Update on
Router Mechanisms to Support End-to-End Congestion Control

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URL ftp://ftp.ee.lbl.gov/papers/collapse.ps

Scenarios for congestion collapse:

Congestion collapse occurs when the network is increasingly busy, but little useful work is getting done.

Problem: Paths clogged with unnecessarily-retransmitted packets. [Nagle 84]
Fix: Modern TCP retransmit timer and congestion control algorithms [J88].

Problem: Paths clogged with fragments of packets invalidated because another fragment (or cell) has been discarded along the path. [KM, 1987]
Fix: MTU discovery [KMM 1988], Early Packet Discard in ATM networks [RF95].

Scenarios for congestion collapse, continued:

Problem: Paths clogged with packets that are discarded before they reach the receiver.
Fix: End-to-end congestion control.
Disincentives at the routers for flows that do not use either end-to-end congestion control or explicit bandwidth allocation mechanisms.