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Hierarchical Organization of a High-Radix Router

The performance of most digital systems today is limited more by their communication or interconnection rather than their logic or memory. To increase the entire system's efficacy, the focus is on improving the system's interconnection network. Stanford researchers have developed an alternative microarchitecture for high radix routers. This hierarchical organization of high radix routers improves throughput up to 60% higher than conventional crossbar architecture and provides 40% area savings over fully buffered crossbar architecture. The end result is higher performance at lower cost for the network system architecture.

Applications

- Network system architecture for high-end routers, switches and I/O devices.

Advantages

- Ability to scale to higher radix within the microarchitecture.
- Lower cost due to scalability and area reduction.
- Improved network performance.

Publications

- Kim, John, Dally, William J., Towles, Brian, and Gupta, Amit, "Microarchitecture of a High-Radix Router", Proceedings. 32th Annual International Symposium on Computer Architecture(ISCA), June 2005, pp. 420-431.

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