

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL

WORKING GROUP 3 (APPLICATIONS AND UPPER LAYERS)

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CM "Logout" Function Discussion

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SUMMARY

This paper responds to a concept identified by industry for a CM-logout service.

1. Introduction

This paper discusses an identified need for an explicit logout service for package 2 CM. Implementers have commented that the addition of this service would aid in operational use of CM, and would also more easily accommodate equipment changes. WG3/SG2 has discussed this, and believes that there are other ways to accomplish this without affecting the SARPs.

2. Discussion

The length of time that application information exchanged via a CM-logon service is relevant has always been viewed as a local implementation issue. This is true for both aircraft and ground implementations. However, as implementations are built, there is a perceived need to have an explicit message for the aircraft to tell a peer ground user that application information should be discarded. This may be because the information is no longer valid.

One of the cases put forth for invalid information is the scenario involving an equipment change. In this case, an aircraft performs a logon and then has an equipment change, which changes the 24-bit aircraft address. The aircraft will then need to perform another logon. This can cause an ambiguity in the ground system, since the ground system may now have a set of information for an aircraft with the same flight ID (and other optional information) but different 24-bit aircraft addresses and application information. The second logon won't replace the first. Therefore, a mechanism is needed to tell the ground system to disregard the first set of logon information.

However, it was decided by WG3/SG2 that this is more of a local implementation issue, which may require operational changes and/or local implementation changes, but did not seem to necessitate any SARPs changes. Some options for accomplishing this are outlined in the next section.

3. Concept

If an aircraft performs a CM-logon, and then subsequently performs another CM-logon after an equipment change (as outlined in the previous section), there are some checks that can be done in order to accomplish the same function as the logout message. For each logon received, a ground CM implementation will need to check for duplicate flight IDs and other information (ETOB, departure/destination airports) against a database of held 24 bit aircraft addresses. If duplicates are found and they are not due to normal repetitive flight plans, the oldest received information should be discarded by the CM ground system, and be replaced by the newly received information.

If the ground system does not normally forward CM information upon receipt of a logon (i.e. a center makes an external request for CM and other application information based on flight plan information), a flight plan change message should be issued. This should result in an additional request for the (correct) CM information. A flight plan change message may be necessary regardless if the 24-bit aircraft address is to be contained in the flight plan itself.

Also note that since the 24-bit aircraft address has changed, the aircraft application addresses have also changed. A ground system will know that information it holds is invalid if either any applications are currently in use (provider abort will occur) or if any applications are subsequently attempted to be used (no applications with those addresses will be found, so an abort or lower-level connection error will result).

4. Conclusion

The "logout" message concept has some advantages. However, if a new service is introduced, many other issues would arise, such as:

- Depending on the topology, there may be problems with notifying other users. If the application information that needs to be canceled has already been disseminated, then the cancellation message will need to be disseminated as well. This could cause coordination problems between neighboring FIRs.
- It would need to be determined who decides when information is no longer needed. Would a logout only be sent when there is a technical reason such as an equipment change, or may there be operational reasons as well? There may be conflicts between aircraft's and ground system's perceptions of when to cancel information and who needs what information.
- Actions on unsuccessful logouts would need to be defined, which would result in increased complexity for the protocol and subsetting rules.

Therefore, it would seem more reasonable to solve the issues associated with the logout concept by local implementation and operational safeguards rather than by changes in the SARPs.

The meeting is invited to comment on this paper and its conclusion.