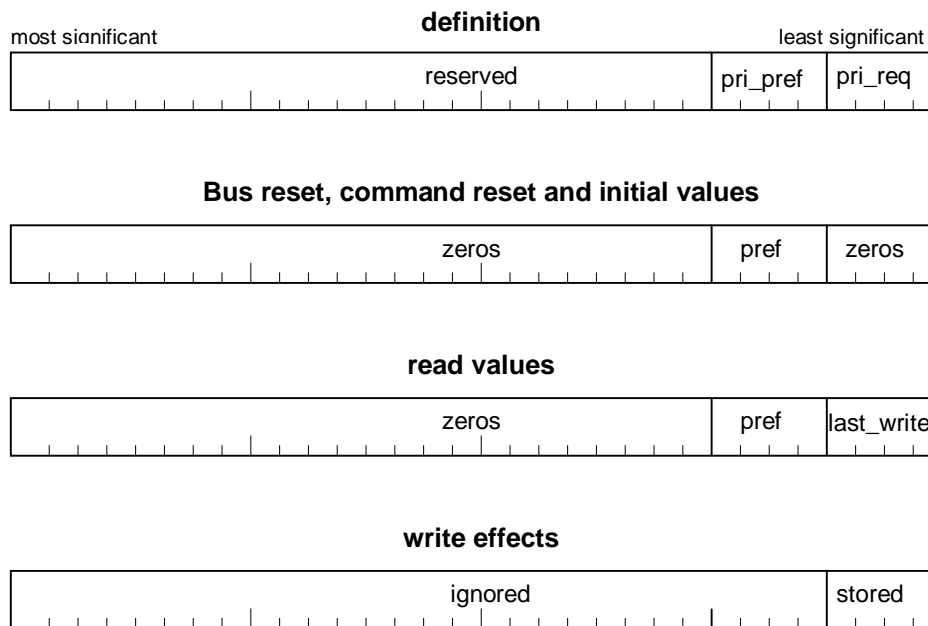


## 9.x FAIRNESS\_BUDGET register (cable environment)

Not implemented, backplane environment.

Optional, cable environment. This register shall be implemented on nodes capable of sending priority asynchronous packets other than cycle start.

The FAIRNESS\_BUDGET register permits the bus manager to configure a node's fair arbitration behavior in order to optimize Serial Bus utilization. The definition is given by figure 9-x below.



**Figure 9-x – FAIRNESS\_BUDGET format**

The *pri\_req* field shall specify the maximum number of priority arbitration requests for an asynchronous request packet that the link is permitted to make of the PHY during a fairness interval. A Serial Bus fairness interval exists between the occurrence of an arbitration reset gap and the first subsequent arbitration reset gap. The *pri\_req* default value of zero is equivalent to the fair arbitration behavior specified by IEEE Std 1394-1995.

The *pri\_pref* field shall specify the preferred number of priority arbitration requests for the node. The *pri\_pref* value of zero indicates no preference.

Each time a link receives PHY status of ARB\_RESET\_GAP, it shall reset an internal variable, *priority\_request\_count*, to the value of *pri\_req* from the FAIRNESS\_BUDGET register. When the link wishes the PHY to arbitrate for the bus in order to send a packet

with one of the transaction codes listed in table 9-x, it may make a priority arbitration request if the value of *priority\_request\_count* is nonzero. Each time the link makes a priority arbitration request for one of these transaction codes it shall decrement *priority\_request\_count*.

**Table 9-x – Transaction codes valid for priority arbitration**

Value	Description
0	Quadlet write request
4	Block write request
5	Quadlet read request
9	

The bus manager shall ensure that the sum of the values of *pri\_req* is the FAIRNESS\_BUDGET registers of all nodes is less than or equal to 63 minus the number of nodes.

NOTE—IEEE Std 1394-1995 specifies only one use for the priority arbitration request from the link to the PHY: to arbitrate for the bus in order to transmit a cycle start packet. This supplement does not change that use of priority request and it shall not count against the *priority\_request\_count* maintained by the link.