



Agenda Item 3: Report on activities carried out to date since the last meetings of the Coordination Committee

REPORT ON THE ACTIVITIES CARRIED OUT TO DATE SINCE THE LAST MEETINGS OF THE COORDINATION COMMITTEE

(Presented by the Secretariat)

SUMMARY	
This working paper presents information on the progress made in the conduction of activities agreed upon at the last REDDIG Coordination Committee meetings (RCC/26 and Extraordinary RCC/27) as part of the 2021 work plan.	
REFERENCES	
<ul style="list-style-type: none">• REDDIG Contract 22502088 and Amendment II to Contract 22502088; and• Reports of the last REDDIG Coordination Committee meetings (RCC/24; RCC/25; RCC/26; RCC/27).	
ICAO strategic objectives:	<i>A – Safety</i> <i>B – Air navigation capacity and efficiency</i>

1. Background

1.1 The main activities that the last meetings of the REDDIG Coordination Committee (RCC/26 and Extraordinary RCC/27) agreed to include in the 2021 work plan in relation to network operation, support and maintenance were as follows:

- a) Monitoring REDDIG II performance;
- b) REDDIG II training programme; and
- c) Operation of REDDIG II and analysis of the implementation of new services.

1.2 REDDIG logistics in 2021 are also presented in this working paper.

2. Description

MONITORING THE PERFORMANCE OF REDDIG II

2.1 It is noted that the network is working at the expected availability and functionality levels, with an availability of 99.9891% in 2021 (expected availability according to design is 99.98% as per Contract 22501200, page 5).

4.1.7 The Contractor shall ensure that the availability of the entire Network (including satellite backbone and ground backbone) is minimum 99.98%.

(Extract indicating expected REDDIG availability)

2.2 **Appendix A** to this working paper contains a graph that shows the REDDIG II availability until 2021.

LOGISTICAL ASPECTS

2.3 **Appendix B** to this working paper shows the logistics carried out by the Regional Office during 2021.

2.4 In 2020, two 80W IBUCs were sent for repair, returned and sent back to their point of origin (nodes in Brazil).

Satellite network spare parts

2.5 The REDDIG II Administration invites focal points to take into account that REDDIG equipment is exceeding the halfway point of its useful life cycle, so it is normal that it starts to show failures and thus the need for more frequent equipment shipping, repair and replacement logistics.

2.6 The following expenditures are incurred for the repair of an item:

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

2.7 The expenses incurred for the maintenance of an item will be included in the annual fees of the State requesting maintenance of the equipment in its node.

2.8 In case there is an item available in the SAM Office Spare Parts Room with the same characteristics of the unit sent to the factory for maintenance, the REDDIG Administration will deliver said unit (on a temporary basis) to the node to maintain its availability. Once the original equipment of the node is returned, the spare item will be sent back to the SAM Regional Office.

2.9 The Twenty-fourth Meeting of the Coordination Committee of Regional Project RLA/03/901 approved Conclusion RCC/24-1 (see the RCC/24 meeting report). This conclusion prevents the project administration from sending spare parts from the Office to States that fail to deliver the flawed original items for factory maintenance.

2.10 However, in the event that a State in this situation requests the purchase of an item, the Office may send a spare part that is in the storeroom (which would become property of the requesting State), to be charged in the annual fee of such State, and the Office would purchase another item to be kept as spare part for the project.

2.11 **Appendix C** to this working paper shows the stock of spare parts kept in the Regional Office storeroom.

Status of the nodes

2.12 **Appendix D** to this working paper shows 2021 statistics on REDDIG support, breakdowns and availability.

2.13 It is important to note that on 20 January 2020, a total failure occurred in the Guayaquil node. The cause was a major power failure that affected not only the REDDIG node but all services and systems in Guayaquil. Auxiliary power units and the ATS telephone switch were affected, just to mention two cases. The REDDIG node resumed operations uneventfully (except for one of the modems) with commercial power, but with no UPS.

2.14 After some time, the Administration of Ecuador installed a new UPS, bringing all REDDIG components back to normal. However, ATS speech services are still non-operational since January 20, 2020. The reason is that the ATS PABX of Guayaquil is still out of service.

2.15 It should be noted that in April 2022, the REDDIG Administration sent to the Guayaquil node two (2) 4-port FXS boards to re-establish at least some ATS speech circuits to restore the capacity of the Guayaquil ACC with adjacent centres. This responds to constant complaints in this regard, particularly from Peru and Colombia, where the answer to all these complaints has been that the lack of ATS speech communications is exclusively due to the switch being out of service. Complaints have also been received regarding issues with speech communications using international direct dialling (IDD).

2.16 Consequently, for any doubts regarding other issues unrelated to the node, administrations were requested to directly contact the Administration of Ecuador to inquire about ATS speech communications, status of the solution to the problem, and any other information.

2.17 There have also been reports of problems due to changes in the Colombian prefixes. Although these changes were reported by the Colombian Administration in a timely manner, there are still cases where old or outdated dialling codes are being used.

2.18 It is important to note that this particular situation has resulted in the use of AIDC for coordination with the ACCs of CENAMER, Lima and Bogota as the primary tool, reminding States that the transport platform for such an application is REDDIG.

2.19 With regard to factory repairs, a 1070 modem of the Lima node was delivered and is operational, and two 80W IBUCs of the Manaus and Recife nodes are already on site, duly installed and operating.

2.20 Note is made of the long periods of time that the pieces of equipment remain in the respective customs, and the importance for focal points to assist with logistics in order to avoid these situations. **Appendix E** to this working paper contains the list of focal points of States participating in the network, to be updated during the RCC/28 meeting.

TRANSFER OF THE BOGOTA REDDIG NODE

2.21 Regarding the transfer of the Bogota node, as per amendment signed on 28 June 2019, it is currently delayed due to problems with the civil works on the site. The material is already available and ready for installation, under the responsibility of the Colombian Administration.

ADDITIONAL GROUND NETWORK NODES (MPLS)

2.22 As agreed by the project members, the SAM Regional Office coordinated at the administrative and technical level the incorporation into REDDIG of the additional nodes of Atlanta and Salt Lake City in late 2020. These nodes have been operating properly, providing an even better performance and enhancing the service.

2.23 In addition to the AMHS/P1 interconnections between Brazil - United States and United States - Peru and Brazil, using the Atlanta and Salt Lake City MPLS nodes, the interconnection between United States and Venezuela was added in 2021. There are three access hubs in the SAM Region for the United States.

2.24 In late March 2022, the MPLS node of COCESNA was installed in Ilopango (El Salvador) and is ready to connect voice and data services with the other nodes of the network. States/Organisations interested in establishing communications with the new (MPLS) node of COCESNA can coordinate with COCESNA focal points.

2.25 The following are some possible communications that can be established:

AMHS/AIDC

- CENAMER AMHS COM centre – Atlanta COM centre (redundancy for the MEVA III connection);
- CENAMER AMHS COM centre – Panama COM centre (redundancy for the MEVA connection);
- CENAMER AMHS COM centre – Bogota COM centre (extra plan); and
- CENAMER AMHS COM centre – Guayaquil COM centre (extra plan).

Speech ATS

- CENAMER ACC – Bogotá ACC (redundancy for the REDDIG II satellite link);
- CENAMER ACC – Guayaquil ACC (redundancy for the REDDIG II satellite link); and
- CENAMER ACC – Panama ACC (redundancy for MEVA III links).

Surveillance data

- CENAMER ACC – Aireon;
- CENAMER ACC – Panama ACC; and
- CENAMER ACC – resources installed on the island of San Andrés.

