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

Follow-up to the implementation of activities under the project on ground-ground and ground-air applications for the SAM Region (Project D2)

(Presented by the Secretariat)

SUMMARY

This working paper presents updated information on the status of implementation of activities under the project on *Ground-ground and air-ground ATN applications* (D2) of the *Ground-ground/air-ground communication infrastructure* programme for the SAM Region.

REFERENCE:

- Final report of the Fifteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/15) - Regional Project RLA/06/901 (Lima, Peru, 11-15 May 2015).
- Second Meeting of Air Navigation and Safety Directors (Lima, Peru, 14 -16 September 2015)

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

1. Introduction

1.1 The SAMIG/15 meeting, as a follow-up to the implementation of the AMHS interconnection, took note that no progress had been made in its operational implementation. According to the Declaration of Bogota, 26 AMHS interconnections should be implemented by late 2016, four of which were already implemented, and the remaining 22 would be implemented as follows: 1 in 2013, 11 in 2014, 5 in 2015, and 5 in 2016.

1.2 In 2014, initial AMHS interconnection trials were conducted between Brazil-Peru, Brazil-Argentina, and Brazil-Paraguay. The results of the Brazil-Peru and Brazil-Argentina trials were positive, but commissioning was delayed due to activities in Brazil related to the organisation of the FIFA World Cup, the restructuring of AMHS architecture, and installation of the REDDIG II digital network, as well as problems with AMHS circuits during the initial operational phase of REDDIG II, which were resolved by the installing company after a period of almost two months.

1.3 In this sense, the States concerned informed the SAM/IG/15 meeting that they would do their utmost to complete the interconnections considered in the Declaration of Bogota.

Proposal of connection of an AMHS system in the SAM Region with SITA

1.4 The SAM/IG/15 meeting was informed by SITA that, due to the expansion of AMHS interconnections, it had started the AMHS connections with air navigation service providers of the EUR/NAT Region to replace the existing AFTN connections. It also informed of its plans to coordinate similar changes with SAM States, specifically to connect with Peru and Brazil.

1.5 For the SITA AMHS interconnection in a mixed AMHS and AFTN environment, it was noted that an AMHS/SITA Type X (Interconnection Architecture) document had been developed by the EUR/NAT AFSG Operations Group and approved by the AFSG/17 meeting.

1.6 In this regard, the SAM/IG/15 meeting agreed to request the Secretariat to send a formal letter to all States and ANSPs of the Region informing them of SITA's proposal, with a view to receiving comments from the States by 31 August 2015, in such a way that SITA could have sufficient time to propose an interconnection plan at the SAMIG/16 meeting. Accordingly, the meeting formulated *Conclusion SAM/IG/15-06: SITA AMHS interconnection with AMHS systems installed in the SAM Region.*

Implementation of AIDC interconnections

1.7 Regarding the implementation of AIDC interconnections, which are also considered a priority in the Declaration of Bogota, the SAM/IG/15 meeting took note of the progress made. More information is found in WP/10 of this agenda item.

ATS speech communications between adjacent border control towers

1.8 The SAMIG/15 meeting analysed the existing issues concerning speech communications between adjacent border control towers, whether in different or in the same TMA, and recognised the existence of a broad variety of communication media between them (VHF, private telephony links, radio links, satellites of up to three (3) end-to-end hops), with the respective inconveniences that implies.

1.9 In this regard, the SAM/IG/15 meeting reviewed the results of the analysis conducted by Brazil on the status of implementation of these circuits, and agreed with the results in that most circuits have been implemented through the REDDIG.

1.10 Likewise, the meeting agreed that all adjacent border ATS speech services, agreed through existing or future letters of agreement, should operate through:

a) REDDIG access provided the States involved deem it necessary, and that local segments do not entail additional satellite hops.
b) Radio link (VHF FM or other bilaterally agreed) in all cases, whether as primary or secondary means.
c) International telephony, as secondary or tertiary means.
d) And that ATS speech services should be recorded.

1.11 In this regard, the meeting formulated conclusion *SAM/IG/15-05: Requirements for ATS speech services between adjacent border ATS units.*

Access to SITA data link services through REDDIG II

1.12 The SAM/IG/15 meeting took note of the progress made in SITA's proposal for States that had CPDLC ADS C service to use the REDDIG to access the SITA AIRCOM data link network in order to improve compliance with the high-availability requirement for ATC data link services that are implemented in the South American Region.

1.13 In this regard, the Meeting took note that on 15 April 2015, the Administration of Chile approved testing of SITA data service access through the Santiago REDDIG node, which was to start in July for a period of three months. Accordingly, the results would be submitted to SAM/IG/16.

1.14 Likewise, in response to a request by ARINC to also consider ARINC's ground-air data links through the REDDIG II, the meeting noted that ARINC would submit the link requirements and the respective technical details to SAM/IG/16 or to the Nineteenth Coordination Meeting of Project RLA/03/901 (REDDIG) RCC/19 (March 2016).

2 Discussion

Follow-up to the implementation of AMHS system interconnection

2.1 As a result of the delay in the implementation of the AMHS interconnection, the Second Meeting of Air Navigation and Safety Directors updated the implementation dates for the AMHS interconnection, as shown in **Appendix A** to this working paper.

2.2 AMHS tests between the Brasilia MTA and the Lima MTA continued in early September 2015 with positive results in the operational exchange of messages. **Appendix B** to this working paper presents the display results of AMHS tests between Brasilia and Lima. In this regard, for operational AMHS interconnection between Brazil and Peru, only the approval is required for start up.

2.3 In early October 2015, AMHS interconnection tests were restarted between Brazil and Argentina. The connection used in this regard is shown in **Appendix C** to this working paper.

2.4 Brazil also conducted tests between the Brasilia MTA and the Montevideo MTA, with positive results. At this meeting, reports are expected on the start up of operations of the AMHS interconnections between Brazil-Peru, Brazil-Argentina, and Brazil-Uruguay.

2.5 **Appendix D** to this working paper contains a list of focal points of SAM States responsible for coordinating the implementation of AMHS interconnections. The Meeting should review this list and update it as necessary.

2.6 Colombia informed of its interest to start AMHS tests with Brazil, Ecuador, Panama, and Venezuela. In this regard, the Meeting will analyse initial coordination for their execution.

Proposed connection between an AMHS system of the SAM Region and SITA

2.7 As follow-up to *Conclusion SAM/IG/15-06: SITA AMHS interconnection with AMHS systems installed in the SAM Region,* the Secretariat circulated the SITA AMHS interconnection document to all SAM States for comments and any expression of interest in interconnecting their AMHS system with SITA.

2.8 Only Brazil informed the ICAO SAM Regional Office of its interest to connect with SITA. This was conveyed to SITA that, in turn, prepared a plan, shown in WP/14, presented by SITA and Brazil for discussion by the Meeting. Thus, conclusion SAM/IG/15/6 is deemed finalised.

Access to SITA data link services through REDDIG II

2.9 In order to coordinate activities for the implementation of the data link service (SITA CPDLC ADS C) corresponding to the Oceanic FIR of Chile, several teleconferences were held between the focal points of Brazil and Chile, the REDDIG Administration and SITA. As a result, it was agreed to implement the configuration shown in **Appendix E** to this working paper. Based on the established configuration, the test date was set for 8 October 2015. Actual data link traffic will be used for the tests, keeping the previous data link connection as back up.

AMHS interconnection implementation activities - Period 2017-2019

2.10 The second meeting of air navigation and safety directors reviewed the implementation of ASBU module B0-FICE *Increased interoperability, efficiency and capacity through ground-ground integration* for the period 2017-2019. This ASBU module includes the implementation of new AMHS interconnections not contemplated for the period 2014-2016, corresponding to AMHS interconnections with French Guiana (2) and inter-regional AMHS interconnections (11). The inter-regional interconnections would be Argentina (1), Brazil (3), Chile (1), Guyana (1), Peru (1), and Venezuela (4). The distribution for the period 2017-2019 is shown in **Appendix F** to this agenda item.

3 Suggested action

3.1 The Meeting is invited to:

a) take note of the information contained in this working paper;

b) review the aspects contained in section 2 and the corresponding appendices to this working paper, and propose actions to fulfil the proposed activities:

- ✓ AMHS interconnection implementation dates presented in Appendix A;
- ✓ update of focal points for the implementation of AMHS interconnection, presented in Appendix D;
- ✓ AMHS interconnection implementation activities for the period 2017-2019, shown in Appendix F; and

c) Review other related issues that it may deem appropriate.

