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Organization

Organisation  
de l'aviation civile  
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Organización  
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Международная  
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منظمة الطيران  
المدني الدولي

国际民用  
航空组织

LN 3/20.1 –SA5469

22 August 2017

To: Mr. Frédéric Guignier, Regional Director of Civil Aviation Authority (DSAC) for French Antilles and French Guiana  
Mr. Jerome Journet, Regional Director, West Indies and French Guiana  
Mr. Jean-Michel Pubellier, Deputy Regional Director, West Indies and French Guiana  
Mr. Michel Areno, Head of French Guiana Air Control Centre Cayenne-Félix Eboué Airport, Head of the Aircraft Search and Rescue RCC, French Guiana  
Lt. Col. Egbert Field, Guyana Civil Aviation Authority, Guyana  
Mr. Jerry Miranda, Ministry of Public Works, Suriname

Subject: **RLA/03/901 REDDIG – Course on IP Networks applied to the REDDIG II**  
(Manaus, Brazil, 13 to 17 November 2017)

**Action required: Confirm attendance by 27 October 2017**

Sir/Madam,

I have the honor to refer to RLA/03/901 Regional Project - *REDDIG Management System and Administration of the Satellite Segment*, to invite your Administration to the Course on IP Networks applied to the REDDIG II, to be held in Manaus, Brazil, from 13 to 17 November 2017.

The twentieth meeting of the REDDIG Coordination Committee (RCC/20) (Lima, Peru, 21 to 23 March 2017) approved the holding of a course on IP networks applied to the REDDIG II, as part of the training activities scheduled for 2017.

This Course is addressed to technical staff with IP network knowledge and responsible for the operation and maintenance of the REDDIG station.

Attached please find the provisional Agenda (**Appendix A**), of the matters to be discussed at the event. The information paper containing general information on the events such as venue, list of recommended hotels, etc., will be uploaded in the ICAO website, as soon as it is available.

I will appreciate receiving a confirmation on participation of your delegates at the indicated event, by sending to this Office the attached Registration Form (**Appendix B**) duly completed for each delegate, no later than **27 October 2017**. This event has assigned one fellowship per RLA/03/901 project member State (fellowship nom-form is enclosed as **Appendix C**).

Please be aware that the event will be carried out in Spanish **with simultaneous interpretation services into English only if confirmation of English-speaking States participants is received in this Regional Office no later than 27 October 2017.**

The documentation will be issued in due course on the website of this Office, [www.icao.int/sam](http://www.icao.int/sam) and will not be printed nor distributed during the event, being it desirable that the delegates take them physically or by electronic means.

Were you to require further information, please contact Mr. Onofrio Smarrelli, CNS Officer, ICAO SAM Regional Office.

Accept, Sir/Madam, the assurances of my highest consideration.



Franklin Hoyer  
Regional Director  
ICAO South American Office  
Lima

**Enclosures**

*As indicated*

cc: Mr. Claude Miquel, Deputy Director, Antilles-Guyane, French Antilles  
Dr. Joyce Blokland-Wijnstein, Permanent Secretary, Directorate of Transport and Communication, Suriname  
Mr. Faizel Baarn, Head of Civil Aviation Department, Suriname  
Mr. Brian De Souza, Director, CASAS, Suriname  
Mr. Marcus Doller, Air Safety Support Intl. (ASSI), United Kingdom  
Mr. Bruce D'Ancely, Policy Specialist, Flight Ops, Air Safety Support International (ASSI), United Kingdom  
ICAORD Mexico (for retransmission to Trinidad & Tobago)  
RLA/03/901 focal points

## APPENDIX A

### Regional Project RLA/03/901 – REDDIG Management System and Satellite Segment Administration

#### COURSE ON IP NETWORKS APPLIED TO THE REDDIG II (Manaus, Brazil, 13 to 17 November 2017)

### CONTENTS

#### Day 1

##### 1. InternetNetworking

- OSI model and TCP / IP model
- Basic functions of the physical layer, link, network and transport
- Encapsulation, PDU overhead

##### 2. Operation of the Cisco IOS software

- Characteristics and functions
- CLI User and Privileged modes
- Basic commands on privileged mode
- Help commands
- Error messages (logs)
- Types of router memories
- Presentation on router hardware and switches used in REDDIG

##### 3. LAN

- Collision domain and broadcast
- Differences between hubs and switches
- Frame Ethernet
- Mac Address and types of network communications (unidissemiation / broadcast / multicast)
- Frame routing in a switch
- Full-Duplex and half-Duplex modes and speed (troubleshooting)
- Hardware y software features of the Netgear switch

##### 4. VLAN

- Importance of the VLANs
- Frame Ethernet 802.1q
- Types of VLAN interfaces (trunk / Access)
- Native VLAN in a port
- STP
- Configuration of VLANs in Netgear
- REDDIG VLANs mapping

##### 5. VLANs (Packet Trace and Netgear) configuration laboratory

## Day 2

### 1. IP addressing

- IP header
- IP addressing types (compare with REDDIG addressing)
- Subnetting / Masks
- VLSM
- REDDIG IP addressing structure
- IP addressing laboratory / Subnet

### 2. Transportation layer

- TCP / UDP differences
- Which REDDIG applications use TCP and UDP?

