**ABSTRACT**

The Internet’s excellent scalability and robustness result in part from the end-to-end nature of Internet congestion control. End-to-end congestion control algorithms alone, however, are unable to prevent the congestion collapse and unfairness created by applications that are unresponsive to network congestion.

To address these maladies, we propose and investigate a novel congestion-avoidance mechanism called Congestion Free Router (CFR). CFR entails the exchange of feedback between routers at the borders of a network in order to detect and restrict unresponsive traffic flows before they enter the network, thereby preventing congestion within the network.

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The fundamental philosophy behind the Internet is expressed by the scalability argument: no protocol, mechanism, or service should be introduced into the Internet if it does not scale well. A key corollary to the scalability argument is the end-to-end argument: to maintain scalability, algorithmic complexity should be pushed to the edges of the network whenever possible.