International Civil Aviation Organization

Fifth Meeting of Aeronautical Telecommunication Network (ATN) Transition Task Force of APANPIRG

Phuket, Thailand, 9-13 June 2003

Agenda Item 4:   **Review the development status of ATN technical documents**

ATN Qualification Programme

(Presented by the Rapporteur of the ATNTTF Ad Hoc Working Group)

SUMMARY

This paper provides information on processes associated with the qualification of equipment for ATN networks. The paper describes the existing SITA VHF Avionics Qualification process and identifies steps for a like process for ATN network providers.

1.   Introduction

At the sixth ATN Transition Task Force Ad-Hoc Working Group B Meeting, it was highlighted that issues existed in compatibility of equipments across administrations that may deploy ATN.

It was agreed that the ATNTTF Working Group would consider relevant issues in preparation for deployment of ATN and prepare as necessary relevant guidance.

2.   Discussion

To assist in the discussion, this paper details the current SITA VHF AIRCOM Qualification program from which relevance is drawn for ATN Qualification. In particular the paper details 'like' qualification methodology necessary for the VHF air-ground ATN sub-network.

SITA established its VAQ program (at that time called VHF Avionics Qualification but now being referred to as Validation, Assessment and Qualification) in 1995 in order to ensure and categorise datalink network and avionics component performance. In describing the process of Qualification this document captures the expertise acquired, lessons learned and resultant assistance to airlines who may benefit from program while they select new or perhaps consider upgrading their existing avionics.

3.   Qualification

The importance of equipment qualification is that various system standards, vendor compliance and methodology are to be used to implement ATN. While relevant standards and references apply, reality has ATN applied across differing administrations and to differing degrees.

In the case of VHF AIRCOM Qualification all components of the SITA VHF sub-network are audited for compliance to relevant standards and specifications. The differing components identified include:

- Aircraft configuration, both by type and individual configuration;
- Vendor avionic conformance to relevant specification and capability;
- Airline management and maintenance;
- VHF AIRCOM practices and specifications.

A fundamental purpose of SITA Qualification is to expose to the person that may be evaluating datalink avionics the list of requirements mandated by industry standards and service providers while identifying and addressing the list of features and characteristics that need to be considered for improved performance over the lifetime of the avionics.

Qualification requires close coordination and configuration management with airlines.

Steps associate with this Qualification are:

1. Compliance requirements

    a. Compliance with relevant industry standards;
    b. Successful completion of service provider qualification testing;
    c. Selection and management of service provider;
    d. Efficiency and robustness of operation;
    e. Upgradability;

2. Extended requirements of:

    a. Management configuration and diagnostic capabilities;
    b. Partitioned architecture (ATS CNS Vs AOC);
    c. Independent capability for customisation and modifications;
    d. ATN requirements.

SITA maintains records of Qualification for airline selection of suitable avionics categorised on aircraft type and configuration capabilities. Qualification tests include appropriate air-ground compatibility and performance but also include SITA AIRCOM processing and router ground components.

4.   High Level Qualification Process

While the SITA Qualification described applies to VHF avionics, a similar program and process exists for satellite avionics as well as for ground processor interface compatibility.

