

Ingest protocol decision tree (2026)

Five questions. One tree. The eight-protocol matrix's most-asked criteria. Designed to be carried into a scoping call.

The five questions

1. Where is the encoder?

Browser · Studio LAN · HW appliance on cellular or satellite · Broadcast facility · Other.

2. What is the path?

Studio LAN · Business broadband · Cellular · Satellite · Public Wi-Fi.

Cellular and satellite rule out RTMP.

3. What is the latency budget?

≥ 6 s passive · 2 - 6 s near-real-time · < 500 ms interactive.

WHIP wins the bottom band.

4. Who owns the ingest endpoint?

Third party (YouTube / Twitch / TikTok / Kick / CF / Mux / AWS IVS) = match the platform.

Your own = pick freely.

5. What can the operator debug?

RTMP fails loudly. SRT fails quietly. WHIP fails on ICE.

Pick the protocol whose failure modes the operator already reads.

Common pitfalls

1. Picking from the matrix and forgetting the encoder.

Verify your encoder ships the protocol — OBS added WHIP in v30.

2. Trusting the protocol's latency floor.

Spec floors are clean-LAN best cases. Real paths pay a tax.

3. Default 120 ms SRT latency window.

Too tight for any ≥ 50 ms RTT path. Set to $4 \times$ RTT.

4. Assuming the third-party platform accepts you.

YouTube added SRT in 2024. Twitch still RTMP-only.

Re-check the platform doc the week of the event.

The tree (top to bottom)

Browser encoder? → **WHIP**. Stop.

Studio LAN production? → **NDI** internally;

SRT or **RTMP** for the cloud push.

HW appliance on cellular/satellite?

Latency < 500 ms → **WHIP**.

Otherwise:

Ops stack speaks RIST or Zixi? → **RIST** / **Zixi**.

Otherwise → **SRT** ($4 \times$ RTT window).

Broadcast facility?

Inside → **SMPTE ST 2110**.

WAN contribution → **Zixi** or **RIST**.

Other / wired?

Destination accepts SRT → **SRT**.

Otherwise → **RTMP** / **RTMPS**.

First answer that fits is the right one.

5. Single-SIM 5G & calling it "bonded".

One tower, one route, one failure mode. Bond across operators.

6. Wrong audio codec for the protocol.

RTMP wants AAC. WHIP wants Opus. Match them.

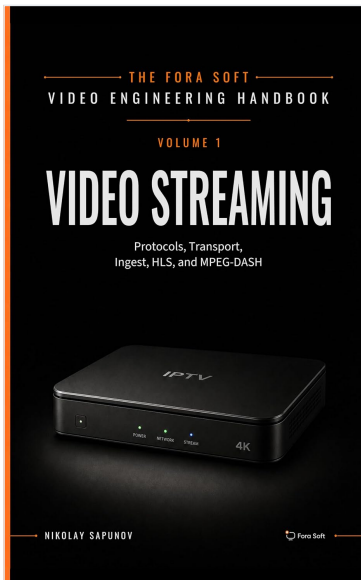
7. One ingest endpoint as "production-ready".

Cheapest reliability win: a second endpoint in a different region.

Eight protocols, eight criteria (2026)

Criterion	RTMP	SRT	RIST	WHIP	WHIP/WT	Zixi	NDI 6	ST 2110
Transport	TCP	UDP	UDP	UDP/DTLS	QUIC	UDP	TCP/UDP/QUIC	RTP multicast
Reliability	TCP retransmit	Selective ARQ	NACK+FEC+2022-7	DTLS-SRTP, NACK	QUIC+WHIP	FEC+ARQ+bonding	TCP retransmit	Engineered
Latency floor	2 - 5 s	0.5 - 2 s	0.5 - 2 s	200 - 500 ms	200 - 500 ms	0.5 - 2 s	< 100 ms	Sub-frame
Loss tolerance	~ 0 %	up to ~ 25 %	up to ~ 25 %	~ 10 %	~ 10 %	up to ~ 30 %	~ 0 % LAN	~ 0 % engin.
Encryption	TLS (RTMPS)	AES 128/256	DTLS or PSK	DTLS-SRTP	QUIC + DTLS	AES 128/256	Optional	IPsec / MACsec
Encoder ecosystem	Universal	Wide + growing	Broadcast-grade	Browser + 2025+	Early adopters	Vendor-managed	OBS / vMix	Cam / mixer
Standards body	Adobe; frozen 2012	Haivision; IETF draft	SMPTE TR-06	IETF RFC 9725	W3C Working Draft	Proprietary	Vizrt	SMPTE+IETF+AMWA
Right answer for...	OBS to YouTube	Public-internet field	Broadcast contribution	Browser ingest	Forward-looking	Legacy + gateway	Studio LAN	Premium facility

Key citations: RFC 9725 (WHIP, Mar 2025) · draft-sharabayko-srt-01 (SRT v1.5) · Adobe RTMP 1.0 (Dec 2012) · W3C WebTransport WD 2025-10-08 · SMPTE TR-06-1/2/3 (RIST) · SMPTE ST 2110-10/-20/-22 · RFC 8825 (WebRTC) · AMWA NMOS · NDI 6.3 (NAB 2026) · Bitmovin 2025 VDR



GO DEEPER · VOLUME 2 OF 7

Video Streaming: A Complete Guide to Video Delivery

From Network Protocols and Transport to Ingest, HLS, and MPEG-DASH

By Nikolay Sapunov, CEO at Fora Soft · 1,124 pages · Kindle & paperback on Amazon

Read it on Amazon →

amazon.com/dp/B0HH8F4R82

This decision tree picks an ingest protocol from encoder, path, latency, endpoint owner and what the operator can debug. Volume 2 covers contribution in depth: RTMP, SRT and RIST internals, WHIP, loss recovery with ARQ and FEC, and the latency budget from camera to origin.

WHAT YOU WILL FIND INSIDE

- RTMP, SRT and RIST internals
- WHIP and WebRTC ingest
- ARQ and FEC loss recovery
- Latency budgets from camera to origin

THE FULL HANDBOOK · 7 VOLUMES · 9,000+ PAGES · ALL ON AMAZON

Vol. 1 · Video Encoding — pixels and color to H.264, HEVC, AV1, quality metrics and AI

Vol. 2 · Video Streaming I — network transport, contribution and ingest, HLS, MPEG-DASH, CMAF

Vol. 3 · Video Streaming II — ABR, CDNs, players, WebRTC, DRM and the economics of delivery

Vol. 4 · Audio for Video I — PCM, codecs, loudness, accessibility, real-time voice processing

Vol. 5 · Audio for Video II — jitter buffers, lip sync, Atmos, quality metrics, neural codecs

Vol. 6 · AI for Video I — models and inference, computer vision, speech, search, generative video

Vol. 7 · AI for Video II — real-time pipelines, agents, serving, cost, compliance, verticals

Choosing an ingest protocol for field crews, studios or browsers?

We will test the candidate protocols on your real paths and encoders and set up the ingest with failover to a second region. 250+ video products shipped since 2005.

Book a 30-min call →

WhatsApp →

Email us →