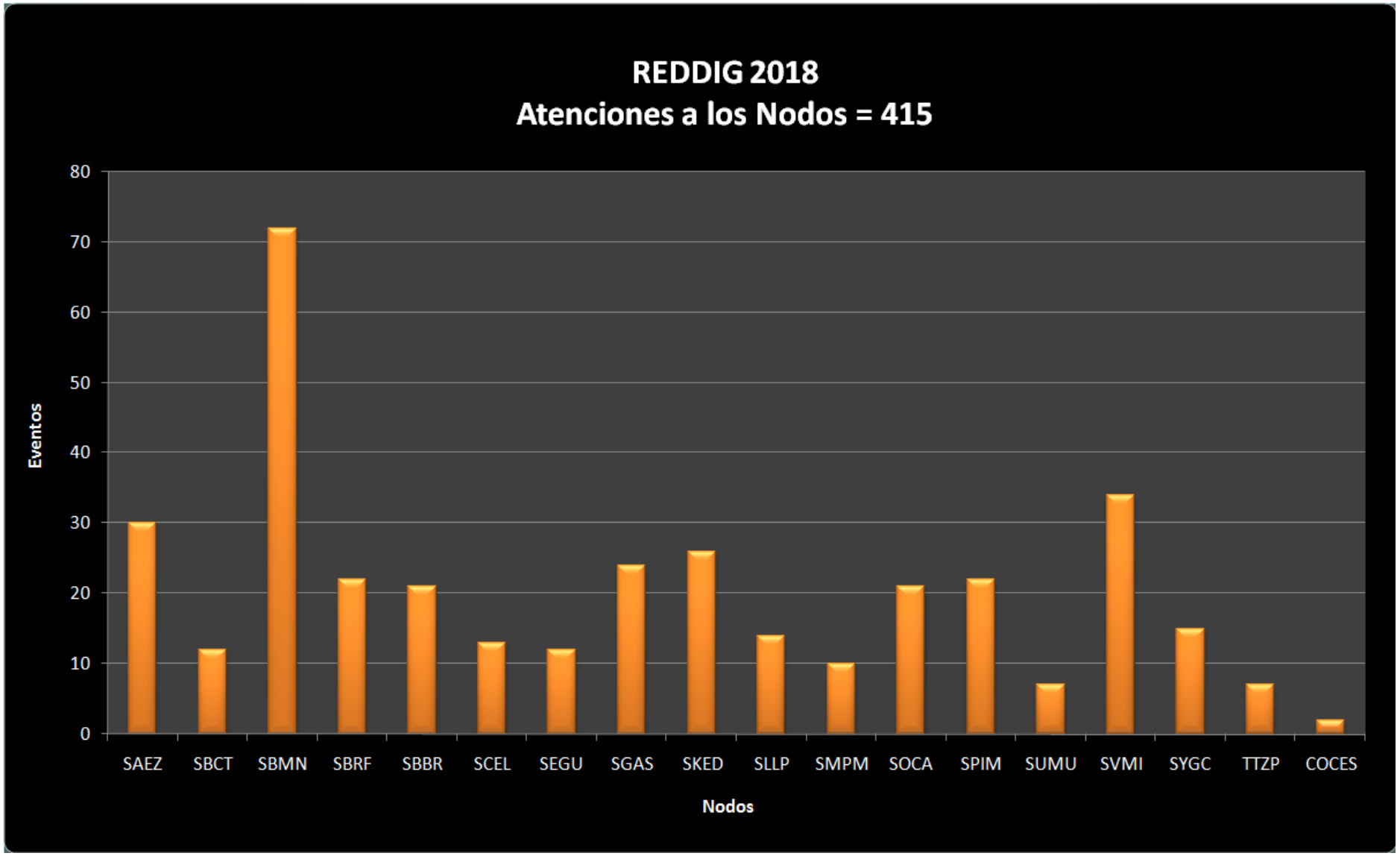
STATE / ESTADO	Name / Nombre	Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
CHI	Christian Vergara Leyton, DGAC	Supervisor de Mantenimiento Técnico Centro de Control de Santiago	cvergara@dgac.cl	(562) 836-4005; (562) 836-4011; (562) 644-8345	Avenida San Pablo 8411, Comuna de Pudahuel, Santiago, Chile
	Pedro Pastrián Céspedes, DGAC	Supervisor de Mantenimiento Técnico Centro de Control de Santiago	ppastrian@dgac.cl	(562) 836-4005; (562) 836-4011; (562) 644-8345	Avenida San Pablo 8411, Comuna de Pudahuel, Santiago, Chile
COL		Director de Telecomunicaciones y Ayuda a la Navegación Aérea		(571) 296-2224; (57) 317-5170996	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
	Gabriel Enrique Guzmán Pachon	Jefe del Grukpo de Sistemas de Comunicaciones	gabriel.guzman@aerocivil.gov.co	(571) 296-2940; (57) 317-656 7202	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
ECU	Rául Avellán Oña, DGAC	Dirección de Nodo Aeropuerto "José Joaquín de Olmedo"	ravellan1@yahoo.com raul.avellan@dgac.gob.ec	(593-4) 269-2829	Av. De las Américas, Edif. Servicio para la Navegación Aérea, Guayaquil