NEW ATS SPEECH COMMUNICATIONS

2.26 At the request of the administrations of Argentina and Paraguay, an internal setup was established at the Asunción node (extension 5522), assigned to the FT TWR of Encarnación (Paraguay) to facilitate coordination with the FT TWR of Posadas (Argentina).

TEMPORARY SPIM - SUMU AFTN CIRCUIT

2.27 In March 2022, at the request of Uruguay and Peru, a temporary AFTN circuit was established between the Lima COM centre and the Montevideo COM centre, to replace the AFTN circuit between the Ezeiza centre and the Montevideo COM centre, which was discontinued because the new system at the Ezeiza AMHS COM centre no longer supported AFTN users (no gateway implemented).

2.28 Peru and Uruguay have already expressed the intention to implement an AMHS (P1)

interconnection between their AMHS COM centres, pending the installation of a new system in Montevideo, which should occur during the course of 2022. Once the AMHS interconnection is implemented, the temporary AFTN circuit will be deactivated.

GROUND NETWORK UPGRADE

2.29 Under the supervision of the network administration, and following the respective tests, Lumen upgraded the bandwidth of all 256-Kbps nodes to 1 Mbps in 2020, and from 1 Mbps to 5 Mbps in 2021 (except for Cayenne, Paramaribo and Georgetown). This is to improve performance and the agreed availability, taking into account the useful life of satellite network equipment and the aforementioned logistic difficulties, and to have a more suitable scenario ready for the implementation of new services.

2.30 Regarding the above, and based on provider requirements, quarterly meetings were held with the provider to discuss developments, enhancements, and the desired future vision to improve quality of service. Work continues to be carried out in that same way. Lumen continued with the process of changing last-mile providers. It should be recalled that these changes were made in 2020 in Manaus and Recife, and in 2021 at the Cayenne node.

2.31 A monthly report is sent to Montreal showing State availability values that fall below 99.7%, as the case may be, in order to penalise Lumen for cases of non-compliance. The availability of Lumen/Centurylink in 2021 is shown in **Appendix F**.

2.32 The Contact Matrix is reviewed and updated annually, emphasising that everything continues to be centralised at the Manaus NCC.

2.33 Finally, it should be noted that Contract No. 22502088 - Ground Network (MPLS based - 5/1 Mbps) services for the SAM Digital Network (REDDIG II) - 1 February 2021 until 31 December 2022, is still in force, and can be extended for two more years.

REDDIG PHONE DIRECTORY

2.34 The REDDIG Administration requested focal points to update the telephone directory (ATS and Administrative) annually or when modifications were made. In this regard, it is noted that this information is subject to the operational documents/letters of agreement between States and that any modification, in addition to being informed and coordinated with the REDDIG Administration, must be incorporated into the official documentation of the States and be communicated through the official channels.

2.35 Emphasis is made on the need to inform the different CNS units about the alternatives available to them for coordination with their counterparts, including administrative telephone services, messaging services, and REDDIG ATS speech services.

COORDINATION IMPROVEMENTS

2.36 In 2021, the request was made once again to inform the REDDIG Administration and the nodes involved of the technological changes or failures or configuration conditions in the systems of the States that affected the services provided by REDDIG (PABX, voice switching, MTA, automated systems, data networks, surveillance data exchange, etc.).

NODE CONFIGURATION BACK-UP

2.37 In 2021, back-ups were made of network equipment configurations, for each station, which are stored and available at the Manaus NCC.

SECURITY

2.38 The passwords of station routers and switches are changed annually in order to preserve the security and integrity of equipment processes and configurations. In some cases where situations were detected at State LAN level, access lists were implemented. These measures will be reinforced and new measures will be implemented once the firewalls and switches that are in the process of being supplied and installed are available. In case of any intervention by local technical staff, they should contact the NCC and report their activities and request access.

2.39 The Technical Cooperation Bureau (TCB) carried out the procurement process for the firewall equipment, as per Conclusion RCC/22-4 of the Coordination Committee of Regional Project RLA/03/901. It should be noted that the purpose of the firewalls is to provide security, standardise equipment and replace the edge routers in each node.

PROCUREMENT OF SPARE PARTS

2.40 Based on the information on the useful life of the equipment and the specificities of the logistical and administrative processes of each State, which cause spare parts shortages, it is recommended that the administrations of each State make provision for the procurement of spare parts for their nodes in order to deal with any occurrences immediately and ensure the operability of services. So far, the only State that has purchased spare parts for its nodes is Brazil, and Venezuela has some spare parts from a similar national network.

2.41 The various logistical problems, the registration of equipment with local entities, local infrastructure issues, the useful life of satellite stations, etc., the fact that the equipment is no longer being manufactured, and that spare parts will be available from the manufacturers only until 2022 inclusive, have required a greater effort in preventive and corrective maintenance, which has been adversely affected by the pandemic.

2.42 It should also be recalled that in 2020 a Skywan 1070 modem was purchased and shipped to the Maiquetía node in Venezuela. During installation, a problem was detected in relation to the type of software licence, which was solved.

SOLAR EXPLOSIONS

2.43 Solar flares affecting the satellite network are reported on an annual basis. This phenomenon, which occurs twice a year, is overcome with the geographical redundancy of the Manaus and Ezeiza NCCs.

REDDIG TRAINING PROGRAMME

2.44 Due to the pandemic, the training courses scheduled for 2020 and 2021 could not be delivered.

2.45 The following training activities had been scheduled:

- a) **Recurrent training on REDDIG operation and maintenance:**

It is a regular task for the REDDIG Administrator to deliver this training during his annual visits to the nodes, which was not feasible due to COVID-19 restrictions;

- b) **Course on firewall security and configuration policies and Advanced course on firewall management and monitoring:**

In both cases, training could not be delivered due to COVID-19, which affected the bidding process.

- c) **Training for the Manaus NCC staff on IP packet analysis using *sniffer* (RADAR, AMHS, etc):**

This activity could not take place due to COVID-19 restrictions.

2.46 With regard to RTO-09, it was to be held in Cochabamba (Bolivia), but was postponed until circumstances allowed it.

REDDIG II OPERATION AND ANALYSIS OF THE IMPLEMENTATION OF NEW SERVICES

DEVELOPMENT OF A SPACE FOR CONSULTATIONS ON THE NETWORK

2.47 The Brazilian Administration has provided NCC technical staff with a mobile phone that gives access to electronic messaging (WhatsApp, Signal, Telegram, etc.). This has greatly facilitated coordination during the pandemic. Currently, all NCC staff use this supplementary means of communication, and the Administrator uses his own mobile phone service for this same purpose.

ANTIVIRUS SOFTWARE IN NMS SERVERS

2.48 As is done every year, the antivirus was renewed for 23 NMS servers, with a 1-year licence. The renewal is due on 31 December each year. The antivirus update was carried out by the Manaus NCC staff in January 2022.

CORRECTIVE MAINTENANCE

2.49 Due to volcanic ash affecting the Guayaquil node (Ecuador), the satellite station was shut down to safeguard the integrity of the equipment. When conditions improved, prior to the start-up of the Guayaquil station, maintenance was carried out on its RF components. It should be noted that services continued to be provided over the ground network.

2.50 Failures occurred in the Lima server coolers.

2.51 There has been a failure in the source of the NMS server of the Bogotá node and a spare part is being procured to restore its operation.

PREVENTIVE MAINTENANCE

2.52 Due to the pandemic, it was not possible to comply with the preventive maintenance programme scheduled for 2021. However, it is the intention to fulfil this task in 2022, paying special attention to the RF part of each station. Only remote corrective maintenance of the software was performed.