APPENDIX A

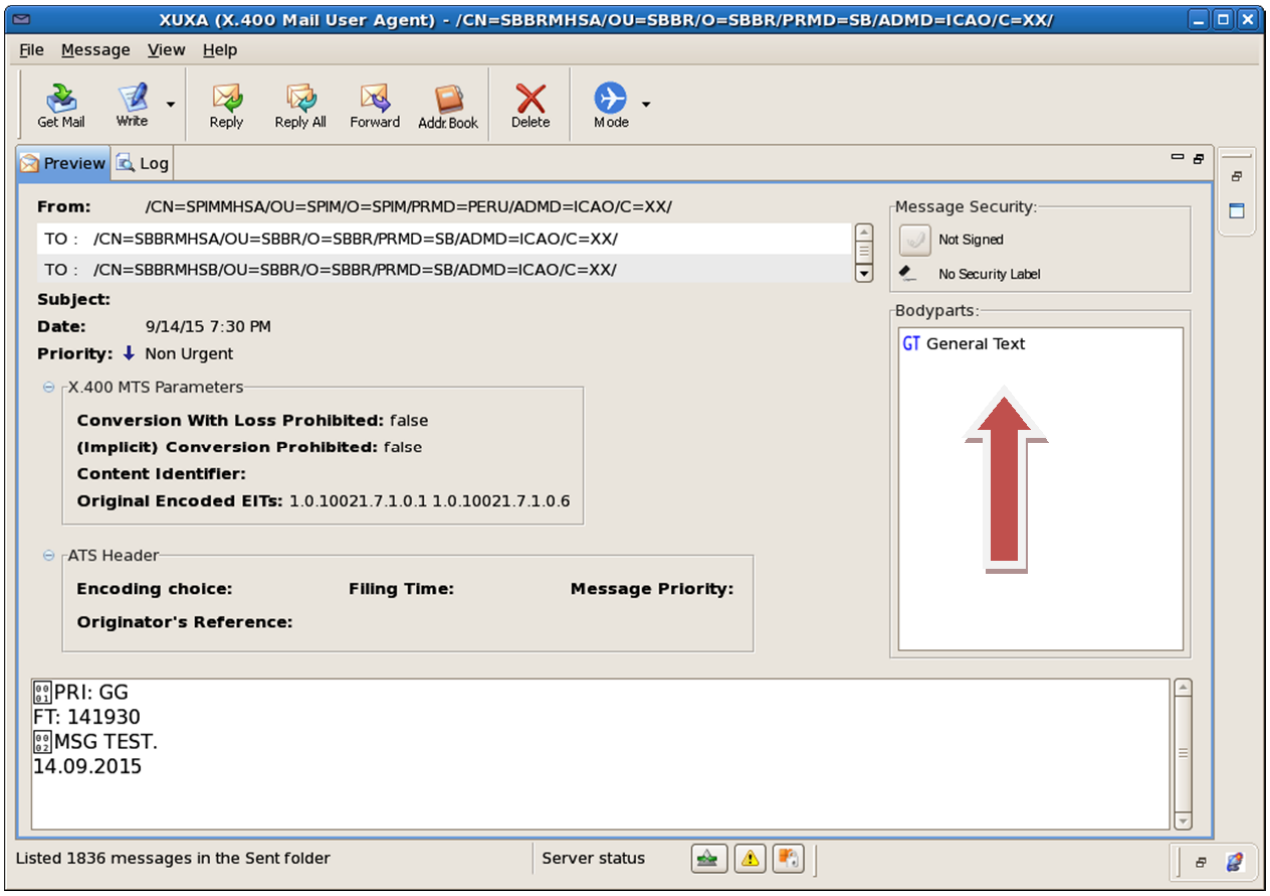
AMHS INTERCONNECTION REQUIREMENT AND DATE OF IMPLEMENTATION

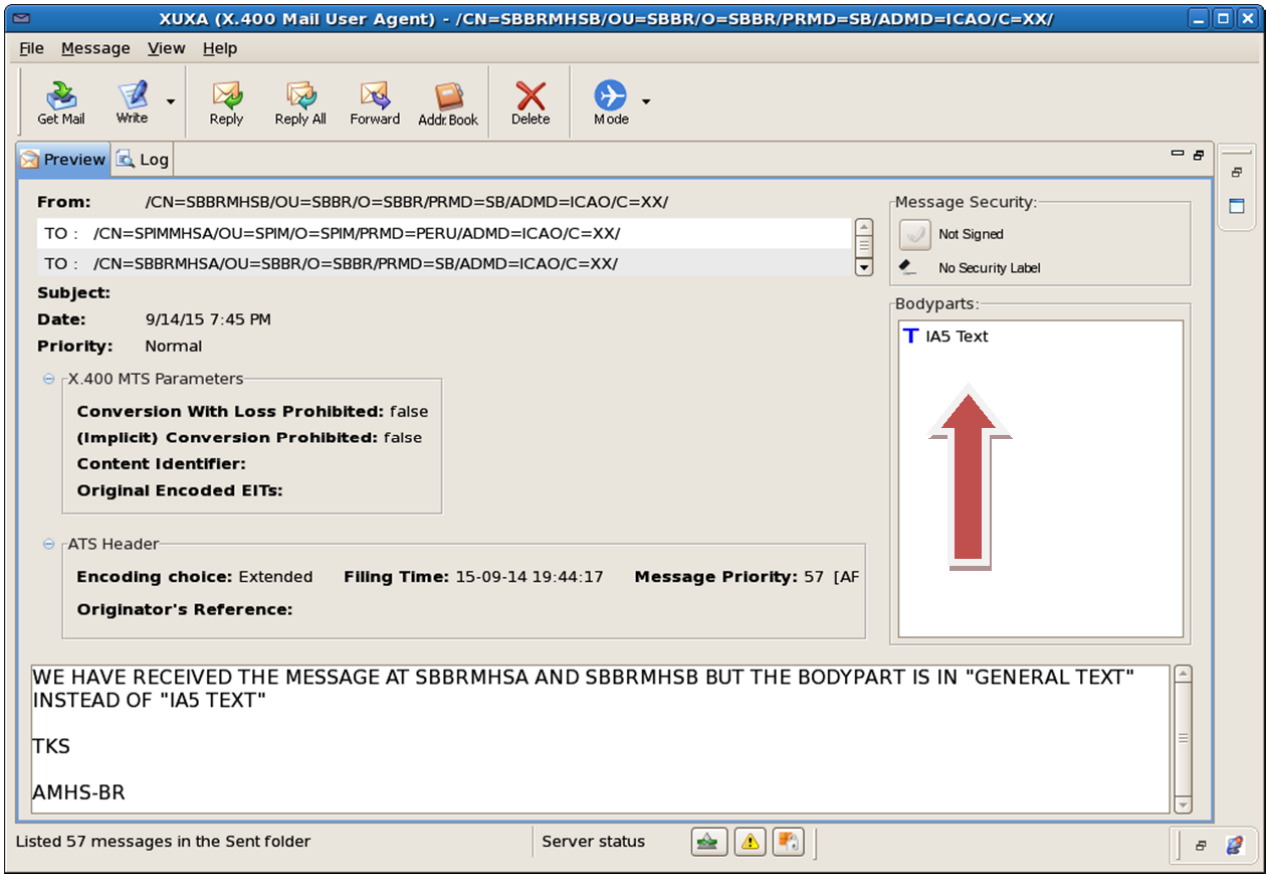
STATE	AMHS INTERCONNECTION REQUIREMENT/	DATE OF IMPLEMENTATION/	REMARKS
Argentina	Bolivia	Mar 2016	
	Brazil	Dec 2015	Operational implementation pending.
	Chile	Dec 2015	
	Paraguay	Mar 2012	Implemented
	Peru	Nov 2015	
	Uruguay	Dec 2015	
Bolivia	Argentina	Mar 2016	
	Brazil	Apr 2016	
	Peru	May 2016	
Brazil	Argentina	Sep 2015	Operational implementation pending
	Bolivia	Apr 2016	
	Colombia	Dec 2015	
	Guyana	Mar 2016	
	French Guiana	TBD	AMHS implementation pending.
	Paraguay	Dec 2015	
	Peru	Nov 2015	
	Suriname	Mar 2016	
	Uruguay	Dec 2015	
	Venezuela	Dec 2015	Reschedule date of implementation
Chile	Argentina	Dec 2015	
	Peru	Dec 2015	
Colombia	Brazil	Dec 2015	
	Ecuador	Dec 2015	
	Panama	Dec 2015	
	Peru	Sep 2010	Implemented
	Venezuela	Jun 2016	
Ecuador	Colombia	Dec 2015	
	Peru	Jul 2012	Implemented
	Venezuela	May 2016	
French Guiana (France)	Brazil	TBD	AMHS implementation pending
	Venezuela	TBD	AMHS implementation pending
Guyana	Brazil	Mar 2016	

