WG2WP214
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Section 3 Guidance for ATN Administrators

3.1 States

3.2 Organizations (e.g., commercial airlines)

Commercial airlines are solely responsible for all their ATN resources, namely:

- o Airline ground systems (networks, routers, end-systems, etc.);
- o All airline airborne systems (busses, routers, end-systems, etc.); and
- o Air/ground subnetworks on the aircraft side.

NOTE: Airborne ATC end-systems are the sole responsibility of airlines for assignment of physical addresses, etc. subject only to the NSAP addressing and naming conventions in SARPs (e.g., 24-bit ICAO address & three character application names like ADS, CMA, CPC & FIS)

3.2.1 RRI Agents and Managed Objects

In order to assist commercial airlines with a minimal capability to administer their ATN resources, a CMIP based Agent Application is suggested for all air and ground router reference implementations (RRI) of ICAO sub-volumes IV & V. Individual aircraft operators need to design and implement land based managers to run their Agent Applications. Network management using CMIP shall be used to collect and report data.

All storage (e.g. tables, databases) is defined as MOs in the the Management Information Bases (MIB). All CSCIs in the RRI shall be capable of using the MIB (i.e. MOs).

There is a requirement for data that exceeds a certain threshhold to be transmitted in real time between an airborne system and a ground host computer. (e.g. this data may be used to influence which air/ground subnetwork is used for transmission). It is noted that this requirement may be met through use of a traffic type in the security option of IDRP, generated by the application. The solution to this problem will be ground-driven.

3.2.1.1 Initial Requirements for Managed Objects (MOs)

The following MOs have been identified to date. All MOs are capable of threshholding (time/size)

3.2.1.1.1 SNDCF

Join/Leave events (or equivalent) by subnetwork,

Aggregates on join/leave events,
Queue counts by subnetwork, and
Aggregate queue counts

3.2.1.1.2 Network/IDRP

All router connections (origin/destination DTE),
Aggregates for all router connections,
IDRP traffic (inbound and outbound, bit count and packets) on every router connection,
Aggregate IDRP traffic,
Forwarding information (FIB),
Policy information (PIB), and
Routing information (RIB).

3.2.1.1.3 Transport

All Transport connections origin/destination TSAP/NSAP and associated priority,
Bit counts (both overhead and data) by Transport connection,
Aggregates for all bit counts for all connections,
Queue counts by transport connection, and
Aggregate queue counts.

3.2.1.1.4 Miscellaneous

Processing time through the RRI based on first bit in last bit out (benchmark/exceptions),
Error counts,
Retransmit counts,
ICAO 24-bit ID, hardware part number, software part number (one MO for each and one aggregate MO for all three),
The ability to launch and/or reply to multiple PINGs, and
Local and remote TRACEROUTE cabability.

Section 4 Guidance for System Implementors

4.1 State Systems

4.2 Organization Systems (e.g., commercial airlines)

4.2.1 Commercial Airline Ground Systems

4.2.2 Commercial Airline Airborne Systems

4.2.2.1 Optional Non-Use of IDRP on Airplanes

4.2.2.1.1 Events have overtaken the primary reason why optional non-use of the inter-domain routing protocol (IDRP), ISO standard 10747, on airplanes exists in draft SARPS. In February 1996, IATA recommended that this option be removed and associated validation activities cease, however, the ATN Panel Working Group 2 agreed that there was insufficient time to make changes to sub-volume V draft SARPs before the November 1996 ATNP/2 meeting. The expectation is that optional non-use of IDRP on airplanes will disappear in the next iteration of sub-volume V SARPs.

During 1994, significant airline and state expectations existed for a mid-1997 operational implementation of ATN (i.e., the CNS/ATM-1 Package) in the North Atlantic. Surveys of avionics vendors at that time indicated a total inability to provide certifiable airborne IDRP in the mid-1997 timeframe. Among other considerations, this led to the draft OPTIONAL NON-USE OF IDRP ON AIRPLANES alternative solution currently in draft SARPS.

Two events occurred after that decision which obviated the need for the OPTIONAL NON-USE OF AIRBORNE IDRP alternative solution, namely:

- Airlines and states agreed that mid-1998 was a more realistic date for the first operational implementation of ATN (i.e., the CNS/ATM-1 Package) in the North Atlantic region, and

- A US government (FAA) - airline industry (ATN Systems Inc.) cooperative agreement was enacted to fund the development of a certifiable IDRP avionics solution by mid-1998. All airlines planning to equip for the 1998 CNS/ATM-1 Package operational implementation in the North Atlantic region intend to use airborne IDRP

4.2.2.1.2 Following are sample reasons for suggesting the use of IDRP on airplanes:

- IDRP on airplanes is an international standards based, airline industry standard solution which is significantly more cost efficient than any ROLL YOUR OWN routing methodology;

- IDRP on airplanes results in automatic reconfiguration (as new services/end systems come online, minimal airborne changes are necessary to accommodate);

- IDRP on airplanes results in automatic route recovery (saves having to program for worst case scenarios); and

- IDRP on airplanes results in airborne knowledge of ground connectivities to support safety critical services (specifically, to know when next generation safety critical services can be supported).