VISIT TO THE NODES

2.53 Although two missions were intended to be undertaken by the REDDIG Administrator,

they were cancelled due to the pandemic in the Region.

2.54 Regarding this issue, Conclusion RTO/8-2 remains valid concerning the need for technical visits by the REDDIG Administrator, as also approved by the Coordination Committee of Project RLA/03/901.

ANALYSIS OF REDDIG II PERFORMANCE IMPROVEMENT REQUIREMENTS

2.55 Issues related to security, additional nodes inside and outside the Region, new services, ground network bandwidth upgrades, interconnections between Regions, etc., and aspects related to a future network, the useful life of current REDDIG equipment and possible actions to be taken in the future, continued to be analysed in 2021.

2.56 In this sense, work is being done on a platform based on the ground network, taking into account known factors (cost/benefit, delay, jitter, throughput, latency, error rate, factor interaction, etc.). This has led to rethinking whether the satellite network should continue to be considered as the primary means. In this regard, there have been some tests in which all services are carried over the ground network as the primary means, with very positive results. See Appendix G for prioritisation by February 2022.

ANALYSIS OF THE REQUIREMENTS FOR IMPROVING THE PERFORMANCE OF REDDIG II

2.57 During 2021, the analysis of issues related to security, the inclusion of additional nodes inside and outside the Region, inclusion of new services, upgrade of bandwidth of the terrestrial network, interconnections between Regions, etc. ; and aspects related to a future network, useful life of the equipment that makes up the current REDDIG and possible actions.

2.58 In this sense, work is being done on a platform based on the terrestrial network, taking into account known factors (cost/benefit, delay, jitter, throughput, latency, error rate, interaction of factors, etc.). What has led to reconsider whether the satellite network should continue to be considered as the main medium. In this sense, they have been tested in some cases, that all services are transported by the terrestrial network as the main one, the results obtained being very positive. See Appendix G for prioritization as of February 2022.

SUPPORT TO COORDINATION OF EXTRA-REGIONAL INTERCONNECTIONS

2.59 In this regard, the support provided to Trinidad & Tobago, Venezuela, Peru, Brazil, and United States (FAA) for the establishment of AMHS/P1 interconnections is noteworthy.

2.60 The Regional Office has an active participation in AMHS system interconnection processes in the Region, as well as in different services that are exchanged between States, such as tests with the Brasilia OPMET bank. It was also reported that it provides assistance in various situations that arise in each State in relation to services and systems, and which are external to REDDIG.

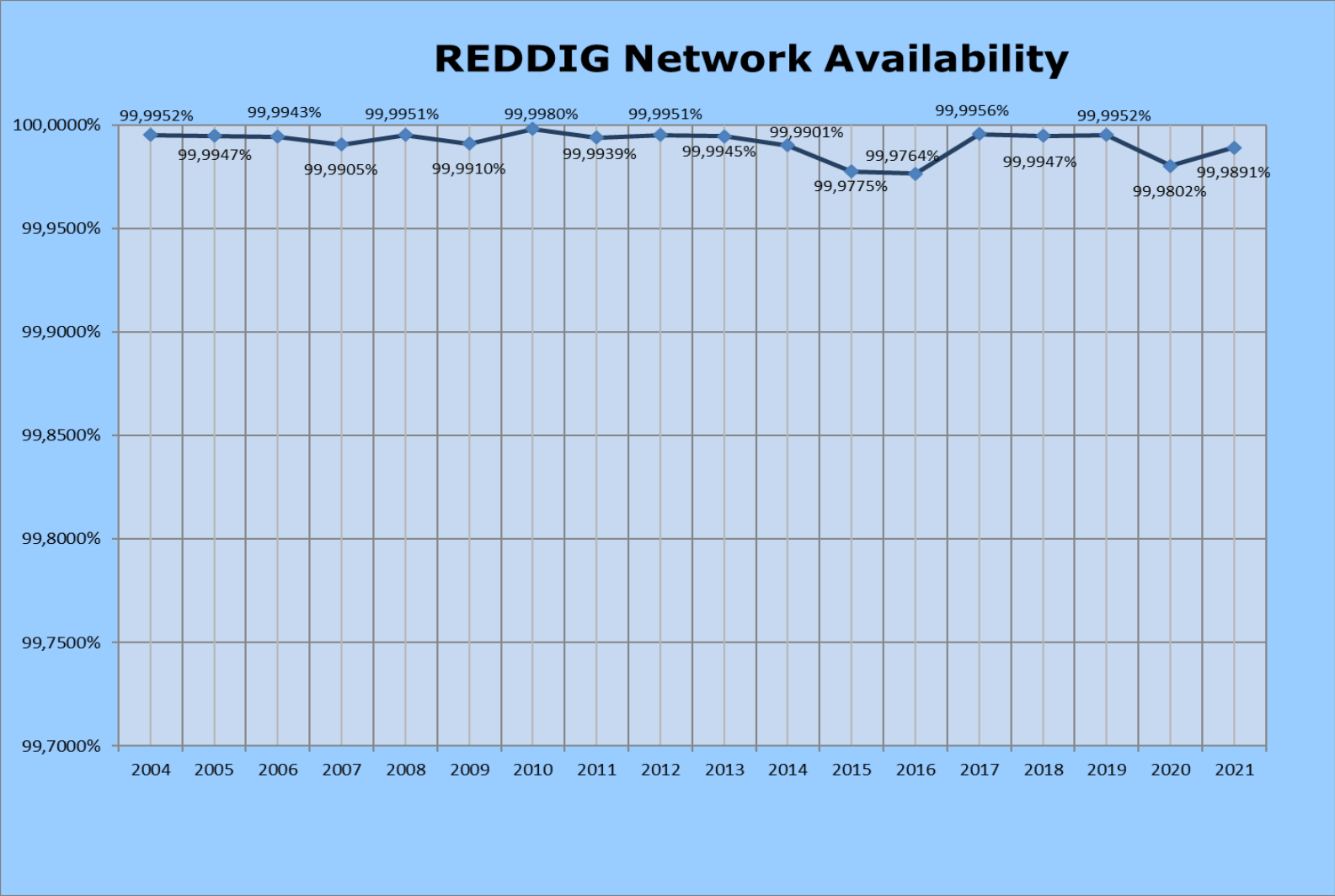
2.61 Collaboration is usually provided with all available tools in order to give the necessary support with all actions aimed at achieving interconnections, exchanges, carriage of different services and information. Support is also provided through actions aimed at information analysis, traffic capture, etc., in order to solve issues encountered in the exchanged services, as well as coordination and actions in conjunction with the MEVA Administrator, etc.