STATE	AMHS INTERCONNECTION REQUIREMENT/	DATE OF IMPLEMENTATION/	REMARKS
	Suriname	Jun 2011	Implemented
	Venezuela	Dec 2016	
Panama	Colombia	Dec 2015	
Paraguay	Argentina	Mar 2012	Implemented
	Brazil	Dec 2015	
Peru	Argentina	Nov 2015	
	Bolivia	May 2016	
	Brazil	Jul 2014	Operational implementation pending.
	Chile	Dec 2015	
	Colombia	Sep 2010	Implemented
	Ecuador	Jul 2012	Implemented
	Venezuela	Dec 2016	
Suriname	Brazil	Dec 2016	
	Guyana	Jun 2011	Implemented
	Venezuela	Jun 2016	
Uruguay	Argentina	Dec 2015	
	Brazil	Dec 2015	
Venezuela	Brazil	Dec 2015	
	Colombia	Jun 2016	
	Ecuador	May 2016	
	Guyana	Dec 2016	
	French Guiana	TBD	AMHS implementation pending.
	Peru	Jun 2016	
	Suriname	Jun 2016	

APPENDIX B

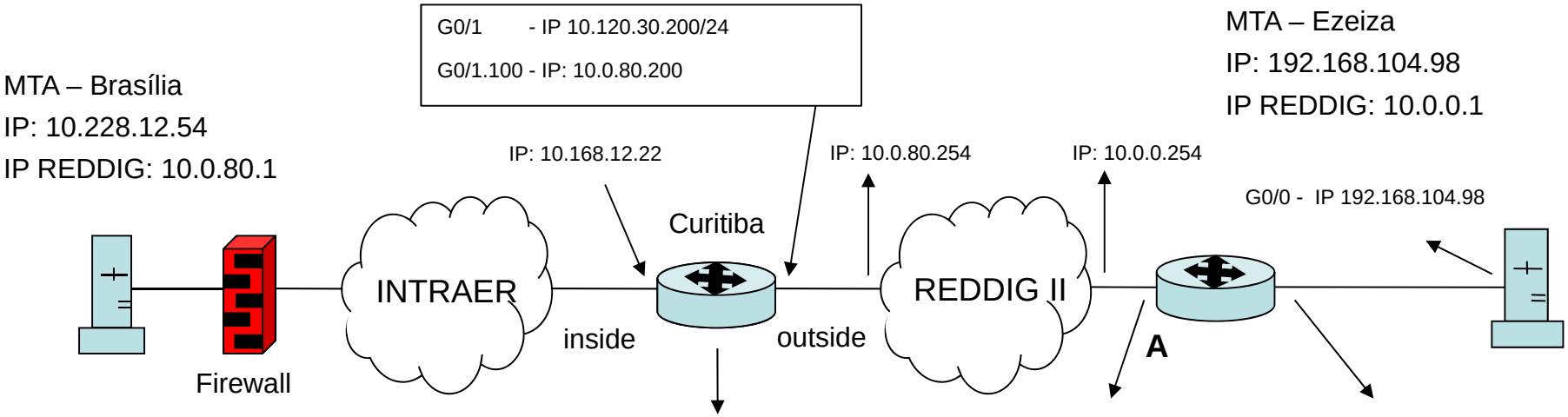
RESULTS OF THE AMHS INTERCONNECTION TESTS BETWEEN BRAZIL AND PERU





Esquema para Interconección
AMHS/interconnection AMHS diagrams

Brasília/Ezeiza



APPÉNDIX D

NATIONAL FOCAL POINTS/PUNTOS FOCALES NACIONALES
IMPLEMENTATION OF INTERCONNECTION OF AMHS SYSTEM /IMPLANTACIÓN INTERCONEXIÓN DE SISTEMAS AMHS

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
ARGENTINA	DGSTA/ANAC	Javier Vittor	Especialista CNS	(54 11) 4480-2362 (54 911) 6894-0692	javiervittor@gmail.com
BOLIVIA	AASANA	Remigio Blanco	Responsable de Telecomunicaciones AASANA	(591 2) 237-0340	rblanco@aasana.bo
BRAZIL/ BRASIL	DECEA	Francisco Almeida	Jefe de División de Coordinación técnica SDTE/DECEA	(55 21) 2101-6230 (55 21) 99499-6762	franciscoalmeida@hotmail.com
COLOMBIA	UAEAC	Gabriel Guzmán	Jefe del Grupo de Sistemas de Comunicaciones	(571) 296-2940 (57) 317-656 7202	gabriel.guzman@aerocivil.gov.co
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ECUADOR	DAC	Raul Avellan	Especialista CNS coordinador sistema AMHS	(593 4) 269-2829 (593 9) 9530-2735	raul.avellan@aviacioncivil.gob.ec
GUYANA	Guyana Civil Aviation	Mortimer Salisbury	Supervisor - AN & T	(592) 261-2569	mbsalisbury2000@yahoo.com
GUYANA FR.					
PANAMA	Autoridad Aeronáutica Civil (AAC)	Abdiel Guzmán	Jefe de Comunicaciones		abvasquez@aeronautica.gob.pa
PARAGUAY	DINAC	Víctor Morán Maldonado	Jefe Departamento de Comunicaciones	(595 21) 758 5208	moranchu@gmail.com
PERÚ	CORPAC	Jorge Garcia	Jefe de Comunicaciones		jgarcia@corpac.gob.pe

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
		Raul Anastasio Granda	Supervisor Comunicaciones AMHS-AFTN Área de Comunicaciones Fijas Aeronáuticas	(511) 230-1018	ranastacio@corpac.gob.pe
SURINAM/ SURINAME	Ministry of Transport, Communication and Tourism, Civil Aviation Department	Mitchell Themen	CNS Technical Division	(597) 325-123 (597) 325-172 (597) 497-143	mickiano@live.com
URUGUAY	DINACIA	Raul Pelayo	Jefe de Comunicaciones		wiledda@hotmail.com
VENEZUELA	INAC	Samuel Sánchez			s.sanchez@inac.gob.ve
		Norelys Blanco	Servicios Integrados COM Maiquetía (SIM-COM)	58 212 3552010	norelys.blanco@inac.gob.ve

APPENDIX E

Teleconferences between the REDDIG Administrations, the focal points of Brazil and Chile and SITA

REDDIG Project

Meeting Minutes

Meeting Date: Aug 31 2015

Meeting Location: Santiago, Chile (DGAC)

Recorded by: Erika Pitrowsky

1 INTRODUCTION

SITA has proposed the South American ANSPs and the ICAO SAM office evaluate and agree on the ANSP system use of the REDDIG network to access the SITA Brazil ACARS processor to communicate via the SITA ACARS service with its user aircraft, instead of the current SITA provided connections to the ACARS processors in Montreal and Singapore.

The SITA provided IP service has the same interfaces and technology as other generic telecom networks and was not designed specifically to support ATC or air-ground communications. This generic IP network service capability should be the same as is provided by the SAM REDDIG network and the SITA defined "MATIP" envelope for identifying ACARS messages when sent over IP networks.

Considering ATS datalink status implementation for the ANSP in the region, DGAC CHILE was considered the candidate for the trial set to begin in August 2015.

In order to develop this network , this document will describe the technical requirements for a single IP circuit between DGAC Chile ATC datalink server and SITA datalink processor located in Rio de Janeiro, Brasil, using REDDIG IP ground network.

