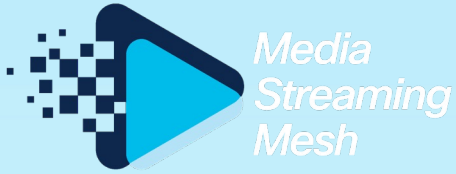

KubeCon
CloudNativeCon
Europe 2023
TiKV



Media Streaming Mesh

Giles Heron

“Don’t text me before I’ve seen the goal!”

This is Hard!!!

A (Fuzzy) Application Taxonomy

	Non Real-Time	Real-Time
Interactive (request/response)	Web Applications	Online Games
Streaming (publish/subscribe)	Message Buses	Live Media

The Live Video Distribution Chain

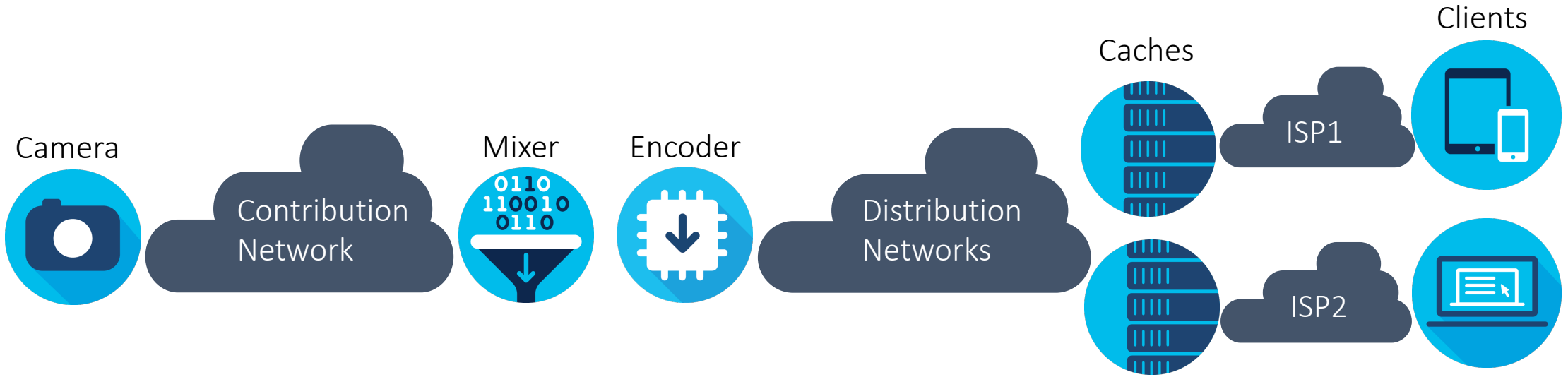
Camera feeds sent to studio

Mixing (generating a broadcast quality feed)

Encoding into multiple formats (resolutions, bitrates, content protection)

“Distribution” to CDN caches (and/or cable head-ends, broadcast towers…)

Delivery to End users (over HLS, DASH etc. for ”live” Internet video)



How does Internet “streaming” work today?

Client gets media playlist from server

Client gets media segments from server

Repeat….

How does live video over IP work?

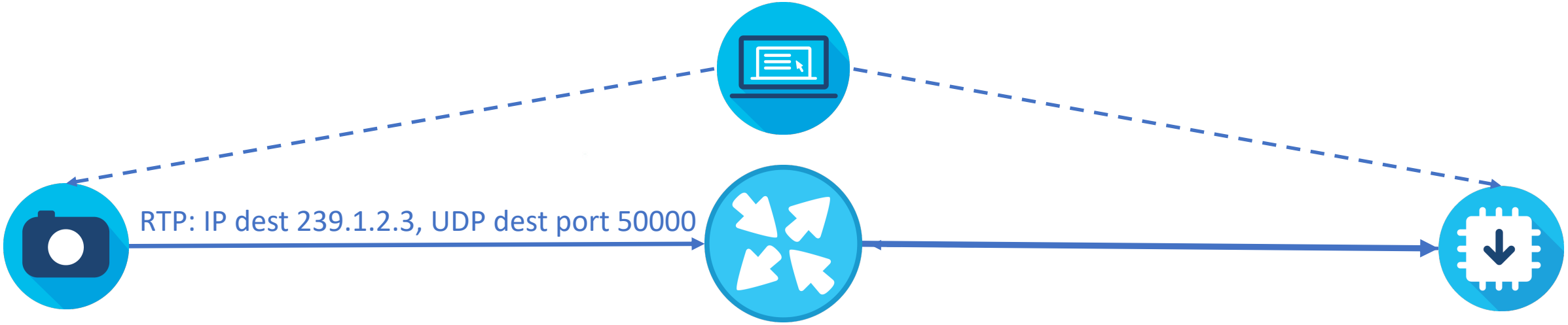
Client gets media streams for URL from server

Client and Server negotiate UDP ports for each stream

Server streams media to client over UDP

RTP e.g.:
UDP source port 45388 / dest port 50950 for audio
UDP source port 37574 / dest port 57566 for video

How does multicast video over IP work?