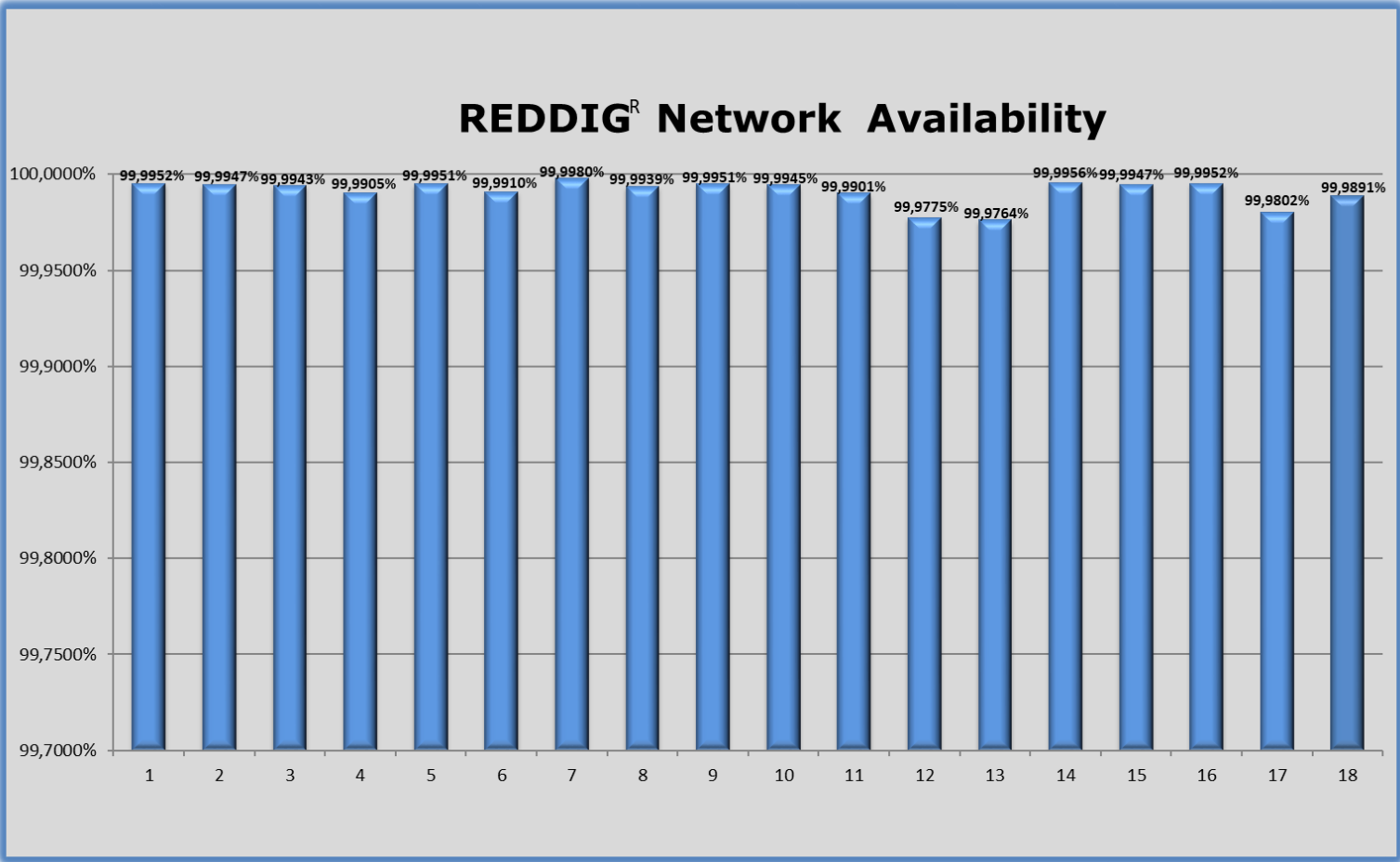
2.62 Coordinated actions were also carried out with INTELSAT in relation to interference, measurements and antenna re-aiming at the time of transponder migration (particularly with the Brasilia node).

3 Suggested action

3.1 The Coordination Committee is invited to:

- a) take note of the information provided;
- b) review the activities carried out since the RCC/24 and RCC/25 meetings, as presented in section 2 and the corresponding appendices to this working paper; and
- c) discuss the issues presented herein and other issues as it may deemed appropriate.





APÉNDICE B / APPENDIX B
MOVIMIENTOS LOGÍSTICOS /LOGISTIC MOVEMENTS

RCC/28-NE/03-WP/03

REGISTRO DE SERVICIOS - ADMINISTRACIÓN Y LOGÍSTICA DE EQUIPOS Y PARTES						
EVENTO	NODO	EQUIPO/PARTE	DOC EMBARQUE	ENVIO DE	HASTA	GASTOS ENVIO US\$
OR-21001	SUMU	Redundancy Switching System (RSS)	SAMRO-86	Lima RO	Carrasco, Uruguay	p/Uruguay (REDDIG)

APÉNDICE C/ APPENDIX C
ALMACEN OACI / ICAO STOREROOM
REPUESTOS REDDIG II – 2020 / REDDIG II SPARE PARTS - 2020

RCC/28-NE/03-WP/03

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



Description	Qty	Unit Price	Total Price
		US\$	US\$
LAN Port Server			
NPORT 5610-8	1	1 230,00	1 230,00
10 MHz Redundancy Equipment			
BIAS-T switch (10MHz redundancy system)	1	2 125,00	2 125,00
Passive DC-Block (Power injector 10MHz pass)	4	542,00	2 168,00
Passive DC-Block (RF Bandwidth)	4	130,00	520,00
Passive Splitter (2 Port RF Bandwidth)	2	265,00	530,00
Spare Parts for HPE PROLIANT DL160 Server			
Fans for HPE PROLIANT DL160 Server	10	124,00	1 240,00
Hot-Plug HP Midline HDD 500GB 7.2k SATA	2	405,00	810,00
Tx 1+1 switching system	1	8 707,00	8 707,00
Rx 1+1 switching system	1	9 523,00	9 523,00
Waveguide Switch (CPRG flange) + Control cable	1	3 528,00	3 528,00
LNB with external 10MHz reference	1	804,00	804,00
RF Filter (for LNB path)	1	676,00	676,00
N-Female Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	45,00	180,00
N-Male Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	44,00	176,00
N-Male Type coaxial connector (for CNT/LRM-600 Type coaxial cable)	4	67,00	268,00

		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				
C2	2	2.1	ROUTER Cisco 2901	CISCO	2901	1	FCZ1719C1BR
		2.2	Two port Async-Sync Serial WAN interface card	CISCO	HWIC	1	FOC17173XNG
		2.3	Two port Async-Sync Serial WAN interface card	CISCO	HWIC	1	FOC17427CCS
		2.4	two port voice interface card FXS	CISCO	VIC3	1	FOC16450PGJ
C2	3	3.1	ROUTER Cisco 2911	CISCO	2911	1	FCZ175060LX
		3.2	24 PORT RJ45 PATCH PANEL	CISCO		1	-
		3.3	01 TARJETA EVM-HD TELEFONICO	CISCO		1	-
		3.4	Cable serial CISCO V.24 DTE DB25	CISCO		1	-
		3.5	Cable serial CISCO V.24 DCE DB25	CISCO		1	-
		3.6	Cable telefonico RJ11 cross over	CISCO		1	-
		3.7	High density 8 port analog and digital extension module	CISCO		1	FOC180475BH
C2	4	4.1	ROUTER Cisco 2901	CISCO		1	FCZ175092L8
		4.2	Two port Async-Sync Serial WAN interface card	CISCO		1	FOC17427CQP
		4.3	two port voice interface card FXS	CISCO		1	FOC17224X7C
		4.4	Cable serial CISCO V.24 DCE DB25	CISCO		1	-
A2	5	5.1	Rx 1+1	Terrasat		1	TE6010431
		5.2	Handheld Terminal with 2 m cable	Terrasat		1	439318
		5.3	Accesorios para RX 1+1	Terrasat		1	-
		5.4	Cables de energia	Terrasat		2	-
		5.5	Cable Coaxial de RF con conectores tipo N 6m.	Terrasat		1	-
		5.6	Cable de Gestion para LNB	Terrasat		1	-
		5.7	Cable Coaxial de RF con conectores tipo N 30 cm.	Terrasat		2	-
A3	6	6.1	Wave Guide Switch for LNB	Logus		1	0244
		6.2	LNB Banda C			1	2386
		6.3	LNB Banda C			1	2381
B2	7	7.1	Switch Netgear de 26 Puertos	Netgear		1	39223C5U0036F
		7.2	Cable USB			1	-
B2	8	8.1	Switch Netgear de 26 Puertos	Netgear		1	39223C5U00378

