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(54) Title: ASYNCHRONOUS DATA PIPE FOR AUTOMATICALLY MANAGING ASYNCHRONOUS DATA TRANSFERS BETWEEN AN APPLICATION AND A BUS STRUCTURE

(57) Abstract

An asynchronous data pipe (ADP) automatically generates transactions necessary to complete asynchronous data transfer operations for an application over a bus structure. The ADP includes a register file which is programmed and initiated by the application. The register file includes the bus speed, transaction label, transaction code, destination node identifier, destination offset address, length of each data packet, packet counter, packet counter bump field, control field, and a status field. During a data transfer operation, the ADP generates the transactions necessary to complete the operation over the appropriate range of addresses, using the information in the register file as a template. The ADP increments the value in the destination offset address field for each transaction according to the length of each data packet, unless the incrementing feature has been disabled and the transactions are to take place at a fixed address. The packet counter represents the number of transactions remaining to be generated. The packet counter value is decremented after each packet of data is transferred. The application can increment the packet counter value by writing to the packet counter bump field. A multiplexer is included within a system having multiple ADPs for multiplexing the information from the ADPs onto the bus structure. A demultiplexer is included within a system having multiple ADPs for routing information from the bus structure to the appropriate ADP.

