Clinical Video Topology Decision Sheet

Pick the right WebRTC topology — peer-to-peer, SFU, or MCU — for each kind of telemedicine session. Answer the questions in order; the first that fits decides. Engineering guidance, not legal advice.

1 · COUNT THE PARTICIPANTS

- ☐ Session is strictly 1:1 and stays 1:1 — peer-to-peer (P2P) is defensible; lowest latency, no media server
- ☐ Session can ever reach 3+ (interpreter, caregiver, supervisor, group) — rule out mesh; plan an SFU
- ☐ Upstream check: at N people, mesh sends (N-1) copies per device — 4 people ≈ 4.5 Mbps up, past most home uplinks

2 · CHECK THE WEAKEST ENDPOINT

- ☐ Patient's device is a normal phone/laptop that decodes several streams — SFU is fine
- ☐ An endpoint can only decode ONE stream (old tablet, exam-room cart, legacy conferencing) — you need an MCU
- ☐ Reaching a fleet of fixed or low-power endpoints — MCU pre-mixes to the one stream they can play

3 · DECIDE ON RECORDING

- ☐ No recording, or per-track recording is fine — SFU; composite later only if needed
- ☐ Need ONE combined video file natively (grid, one frame) — MCU produces it, or use a dedicated composer
- ☐ True end-to-end encryption required (high-sensitivity behavioral health) — MCU is ruled out; it decrypts to mix

4 · THE COMPLIANCE BOUNDARY

- ☐ Every media server (SFU or MCU) is inside the HIPAA boundary — encryption alone is not compliance
- ☐ Vendor-run server — signed BAA covering it (45 CFR 164.308(b)); self-hosted — inside your covered environment
- ☐ Audit logging, access control, and authentication designed around the server, per 45 CFR 164.312

5 · MONEY & SCALE (ORDER-OF-MAGNITUDE)

- ☐ Mesh ≈ $0 server but fails past 2-3; SFU ≈ $300–500/mo at ~100 concurrent; MCU ≈ $2,000–5,000/mo — re-verify
- ☐ MCU adds latency (decode + mix + encode) and bakes in one fixed layout for all viewers
- ☐ Default to a hybrid: SFU baseline, P2P for 1:1, MCU only where an endpoint or recording demands it

THE ONE QUESTION THAT EXPOSES A VENDOR

“What happens when a third participant joins?” · Does the SFU/MCU carry a signed BAA? · Can the patient's phone handle the streams you send it? · Where is a combined recording produced, and is it encrypted at rest? · Re-verify all cost and BAA figures before you commit.