Controller connects to sender and gets media information

Controller connects to receiver and sends media information

Receiver joins sender IP multicast group

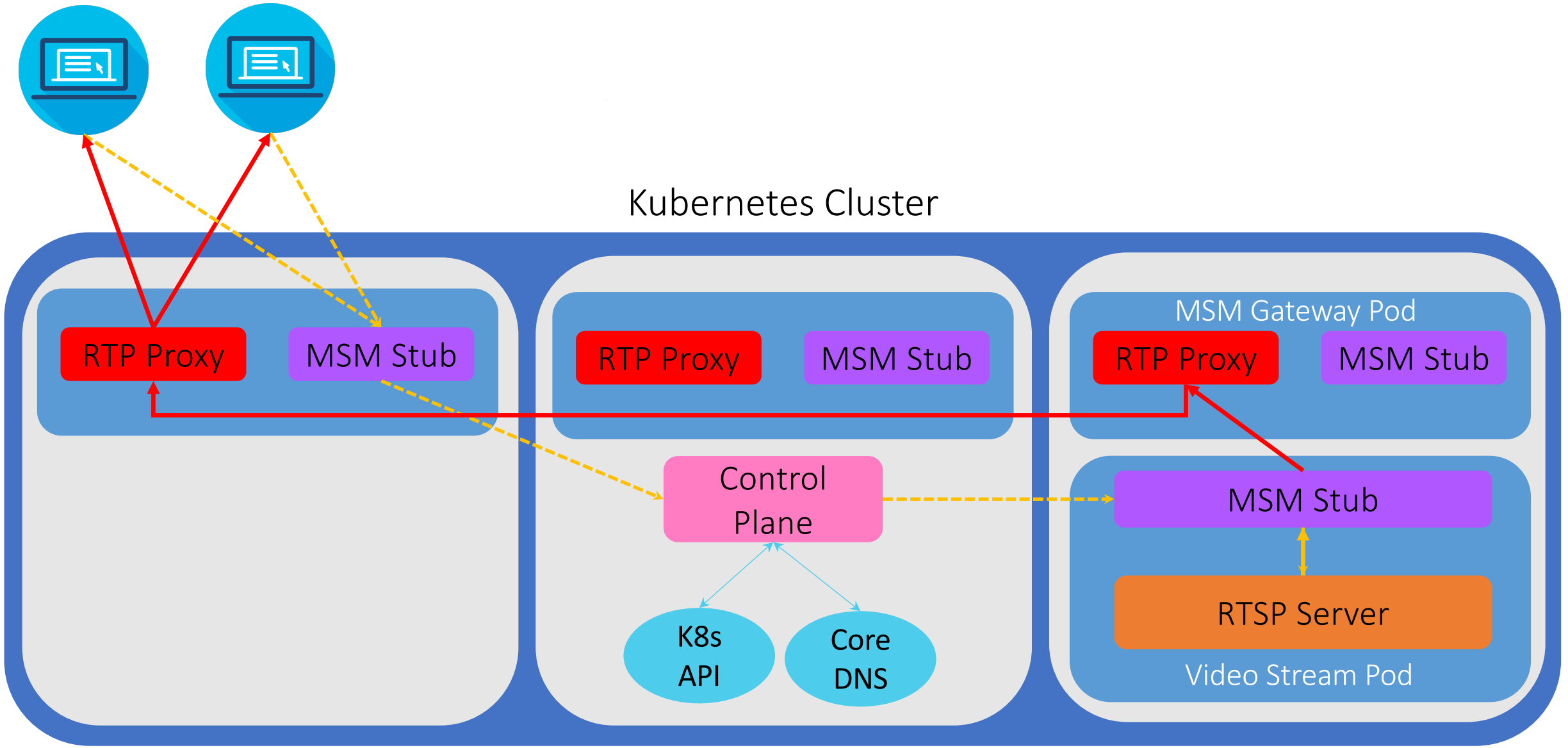
Traffic flows to receiver

Kubernetes Connectivity Options

	TCP	HTTP	UDP	Real-Time Media (RTSP, SIP, etc.)
kube-proxy & NodePort	★	★	★	⊘
Service Mesh & Load Balancers	★	★★	⊘	⊘
Host Networking	★	★	★	★
Media Streaming Mesh	★	★	★	★★

One Pod Per Node!!!

MSM Demo Setup



Benefits of Media Streaming Mesh

Observability

measure jitter and packet loss

Security

authenticate, authorise, encrypt

Distribution

replicate streams optimally

Deployability

optimise cluster footprint

Call to Action

- Media Streaming Mesh enables real-time media applications to be fully integrated in today's cloud native world
- MSM is a work in progress and is in open-source
  - https://www.github.com/media-streaming-mesh
- Please collaborate with us to make it a success!

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