2 ATTENDANCE

Name	Title	Organization	Present
Adriana Mattos	Sr Manager - ATM Business Development	SITA	Conf Call
Ben Bryant	Sr Solution Designer	SITA	Conf Call
Erika Pitrowsky	Project Manager	SITA	Yes
Jorge Arroyo	Deployment Specialist	SITA	Conf Call
Olivier Epicoco	Lead Architect	SITA	Conf Call
Nilson Barbosa	AIRCOM Specialist	SITA	No
Terry Horn	Sr Manager - Service Operations	SITA	No
Luis Alejos	REDDIG Administrator	REDDIG	Conf Call
Cel Almeida		DECEA	No
Cap Renata		DECEA	No
Eduardo de La Fuente	DGAC	DGAC	Yes
Christian Vergara	Focal Point REDDIG	DGAC	Yes
Pedro Pastrian	Second Focal Point REDDIG	DGAC	Yes
Javier Flores	Eletronic Leader	DGAC	Yes
Luis Durán	Logistic – S. Telecom	DGAC	Yes
Cristobal Pastene Porta	DGAC - TIC	DGAC	Conf Call
Onofrio Smarrelli	REDDIG coordinator	REDDIG	Conf Call

3 AGENDA

Monday, 31th August

10:00 – 12:00 **Site survey to check DGAC and REDDIG equipment**

a) *Analyze the distance between DGAC and REDDIG equipment*
b) *Identify the possibility to use DGAC's switch or router to connect to REDDIG switch*
c) *Check the process to have the cable connection establish*

14.00 – 16.00 **Meeting with IT team from DGAC, REDDIG, SITA and DECEA**

a) *Analyze the IP addressing plan*
b) *Identify the CPDLC server to make the tests*
c) *Finish trial topology*

4 DISCUSSION

This network development plan was separated in 3 parts: the connection of DGAC to REDDIG network in Chile (Chile side), the connection of REDDIG to GIG Processor network in Brazil (Brazil side) and the trial.

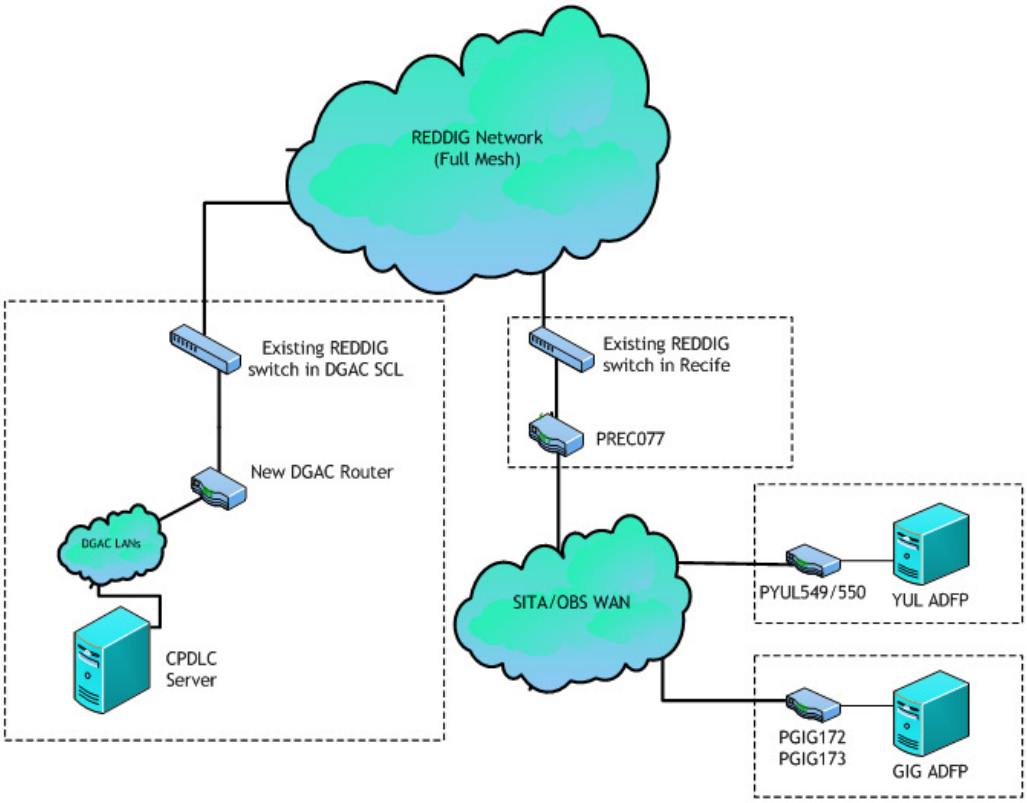

Figure 1: Connection proposal between REDDIG, DGAC and GIG/YUL Processor

4.1 Connection between DGAC and REDDIG

DGAC and REDDIG's equipment are in the same room (Figures 2, 3 and 4) and DGAC will be responsible for making the physical connection between REDDIG switch and DGAC server.

