



AT&T

subject: More than 8 devices per bus for WIDE SCSI

date: December 4, 1987

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DOCUMENT # X3T9.2/87-206

1. Introduction

With the increasing popularity of embedded target controllers, there exists motivation for allowing more than 8 devices on a SCSI bus. There also exists a requirement that any change made to allow more than 8 SCSI devices on a bus be backward compatible with the base of peripherals and hosts all ready in the field. The following proposal addresses both of these issues.

As currently proposed, WIDE SCSI allows only 8 devices to be connected to the bus even though additional data bits are available. These additional bits could be used in the arbitration and selection phases thus allowing more than 8 devices to be connected to the bus.

The current arbitration priority scheme has data bits 0 through 7 in increasing order such that data bit 7 is highest and data bit 0 is lowest priority. In order to allow 8, 16, and 32 bit devices to co-exist on the bus, the priority assigned to data bits 8 through 31 need to be assigned in decreasing order such that data bit 8 has lower priority than data bit 0 and data bit 31 is lowest priority. The priority assigned to data bits 0 through 7 shall remain in increasing order such that data bit 0 has a higher priority than data bit 8 and data bit 7 has the highest priority on the bus.

The following changes are proposed to allow these additional data bits to be valid during arbitration, selection, and reselection phases and to allow the above mentioned priority scheme to be implemented.

2. Proposal

In subsection (4) of Section 5.1.2 ARBITRATION PHASE:

"...If a higher priority SCSI ID bit is true on the DATA BUS (~~DB(7) is the highest~~) (priorities assigned to DB(0) through DB(7) are in increasing order with DB(7) being highest priority on the bus while DB(8) through DB(31) are assigned in decreasing order with DB(8) being just lower in priority than DB(0) and DB(31) being lowest priority on the bus), then the SCSI device has lost the arbitration..."

In subsection (5) of Section 5.1.2 ARBITRATION PHASE:

"...All other ~~seven~~-DATA BUS bits shall be released by the SCSI device."

3. Associated Concerns

Preliminary analysis indicates that the single-ended drivers will not be able to drive more than 12 loads (worst case) without raising the value of the pull-up termination resistors. A detailed analysis of how this and the increased capacitance due to an increase in the number of bus taps will affect the single-ended signal characteristics has not been done. These same concerns about signal characteristics hold true for the differential bus as well.