Adaptive Applications

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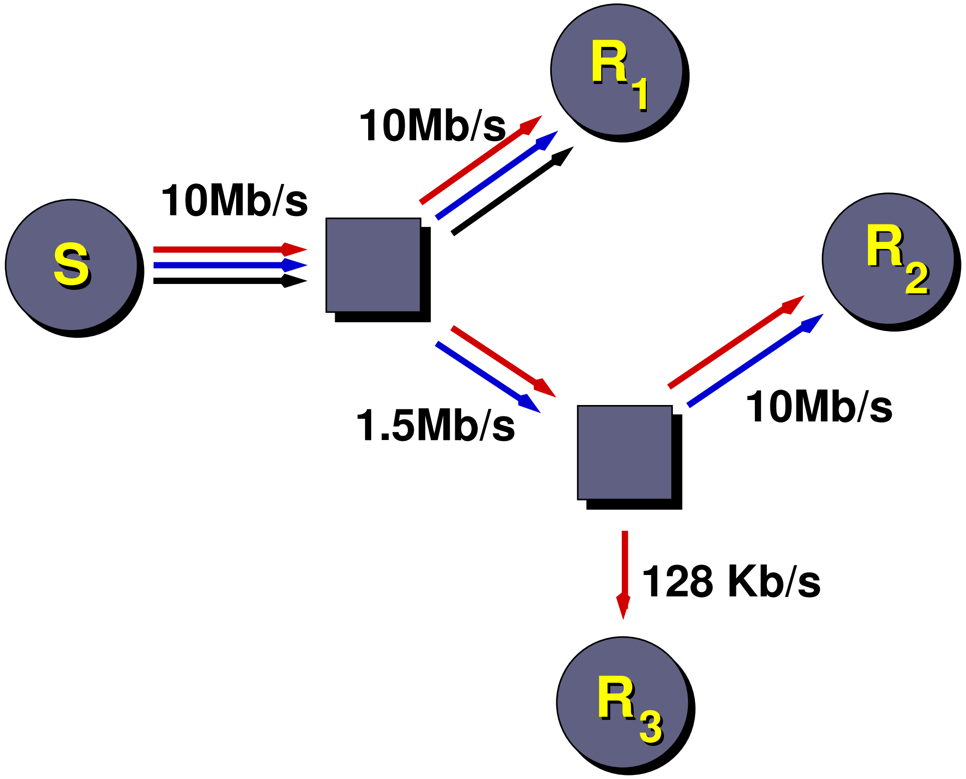
What Adapt?

- Can target a larger user community (app works over more paths)

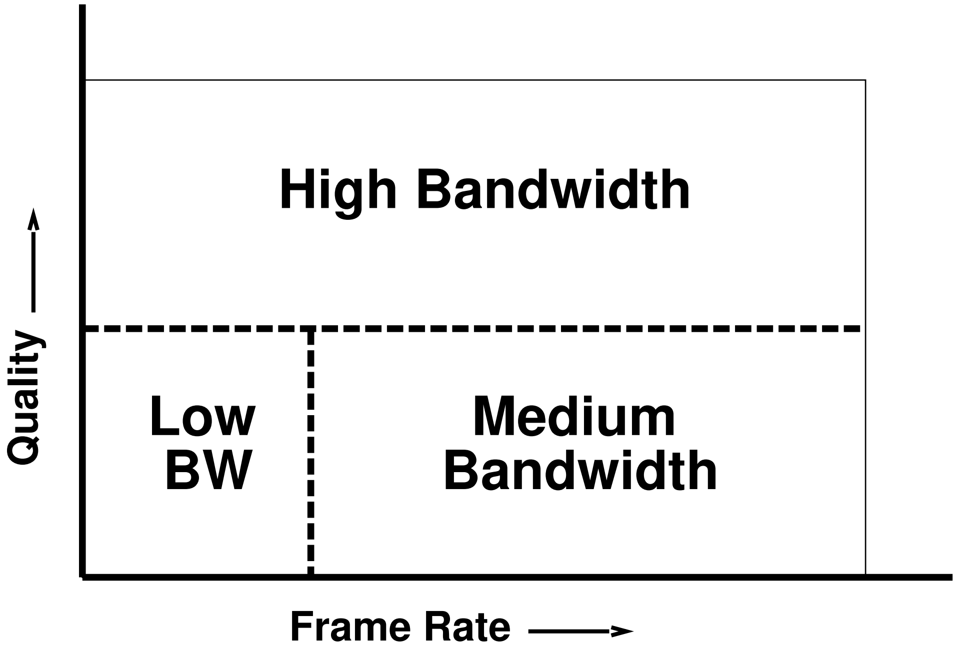
- can move beyond “one size fits all” delivery