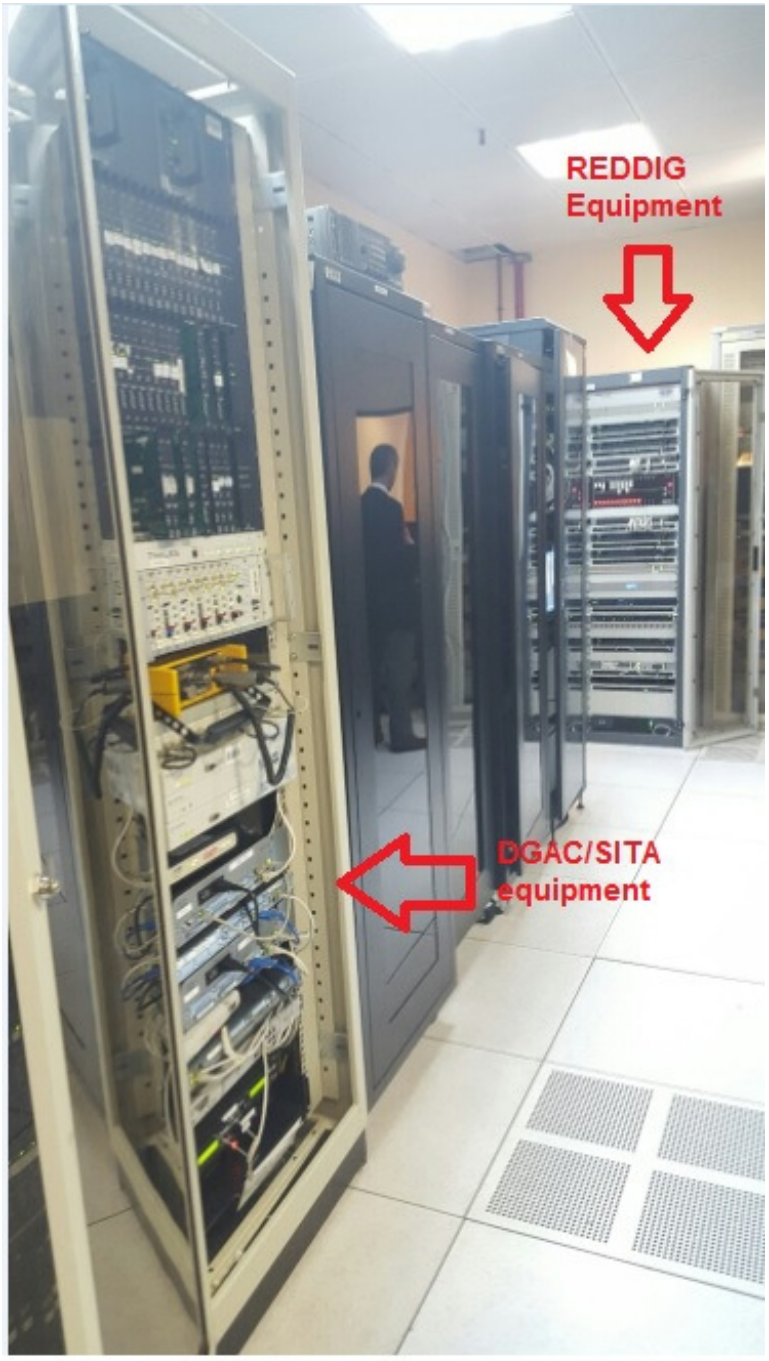

Figure 2: Distance between DGAC and REDDIG equipment

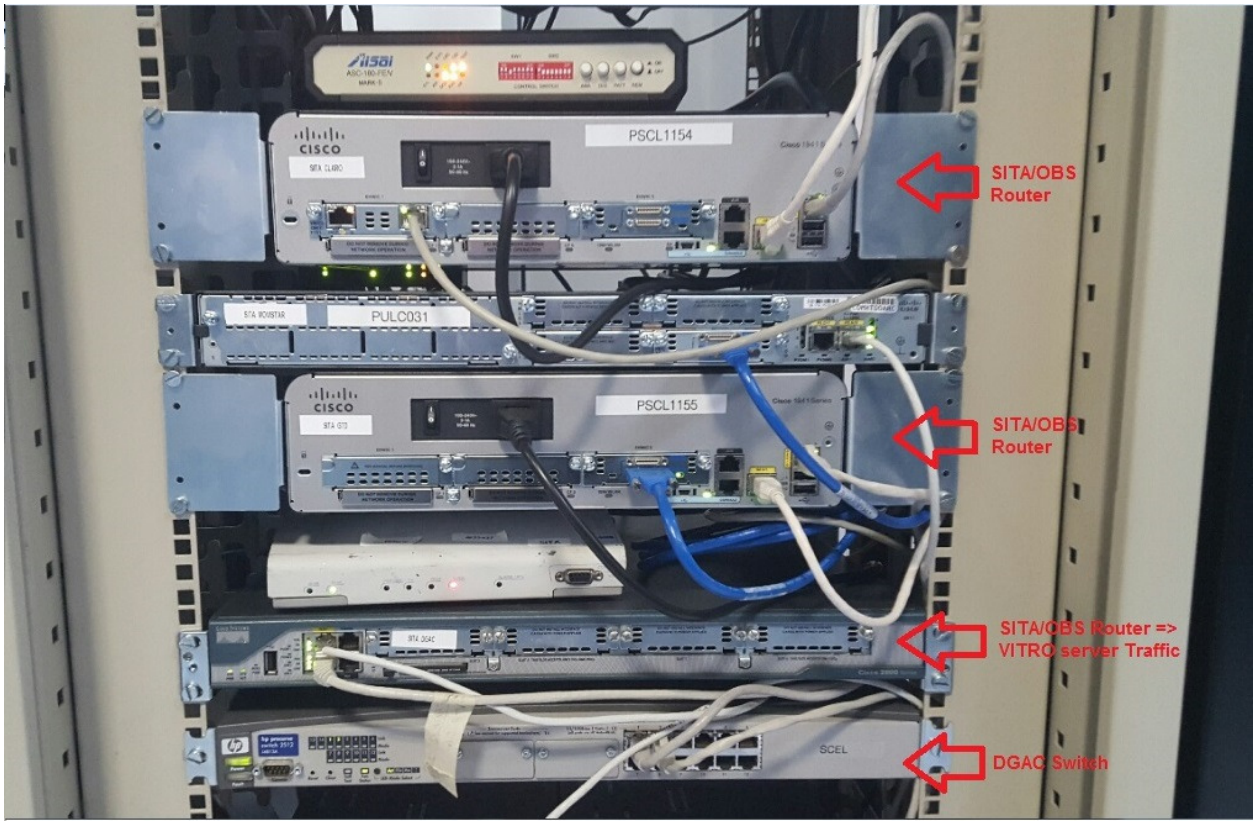

Figure 3: DGAC Equipment

Figure 4: REDDIG Equipment

DGAC informed two possibilities to have the connection between the CPDLC server and REDDIG switch: directly connection between Vitro server in a new port configured with IP 10.0.34.1 to REDDIG switch, or a new router equipment to connected to Vitro server through DGAC switch to REDDIG switch.

REDDIG requested the connection with a router between CPDLC server and REDDIG switch to allow the configuration and no impact in other services.

DGAC will provide the router for the trial, but the equipment will only be available for installation after September 15th. The connection should be performed as Figure 5.

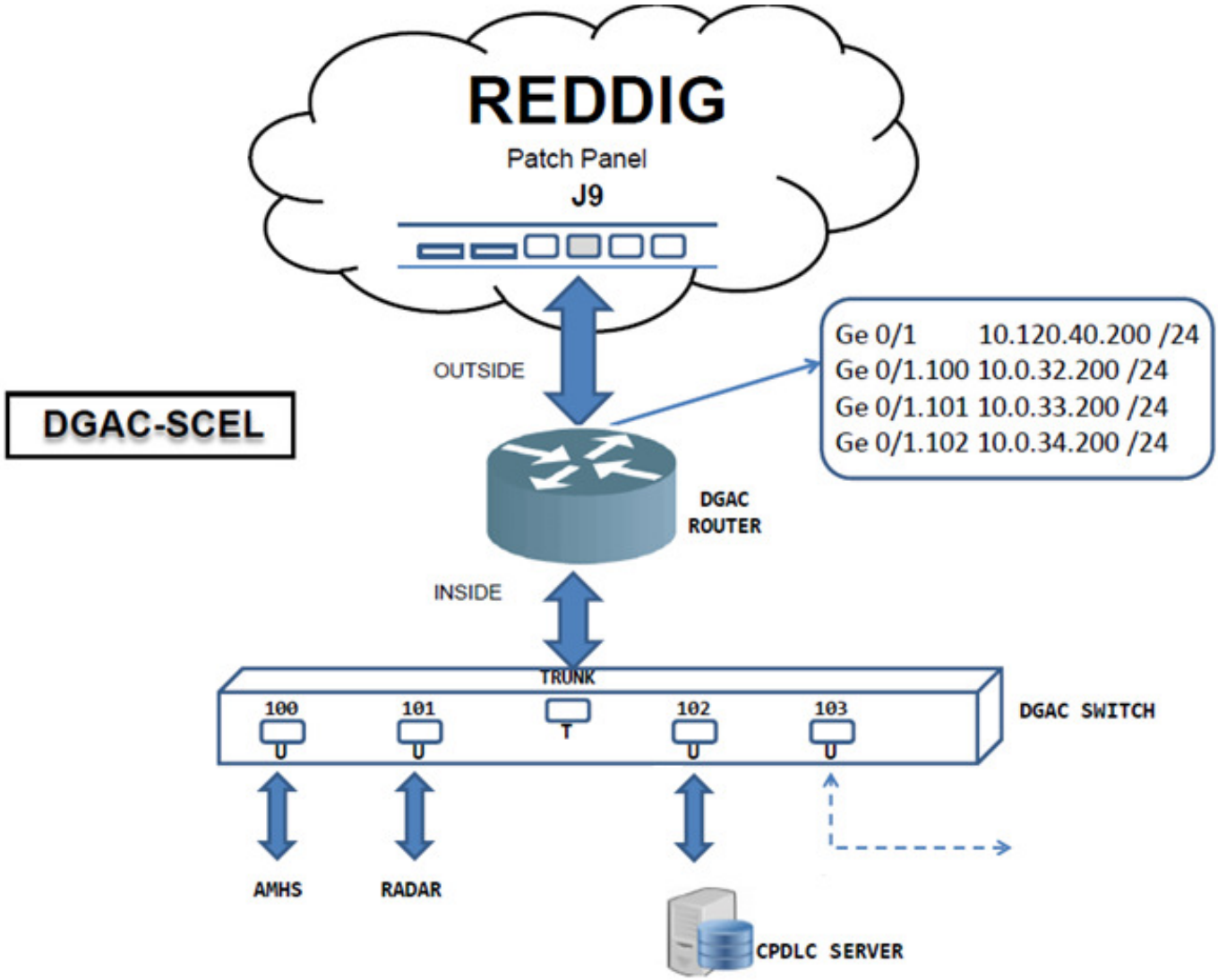

Figure 5: Connection inside DGAC

4.2 Connection between REDDIG and SITA

The physical connection between REDDIG router and PREC077/SITA router was set on Aug 20th.

4.3 Network Configuration

REDDIG informed that the VLAN test 102 is already configured in Chile and Recife and no modification is necessary. DGAC and SITA will have to make IP translations to pass the traffic through REDDIG according to Figure 6 and 7.

