International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

Fifth Eastern Caribbean Network Technical Group (E/CAR/NTG/5) and Third Eastern Caribbean Radar Data Sharing Ad-hoc Group (E/CAR/RD/3) Meetings
Guadeloupe, France, 22 to 24 October 2014

Agenda Item 2: **E/CAR AFS Network**
         2.1 **Network performance analysis and general aspects**

**NETWORK PERFORMANCE ANALYSIS AND GENERAL FEED BACK
FRENCH WEST INDIES**

(Presented by France)

| EXECUTIVE SUMMARY |
|---|
| The new E/CAR Aeronautical Fixed Service (AFS) network has significantly improved its performance. This paper identifies possible improvements. |

| Action:	The suggested actions are included in section 7
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection

1. **Introduction**

1.1   The E/CAR2 AFS network is globally compliant with operational requirements, but some improvements may be needed, both on technical and procedural aspects.

1.2   E/CAR network is based on TSTT MPLS. As FWI are outside the TSTT MPLS area, Martinique and Guadeloupe do not benefit MPLS redundancy and services. It was decided to have direct connections between Martinique and Trinidad, and between Guadeloupe and Antigua to join MPLS. A backup line has been set up between the two islands.

FWI interconnection to TSST MPLS /E/CAR network:
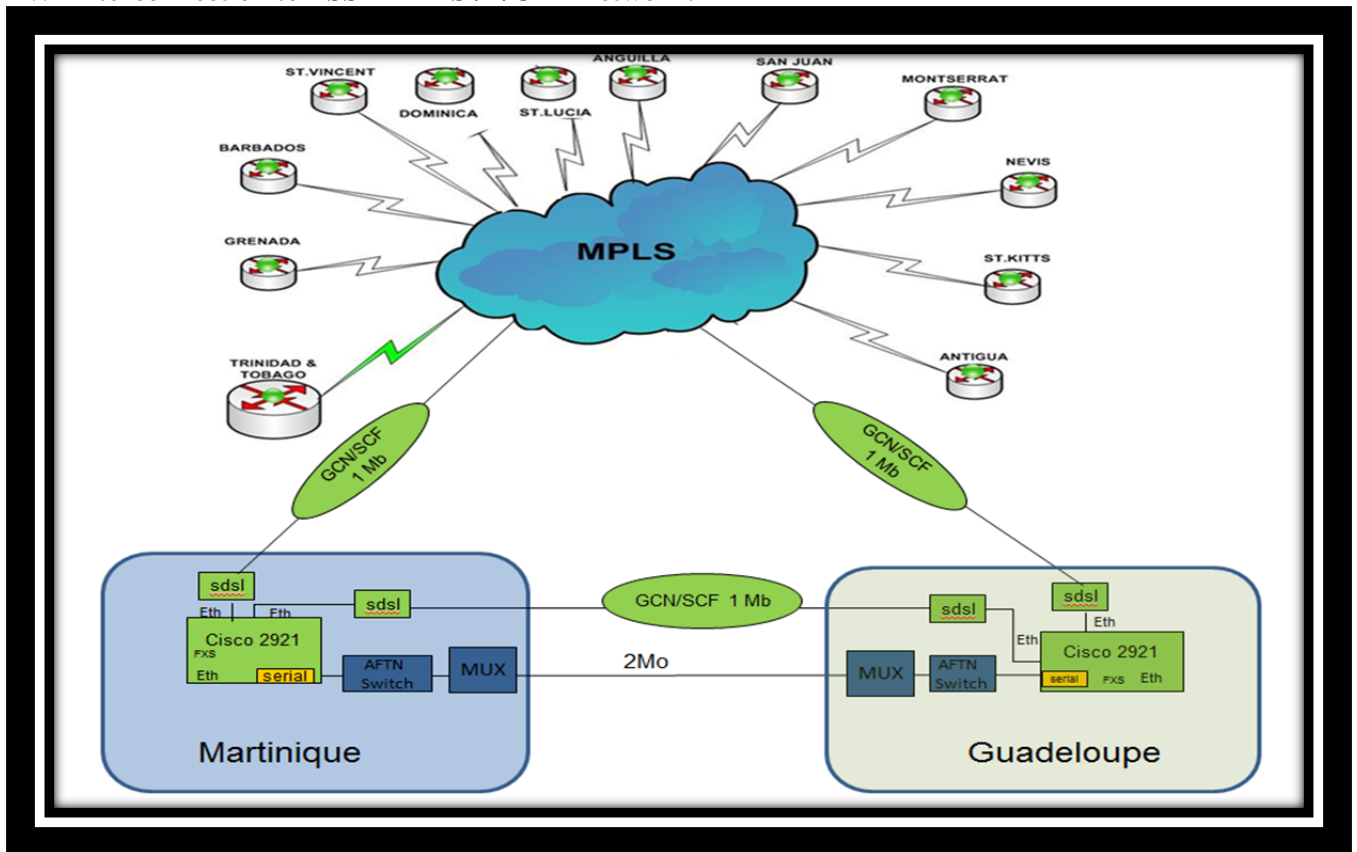
Systems connected in FWI
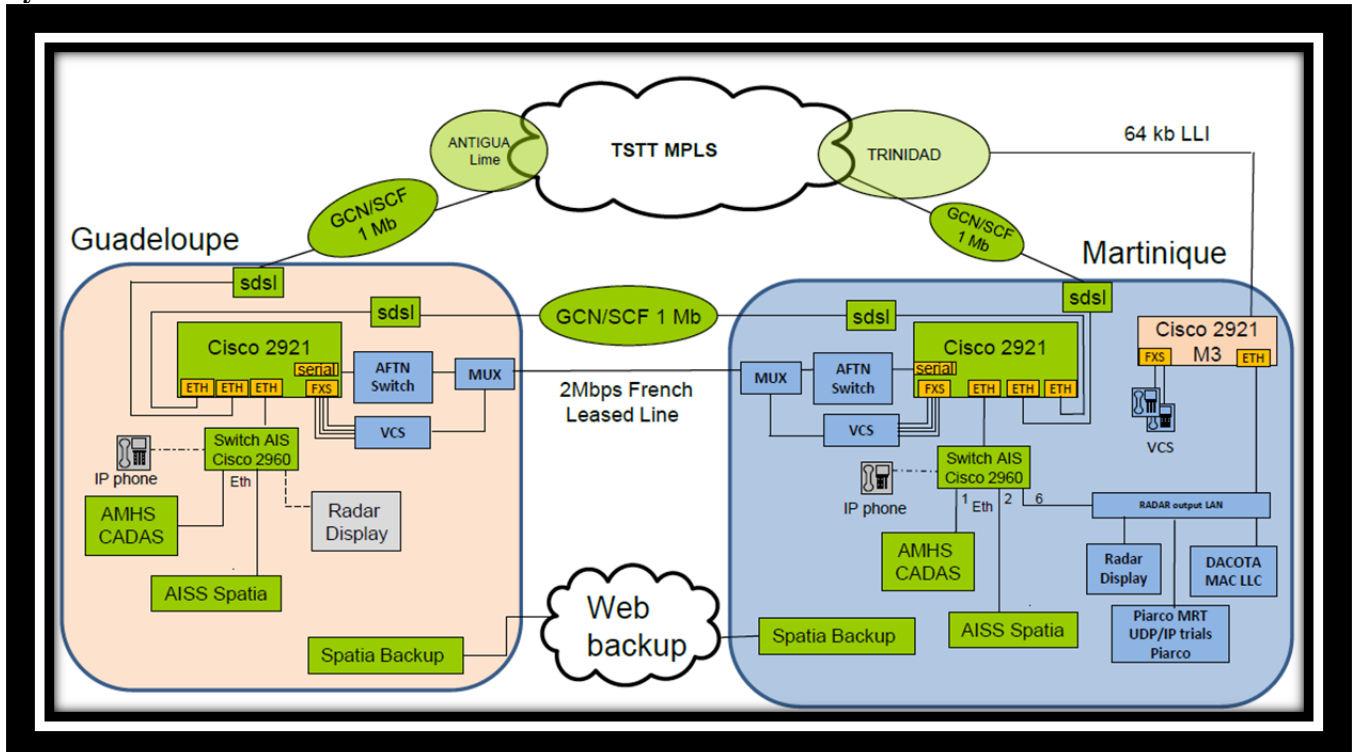
2.   Status of the network

2.1   Following E/CAR network on-going actions are still pending for FWI :

- Replacement of backup Cisco2921 router in Guadeloupe (no backup presently)
- Set up of automatic backup routing for Martinique (via Guadeloupe). When Martinique-Trinidad link fails, there is no automatic rerouting via Guadeloupe. In Guadeloupe, automatic rerouting was tested successfully.

