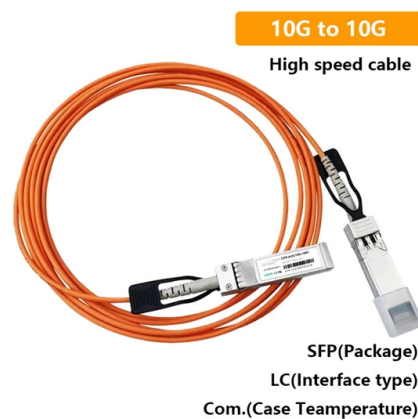


Low loss in hot channels for cloud computing



AI Overview

Achieving low loss in hot channels for cloud computing requires a combination of congestion control, optimized routing, edge computing, and high-performance network architectures to ensure reliable, low-latency, and high-throughput data delivery. Key Strategies for Low Loss

1. Advanced Congestion Control and Lossless Forwarding Implementing congestion control mechanisms such as Lossless Congestion Control with Priority Scheduling (CCLF) can significantly reduce packet loss in high-demand channels. This approach monitors output queues, aggregates packets, and prioritizes scheduling to achieve zero packet loss, improve bandwidth utilization, and reduce flow completion times by up to 41% compared to traditional methods.
2. WAN Acceleration and Protocol Optimization For geographically distributed cloud environments, WAN acceleration and protocol enhancements reduce round-trip times and retransmissions. Techniques like predictive data path optimization dynamically reroute traffic over the least-congested paths, while intelligent data deduplication and compression minimize redundant transmissions, especially for encrypted data.
3. Edge Computing and Data Locality Processing workloads closer to the data source using edge-to-cloud platforms reduces latency and packet loss in hot channels. Critical workloads can be handled locally while synchronizing with distant cloud repositories, ensuring low-delay operations for latency-sensitive applications.
4. High-Performance Cloud Network Architecture Deploying wire-rate, non-blocking, ultra-low latency switches with cut-through architecture (e.g., Arista 1/10GbE switches) reduces switching latency to microseconds. Using leaf-spine topologies minimizes hops, and standard Ethernet with TCP windowing ensures reliable throughput while maintaining low packet loss

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