APÉNDICE C/ APPENDIX C
ALMACEN OACI / ICAO STOREROOM
REPUESTOS REDDIG II – 2020 / REDDIG II SPARE PARTS - 2020

RCC/28-NE/03-WP/03

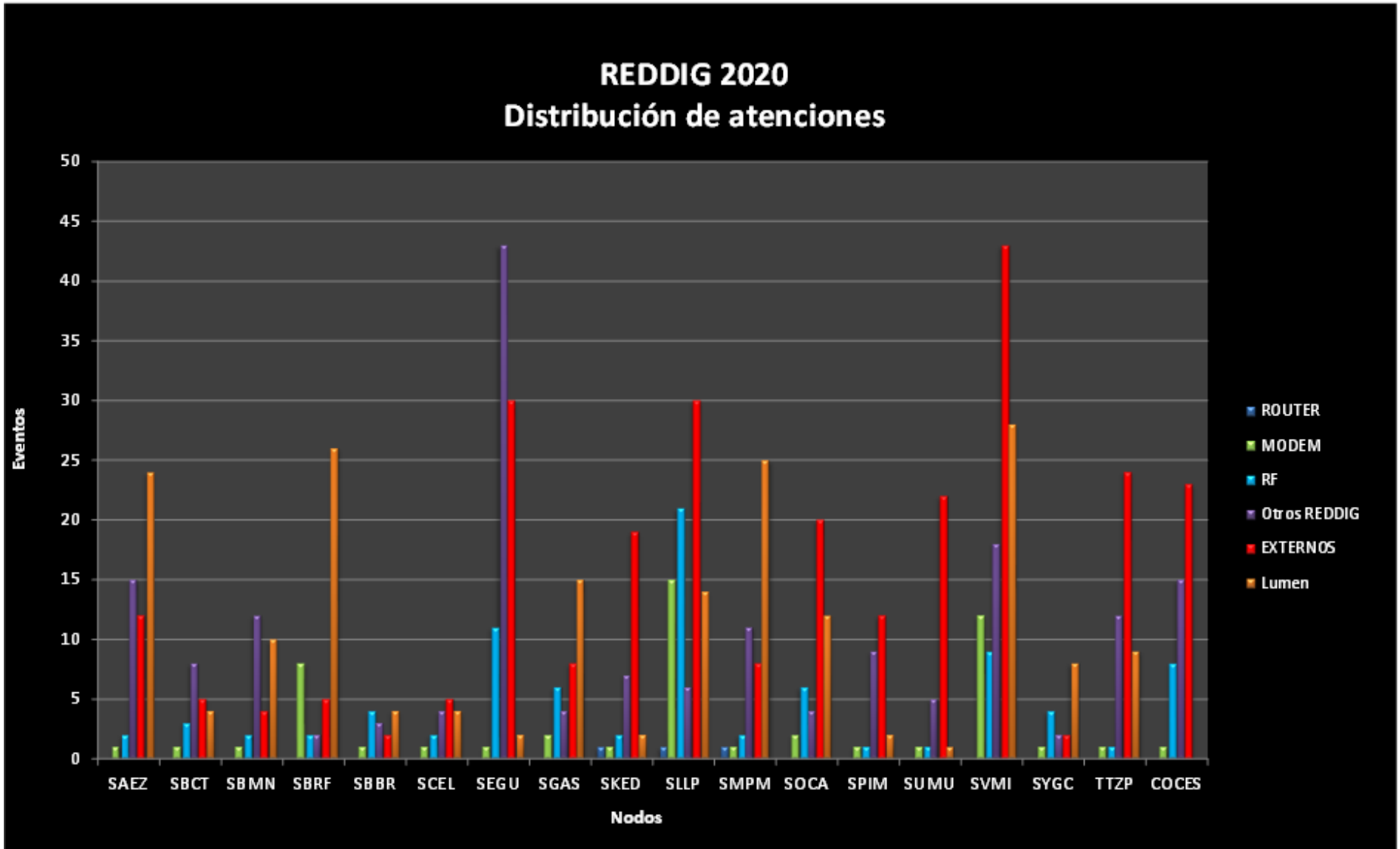
D1	10	10.1	Manuales de Curso de Rio de Janeiro				-
D2	11	11.1	Documentos Oficiales REDDIG II				-
D1	12	12.1	Manuales REDIG II				-
D1	13	13.1	Documentos Oficiales REDDIG II				-
			EQUIPOS Y PIEZAS DE REPUESTO EN GENERAL				
B3	14	14.1	Tarjeta Serial MOXA de 8 Puertos RS-232 PCI	MOXA		1	TADBB1062386
B3	15	15.1	Disco Duro Externo IOMEGA NAS 2 Tb	LENOVO		1	V9AP370005
		15.2	Fuente para Disco Duro	LENOVO		1	-
		15.3	Manuales	LENOVO		1	-
B3	16	16.1	UPS Eaton Eclipse ECO 1200 VA	EATON		1	G030D43420
B3	16	16.1	UPS Eaton Eclipse ECO 1200 VA	EATON		1	G030D43420
B3	17	17.1	Cable Multipuerto Moxa 8 puertos	MOXA		1	-
		17.2	Cable Cisco V.24 DTE	CISCO		5	-
		17.3	Cable Cisco V.24 DCE	CISCO		11	-
		17.4	Cable DB25 Male-Female			6	-
		17.5	Cable Patch Cord ethernet RJ45			6	-
C3	18	18.01	Cable Multiple Cisco 8 puertos ethernet con adaptadores a DB25	CISCO		2	-
		18.02	Two port Async-Sync Serial WAN interface card	CISCO		1	FOC17173XSA
		18.03	Four port Async-Sync Serial HWIC	CISCO		1	FOC17056CG2
		18.04	Four port Async-Sync Serial HWIC	CISCO		1	FOC17405CTK
		18.05	Eight port Async interface card	CISCO		1	FOC174673WU
		18.06	Two Port Voice Interface Card FXS.	CISCO		1	FOC1747821Q
		18.07	Two Port Voice Interface Card FXS.	CISCO		1	FOC18073ZCY
		18.08	Two Port Voice Interface Card FXS.	CISCO		1	FOC1747823M
		18.09	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WJ8
		18.10	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WD0
		18.11	Two Port Voice Interface Card FXS.	CISCO		1	FOC174781UF
		18.12	Two Port Voice Interface Card FXS.	CISCO		1	FOC18073ZJL
		18.13	Two Port Voice Interface Card FXS.	CISCO		1	FOC17461BL9
		18.14	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WGP
		18.15	Two Port Voice Interface Card FXS.	CISCO		1	FOC18158WH7
		18.16	Four Port Voice Interface Card FXS	CISCO		1	FOC1747523F

