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Assignment

Briefly explain the following interconnection network

1) The crossbar Network
2) Cube Interconnection Network
3) Fat tree connector

Answer

1) The Crossbar Network :- This allows any processor in the system to connect to any processor or memory unit so that many processors can communicate simultaneously without contention

A crossbar can be defined as a switching network with N inputs and M outputs which allows up to $\min\{N, M\}$ one-to one interconnections without contention

2) Cube Interconnection Network :- It is a type of network topology used to connect multiple processors with memory module and accurately route data

Hypercute networks consists of 2^n nodes. These nodes form the vertices of squares to create an inter-network connection. A hyper cube is basically a multi dimensional mesh network. with 2 nodes in each dimension

3) The fat tree connection & This is a universal network for provably efficient communication. It was invented by Charles C- Leiserson of the Massachusette Institute of Technology in 1985.

In a tree structure, every branch has the same thickness, regardless of their place in the hierarchy- they are all "skinny" (low bandwidth) - In a fat tree branches nearer the top of the hierarchy are "fatter" (thicker) than branches further down the hierarchy. In a telecommunication network, the branches are data links, the varied thickness (bandwith) of the data links allows for more efficient and technology specific use.