

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL

WORKING GROUP TWO

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**Potential ATN ICS SARPs defect due to the priority
restrictions on the Mode S Subnetwork**

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SUMMARY OF THE DEFECT

At the last WGW meeting in Phuket, priority restrictions over the Mode S subnetwork were introduced in Subvolume 1 (section 1.3.8): low priority CLNP PDUs are not permitted to go through the Mode S subnetwork.

ATN routers compute the best routes function of the security attribute, and may consequently select route via a Mode S subnetwork for all CLNP PDUs with a given security tag value, without consideration to the PDUs priority. Low priority CLNP PDUs may therefore be wrongly routed to an A/G BIS connected to a Mode S subnetwork, (where they will be discarded), whereas another path to the aircraft, via a mobile subnetwork allowing low priority traffic, might be available.

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1. Introduction

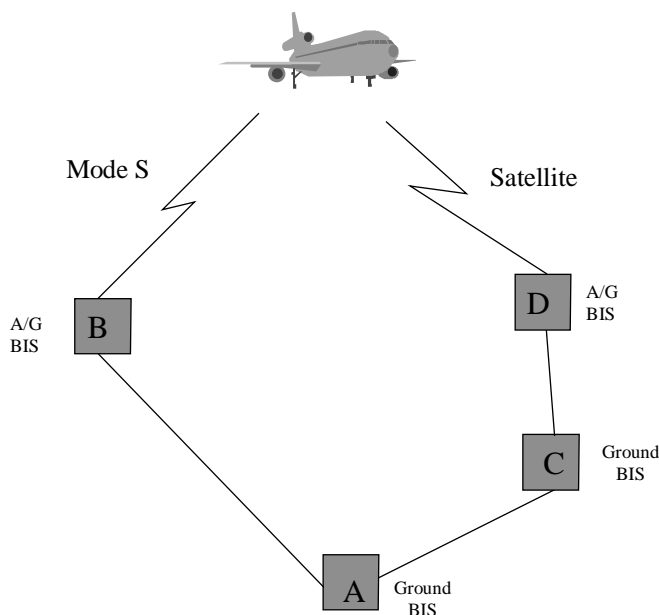
At the last WGW meeting in Phuket, priority restrictions over the Mode S subnetwork were introduced in Subvolume 1 (section 1.3.8): low priority CLNP PDUs are not permitted to go through the Mode S subnetwork.

ATN ground routers are not designed to take routing decisions based on the CLNP priority and there is consequently a potential risk that low priority CLNP packets be wrongly routed toward a Mode S subnetwork whereas an alternate authorized path exists to reach the aircraft.

This paper recommends the Working Group 2 to consider this potential problem and to decide whether a PDR needs to be issued to the ATNP CCB.

2. Problem Statement

Consider the configuration, depicted in the figure below.



The Ground BIS A knows two routes to the aircraft:

- One route in two hops, and going through the Mode S subnetwork.
- One route in three hops, and going through the Satellite subnetwork.

The satellite and the Mode S subnetwork are both assumed to be permitted for ATSC traffic.

If Ground BIS A route selection criteria is to minimize the number of hops, it will then elect the route going through Mode S subnetwork as being the best path toward the aircraft. All CLNP PDUs (including both low and high priority PDUs) will consequently be forwarded by BIS A to A/G BIS B. And the low priority CLNP PDUs will then be discarded by the A/G BIS B since these PDUs are not permitted to go through a Mode S subnetwork. Considering that a path is available for low priority ATSC traffic through the satellite subnetwork, the routing appears to be defective: the priority restrictions over the Mode S subnetwork may induce routing black holes for low priority ATSC traffic.

