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Which Network Streaming Protocol Should I Pick?

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Who am I?

- GNOME developer since 1999 (20 years!)
- GStreamer developer at Collabora since 2007
- Started with VVoIP: Telepathy & Farstream



Network protocols ?

- RTP
- SRT
- RIST
- WebRTC
- RTMP
- MMS
- RTSP
- HLS
- SIP
- SDI
- Icecast
- AVB
- RTSP/RDT
- VNC (RFB)
- MPEG-DASH
- SmoothStreaming
- HTTP streaming
- MPEG-TS over UDP
- SMPTE ST2110



Trade-off

Latency

vs

Reliability



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Open First

Adaptivity

- None
- Server-side
- Client-side





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Low latency

Local network only

- Uncompressed high bandwidth
 - SDI
 - SMPTE ST2110
 - Uncompressed video over RTP
- Layer 2 with reserved bandwidth
 - AVB

Local network only: IP based

- RTP
 - With dynamic config: RTSP/UDP
 - Security cameras
 - Without: plain RTP
- Legacy: MPEG-TS over UDP
- Avoid NDI ... just plain evil



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Low latency

< 1 second

Lowest latency

- SRT
 - MPEG-TS transport
 - Guarantees order, not delivery
 - Tries to retransmit
 - Popular in TV/Broadcast world
- RTP based

RTP/UDP Based

- MPEG-TS stream
 - RIST, much less popular than SRT
- Legacy VoIP
 - SIP (or XMPP)
- Modern video call
 - WebRTC



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Medium latency

< 10 seconds

Medium latency

- CDN scalable
- Pushed over TCP
- Specialized
- Legacy



CDN scalable

- Client adaptive
- Low latency MPEG-DASH
- Low latency HLS



Pushed over TCP

- Security camera
 - RTSP/TCP
- Upload to live cloud streaming
 - RTMP (but consider SRT is available)
- Internet Radio
 - HTTP Streaming / Icecast

Specialized

- Desktop sharing
 - VNC (RFB)



Legacy interop

- RealPlayer
 - RTSP / RDT
- Microsoft players
 - MMS



Highest latency

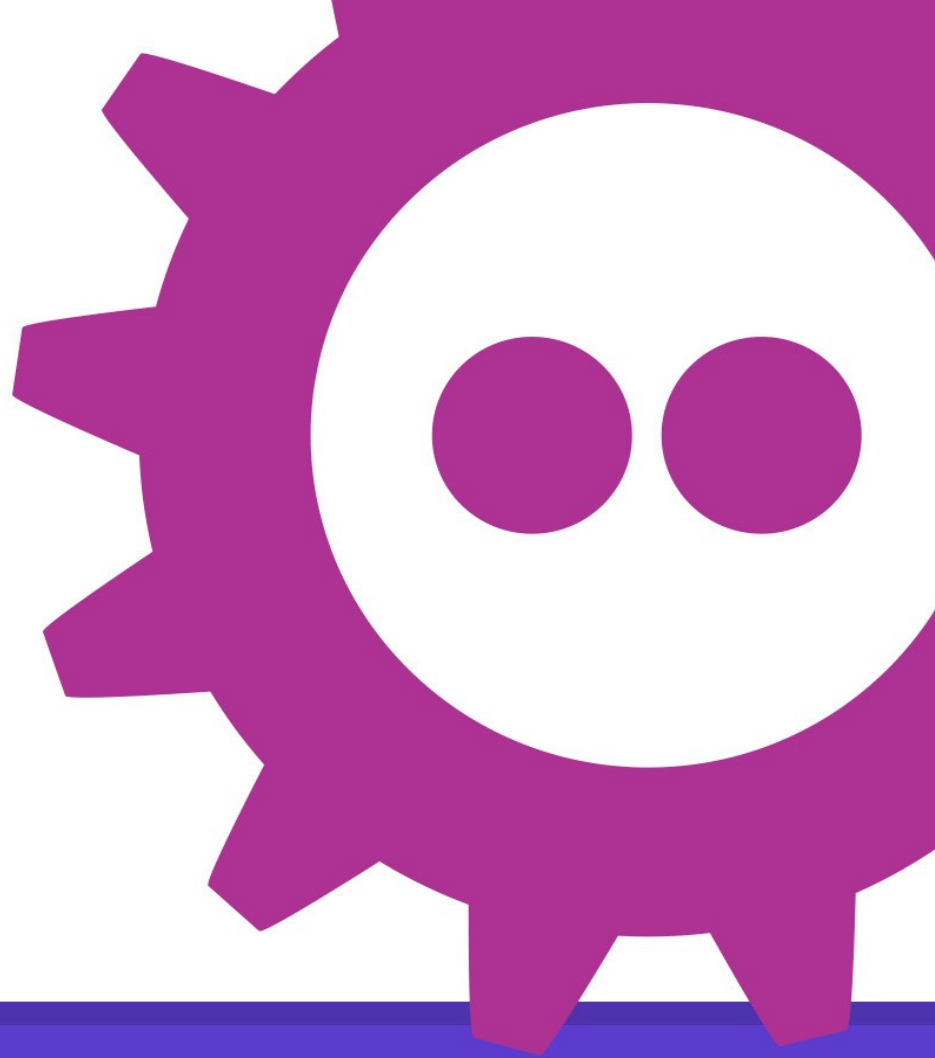
CDN scalable

- Client adaptive
- MPEG-DASH
- HLS

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Questions?



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