

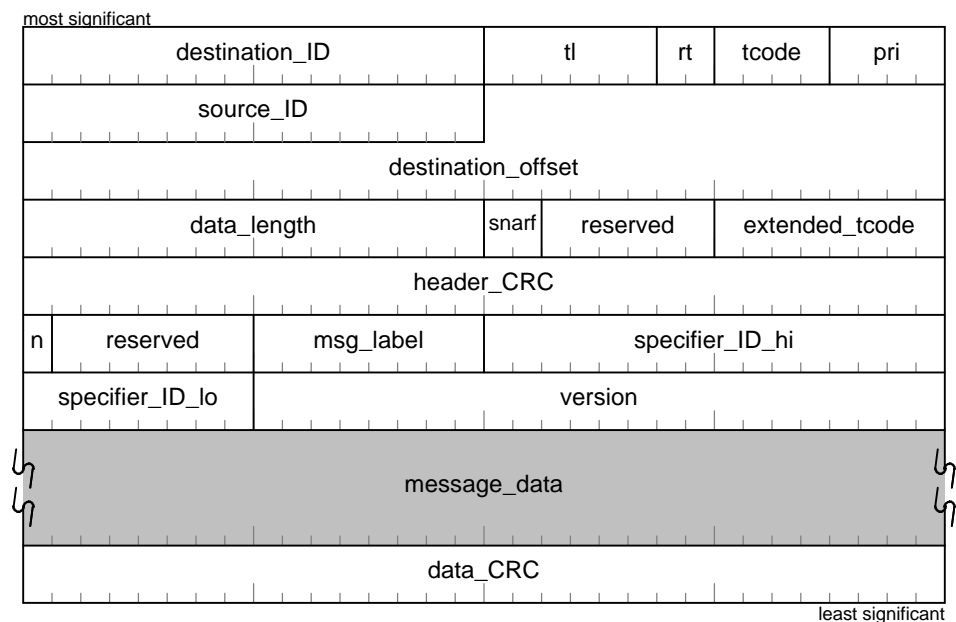
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FROM: Peter Johansson
 TO: IEEE P1394.1 Working Group
 DATE: October 3, 1999
 RE: Message formats for inter-bridge communications

Discussions to date in the working group have involved three possible methods for bridges to exchanges messages (commands):

- block write requests addressed to a bridge portal s MESSAGE_REQUEST and MESSAGE_RESPONSE registers;
- block write requests addressed to some node s MESSAGE_REQUEST or MESSAGE_RESPONSE registers but intercepted by the terminal bridge and diverted to one of the bridge s portals; or
- GASP packets observed by all bridges (the packet may be intended for all bridges or a subset).

All these packets use a similar format that reserves the first two quadlets of the data payload for identifying information; either format may be used as a prefix for a common format for the remaining 56 bytes of available data payload. The format of the entire block write packets, whose data payload is compliant with draft standard IEEE P1212, is shown below:



The usage of the *destination_ID*, *tl*, *rt*, *tcode*, *pri*, *source_ID*, *destination_offset* and *data_length* fields (as well as both the header and data CRC) shall be as specified by IEEE Std 1394-1995.

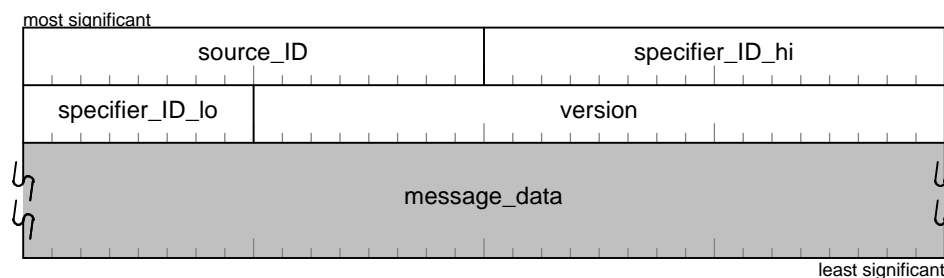
The 16-bit extended transaction code field defined by IEEE Std 1394-1995 is subdivided to yield a new field, *snarf*, which shall indicate the final destination of the packet according to the table below:

Value	Action
0	Not intercepted by the terminal bridge but forwarded to the recipient identified by <i>destination_ID</i> . This is normal processing for request formats defined by IEEE Std 1394-1995.
1	Intercepted by the terminal bridge and processed by the portal connected to the bus identified by the most significant ten bits of <i>destination_ID</i> .
2	Intercepted by the terminal bridge and processed by the entry portal that eavesdropped the request.
3	Reserved for future standardization

With the exception of a reduction in size from 16 to eight bits (and a concomitant reduction of the generous quantity of extended transaction code values reserved for future standardization), the usage of *extended_tcode* remains as specified by IEEE Std 1394-1995.

