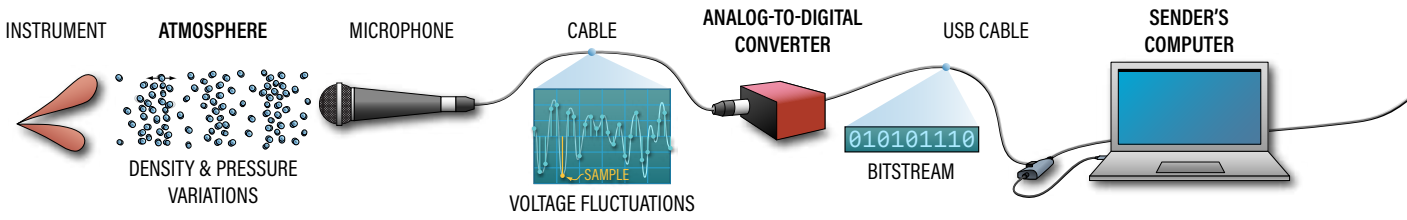
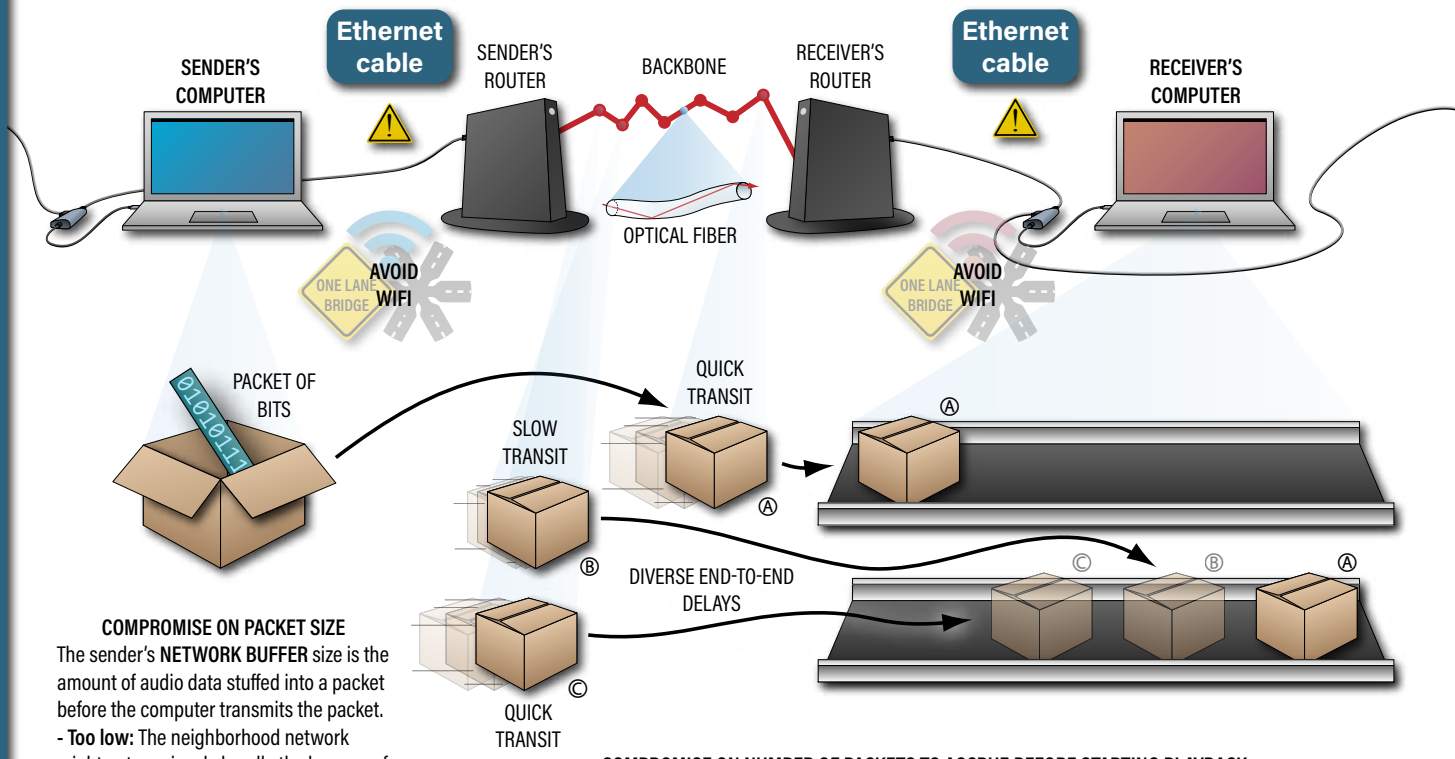
Low-latency packetized audio over networks