Considerable attention in Qualification applies to the compatibility of ground system interfaces and system compatibility. In order to ensure this SITA Qualification includes test-bed simulations and reversion testing capability. Figure 1 depicts the SITA AIRCOM Datalink Traffic (ADLT) system internal interfaces as well as supporting external ground network interfaces.
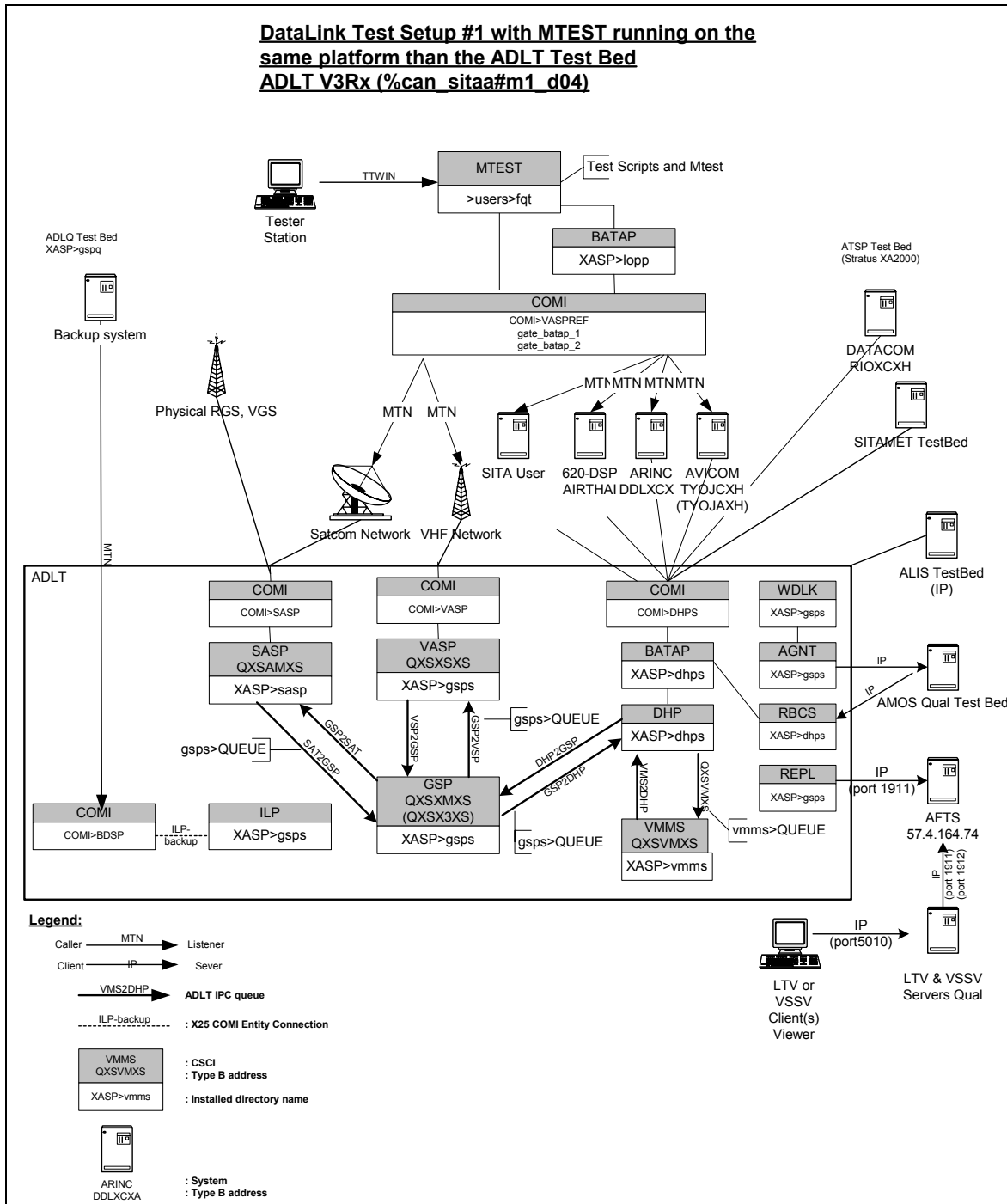

Figure 1: SITA ADLT and external interfaces

While SITA AIRCOM represents a global datalink management capability it is self contained and managed by SITA. In the case of ATN, both for ground and air-

ground components, the management of associated components is across several administrations and service providers.

The ATN Qualification process must satisfy in process and compatibility test capability for internetworking, system performance and selection across these administration and service provider boundaries. These include:

1.Compliance requirements

    a. Compliance with relevant industry standards: involving ATN ground and air-ground components;

    b. Successful completion of service provider qualification testing: internal system performance and selection qualification within a service provider;

    c. Selection and management of service provider: qualification and authentication of a provider to meet ATN performance and service delivery;

    d. Efficiency and robustness of operation: management of providers of ATN services across administration and service provider boundaries and authenticated capabilities;

    e. Upgradability: management of service improvements and developments in accordance with administration and service provider boundaries;

2.extended requirements of:

    a. Management configuration and diagnostic capabilities: management of performance confirmation across administration and service provider boundaries including system logs and diagnostic management;

    b. Partitioned architecture: ATS CNS authentication and service performance portioned from AOC and non-ATN service elements;

    c. Independent capability for customisation and modifications: process to ensure customised network capabilities are included for security, network authentication and management performance;

    d. ATN requirements: expanded to include ATN performance and application based needs.

5.   Action by the Meeting

The Ad Hoc Working Group is invited to review the material within this paper and address guidance for ATN Qualification and a method to manage such information.