

# Fairness Budget Register Specification

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## 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 request packets.

The FAIRNESS\_BUDGET register permits the bus manager to configure a node’s fair arbitration behavior in order to optimize Serial Bus utilization. This register provides a mechanism for nodes to send more than one asynchronous request\* packet per fairness interval. The definition is given by figure 9-x below.

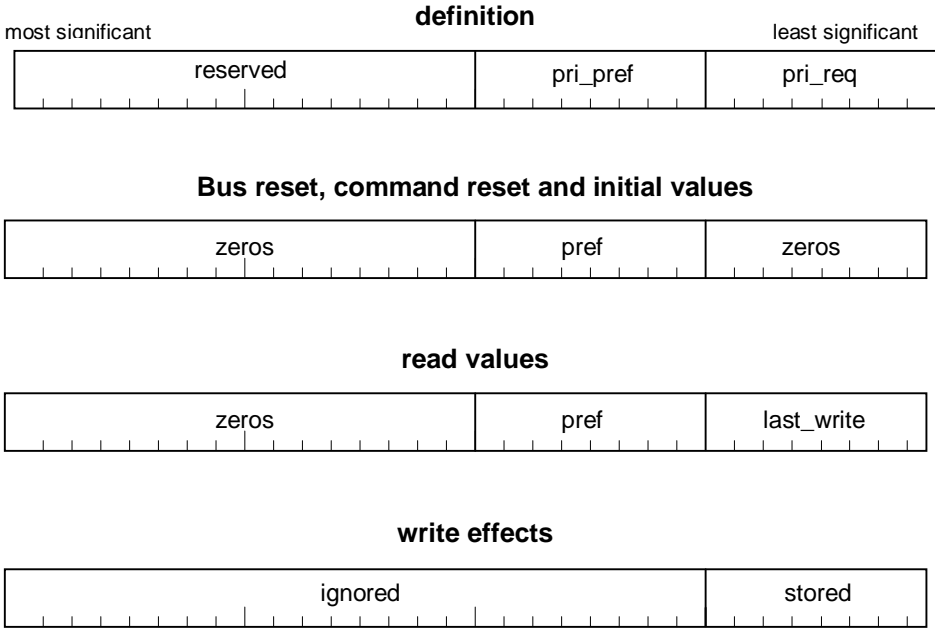


Figure 9-x – FAIRNESS\_BUDGET format

The *pri\_req* field shall specify the maximum number of priority arbitration requests for asynchronous request packets 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 nodes preferred number of priority arbitration requests for asynchronous request packets, *pref*. The bus manager should read this value before writing to the *pri\_req* field. The bus manager shall not write a value greater than the nodes *pref* value to the *pri\_req* field.

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 for priority arbitration counting against *priority\_request\_count***

Code	Name
0	Write request for data quadlet
1	Write request for data block
4	Read request for data quadlet
5	Read request for data block
9	Lock request

\* – This section does not alter the use of priority requests for cycle start or asynchronous response packets and they shall not count against the *priority\_request\_count* maintained by the link.