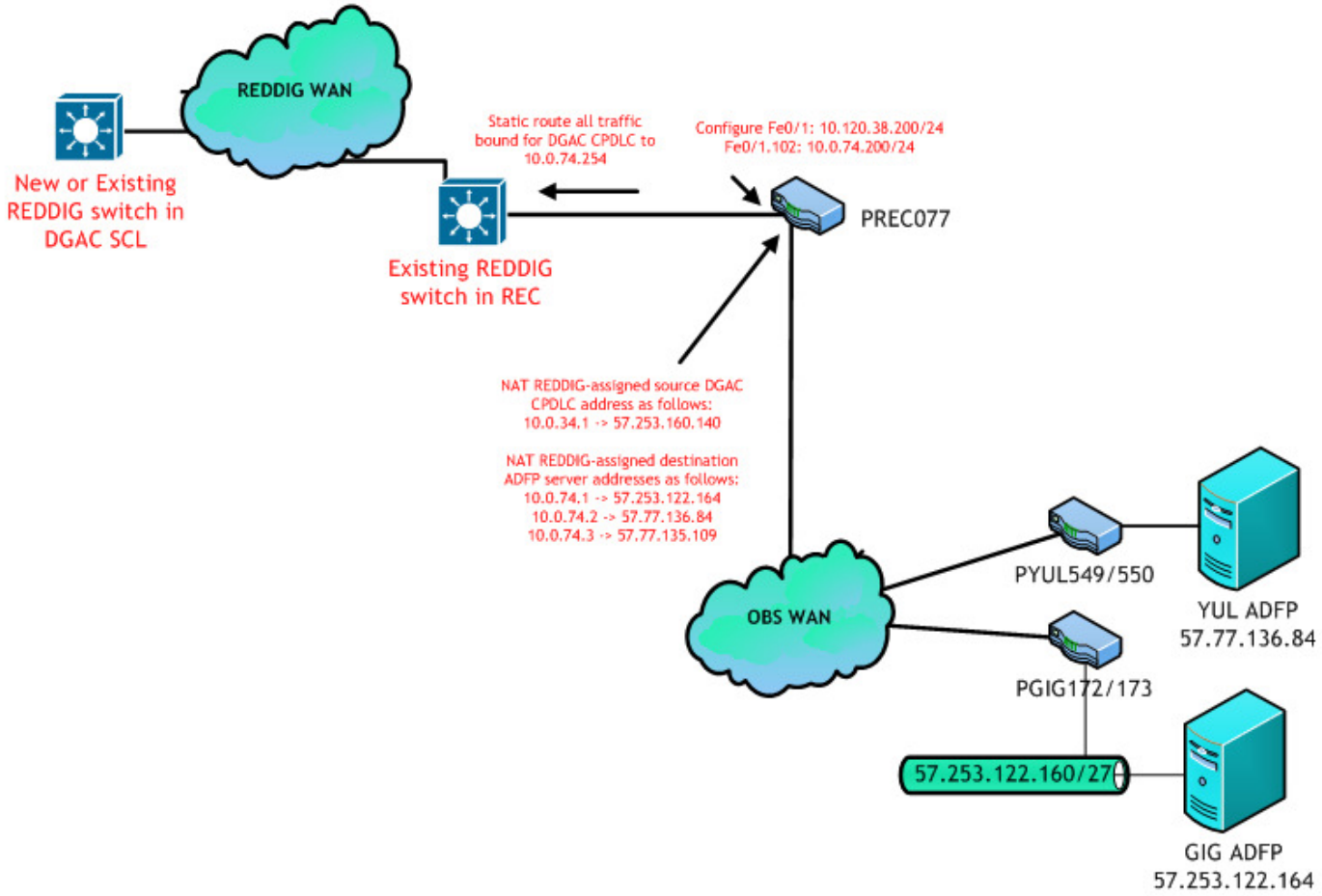

Figure 6: Configuration proposed in Recife

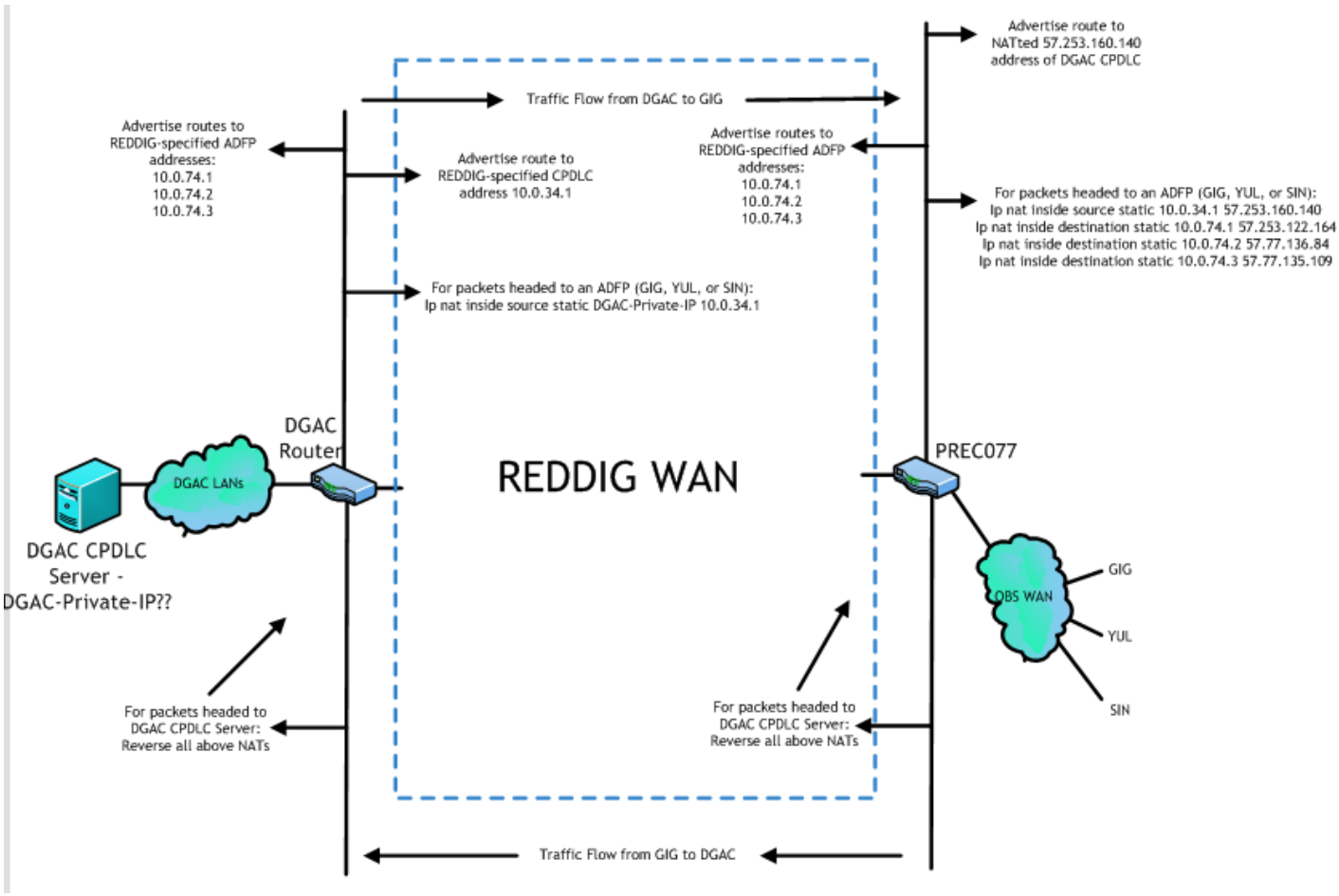

Figure 7: NAT and routings

DGAC will have to configure the IP 10.0.34.200/24 in the router port (Figure 8).

DGAC router will need to accept traffic from primary and secondary links all the time and establish the connection to GIG processor through REDDIG as primary and YUL/SIN processor through OBS as secondary.