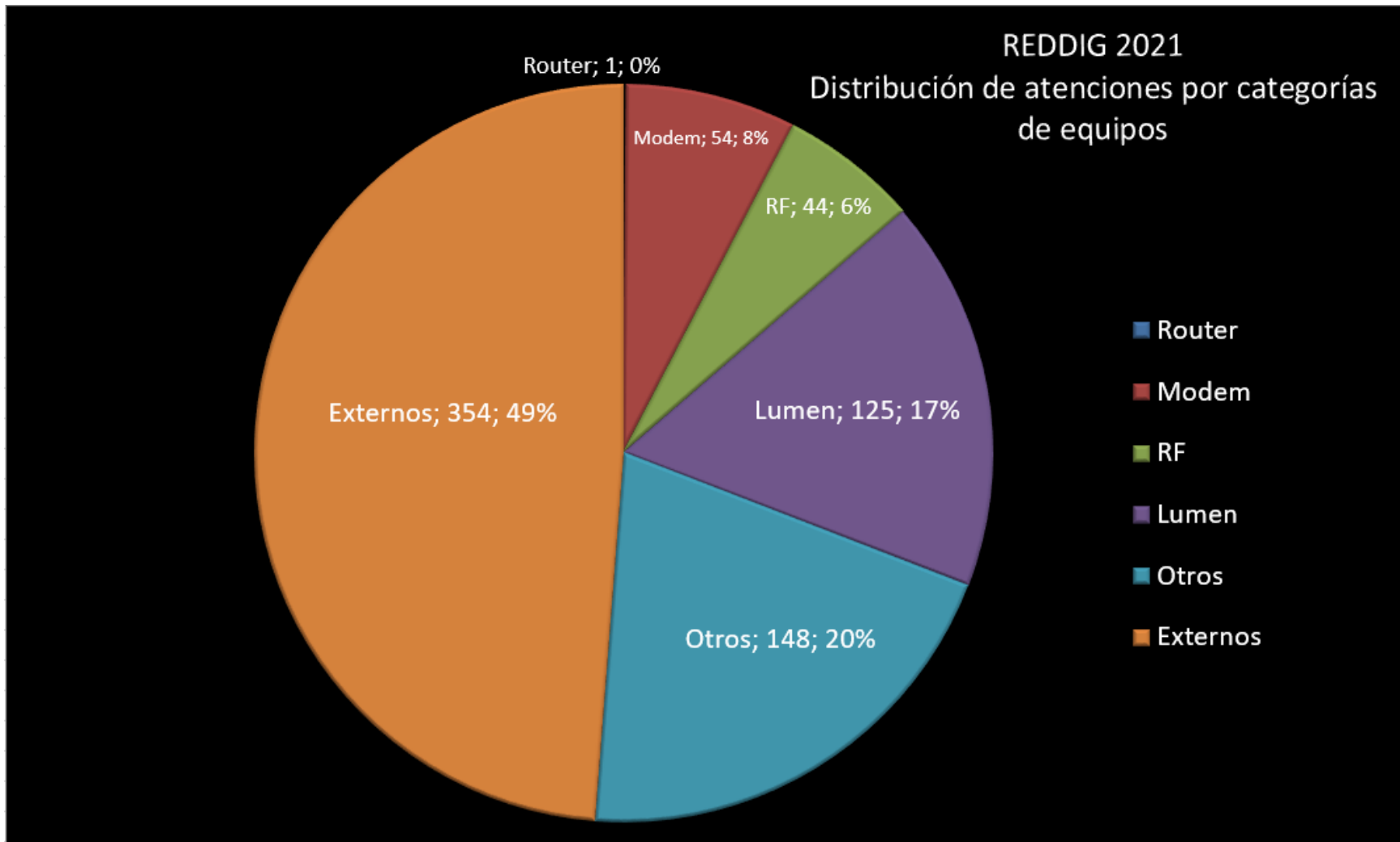
		18.17	Four Port Voice Interface Card FXS	CISCO		1	FOC174753RT
		18.18	Four Port Voice Interface Card FXS	CISCO		1	FOC174751RP
		18.19	Four Port Voice Interface Card FXO	CISCO		1	FOC1746833R
		18.20	One Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	CISCO		1	FOC17451Q66
		18.21	High Density voice/fax external Module	CISCO		1	FOC17443E08
		18.22	Two Port 2nd Gen Multiflex trunks Voice Wan Interface Card E1/T1	CISCO		1	FOC17479P39
		18.23	Eight port Async-Sync interface card	CISCO		1	FOC17446GYD
C3	19	19.1	Module Adapter for SM Slot on CI	CISCO		1	FOC17516V0F
C3	20	20.1	Module Adapter for SM Slot on CI	CISCO		1	FOC17516UU5
B1	21	21.1	Impresora Laser Jet Pro 400 M401dn	Hewlet Packard		1	VNH4222944
		21.2	Cables de Energia			1	-
A3	22	22.1	8 Port Device Server 10/100 eth	MOXA		1	TADAE101113
B1	23	23.1	RSS 16 SLOT 4U Chasis	DATAPROBE		1	115010100300024
		23.2	Power Module	DATAPROBE		1	193008400000128
		23.3	Network Control Card	DATAPROBE		1	134006500400093
		23.4	Dual 8 wire Module Jack A/B card	DATAPROBE		1	111020200200892
		23.5	Dual 8 wire Module Jack A/B card	DATAPROBE		1	111020200200893
		23.6	D25 A/B Card	DATAPROBE		1	111020000100593
		23.7	D25 A/B Card	DATAPROBE		1	111020000100594
		23.8	D25 A/B Card	DATAPROBE		1	111020000100643
		23.9	D25 A/B Card	DATAPROBE		1	111020000100667
B1	24	24.1	RSS 16 SLOT 4U Chasis	DATAPROBE		1	115010100300011
		24.2	Power Module	DATAPROBE		1	193008400000115
		24.3	Network Control Card	DATAPROBE		1	134006500400080
		24.4	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200889
		24.5	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200890
		24.6	Dual 8 wire Module Jack A/B card	DATAPROBE		1	11020200891
		24.7	D25 A/B Card	DATAPROBE		1	111020000100629
		24.8	D25 A/B Card	DATAPROBE		1	111020000100630

