

# Adaptive Applications

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IETF ADAPTS BOF

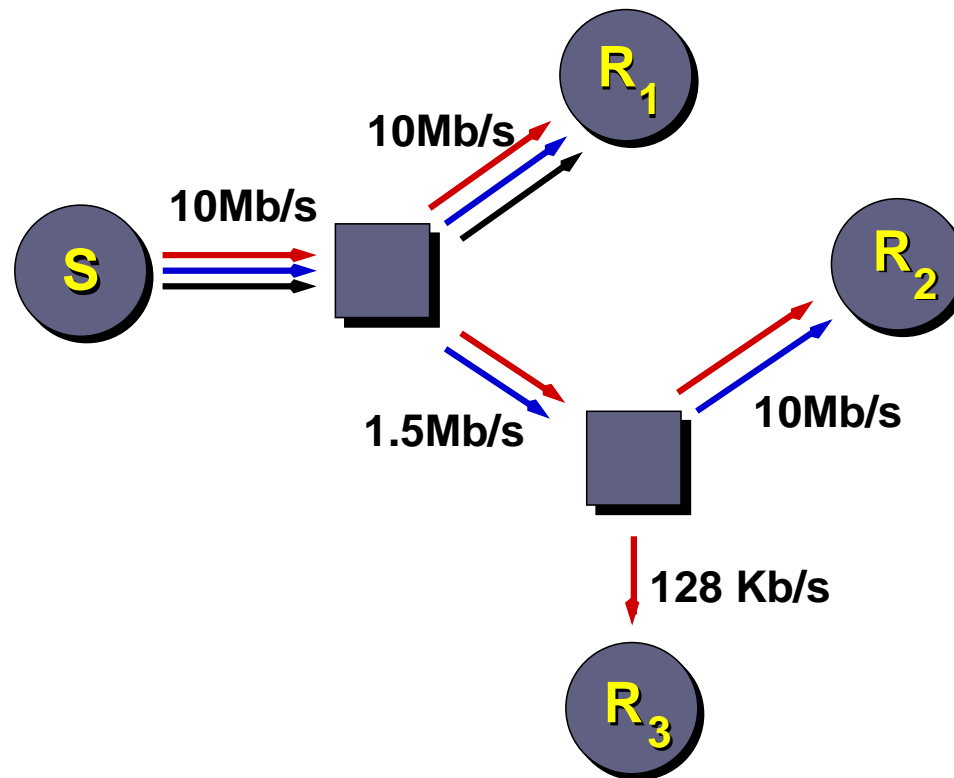
Washington, DC

December 9, 1997

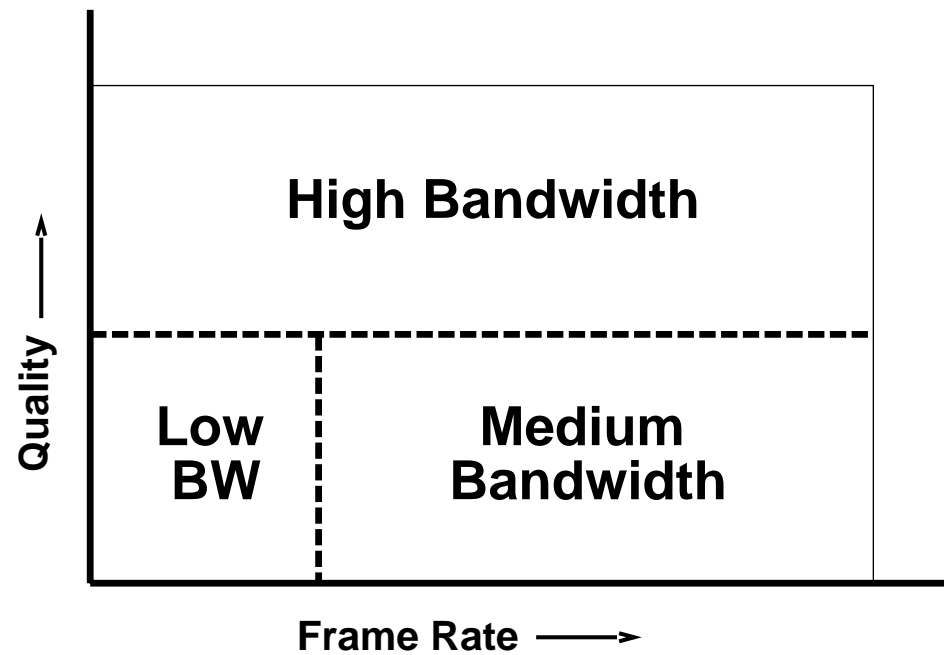
## What Adapt?

- 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

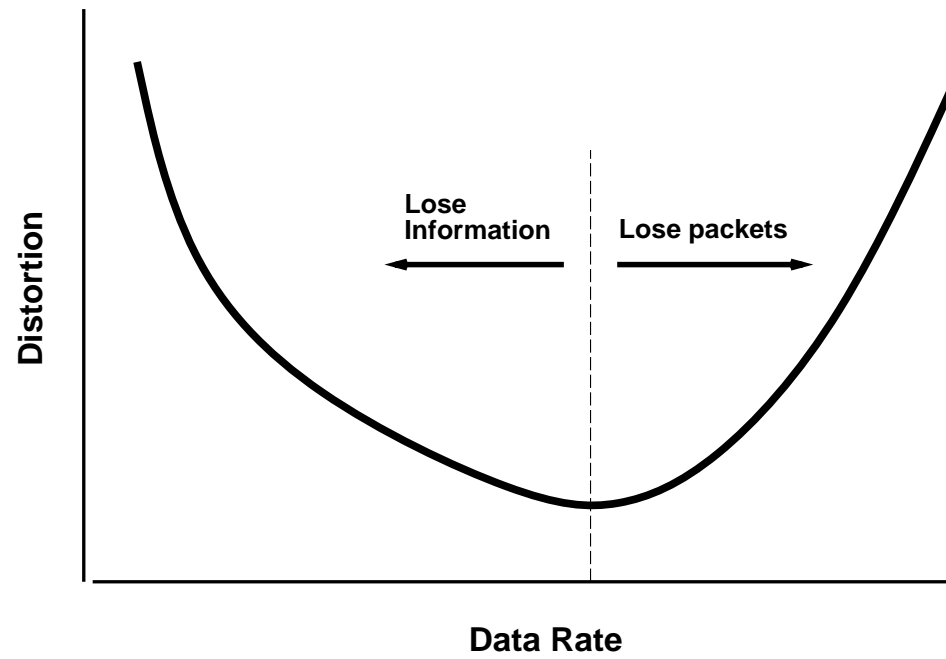
## Using multiple multicast groups for receiver-based adaptation



## 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, . . .) 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](http://www-mash.cs.berkeley.edu/dist/mccanne/csd-96-928.ps.gz)