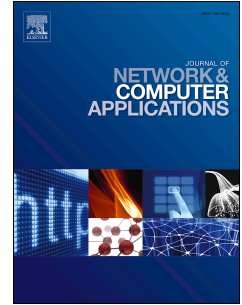


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An Efficient Error Prevention and Recovery Scheme for Multicast Traffic in Data Center Networks

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Abstract

In cloud application services, data are generally transmitted by multicast-based group communications to avoid transmission of duplicate packets and reduce bandwidth waste. However, the data amount in data center networks (DCNs) has increased to the scale of tremendous data over time. Tremendous data can be processed only through DCNs by using distributed computing technologies. Consequently, a large flow of multicasts has been generated. DCNs comprise a high number of commodity servers and switches, which exhibit limited capabilities to process packets. Subsequently, the rate of multicast congestion in DCNs increases substantially, resulting in severe packet loss and transmission error. Packet loss and transmission error cause all transmitting devices to retransmit data, resulting in network bandwidth waste, transmission delay, and disrupted transmission of other data. Consequently, network congestion is exacerbated, and the entire multicast tree crashes. Therefore, this paper proposes an error prevention and recovery multicast, which enables areas of errors to be effectively inferred and reduces the chain effects of errors by using repair multicast trees and multiple multicast

*Fully documented templates are available in the elsarticle package on CTAN.

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