# Implementing Synchronous Multicasting in Switch-Based Cluster Systems

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## ABSTRACT

A new realtime-based wormhole routing technique is presented. This kind of routing method that can implement synchronous multicasting in switch-based cluster systems has high-performance and low cost. By using this technique, we have developed a kind of computer network, which consists of an RTnet network interface card (RTNIC), RTnet network switch and commutation protocols. The RTnet is designed to provide a low-latency and high throughput end-to-end interconnects. The performance of Multicasting and realtime is better than the Myrinet. The build-up time of channel is shorter than that of SCI (Scalable Coherence Interface) and FC (Fiber channel), the throughputs higher than that of SCI and FC. By testing, the establish time of connection can be less than 0.1 $\mu s$; The 10 bits data can be transferred through the crosspoint in 8ns; The end to end latency is lower than 1 $\mu s$.

**Keywords**: realtime-based wormhole routing, synchronous Multicasting, low-latency, high- throughput, end-to-end interconnects