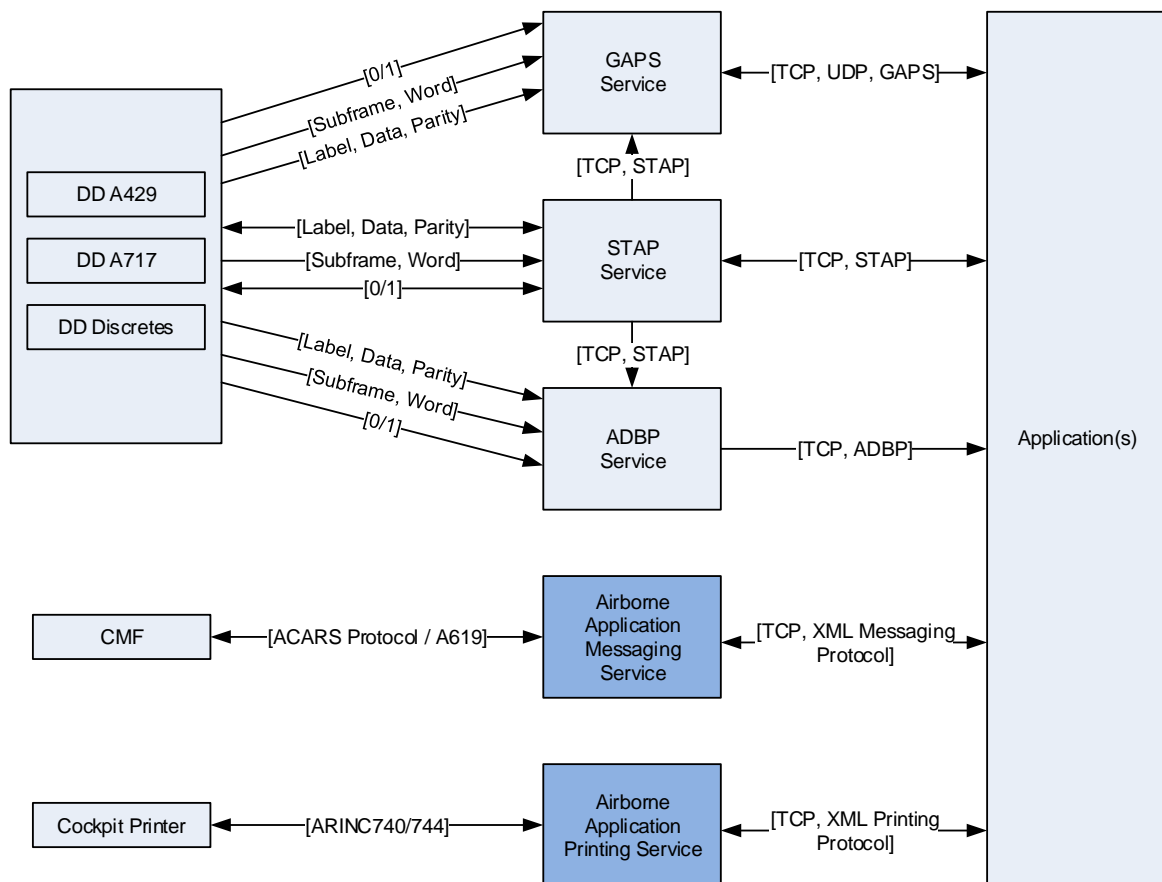


## 2.1 Link Type

The transport layer as depicted in Figure 2-1 for the ADBP, GAPS, ~~and~~ STAP, **Messaging Service, and Printing Service** protocols has a point-to-point characteristic, realized as a standard Transmission Control Protocol (TCP)/Internet Protocol (IP) connection. EFB applications act as clients, and the server functionality, defined as an ADIF, must be accessible by the applications running on an EFB. The actual place of implementation for the services may vary depending on the actual system integration configuration. Each of the services may reside:

- Directly inside of the AID
- Indirectly inside of the AID, accessible via specialized driver installed on the EFB
- Inside the EFB
- Inside any external service, like NSU, accessible through the on-board networking system



**Figure 2-1 – Role and Accessibility of the GAPS, STAP, and ADBP, Messaging and Printing Services**

Figure 2-1, Role and Accessibility of the GAPS, STAP, ~~and~~ ADBP, Messaging, and Printing Services, shows the role of the services from the applications' point of view. The left hand side of the figure is shown for example only. ARINC Specification 834 is written to be independent of aircraft network architecture.

The GAPS protocol uses SNMP requests to acquire aircraft parameters; thus, no dedicated communications channel is required.

The STAP protocol requires only one single communication channel per application willing to participate in data acquisition and/or transmission. This channel is used for:

- Subscribing for the requested parameters
- Locking the transmission channels
- Transmitting data
- Checking status of a server
- Receiving current values of requested parameters

The ADBP protocol requires two communication channels per application willing to retrieve avionics data. The first channel is used for synchronous request-response control messaging, while the second one is used for asynchronous data delivery only and requires an active listening socket opened on the client side.

Notes:

1. None of the protocols provides any checksum mechanisms. This functionality is fully covered by the TCP layer.
2. Supplement 1 to ARINC Specification 834 introduces checksums that are attached to individual messages of the STAP protocol. This will enable certification of the checksum mechanisms of a TCP stack. Please refer to Section 6.3.1, Checksums for Requests and Responses.

The number of communication channels is not specified nor is it limited. Each EFB application is allowed to open more than one connection to the server, as well as any number of EFB devices is allowed to connect to the server.

In case of the STAP protocol, termination of a connection is equivalent to termination of the whole session (unsubscription of all the requested parameters and release all the locked channels, if any). In case of the ADBP protocol, closing a control link does not close a session.

The GAPS protocol uses the industry standard port 161 using the UDP protocol for SNMP get/set/walk commands and port 162 for SNMP traps. TCP ports are not explicitly defined for the STAP and ADBP protocols. The system integrator is responsible for the network configuration systems that use ADBP and STAP protocols.

### The Airborne Messaging Service Specification

- Defines a standardized communication protocol for airborne applications to exchange messages (uplink or downlink) with on-ground end systems through the aircrafts ACARS network.
- The ARINC 834 Airborne Messaging Service defines a client/server architecture that abstracts away (from the airborne applications) the complexities of ACARS ARINC 619 communications protocol and provides a straight forward client interface to the airborne messaging service.

### The Airborne Printing Service Specification

- Defines a standardized communication protocol for airborne applications to utilize the functions of ARINC 740/744 cockpit printers.
- The ARINC 834 Airborne Printer Service defines a client/server architecture that abstracts away (from the airborne applications) the complexities of ARINC 740/744 printer communication and provides a straight forward client interface to the airborne printer service.

Both the Messaging and Printing services send and receive XML formatted messages to and from the airborne applications over a TCP/IP communication link.