FRA	Michel Areno Dirección de los servicios de navegación aérea (Francia)	Jefe del centro de control del aeropuerto de Cayena	michel.areno@aviation-civile.gouv.fr	594 594 359395	Aviation Civile, Aeroport de Cayenne Félix Eboué, 97351 Matoury, Guyane Francaise
GUY	Mortimer Salisbury, Guyana Civil Aviation Authority	Supervisor - AN & T	mbsalisbury2000@yahoo.com	(592) 261-2569	Control Tower complex, Cheddi Jagan International Airport, Timehri, East Bank Demerara, Guyana
	Sewchan Hemchan, Guyana Civil Aviation Authority	Electrical Engineer	sewchan_hemchan@yahoo.com	(592) 261-2569	Control Tower complex, Cheddi Jagan International Airport, Timehri, East Bank Demerara, Guyana
PAR	Víctor Morán Maldonado DINAC	Jefe Departamento de Comunicaciones	moranchu@gmail.com	(595 21) 758 5208	Centro de Control Unificado, Gral. Artigas y Fernando de Mompox, Mariano Roque Alonso, Paraguay
	Aldo Pereira Alcaraz, DINAC	Jefe Sección Radiocomunicaciones	aldopereira26@gmail.com	(595-21) 645-708; (595-21) 645598	Centro de Control Unificado, Gral. Artigas y Fernando de Mompox, Mariano Roque Alonso, Paraguay