This configuration will allow contingence between processors (GIG and YUL) and transmission (REDDIG and OBS), but DGAC needs to check the following configuration in Vitro Server:

- Add the REDDIG connections to GIG and YUL on top of the existing connections with SIN & YUL ADFP
- Use route commands at the OS level to route the packets on separate gateways depending on the destination address
- Support a total of four MATIP connections (2 new REDDIG on top of 2 existing OBS) and alternate automatically between the 4 connections (ANNEX III)

In summary, this trial consists on passing the traffic from Vitro Server to SITA Rio processor through REDDIG (SCLCAYA + REDDIG + GIG). In case of a problem in GIG Processor the traffic would automatically

change to YUL processor (SCLCAYA + REDDIG + YUL). If a problem occur in REDDIG transmission the traffic would change manually or automatic (depends on Vitro Server) to OBS (SCLCAYA + OBS + YUL/SIN).

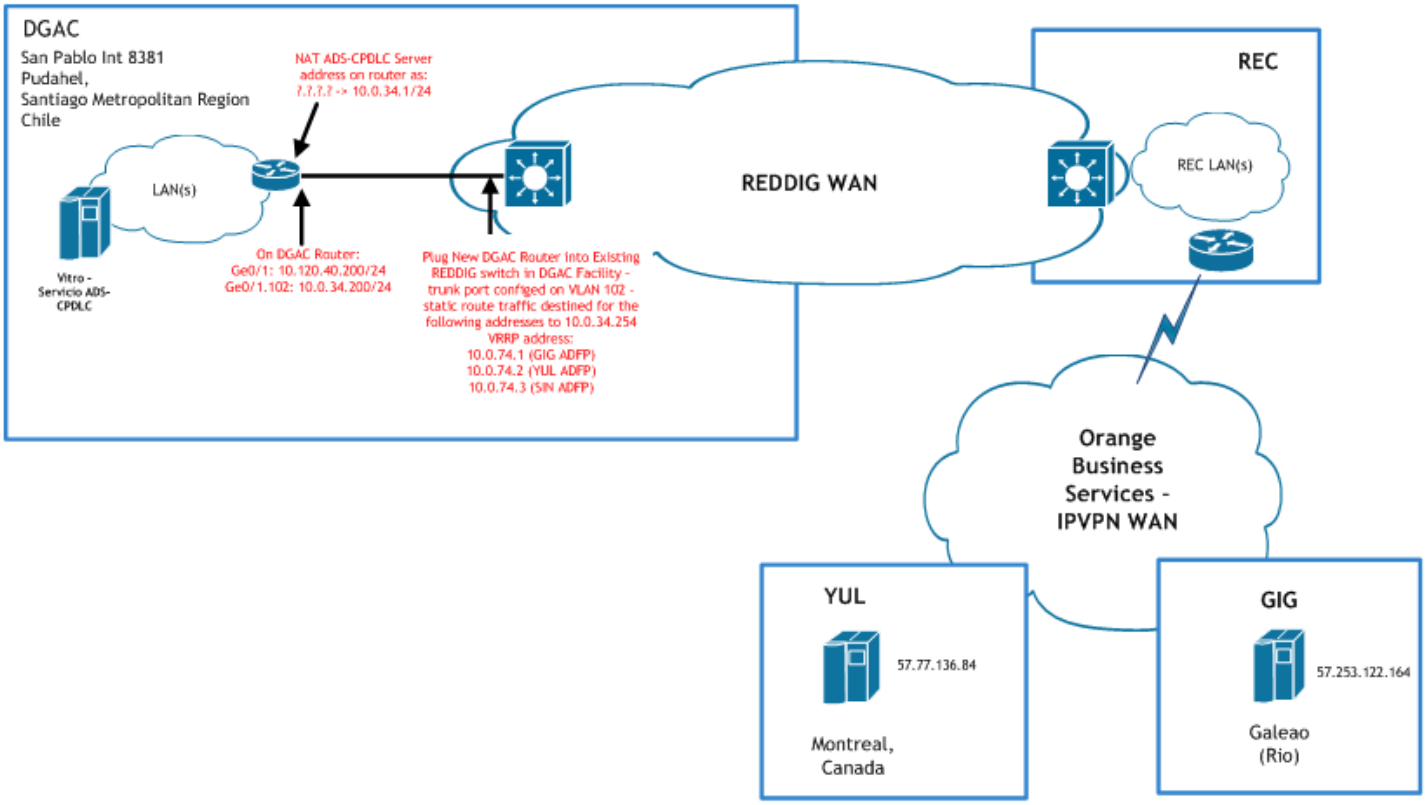

Figure 8: Configuration proposed in DGAC

4.4 DGAC CPDL Server

DGAC has two CPDLC servers: Vitro and Topsky (Figure 8). Vitro is used for oceanic traffic and is current connected to SITA YUL/SIN through OBS link. Topsky server is being used for continental traffic in ACCS facilities, in Santiago of Chile. It can accept the protocols ADS-C/CPDLC but requires some adjustments to process the traffic that is far away from Santiago and this is the reason why DGAC decided to use the (operational) VITRO Server to perform the trial.

DGAC will have to configure SCLCAYA (Vitro) to accept downlink from RIOXCXH during the test date to establish the communication with GIG ADFP and check the configuration informed on item 4.3.

REDDIG requested a memorandum to validate the migration of the current traffic during 3 months in Vitro Server instead of making the tests with a test server.

Figure 8: Vitro and Topsky Server

4.5 Trial Setup

The trial date will be informed by DGAC after having all the physical connections in place. The router and server configurations will be performed together during the tests.

The test will be separated in 2 parts: Telnet test and traffic migration to test the connection from SCLCAYA to YUL Processor through REDDIG network first, and later test the connection from SCLCAYA to GIG Processor through REDDIG network. To perform the second test DGAC will have to add GIG processor IP in the CPDLC server, as procedure described below and Annex III.

(1) Configure DGAC router/switch
(2) Configure REDDIG router/switch (if necessary)
(3) Configure SITA/OBS PREC077 router
(4) Perform telnet tests from SCLCAYA VITRO server to YUL/SIN ADFP
(5) Migrate the traffic from OBS to REDDIG in DGAC router (communication to YUL/SIN processor)
(6) Configure SCLCAYA server to accept downlink from RIOXCXH
(7) Migrate the traffic from YUL to GIG through REDDIG in DGAC router (communication to GIG processor)
(8) Confirm the operation through GIG processor using REDDIG
(9) Test YUL contingence through REDDIG (GIG primary link)

When performing the trial is important to guarantee that the traffic analyzed is going through REDDIG's network and GIG processor and not in the existing OBS network between DGAC and YUL/SIN processors.

For documentation purposes, a copy of log events of GIG/SIN/YUL ADPFs and traffic log copies of the first few uplinks and downlinks exchanged via REDDIG would be provided to demonstrate the connection results.

5. NEXT STEPS FOR THE TRIAL

N	Action	Resp	Date
5.2.1	Finish the static net addressing	BB / SITA	28/Aug/2015
5.2.2	Develop the type B message diagram	OE / SITA	4/Sep/2015
5.2.3	Send the Memorandum to DGAC	AM / SITA	11/Sep/2015
5.2.4	Confirm the possibility to have the configuration in Vitro server as Diagram attached on ANNEX III.	DGAC and DECEA	11/Sep/2015
5.2.5	Submit Aircom configuration request for MATIP connections a) Connection between SCLCAYA (production server) and YUL/SIN processor through REDDIG b) Connection between SCLCAYA (production server) and GIG processor through REDDIG	NB / SITA	11/Sep/2015
5.2.6	Configuration of ADFP and firewall	Aircom Config / SITA	11/Sep/2015
5.2.7	Make the cable connection between REDDIG and DGAC equipment	EF / DGAC	16/Sep/2015
5.2.8	Get the Memorandum approval	DGAC and DECEA	16/Sep/2015
5.2.9	Schedule the configuration of the Server and routers (OBS, REDDIG and OBS) to perform telnet test and trial	EP / SITA	16/Sep/2015
5.2.10	Perform the configuration, tests and mígrate the traffic: a) Configure DGAC router/switch b) Configure REDDIG router/switch (if necessary) c) Configure REDDIG SITA/OBS PREC077 router d) Perform telnet tests from SCLCAYA VITRO server to YUL/SIN ADFP e) Migrate the traffic from OBS to REDDIG in DGAC router (communication to YUL/SIN processor) f) Configure SCLCAYA server to accept downlink from RIOXCXH g) Migrate the traffic from YUL to GIG through REDDIG in DGAC router (communication to GIG processor) h) Confirm the operation through GIG processor using REDDIG i) Test YUL contingence through REDDIG (GIG primary link)	ALL	To be confirmed
5.2.11	Send the trial documentation	EP / SITA	1 day after the migration day
5.2.12	Confirm the operation of REDDIG network with DGAC and Aircom	EP / SITA	30/Sep/2015