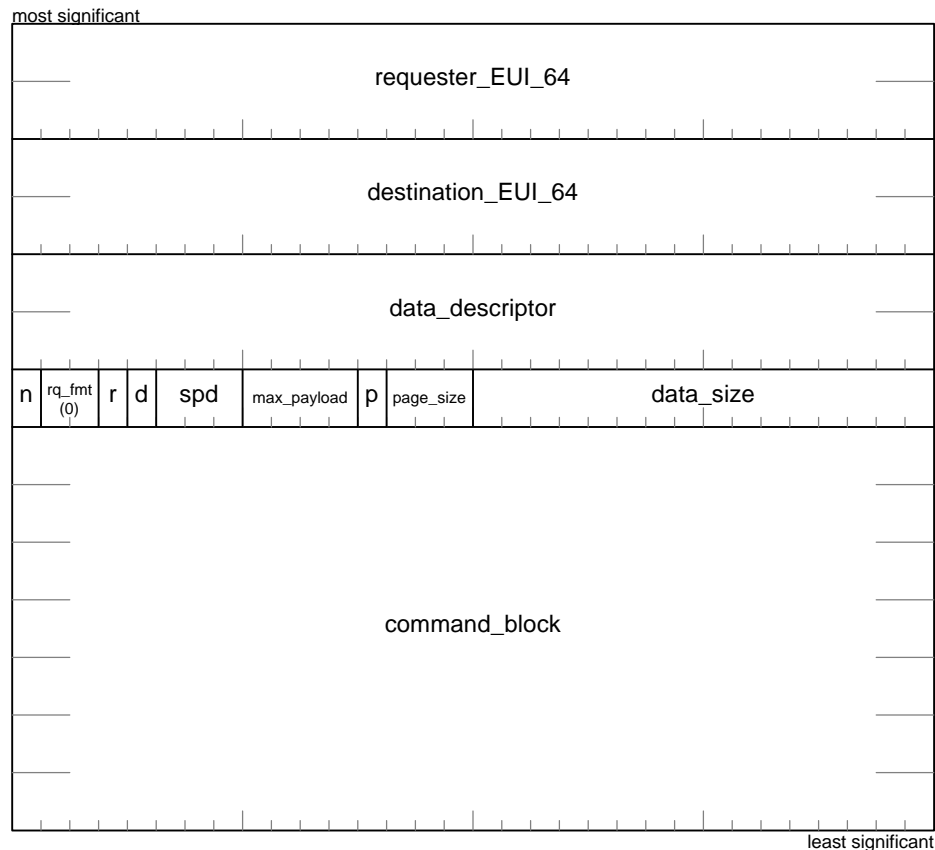
The usage of the *notify* bit (abbreviated as *n* above) shall be as specified by draft standard IEEE P1212. The *msg_label*, *specifier_ID* and *version* fields shall be zero.

The GASP payload format, compliant with draft standard IEEE P1394a is as follows:



Although the *source_ID* field originally contains a local node ID, by the time the GASP packet is received on other buses *source_ID* shall contain a virtual node ID. The *specifier_ID* and *version* fields shall be zero.

In cases where *message_data* embodies a request (that is, it was contained within either the payload of a block write request addressed to the MESSAGE_REQUEST register or the payload of a GASP packet), it shall conform to the format illustrated by the figure below.



The *requester_EUI_64* field shall contain the EUI-64 obtained from the requester's bus information block.

The *destination_EUI_64* field identifies the intended recipient of the request. When zero, the request may be accepted without verification of an EUI-64 match. Otherwise, the recipient shall compare *destination_EUI_64* with the EUI-64 in its own bus information block and shall ignore the request if they are not equal.