### 3. Initial configuration of a router and a switch

- Initial logical configuration of the Cisco router and Netgear switch
- Interface and administrative IP addressing
- Software licenses
- Types of router access
- CDP / LLDP
- ARP
- Brief example on how a package travels in a switch and router network

### 4. VRRP

- Operation
- Advantages
- REDDIG VRRP configuration
- Priority
- IPSLA Tracks

### 5. IP routing

- Router operation
- Features of a Cisco router (CEF)
- Path determination and routing table
- Administrative distance
- Route types (direct, static, dynamic and default) – show the REDDIG routing table as reference

## Day 3

### 1. Static routing

- Advantages and disadvantages of static routings
- Manners for the configuration of static routes (next-hop / interface)
- Default routes
- Configuration of static routes in REDDIG (Level-3)
- Show IP route

### 2. Dynamic routing

- Areas
- Router types in OSPF (DR, BDR, ASBR, ABR)
- LSDB / SPF / Hello
- Vicinity and adjacency (see REDDIG router)
- Status of an interface with adjacency
- DR / BDR selection
- LSA / LSA types
- Troubleshooting commands
- SH IP OSPF information, REDDIG router data base
- SH IP OSPF neighbours status

### 3. Inter-VLAN routing

- VLAN routing objectives
- VLAN routing s in the REDDIG trunks

### 4. Laboratories involving static, dynamic and inter-VLAN routing

## Day 4

### 1. Access lists

- Use of ACLs
- ACL types
- Construction of ACLs
- Wildcards
- ACLs used in REDDIG

### 2. NAT

- Use of NAT
- NAT types (static, PAT)
- Use of NAT in REDDIG

### 3. QoS

- Importance
- Basic parameters of a network (jitter, delay, loss of packages)
- Diffserv
- Traffic classification
- Policers
- QoS application in interfaces
- Troubleshooting commands for QoS
- QoS configuration in REDDIG Cisco routers

### 4. Traffic tunnelling

- Operation
- BSTUN
- GRE
- Tunnel configuration in REDDIG

### 5. Laboratories involving ACL, NAT, QoS and tunnels)

## Day 5

### 1. VOIP

- Analogue and digital interfaces
- Basic protocol concepts in SIP signalling
- Codec types
- VOIP configuration in Cisco
- Call-manager
- Dial-peers
- Translation rules
- VOIP configuration in REDDIG

### 2. WAN technologies

- Link layer protocols
- Point-to-point link configuration
- Configuration of WAN links in the SkyWAN modems
- Configuration of routing protocols in SkyWAN modems

### 3. MPLS

- Basic operation concepts of the service provider MPLS network
- REDDIG traffic routing through the Level-3 MPLS network

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APÉNDICE B / APPENDIX B

ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL  
INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/03/901 REDDIG - CURSO DE REDES IP APLICADO A LA REDDIG II

RLA/03/901 REDDIG – COURSE ON IP NETWORKS APPLIED TO THE REDDIG II

Manaos, Brasil, 13 al 17 de noviembre de 2017 / Manaos, Brazil, 13 to 17 November 2017

FORMULARIO DE REGISTRO / REGISTRATION FORM

1. Estado/*State:*

Organismo/*Organization:*

2. Nombre/  
*Name:*

3. Cargo/*Position:*

4. Participa como / *Participates as:*

Delegado/  
*Delegate*

Asesor/  
*Adviser*

Observador/  
*Observer*

5. Dirección oficial /  
*Business address:*

6. Tel.: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

7. Hotel o dirección en la ciudad/  
*Hotel or local address:*

8. Información de vuelo/  
*Flight information:*

Vuelo de llegada/ fecha/ hora/  
*Arrival flight/ date/ hour:*

Vuelo de salida/ fecha/ hora/  
*Departure flight/ date/ hour:*

Firma /  
*Signature:*

Fecha /  
*Date:*

*Por favor envíe este formulario a: / Please return this form to: icaosam@icao.int; sam\_tc@icao.int*