APÉNDICE C/ APPENDIX C
ALMACEN OACI / ICAO STOREROOM
REPUESTOS REDDIG II – 2020 / REDDIG II SPARE PARTS - 2020

RCC/28-NE/03-WP/03

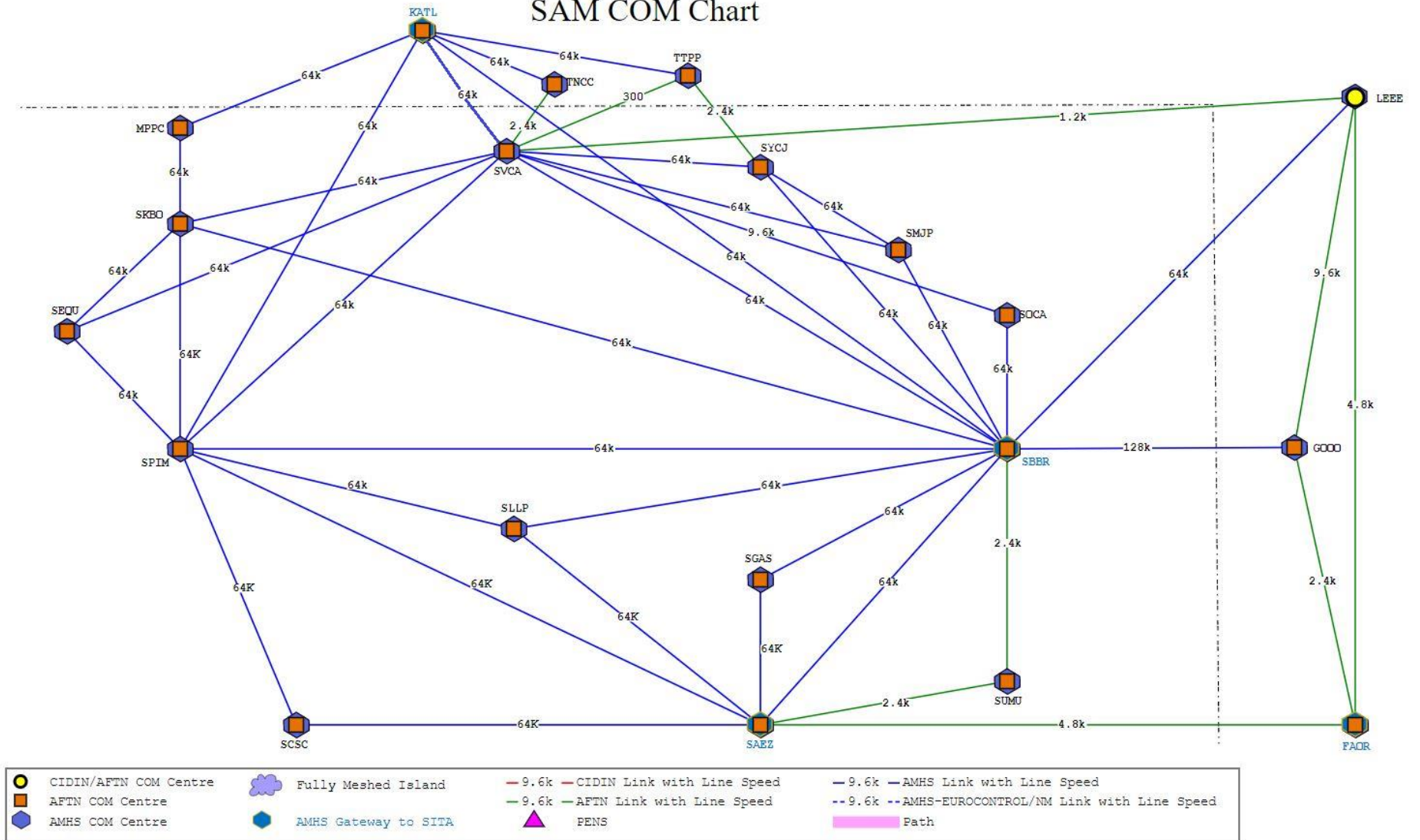
C3	25	25.1	High density 8 port analog and digital extension module	CISCO		1	FOC174049WM
		25.2	High density 8 port analog and digital extension module	CISCO		1	FOC174049YH
		25.3	Cable de consola de Cisco			2	-
		25.4	KVM Extender			1	F3D46058D140097
		25.5	Convertidor USB - Serial			1	-
		25.6	Telefono IP DEPAEPE	DEPAEPE		1	PE02001120001826
		25.7	Mouse Optico USB Negro			1	-
		25.8	Regleta electrica con 05 tomas			2	-
		25.9	Teclado Estandar K120	Logitech		1	-
B2	26	26.1	Filtro RF	NORSAT		1	C001128132
		26.2	Filtro RF	NORSAT		1	C001128140
		26.3	Barras de Anclaje de acero			3	-
		26.4	Bloques de anclaje de plastico negro			6	-
		26.5	Tomillos de sujecion de acero			20	-
		26.6	Blank panel para RSS			3	-
		26.7	Regleta electrica con 05 tomas			2	-
		26.8	Adaptadores Cambia genero DB25			15	-
C1	27	27.1	Pantalla LCD 27"	SAMSUNG		1	0293H4MDB00709
C1	28	28.1	HP ProLiant DL160 Gen8 Base - Server	Hewlett Packard		1	CZJ34500JZ
C2	30	30.1	Router Cisco 2901	CISCO	2901	1	FCZ175092KM
C2	31	31.1	Router Cisco 2901	CISCO	2901	1	FCZ170391DX
C2	32	32.1	Router Cisco 2901	CISCO	2901	1	FCZ170592LK
A3	61	61.1	Firewall NETGEAR Prosafe VPN Dual Wan Gigabit	Netgear		1	2CH23A3W501B3





*58% of the support corresponded to “Others” and “External”

SAM COM Chart



APÉNDICE E / APPENDIX E
 REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

RCC/28-NE/03-WP/03

STATE/ ESTADO	Name / Nombre	Position/ Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
ARG	Moira Lidia Callegare, ANAC	Jefe de Departamento CNS	mcallegare@anac.gob.ar	(5411) 594-13097	Edificio ANAC Central Paseo Colón 1452, Ciudad Autónoma de Buenos Aires, CP 1063
	Sergio Alberto Vallone, ANAC	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
	Lic. Fabian H. Romero	Gerente Infraestructura y Tecnología	fromero@eana.com.ar	+54 11 4320-2384 Cel. +54 911 5139-6316	EANA S.E. Rivadavia 578, Piso 5°. C1002AAQ 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) 2101-6620	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
	Bruno Pacheco Santos Azevedo Costa	Asesor de Comunicaciones DECEA	pachecobpsac@decea.gov.br	(55 21) 21016684	Avenida General Justo, 160 Rio de Janeiro, Brasil
BOL	Javier Osvaldo Campos Gonzáles, DGAC	Inspector CNS	jcamos@dgac.gob.bo	(5912) 7152-0131	
	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@asana.bo	(5912) 237-0340	Aeropuerto Internacional El Alto, Bloque Técnico AASANA

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REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

RCC/28-NE/03-WP/03

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	Pedro Pastrían 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)
	Andrés Colmenares	Coordinador Grupo de Comunicaciones y Redes Aeronáuticas Dirección de Telecomunicaciones y Ayudas a la Navegación Aérea	andres.colmenares@aerocivil.gov.co	(571) 296-2940	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
	Robinson Quintero Ladino	Grupo Sistemas de Comunicaciones	robinson.quintero@aerocivil.gov.co	(571) 296-2241	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
	Gabriel Enrique Guzmán Pachon	Jefe del Grupo 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)

APÉNDICE E / APPENDIX E
 REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

RCC/28-NE/03-WP/03

STATE/ ESTADO	Name / Nombre	Position/ Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
ECU	Nancy Tapia	Analista CNS para la Navegación Aérea	ntapia@aviacioncivil.gob.ec	593 2 294 7463 EX:2197	Av. De las Américas, Edif. Servicio para la Navegación Aérea, Guayaquil
FRA	Serge Cupli	Assistant de Subdivision Technique charge de la DO/QST	serge.cupoli@aviation-civile.gouv.fr	594 594 359371	Aviation Civile, Aeroport de Cayenne Félix Eboué, 97351 Matoury, Guyane Francaise
GUY	Mortimer Salisbury, Guyana Civil Aviation Authority	Supervisor - AN & T	mbsalisbury2000@yahoo.com msalisbury@gcaa-gy.org	(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

APÉNDICE E / APPENDIX E
REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

RCC/28-NE/03-WP/03

PAR	Víctor Morán Maldonado, DINAC	Gerente de Telecomunicaciones	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 Departamento Comunicaciones	apereira@dinacia.gov.py aldopereira26@gmail.com	(595-21) 758-5201	
	Ronald Benítez, DINAC	Jefe Sección USAT	ronaldbenitez@gmail.com	(59521) 758-5201	
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) 414-1514	Aeropuerto Internacional Jorge Chávez, Callao, Perú
SUR	Cicilson Jurgen	Acting Chief of CADSUR CNS Division	jurmaja@hotmail.com and cns@cadsur.sr	(597) 531288; (597) 498898; (597) 325123, Mobile: (597) 8792810	J. A. Pengel International Airport, Zanderij, district Para, Zorg en Hoop Airport, Paramaribo
	Kofi Orlando	CNS Supervisor	oomken80@gmail.com	(597) 531288; (597) 498898; (597) 325123, Mobile: (597) 8531923	J. A. Pengel International Airport, Zanderij, district Para, Zorg en Hoop Airport, Paramaribo

