**Requirements for Congestion Control for Reliable Multicast**

- a first cut -

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From conversations with: Van Jacobson, Mark Handley, Allyn Romanow, Lixia Zhang, Jean Bolot.

* This concerns best-effort traffic.
Traffic with minimum rate requirements should use reservations or other services.

This applies to any best-effort traffic on a link.
No special exceptions to best-effort traffic because it is audio, video, reliable multicast, etc.

**The guideline:**

For any link, the traffic arrival rates for a flow should respond to congestion in a way that is no more aggressive than multiplicative decrease, additive increase, with increase and decrease rates that give behavior that is no more aggressive than current implementations of TCP.

Why no more aggressive than additive increase and multiplicative decrease?

(1) Stability.

(2) Compatible with the installed base of TCP.

**Time scales?**

Seconds, not small fractions of a second.

Some justification:

* Links where a single flow can create severe transient congestion are increasingly likely to have appropriate queue management.

* Links with high levels of statistical multiplexing are less concerned with smaller time scales.

* OK for modem links.

**Possible implementations:**

Sender-based, windows or rates;
Receiver-based;
Mixtures.
Many many possibilities.

Senders just send, receivers unsubscribe if loss rates indicate that traffic is not TCP-friendly.

Sender-based rate-based:
Multiplicative decrease in response to a single packet drop.
Additive increase at periodic intervals.