

Title	圧縮技術を用いた効率的な輻輳管理フレームワーク
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## Dissertation Abstract

### Abstract

In this dissertation, congestion control management mechanisms are investigated to introduce a new direction for aiding in solving network congestion. Existing mechanisms that directly or indirectly help to eliminate the congestion problem were being investigated.

The well-known empirical model of TCP connection throughput model has been extended in this thesis to include the effect of compression of part of the traffic throughput. The derived model can help to estimate the performance of congested networks when compression is applied.

The proposed generic ECM framework can be applied to minimize the impact of network congestion by orchestrating different existing congestion management mechanism with the newly introduced compressed MPLS mechanism. The ECM framework presented in this research offers an overall idea on how to help in improving congested networks throughput by reducing the impact of network congestion. In other words, ECM framework can indirectly help congestion points or links of the entire network (Internet). ECM framework can be re-engineered to cooperate with other possible mechanisms (i.e., network coding) for further reduction of network congestion.

The ECM/C model is presented in this research which offers an overall idea on how to utilize compression in the networking model to help in improving congested networks throughput for limited resource devices.

**Keywords:** MPLS-TE, compression, congestion avoidance, CBR networks, traffic flow control