

**BR077R00 (submitted for p1394.1 committee vote):
Shorter/adaptable time-of-death packet labels**

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**This contribution is one of several, presented for review and incorporation.
An overall contribution, which provides an overall context for this and other contributions, is presented in BR047R09.**

The worst-case time-of-death is based on the residency times in one bridge multiplied by the number of bridges. Since this number can sometimes become quite large, protocols for reducing this timeout, for specific requester-to-responder communications, is desirable.

A technique for effecting smaller timeouts is presented. The intent is to specify the packet time-of-death within the extended-packet header, so that the packet timeout can be reduced. The assumption is that the optimal time-of-death would be determined empirically, by reducing the time when no errors are observed, and increasing the time when errors are observed.

Of course, a residency time limit within bridges is still required, because this is necessary for the correct operation of bus-restart operations.

F.2 Reduced timeouts

The remote-timeout is much larger than required, since most of the delays are typically introduced by a single portal. Nodes that wish to reduce this timeout may include a time-of-death label in the packets, which causes requests to be rejected and responses to be discarded at an earlier time.

Since quadlet read and write requests have no extended_tcode field, the block formats are used instead. To support this methodology, the final bridge is required to convert between block and quadlet formats, when a legacy node is addressed. These possibilities are discussed in the following subclauses.

F.2.1 Remote aware-requester/split-responder transactions

A remote read transaction between an *a.1* requester and a *c.1* responder normally involves a sequence of request and response subactions, as illustrated in figure F.1 and figure F.2.

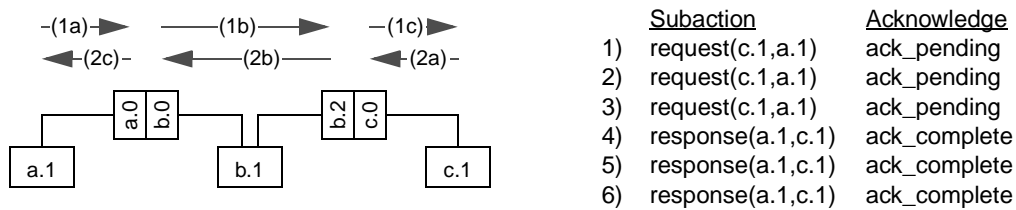


Figure F.1—Destination-bus address transactions

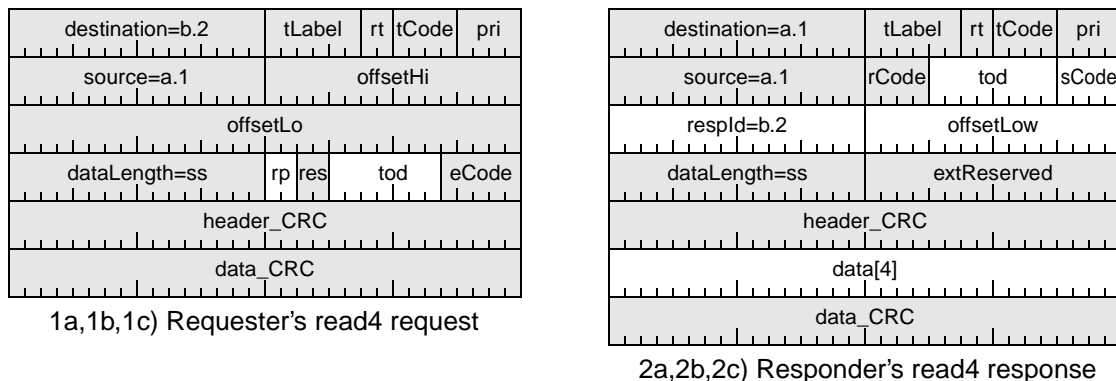


Figure F.2—Remote subaction encodings, bridge-aware responder

The request contains a 2-bit *sp* field (selected portal) field, which is zero (nonzero values identify FirstRead and FinalRead requests).

The remote request (and affiliated response) also contain a 7-bit *timeOfDeath* field, which ensures the packet's destruction before the requester's remote-timeout occurs.

The response contains a 5-bit *sCode* field that (in the case of a bus-bridge detected error) further identify the cause of the reported error. The 16-bit *responderId* field identifies the source of the response, when different from the responder. The 16-bit *offsetLow* field copied from the request, to increase the numbers of possible concurrently active transactions.

F.2.2 Legacy responder

A remote read transaction between a bridge-aware *a.1* requester and legacy *c.1* responder normally involves a sequence of request and response subactions, as illustrated in figure F.3. The final *c.0* portal accepts the responsibility of converting between the bridge-aware (1a,1b,2b,2c) formats illustrated in figure F.2 and the legacy-device subaction formats illustrated in figure F.4.

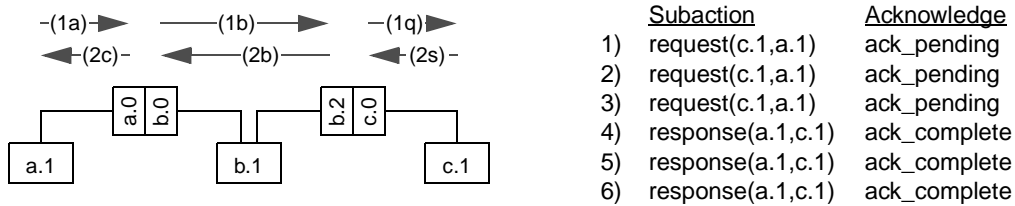


Figure F.3—Legacy responder subactions

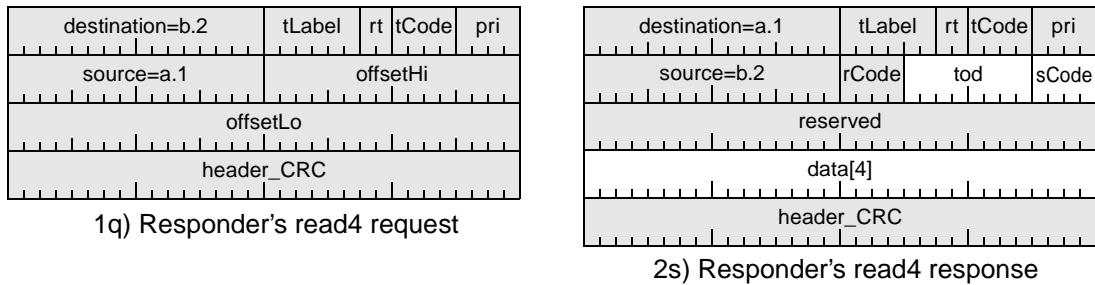


Figure F.4—Remote subaction encodings, bridge-aware responder

Bus bridges are expected to serialize their processing of legacy-packet conversions, since these conversions require saving of request-packet information for later inclusion in the returned response.