- the net will kill you if you don’t

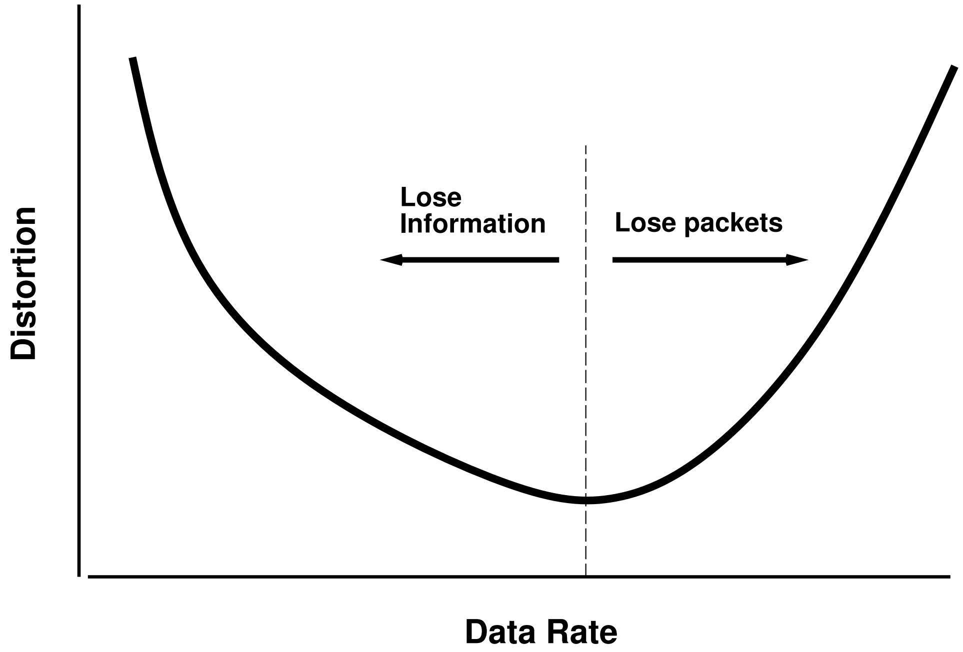
Using multiple multicast groups for receiver-based adaptation



Coding into Layers



Driving the Adaptation



RLM Notes

- Works well for both multicast and unicast (for unicast, IGMP join/leave is replaced by RTCP add/drop).
- Most audio codecs easily map to layers (GSM LPC $+$ RPE $+$ resid, MPEG/AC-3 critical bands).
- For reliable multicast (e.g., shared workspace), probably maps to hierarchical coding $+$ local recovery policy.
- “Multiplicative down / additive up” congestion control requires geometric $(2, 4, 8, \ldots)$ layer spacing.

Documents describing RLM

Receiver-driven Layered Multicast,
Steven McCanne, Martin Vetterli, and Van Jacobson.
SIGCOMM '96, August 1996, Stanford, CA.
`ftp://ftp.ee.lbl.gov/papers/mccanne-sigcomm96.ps.gz`

Low-complexity Video Coding for Receiver-driven Layered Multicast,
Steven McCanne, Martin Vetterli, and Van Jacobson,
IEEE Journal on Selected Areas in Communications, August 1997.
`http.cs.Berkeley.edu/~mccanne/papers/mccanne-jsac97.ps.gz`

Steve McCanne's PhD thesis:
`www-mash.cs.berkeley.edu/dist/mccanne/csd-96-928.ps.gz`