Signal acquisition



Packetization, transport, & sorting



COMPROMISE ON PACKET SIZE

The sender's **NETWORK BUFFER** size is the amount of audio data stuffed into a packet before the computer transmits the packet.

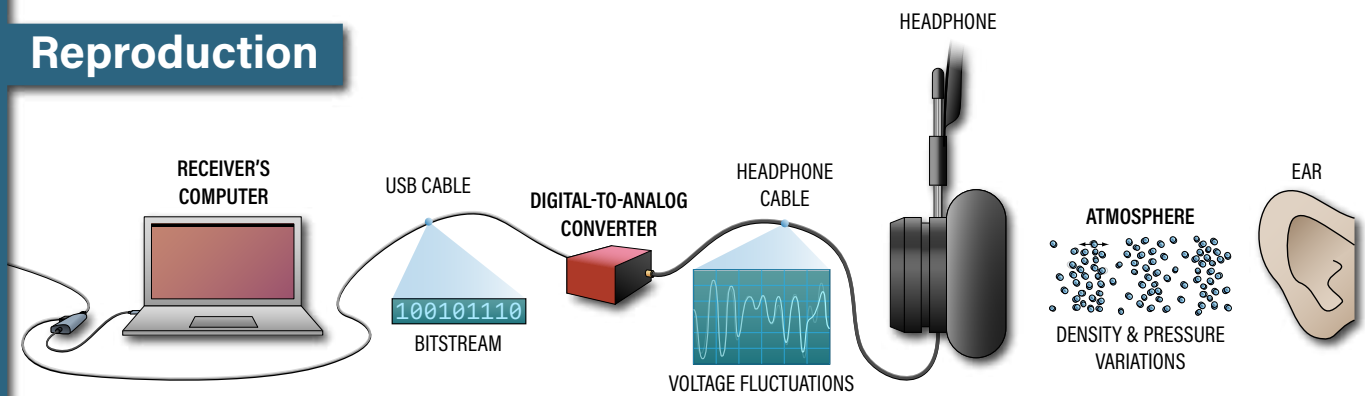
- **Too low:** The neighborhood network might not graciously handle the barrage of packages/second, and the impossibility of maintaining consistent tiny waiting times between the arrivals at the receiver of consecutive packets means that packets often arrive at the receiver out of order.
- **Too high:** The earliest data packed into a packet gets stale before the packet is sent.

COMPROMISE ON NUMBER OF PACKETS TO ACCRUE BEFORE STARTING PLAYBACK

Wait until the moment packets Ⓐ, Ⓑ, and Ⓒ are for the first time all loaded on the conveyor belt. Starting at that time with packet Ⓐ, open packets one-by-one at correct regular time intervals (so long as each needed packet is on the conveyor belt in time for its turn to be opened). If later a packet is too late-arriving to be opened at its correct time, wait. At the moment the conveyor belt soonest again contains 3 correctly-ordered packets, resume opening packets. The number of correctly-ordered packets on the conveyor belt that triggers beginning of playback (here, 3 packets) is the size of the receiver's **JITTER BUFFER**.

- **Too low:** Trying to open packets on arrival, say, increases the likelihood of interruptions in the stream of packet openings.
- **Too high:** Packets often sit for a long time on the conveyor belt waiting to be opened.

Reproduction



lowlatency.audio