
Fairness Budget Register

0.9x Specification Variance from Accepted Proposal

Issues

- Field Size 4 or 8 bits
- Range Checking Responsibility
- Total Requests Limitation

Field Size

- 0.9x says 4 bits
 - » Attempts to limit effects of malicious software
 - » Constrains hardware to limit a nodes requests to at most 16 per fairness interval
- Proposal says 8 bits
 - » Devices may implement the number of bits they need
 - » Future applications may determine more than 16 is reasonable in some circumstances

Range Checking Responsibility

- 0.9x says each node checks
 - » Additional hardware range checking
 - » Bus manager doesn't have to read preference first
 - » Bus manager may need to read value after writing it
- Proposal says bus manager checks
 - » Bus manager reads or remembers devices maximum value
 - » Device only needs to implement enough bits to accommodate it's preference value

Total Requests Limitation

- 0.9x says the Bus Manager ensures no more than 63 total requests per fairness interval
 - » Attempts to limit effects of malicious software?
 - » Constrains software to limit total requests to at most 63 per fairness interval
- Proposal is silent on this issue
 - » 63 is a good guideline
 - » Future applications may determine more than 63 is reasonable in some circumstances

Additional Issue

- Currently all nodes default to OFF
 - » Ensures feature is harmless
 - » Not activated unless managed
- Defaulting to ON
 - » Feature operates even if never activated by bus manager
 - » Reduces bus traffic after bus reset?
- John Fuller has suggested that Disks and Bridges may default to ON and other devices default to OFF
 - » How are disks and bridges clearly distinguished?
 - » Designers prerogative?