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1. **The 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. Crossbar networks are used in the design of high-performance small-scale [multiprocessors](https://www.sciencedirect.com/topics/computer-science/multiprocessors), in the design of routers for direct networks, and as basic components in the design of large-scale indirect networks.
2. **Cube interconnection network**: It is a three-dimensional interconnection network. The minimum distance between a pair of nodes is the minimum number of communication links that data from one of the nodes must transverse in order to reach the other node.
3. **Fat Tree Network**: 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.