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1. Crossbar network: Crossbar networks allow any processor in the system to connect to any other processor or memory unit so that many processors can communicate simultaneously without contention. A new connection can be established at any time as long as the requested input and output ports are free. A crossbar switch is an assembly of individual switches between a set of inputs and a set of outputs. The switches are arranged in a matrix. They are commonly used in information processing applications such as [telephony](https://en.wikipedia.org/wiki/Telephony) and [circuit switching](https://en.wikipedia.org/wiki/Circuit_switching), but they are also used in applications such as mechanical [sorting machines](https://en.wikipedia.org/wiki/Sorting_machine).
2. Cube interconnection network: It is a 3-dimensional interconnection network. [Hypercube](https://en.wikipedia.org/wiki/Hypercube) networks are a type of [network topology](https://en.wikipedia.org/wiki/Network_topology) that is an extension of cube network used to connect multiple [processors](https://en.wikipedia.org/wiki/Processors) with memory modules and accurately route data. Hypercube networks consist of 2m nodes. These nodes form the vertices of squares to create an internetwork connection. A hypercube is basically a multidimensional [mesh network](https://en.wikipedia.org/wiki/Mesh_networking) with two nodes in each dimension. The n-cube network has several features that make it very attractive for parallel computation. It appears the same from every node, and no node needs special treatment. It also provides n disjoint paths between a and a destination.
3. Fat tree connection: The fat tree network is a universal [network](https://en.wikipedia.org/wiki/Network_theory) for provably efficient communication. Such network is a tree, and processors are connected to the bottom layer. The distinctive feature of a fat-tree is that for any switch, the number of links going down to its siblings is equal to the number of links going up to its parent in the upper level. Therefore, the links get “fatter” towards the top of the tree, and switch in the root of the tree has most links compared to any other switch below it, This set-up is particularly useful for [networks-on-chip](http://en.wikipedia.org/wiki/Network_On_Chip). However, for enterprise networks that connect servers, commodity (off-the-shelf) switches are used, and they have a fixed number of ports.