INTERNATIONAL CIVIL AVIATION ORGANIZATION
EASTERN AND SOUTHERN AFRICAN (ESAF) OFFICE

Sixteenth Meeting of the SADC VSAT2 Supervisory Board (SADC SVB/15)
(Virtual Meeting, 12 - 13 July 2021)

Agenda Item 6: Background and Rationale of the SADC VSAT2 Network

(Presented by ATNS)

SUMMARY
This paper aims to demonstrate the background and the founding rationale behind the structure and the operational model of the SADC Network. The paper further captures the critical historical decisions as concluded by the Member States and AFI Regional structures.
REFRENCE(S): SADC Protocol on Transport and Communication APIRG Conclusions
RELATED ICAO STRATEGIC OBJECTIVE(S): Global Air Navigation Plan (GANP) ASBU Block 1 modules

1. INTRODUCTION

1.1. The SADC VSAT network project was initiated in 1998 and comprised of 13 SADC Member States (Angola, Botswana, Democratic Republic of Congo, Eswatini, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia, Zimbabwe). In 2000 Burundi and Rwanda joined the network and the membership grew to 15 Member States.

1.2. The SADC Region recognized the importance of the SADC VSAT network and included the network's Terms of Reference to the SADC Protocol on Transport and Communication.

1.3. The SADC VSAT network was established to address ground/ground communication deficiencies in the Southern African part of the AFI region.

1.4. The objective of the network is to support the provision of a variety of aeronautical telecommunication services including the mandated Air Traffic Services Direct Speech (ATS/DS) and Aeronautical Fixed Telecommunication Network (AFTN), for which the network was built as well as the migrating of these to the modern equivalent ATN applications of ATS Message Handling System (AMHS), ATS Inter-facility Data

Communications (AIDC) and Voice over Internet Protocol (VoIP).

1.5. In 2012, the Eighteenth Meeting of the APIRG (APIRG/18) held in Kampala commended the improvement in ATS/DS and AFTN services in the AFI Region and recommended States to put in place mechanisms for future sustainability of the SADC VSAT network beyond 2015, under its conclusion 18/27 – *Arrangements to Ensure Sustainability of NAFISAT and SADC VSAT/2 Networks.*

1.6. In 2013, the Nineteenth Meeting of the APIRG (APIRG/19) held in Senegal commended the positive agreement reached by SADC States, ATNS and IATA to maintain, upgrade and/replace the network for the upcoming 7 years, to support the continued and effective provision of Air Traffic Management services, pursuant to APIRG Conclusion 19/27 – *Arrangements to Ensure Sustainability of NAFISAT and SADC VSAT/2 Networks*.

2. DISCUSSION

2.1. The SADC VSAT/2 network upgrade was completed in 2017 to enable the network to be IP capable. Subsequent to the upgrade, the optimization of the bandwidth was undertaken and completed in 2018.

2.2. The following are some of the services that the network is capable of supporting.

- Computer-to-computer data exchanges between ATS Flight Data Processing Systems (FDPS);
- Operational meteorological data exchanges;
- Operational aeronautical information services exchanges;
- Aeronautical administrative support;
- ADS-B and Radar data exchanges; and
- VHF Extended range.

2.3. A technical feasibility study was conducted in 2018 and showed that the upgraded networks are technically capable of supporting the added services, however these services will require additional satellite spectrum and in some cases hardware.

2.4. The services currently operating on the networks are the following.

- Aeronautical Fixed Telecommunication Network (AFTN) data services;
- Aeronautical Message Handling System (AMHS); and
- Air Traffic Services Direct Speech (ATS/DS) voice services

2.5. A Proof of Concept (PoC) was conducted in 2018 to measure the impact of Value-Added Services on the NAFISAT network to ensure that the network is flexible and scalable to adopt future services.

2.6. The PoC was conducted between South Africa and a NAFISAT Member State (Seychelles) and the objective was to test if the network was able to handle a continuous data stream in the form of the:

- Space-based ADSB data; and
- The Centralized AIM database client connectivity.

2.7. The conclusion of the PoC was that the networks is capable of supporting these additional Value-Added Services.

2.8. Additional satellite provider spectrum would be required for each additional service that is activated and would need its own dedicated spectrum on the network.

2.9. Since the 2017 upgrade, the network continues to operate at the agreed service levels. This has also resulted in the benefit that Member States now have access to a platform that is enabled to deliver traditional services in a more efficient and cost-effective manner. The network has rather over the years seen a slow uptake of the IP enabled services (such as AMHS) for which it was upgraded. It is encouraged that Member States deliberate on and share their implementation plans on these IP enabled services.

2.10. The impacts of the global COVID-19 pandemic has necessitated a rethink in the balancing of service provision, safety of operations and affordability. As a result, the network service provider has developed a roadmap for the future of the SADC VSAT/2 network leading towards the year 2022 and beyond. The formulation of this roadmap is aimed at providing a technically feasible response to the current economic difficulties that the global aviation industry finds itself in as well as ensuring that the network remains operationally and financially sustainable.

2.11. Since the World Health Organization declared the coronavirus as the global pandemic, the AFI Region has seen a very steep decline in air traffic movements and in turn, lower FIR crossings. The decline in FIR crossing has since remained under pressure and is expected to remain subdued for a foreseeable period of time. It is estimated that the recovery will only start to be evident in the later part of 2023 to early 2024. This status quo has put the financial sustainability of the network under pressure. This situation is a reminder to the Member States to ensure that the network operator's efforts and ability to collect the SADC VSAT/2 charges is enabled and supported.

3. ACTION BY THE MEETING

3.1 The meeting is requested to note the content of the Working Paper and urge Member States take action in implementing the suggestions within their jurisdictions where necessary.

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