6 NEXT MEETING

Next meeting: Sep 11th 2015

Annex I – Contact List

Company	Name	Title	Phone	Email
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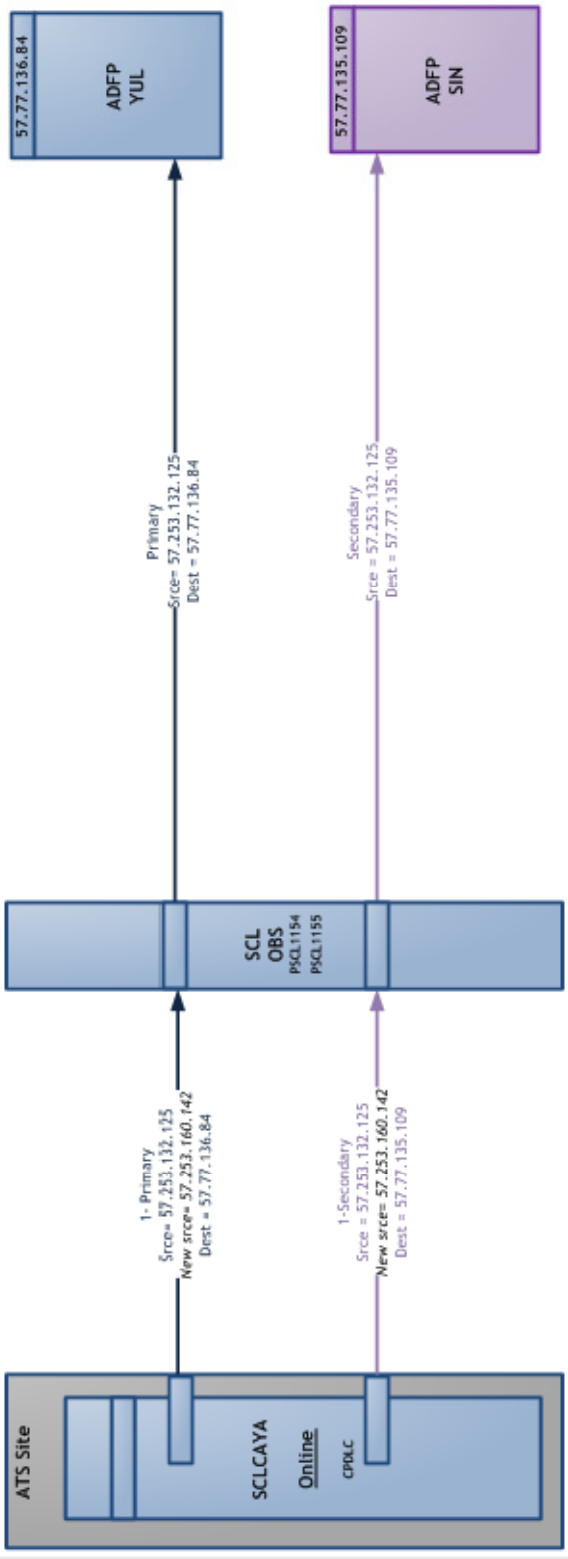
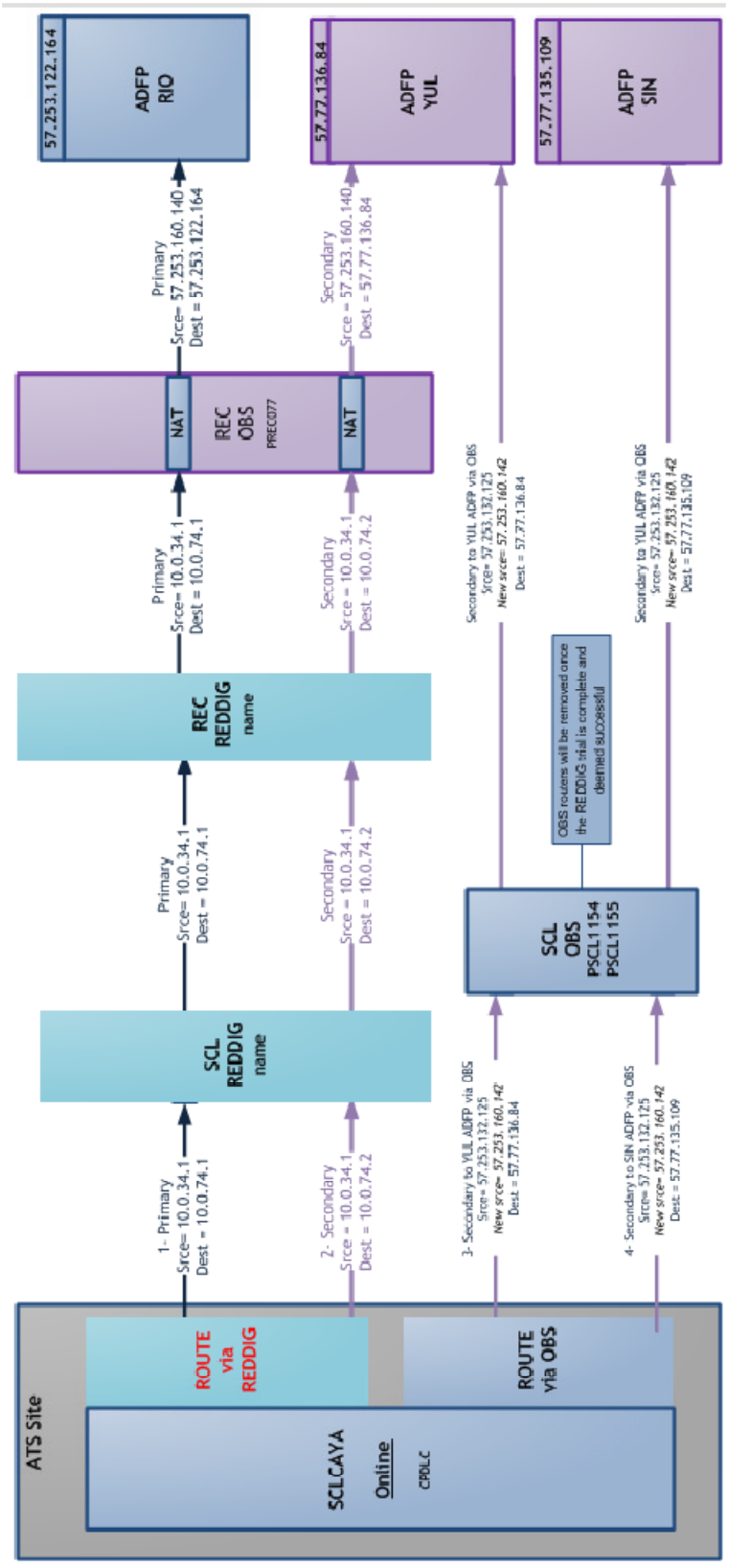
Annex II – DGAC Connection Today (SCLCAYA via OBS)



Annex III – Trial Setup (SCLCAYA via REDDIG)



APPENDIX F

IMPLEMENTATION OF BLOQUE B0-FICE ELEMENTS FOR THE PERIOD 2017-2019

AMHS INTERCONNECTION IMPLEMENTATION

B0 – FICE: Increased interoperability, efficiency and capacity through ground-ground integration						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
AMHS implementation/ interconnection	All States	Indicator: % of AMHS systems interconnected Support metrics: Number of AMHS systems interconnected **13 AMHS systems interconnected by the end of 2019**	5	5	3	By the end of 2016, 26 AMHS interconnections would be implemented
Implementation of AIDC interconnections between adjacent ACCs	All States	Indicator: % of interconnections implemented between adjacent ACCs Support metrics: Number of AIDC interconnections implemented between adjacent ACCs **Implementation of 26 AIDCs by the end of 2019**	13	6	7	
Implementation of domestic IP networks	All States	Indicator: % of States that have implemented domestic IP networks Support metrics: Number of domestic IP networks implemented **7 States implemented by the end of 2019**	3	2	2	