

عنوان مقاله:

Design of a Low-Latency Router Based on Virtual Output Queuing and Bypass Channels for Wireless Network-on-Chip

محل انتشار:

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خلاصه مقاله:

Wireless network-on-chip (WiNoC) is considered as a novel approach for designing future multi-core systems. In WiNoCs, wireless routers (WRs) utilize high-bandwidth wireless links to reduce the transmission delay between the long distance nodes. When the network traffic loads increase, a large number of packets will be sent into the wired and wireless links and can easily fill FIFO queues at the input ports of routers. In these conditions, head-of-line (HOL) blocking and node congestion may occur and the network communications efficiency tremendously decreases. In this study, a low-latency router was proposed, which employs virtual output queuing (VOQ) and bypass channels to eliminate the congestion of routers and improves network performance. Synthetic traffic patterns were simulated using Noxim simulator and obtained results show that considerable improvement in the latency, total energy consumption and the saturation throughput can be achieved compared to the other WiNoCs.

کلمات کلیدی:

wireless network-on-chip, head-of-line blocking, bypass channels, virtual output queuing, low-latency routers

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