

RIST configuration cheat sheet

Profiles, ports, latency settings, bonding modes, and the most common pitfalls. One page, print-ready.

Simple Profile

TR-06-1 (Oct 2018) — baseline interop

Transport: RTP over UDP, default port 1968
 Reliability: NACK ARQ (RFC 4585 Bitmask + Range NACK)
 FEC: SMPTE 2022-1 XOR, optional
 Bonding: SMPTE 2022-7 seamless + load sharing
 Encryption: none
 Use when: private/leased line; baseline interop with legacy SMPTE 2022-2 gear.

Main Profile

TR-06-2 (Mar 2020, refreshed Jun 2024) — production default

Transport: GRE-in-UDP (RFC 8086), default port 4755
 Encryption: DTLS 1.2 (AES-128/256-GCM) + PSK option
 Auth: certificate or TLS-SRP
 Tunnel: multiplex many streams + in-band control
 Other: NULL-PID drop, NAT traversal, extended seq numbers
 Use when: any open-internet path; satisfies most procurement specs.

Advanced Profile

TR-06-3 (2021, refreshed 2023) — broadcast-only

Payload: arbitrary IP (SMPTE ST 2110, ST 2022-6, MPEG-TS)
 Overhead: ~0.6% (reduced-overhead encapsulation)
 FEC: LDPC, Raptor codes, plus SMPTE 2022-1
 Relay: TR-06-4 Part 3 SIP-style proxy (firewall-friendly)
 Encryption: inherits Main Profile DTLS
 Use when: uncompressed studio essence over public internet.

Recommended latency budget by path (4× RTT floor + jitter margin)

Path scenario	Typical RTT	Floor	Recommended setting
Wired LAN, same city	5-15 ms	60 ms	150 ms
Wired internet, same country	20-40 ms	160 ms	300-500 ms
Wired internet, transatlantic	80-120 ms	480 ms	800-1,200 ms
4G mobile uplink (bonded)	80-200 ms	800 ms	1,500-2,500 ms
5G mobile uplink	30-80 ms	320 ms	800-1,500 ms
Geostationary satellite	500-700 ms	2,800 ms	4,000-8,000 ms
LEO satellite (Starlink)	25-60 ms	240 ms	500-1,200 ms

Pick a bonding mode

Seamless redundancy (SMPTE 2022-7) — send a full copy of the stream on each link. Receiver picks first arrival. 2× wire bandwidth for zero packet loss on link failure. Pick when bandwidth is cheap and downtime is unacceptable.

Load sharing — split packets across links. Aggregate bandwidth is sum of links. ARQ rebuilds loss over the survivor on link failure (brief glitch possible). Pick for bonded mobile uplinks and bandwidth-constrained paths.

Pre-flight checklist

- Receiver explicitly requires Main Profile (reject Simple to ensure DTLS).
- Latency budget ≥ 4× measured worst-case RTT plus jitter margin.
- Same bonding mode (seamless or load-share) on sender and receiver.
- Firewall opens UDP/4755 (Main) or UDP/1968 (Simple), not both.
- RTCP feedback interval tuned to budget (default 100 ms; tight paths use 5-10 ms).
- PSK passphrase ≥ 32 random characters; rotate periodically.