APÉNDICE E / APPENDIX E
REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

RCC/28-NE/03-WP/03

STATE/ ESTADO	Name / Nombre	Position/ Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
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) 6040408, Ext. 4520	Aeropuerto Internacional de Carrasco Av. Wilson Ferreira Aldunate 253 Paso Carrasco, Canelones
	Ricardo Clavijo, DINACIA	Director de Electrónica	rclavijo@dinacia.gub.uy		
VEN	Jarumy Castillo, INAC, INAC	Coordinadora CNS	ja.castillo@inac.gob.ve	(58212) 355-2143; (58424) 354-9924	Edificio ATC, 2do piso, Dpto. de Comunicaciones, Maiquetía, Edo. Vargas, Venezuela

APÉNDICE F / APPENDIX F

RCC/28-NE/03-WP/03

DISPONIBILIDAD DE LUMEN DURANTE EL AÑO 2021 / AVAILABILITY OF CENTURYLINK DURING THE YEAR 2021

	jan21		feb21		mar21		abr21		may21		jun21		jul21		ago21		sep21		oct21		nov21		dez21		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	Availability	USD Credit	USD Credit	
SAEZ	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		1,145	99,96%
SBBR	98,538%	12,20	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		98,844%	6,762	100,000%		100,000%		100,000%		100,000%		100,000%		18,962	99,78%
SBCT	100,000%		99,525%	1,38	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		1,382	99,96%
SBMN	100,000%		100,000%		100,000%		99,604%	0,80	98,930%	6,43	100,000%		96,078%	30,24	97,681%	16,86	98,611%	9,09	100,000%		100,000%		100,000%		100,000%		63,427	99,24%
SBRF	100,000%		96,922%	21,95	98,798%	7,12	92,740%	54,98	98,864%	6,60	100,000%		97,521%	17,21	100,000%		100,000%		100,000%		100,000%		98,980%	5,69	100,000%		113,556	98,65%
SCEL	100,000%		93,349%	52,08	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		52,078	99,45%
SEGU	100,000%		100,000%		100,000%		98,985%	5,863	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		5,863	99,92%
SGAS	100,000%		100,000%		99,518%	3,413	100,000%		100,000%		100,000%		100,000%		100,000%		93,688%	112,725	97,201%	46,856	100,000%		100,000%		100,000%		162,994	99,20%
SKED	100,000%		100,000%		100,000%		97,982%	13,572	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		13,572	99,83%
SLLP	100,000%		100,000%		100,000%		99,585%	3,047	100,000%		99,175%	13,912	97,348%	62,328	100,000%		100,000%		100,000%		100,000%		97,860%	48,76	100,000%		128,047	99,50%
SLCB												97,348%	53,39	100,000%		72,571%	615,828	100,000%		100,000%		100,000%		100,000%		669,218	94,99%	
SMPM	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		96,131%	140,619	100,000%		99,628%	2,837	100,000%		143,456	99,65%
SOCA	100,000%		100,000%		100,000%		94,510%	138,054	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		138,054	99,54%
SPIM	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		0	100,00%
SUMU	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		0	100,00%
SVMI	100,000%		100,000%		99,678%	0,629	100,000%		100,000%		100,000%		100,000%		99,392%	8,809	100,000%		100,000%		100,000%		100,000%		100,000%		9,438	99,92%
SYGC	100,000%		100,000%		100,000%		98,934%	36,323	96,983%	128,514	100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		164,837	99,66%
TTZP	100,000%		100,000%		95,800%	34,71	100,000%		100,000%		100,000%		100,000%		100,000%		96,711%	26,602	100,000%		100,000%		100,000%		100,000%		61,312	99,38%
SBRJ																	100,000%		100,000%		100,000%		100,000%		100,000%		0	100,00%
ICAD												100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		100,000%		0	100,00%	
	94,363%	12,20	93,878%	75,41	94,100%	45,87	93,828%	78,27	93,958%	187,41	94,231%	142,43	104,905%	163,18	105,329%	32,43	108,977%	764,25	110,716%	188,62	110,936%	54,448	111,09%	2,84	1747,341	1988,62%		
																										USD	1747,34	99,43%

Note: SLA-Availability for all nodes: 99.70%
 Nodo Cochabamba, 21 Jun 2021
 Nodo Rio de Janeiro, 31 Aug 2021
 Nodo Oficina Regional OACI, 14 Jun 2021

APÉNDICE F / APPENDIX F

RCC/28-NE/03-WP/03

DISPONIBILIDAD DE LUMEN DURANTE EL AÑO 2021 / AVAILABILITY OF CENTURYLINK DURING THE YEAR 2021

Prioridad FEB 2022

	Argentina	Bolivia	Brasil Recife	Brasil Manaus	Brasil Brasilia	Brasil Curitiba	Chile	Colombia	Ecuador	Francia	Guyana	Paraguay	Perú	Suriname	Trinidad & Tobago	Uruguay	Venezuela	Terrestre	Satelital
Argentina		Terr	Terr	Terr	Terr	Terr	Terr	Sat	Terr	Sat	Sat	Terr/Sat	Terr	Terr	Sat	Terr	Terr	68,75%	31,25%
Bolivia	Terr		Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	100,00%	0,00%
Brasil Recife	Terr	Sat		Terr	Terr	Sat	Sat	Sat	Sat	Terr	Sat	Sat	Sat	Sat	Sat	Terr	Sat	31,25%	68,75%
Brasil Manaus	Sat	Sat	Sat		Sat	Sat	Sat	Terr	Sat	Terr	Sat	Sat	Sat	Sat	Sat	Sat	Sat	12,50%	87,50%
Brasil Brasilia	Terr	Terr	Terr	Terr		Terr	Sat	Terr	Sat	Terr	Sat	Terr	Terr	Terr	Sat	Sat	Terr	68,75%	31,25%
Brasil Curitiba	Terr	Sat	Sat	Terr	Sat		Sat	Sat	Sat	Sat	Sat	Terr	Sat	Sat	Sat	Terr	Sat	25,00%	75,00%
Chile	Terr	Sat	Sat	Terr	Sat	Sat		Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	12,50%	87,50%
Colombia	Sat	Sat	Sat	Sat	Terr	Sat	Sat		Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	93,75%	6,25%
Ecuador	Sat	Sat	Sat	Terr	Terr	Sat	Sat	Terr		Sat	Sat	Sat	Terr	Sat	Sat	Sat	Sat	25,00%	75,00%
Francia	Terr	Sat	Sat	Sat	Terr	Sat	Sat	Sat	Sat		Sat	Sat	Sat	Sat	Sat	Sat	Sat	12,50%	87,50%
Guyana	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat		Sat	Sat	Sat	Sat	Sat	Sat	0,00%	100,00%
Paraguay	Terr/Sat	Sat	Sat	Sat	Terr	Terr	Sat	Sat	Sat	Sat	Sat		Sat	Sat	Sat	Sat	Sat	18,75%	81,25%
Perú	Sat	Terr	Sat	Sat	Terr	Sat	Terr	Terr	Sat	Sat	Sat	Sat		Sat	Sat	Sat	Terr	31,25%	68,75%
Suriname	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr	Terr		Terr	Terr	Terr	100,00%	0,00%
Trinidad & Tobago	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Terr		Sat	Sat	6,25%	93,75%
Uruguay	Terr	Sat	Terr	Terr	Terr	Terr	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat		Terr	37,50%	62,50%
Venezuela	Sat	Sat	Sat	Sat	Terr	Sat	Terr	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Sat	Terr		18,75%	81,25%
																		38,97%	61,03%
																		100,00%	