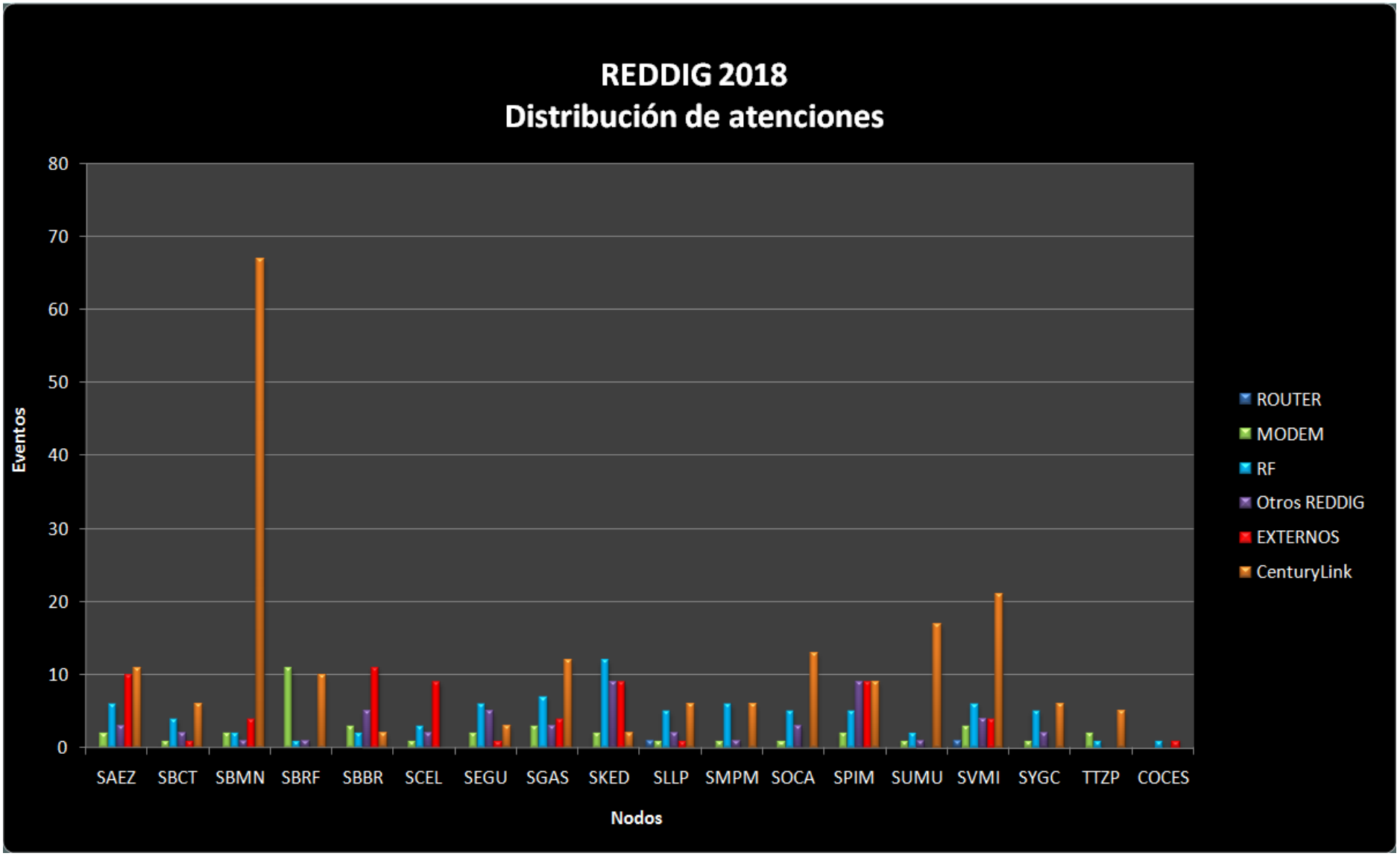
STATE / ESTADO	Name / Nombre	Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
PER	Luis Silva Gárate, CORPAC	Jefe del Equipo encargado de la Operac. y Mantto. del Nodo REDDIG-Lima	lsilva@corpac.gob.pe	(511) 515-3015; (511) 414-1250	Aeropuerto Internacional Jorge Chávez, Callao, Perú
SUR	Mitchell Themen Ministry of Transport, Communication and Tourism, Civil Aviation Department	CNS Technical Division	mickiano@live.com	(597) 325-123 (597) 325-172 (597) 497-143	J. A. Pengel International Airport, Zanderij, district Para, Zorg en Hoop Airport, Paramaribo
TRI	Rohan Garib, Civil Aviation Authority	Executive Manager Air Navigation Services	rgarib@caa.gov.tt	(1-868) 669-4806 (1-868) 669-4706,	Trinidad and Tobago Civil Aviation Authority Complex, Caroni North Bank Road, Piarco
	Veronica Ramdath, Civil Aviation Authority	Manager Telecommunications and Electronics	vramdath@caa.gov.tt; vramdath@gmail.com		
URU	Miguel Vera, DINACIA	Técnico de la División Comunicaciones	miguelvera@adinet.com.uy	(5982) 6010932, Ext. 4520	Aeropuerto Internacional de Carrasco Av. Wilson Ferreira Aldunate 253 Paso Carrasco, Canelones
VEN	Vicente FioreFedullo, INAC	Jefe Región Maiquetía-Venezuela	v.fiore@inac.gob.ve	(58212) 355-2143; (58212) 355-1412	Edificio ATC, 2do piso, Depto. De Comunica., Maiquetía, Edo. Vargas, Venezuela
	Luis Escobar, INAC	Coordinador de los Sistemas de Comunicaciones CNS Región Maiquetía	l.escobar@inac.gob.ve	(58212) 355-2143; (58212) 355-1412	Edificio ATC, 2do piso, Depto. De Comunica., Maiquetía, Edo. Vargas, Venezuela

