NoC Communication Backbone

Network-on-Chip communication backbone is a component based sub-system, which features customizable and concurrency compliant components. The NoC design is based on layered architecture, having two layers: network protocol layer and communication backbone layer. The aim of this NoC implementation is to develop IP libraries for packet-switched communication backbones for multi-core systems. This reduces development time spent on the communication backbone for multi-core system, the cost of designing the final product and enhances productivity of system design. The developed libraries have reusable, customizable and parameterizable components, which are designed using MLDesigner tool. This software is for designing and analyzing systems on a multi-domain environment. The simulations on MLDesigner provide performance parameters, such as throughput, latency, resource usage, and network load. These parameters can be added with performance parameters extracted from hardware implementation, such as power and utilized area on FPGA, to generate a specification set for different configuration of the NoC. This specification set can be used by the system architect to select the NoC configuration. This meets the requirements of the system to be designed without the need to invest time in designing the communication backbone from scratch.