

Comments on SpaceWire-RT Initial Protocol Definition

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General

- ❖ The SpaceWire-RT protocol developed by Prof. Steve Parkes of University of Dundee and documented in the initial protocol definition document meets most of our requirements we presented at the tenth WG meeting held in February 2008.
- ❖ We think the protocol will meet our requirements for monitoring and controlling instruments in realtime better if multiple retry types are defined.
- ❖ We also have some comments and questions on the protocol specification and its documentation, most of which are minor.

Retry Types

- ❖ 12.4 SCHEDULED SYSTEM says “d) For the guaranteed service operating over a scheduled system, retries shall be sent within same time-slot as the original packet,” but what happens if all retries have failed in the same time-slot without reaching the Retry Prime Limit? What should the sender do in the next time-slot? (We assume that this time-slot was quite busy.)
- ❖ How about defining the following three types? In the next time-slot:
 1. Start using the alternative route or wait for intervention by the network management system.
 2. Keep sending the same packet until the Retry Prime Limit is reached.
 3. Give up sending that packet and send the next packet (this type is useful for not-so-urgent and not-so-important data).

More Explicit Flow Control

- ❖ The destination channel buffer can store multiple SDUs, but there is no way for the sender to know how many more SDUs can be put into the destination channel buffer. It may be useful if there is a way for the receiver to tell the sender explicitly how many SDUs the sender can send.
- ❖ How about if the receiver tells the sender the greatest sequence number that the receiver can store in the destination channel buffer? For example, if the receiver has received SDU #4 and it can store three more SDUs, the receiver tells the sender that it can receive up to #7.
- ❖ Furthermore, BFCT can be piggybacked with ACK. ACK can tell the sender that the the receiver has received SDU #4 and it can receive up to #7

Resetting the Receiving Counter

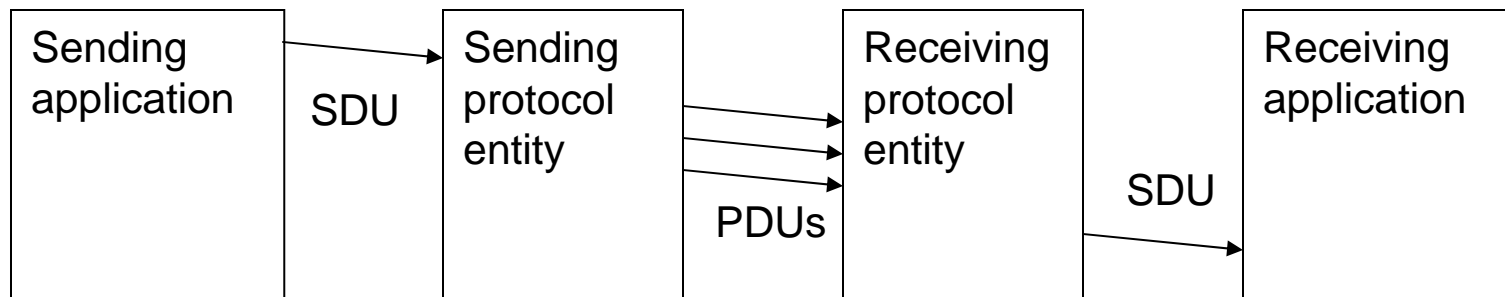
- ❖ If there is a way for the sender to reset the value of the last received sequence number variable in the destination channel buffer of the receiver, the sender can use it if the sender is not sure whether the receiver is functioning correctly. But this can be done with a different method (e.g., by resetting the entire receiver).

Channels

- ❖ 12.4 SCHEDULED SYSTEM says “a) Channels shall be assigned to time-slots in such a way that there is no conflicting use of resources i.e. none of the channels assigned to a particular time-slot may use the same SpaceWire link.”
- ❖ However, shouldn't we say “... i.e. none of the channels assigned to a particular time-slot may use the same SpaceWire link or router” ?
- ❖ (Editorial) The example given in Figure 3-3 does not follow this rule.

Comments on Terminology

- ❖ In this document, the data unit passed by the application to the protocol is called user information, and a chunk that fits in one PDU is called an SDU. However, according to the OSI Reference Model, SDU is the data unit passed by the application to the protocol.



- ❖ The term “route” is used frequently in the document (e.g., alternative route), but the difference between route and path is not clear.