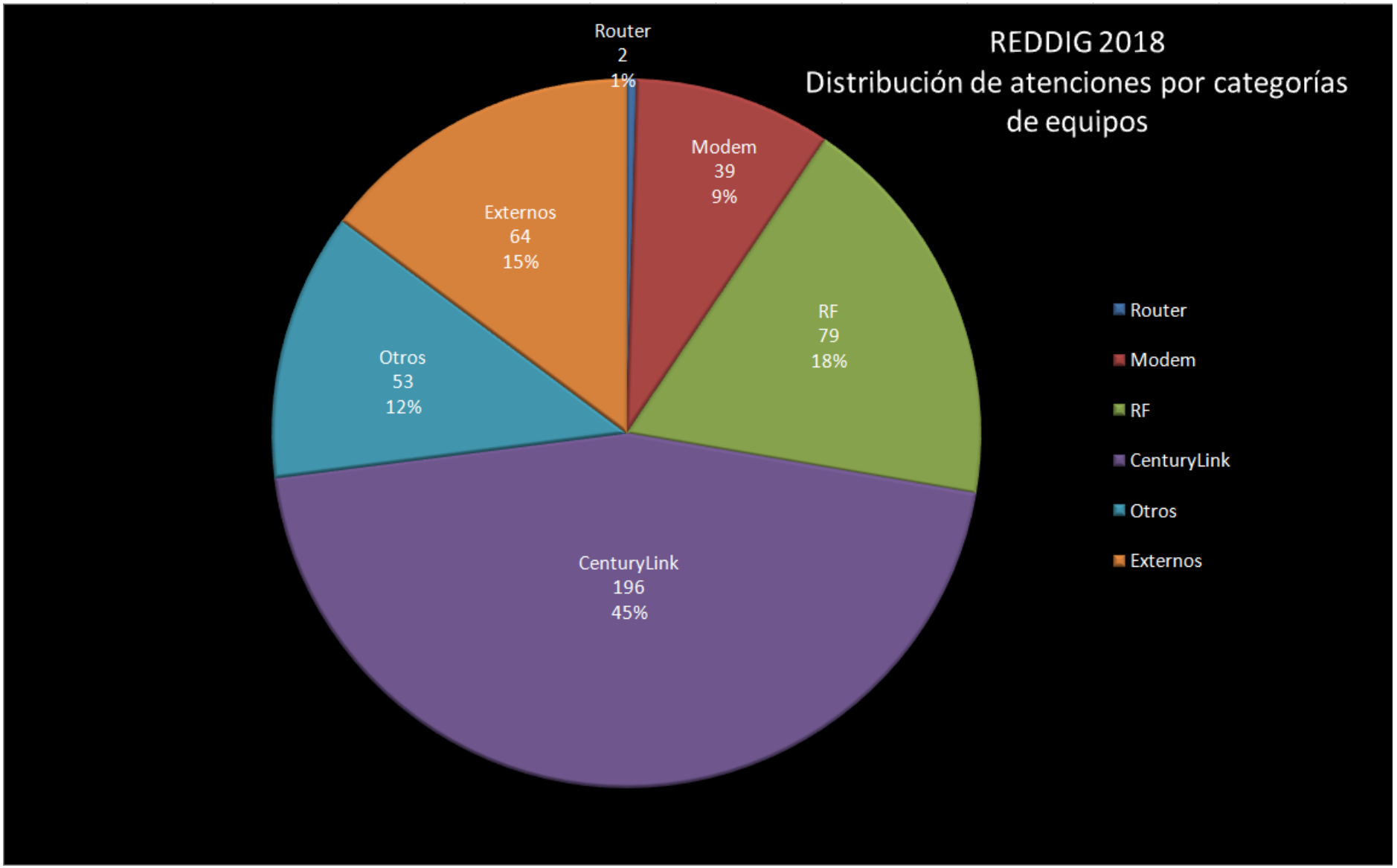
APÉNDICE H / APPENDIX H

RESUMEN DE AVERÍAS Y PARTES – 2018
LIST OF TROUBLESHOOTING AND SPARE PARTS – 2018

REGISTRO DE SERVICIOS - ADMINISTRACIÓN Y LOGÍSTICA DE EQUIPOS Y PARTES						
EVENTO	NODO	EQUIPO/ PARTE	DOC EMBARQUE	ENVIO DE	HASTA	GASTOS ENVIO US$
OR-18001	SMPM	IBUC 80W	SAMRO-78	Lima RO	Paramaribo, Surinam	p/Surinam (INEO)
OR-18002	SVMI	IBUC 80W	SAMRO-79	Lima RO	Maiquetía, Venezuela	p/Venezuela(REDDIG)


REDDIG 2018
Atenciones a los Nodos = 415
Eventos
80
70
60
50
40
30
20
10
0
SAEZ
SBCT
SBMN
SBRF
SBBR
SCEL
SEGU
SGAS
SKED
SLLP
SMPM
SOCA
SPIM
SUMU
SVMI
SYGC
TTZP
COCES
Nodos


REDDIG 2018
Distribución de atenciones
Eventos
80
70
60
50
40
30
20
10
0
SAEZ
SBCT
SBMN
SBRF
SBBR
SCEL
SEGU
SGAS
SKED
SLLP
SMPM
SOCA
SPIM
SUMU
SVMI
SYGC
TTZP
COCES
Nodos
ROUTER
MODEM
RF
Otros REDDIG
EXTERNOS
CenturyLink


REDDIG 2018
Distribución de atenciones por categorías de equipos
Router
2
1%
Modem
39
9%
RF
79
18%
CenturyLink
196
45%
Otros
53
12%
Externos
64
15%
Router
Modem
RF
CenturyLink
Otros
Externos