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Chapter 3.6 Principles of Congestion Control

3.6.1 What is Congestion

- Informally, **congestion** is when sources are sending *too much data* in a *short* period of time such that the network can't handle all the data in time.
- This is different from flow control.
- Congestion could result in: *lost packets* or *very long delays*.
- **Note**: There are a lot of visuals. See **slides 3-86 to 3-93**.

3.6.2 Approaches Towards Congestion Control

- Two approaches are typically used for congestion control.
- End-end congestion control:
  - The network does not provide explicit feedback.
  - End-systems infer congestion based on loss and delay.
  - This is the approach used by TCP.
- Network-assisted congestion control:
  - Routers provide feedback to end systems.
  - They provide a single bit to indicate the congestion level, and an explicit rate for the sender to send data at.