2.2   Availability performances:

- Martinique: 88% over 12 months
- Guadeloupe: 99,04% over 12 months.

2.3   In Martinique, most of problems came from failures in local loop / local connections. Mediaserv Company is responsible for most failures, mainly because their network equipments are not enough protected against power dysfunctions, moreover they use UPS but do not get electric generators.

3.   Contingency Plan for E/CAR

3.1   Decision was taken to develop E/CAR AFS Network Contingency Procedures (Conclusion E/CAR/NTG/4/05 **-** *E/CAR AFS Network Contingency Procedures***:** That France and the United States develop network contingency procedures for the E/CAR AFS Network and present this document to the E/CAR/NTG/5 meeting).

3.2   Are not taken into consideration:

- the possible future use of a VSAT as a contingency E/CAR network solution
- the MEVA interconnection

3.3   Exchanges between FAA and France have led to following proposals, for discussion.

Case of full ECAR/Network failure or case of failure of one State node:

For voice communications, use of:

- PSTN backup numbers (that are programmed on VCSS and on backup telephones / GSM), in accordance with Letters of Agreements.
- Direct lines when existing (ie: Saint Lucia-Martinique, Trinidad and Tobago-Martinique, Guadeloupe-Martinique, etc.)

For AFTN/AMHS:

- use of SPATIA Web
- for those States that use local FDP, manual re input from SPATIA Web into the local FDP. Several aeronautical messages may not be possible.

Case of partial failure of the network (one of the services provided through the network is OFF) :

- AMHS OFF: use of SPATIA Web
- Voice OFF: use backup PSTN numbers or direct lines when existing.
- AFTN OFF: use of SPATIA/CADAS, local manual input into our FDP.

4.   Maintenance procedures and Fault reporting

4.1   Fault reporting and analysis: The Web portal and the email address are working correctly. Feedback on solutions to faults and determination of its causes should be improved and communicated via the portal. It is noted that communication in reporting has improved.

4.2   Information before maintenance: Information is required before any configuration change, even if no impact has been identified. Cisco routers software is a nodal point of the network. If a problem occurs during a configuration change, all the network for the site could be down and backup procedures should be ready, as well as information to end users. This preliminary information should be part of maintenance agreement.

4.3   FWI still support the set-up of a common maintenance agreement for E/CAR network.. This agreement could cope with the network and the applications / data that are delivered through the network to E/CAR States (SPATIA, CADAS, Radar data). A TTCAA – SNA-AG radar agreement is existing, that could be integrated in E/CAR agreement.

4.4   Regular TSTT preventive maintenance on site was planned, but not respected. FWI strongly recommend setting up these visits on a regular basis to test backup, check configurations, verify hardware, check contacts.

5.   Supervision

5.1   TTCAA METRO supervision is useful but could be completed as it only shows links status. FWI would suggest having local display with additional information for States who need more information: on each data thread or on SPATIA/CADAS machines and routers. A local system polling in SNMP the different equipment could then display synthetic supervision about E/CAR network and systems. This display could also simply monitor radar data received. FWI could study development of a tool for all, but need to get access to local MIBs.

6.   **Conclusion**

6.1   The ECAR2 network is globally operating correctly but improvements are proposed:

- To replace Cisco router in Guadeloupe and set up backup routing in Martinique
- To correct the weakness detected in local connections in Martinique
- To improve supervision
- To improve communication with end users
- To complete a Maintenance Procedure and Service Level of Agreement.
- To implement TSTT preventive maintenance on sites on a regular basis.

7   **Suggested Actions**

7.1   The Meeting is invited to:

a)   take in consideration FWI point of view regarding the E/CAR AFS Network performance;

b)   take action for completing the E/CAR AFS Network actions for FWI;

c)   take in consideration propositions concerning contingency actions for E/CAR network;

d)   decide whether there is a need for supervision improvement and the opportunity for FWI to develop local supervision that could benefit to all States;

e)   take action for managing TSTT visits on a regular basis and define frequency; and

f)   define actions to complete the pending agreed actions on Maintenance Procedure and SLA.

— END —