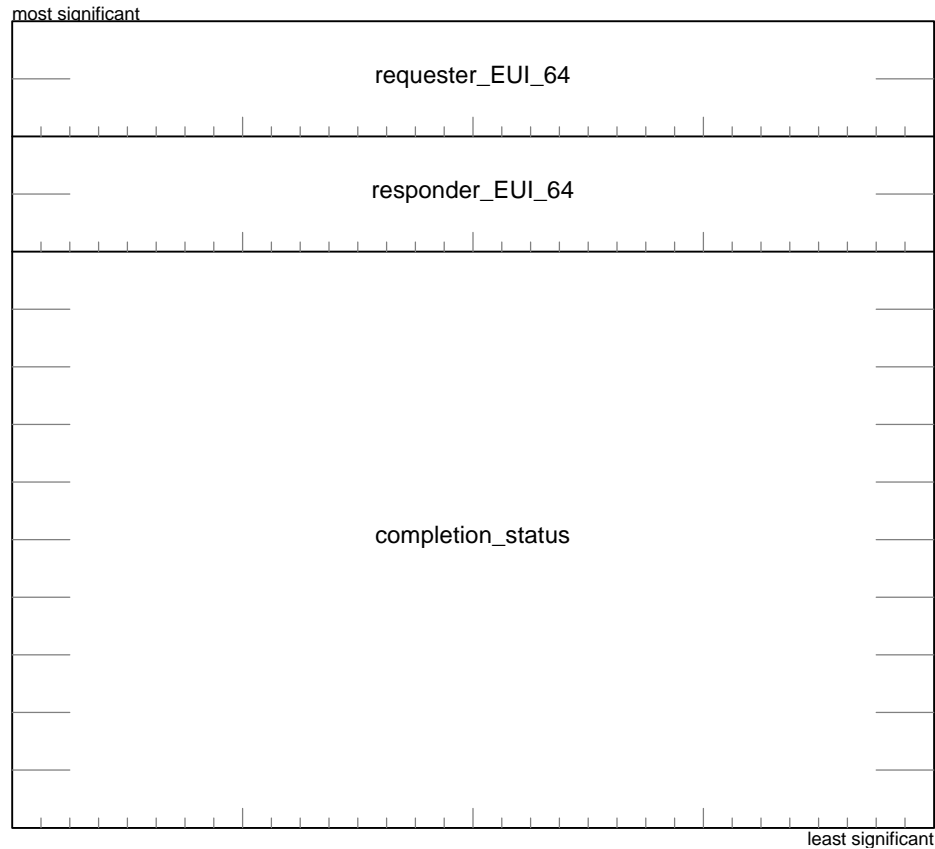
An optional data buffer may be associated with a request so long as either a) the *destination_EUI_64* field is nonzero or b) the request was contained within a block write addressed to a single node's MESSAGE_REQUEST register. When no data buffer is present, *data_size* shall be zero and the meaning of the *direction* and *page_table_present* bits and the *data_descriptor*, *spd*, *max_payload*, and *page_size* fields is undefined. Otherwise the usage and meaning of these bits and fields shall be as specified by ANSI NCITS 325-1998 for a normal command block ORB.

NOTE There may be no necessity for a data buffer if all requests and their associated data fit within the useful data payload (56 bytes) in a block write addressed to MESSAGE_REQUEST. Even if some requests do not fit within this limit, another alternative might be to define a different well-known CSR that accommodates a larger data payload.

The *notify* bit (abbreviated as *n* above) shall be one and the *rq_fmt* field shall be zero (see ANSI NCITS 325-1998).

The *command_block* field shall specify the operation to be performed by the bridge portal.

When a request initiated by receipt of a block write request or GASP packet is complete, the bridge portal usually returns completion status to the requester's MESSAGE_RESPONSE register. In this case, *message_data* shall conform to the format illustrated below:



The *requester_EUI_64* field shall be equal to the value of the *requester_EUI_64* field in the corresponding request.

The *responder_EUI_64* field shall be equal to the EUI-64 obtained from the responder's bus information block.

The *completion_status* field, which may include response data, shall indicate the completion status of the response.