WebRTC란?

MashUp Node팀 15기 세미나

최재영

0. 📺 실시간 스트리밍의 종류

1. RTMP : Flash 기반, 낮은 지연
2. HLS : HTTP 기반, 안정적이지만 5~10초 지연 발생
3. WebRTC : P2P, 가장 낮은 지연, 설치 필요없음

1. 🌱 WebRTC의 역사

2011년, 구글이 오픈소스로 공개

브라우저끼리 "플러그인 없이" 실시간으로 데이터를 주고받자!

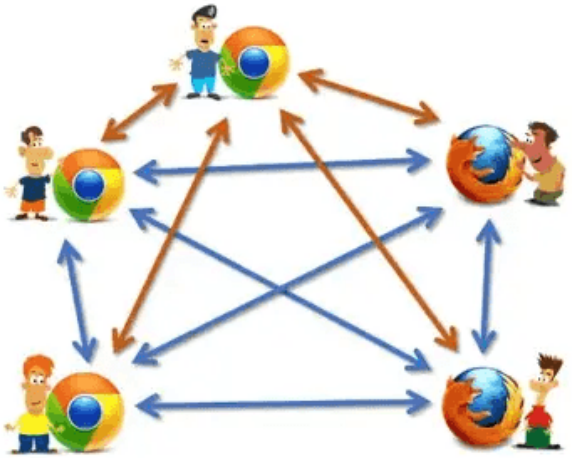
"실시간 양방향 통신"을 위한 기술

그럼 Youtube는?


YouTube

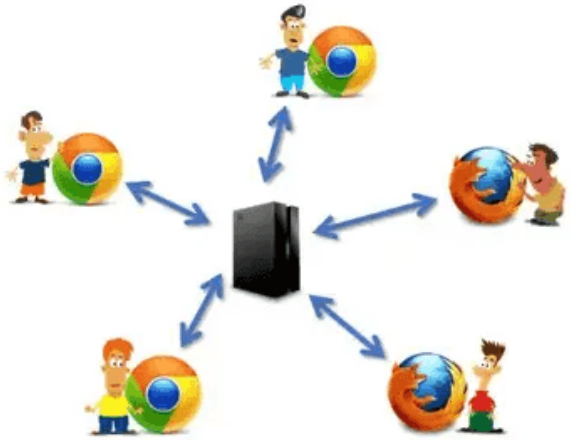
Mesh

Connections:	**4** | **10**
Uplink:	**4** mbps
Downlink:	**4** mbps
Total:	**20** mbps



MCU

Connections:	**1** | **5**
Uplink:	**1** mbps
Downlink:	**1** mbps
Total:	**10** mbps



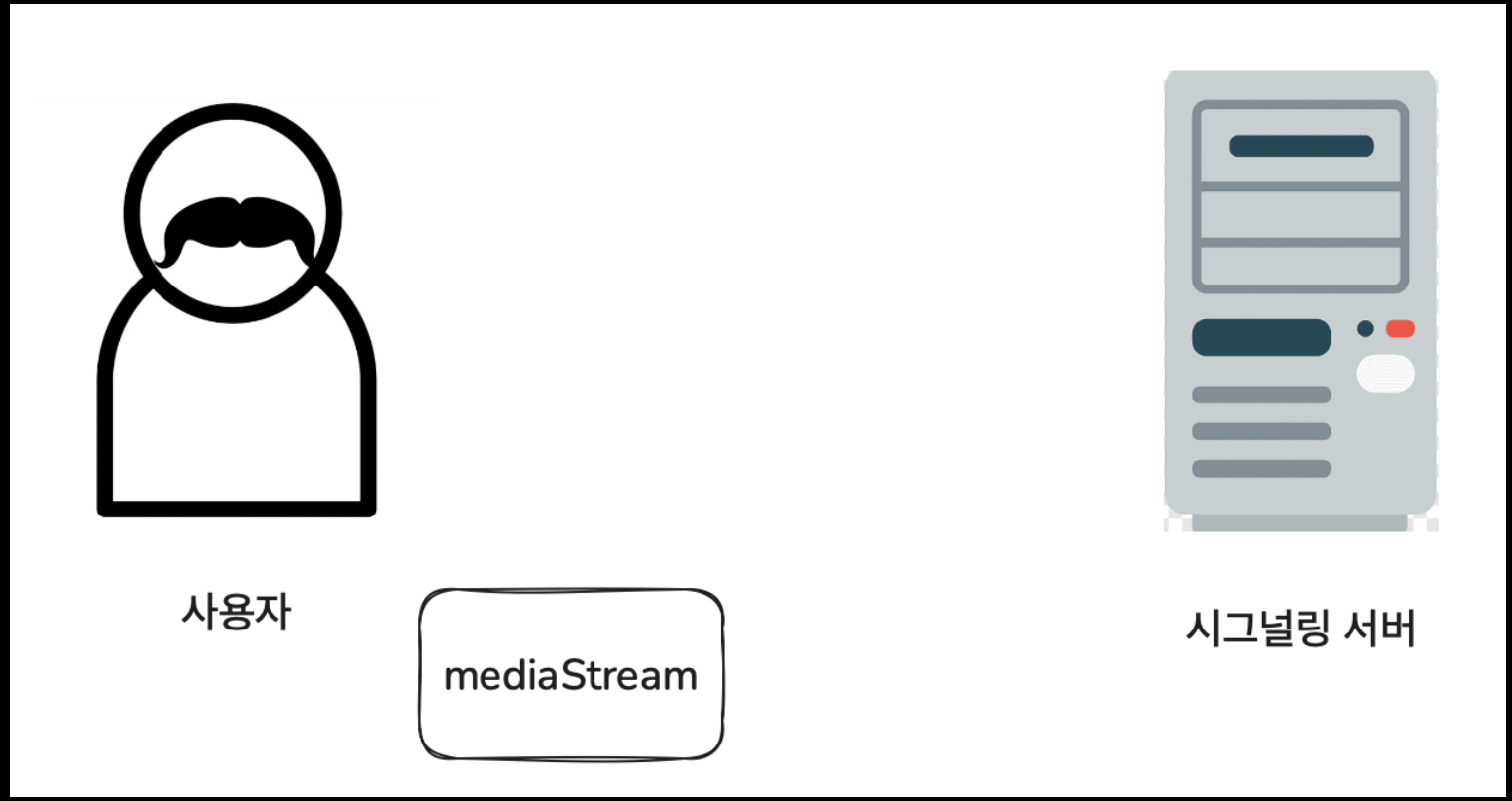
SFU

Connections:	**5** | **25**
Uplink:	**1** mbps
Downlink:	**4** mbps
Total:	**25** mbps

BlogGeek.Me

실시간 양방향 스트리밍

2. 🧪 WebRTC 원리



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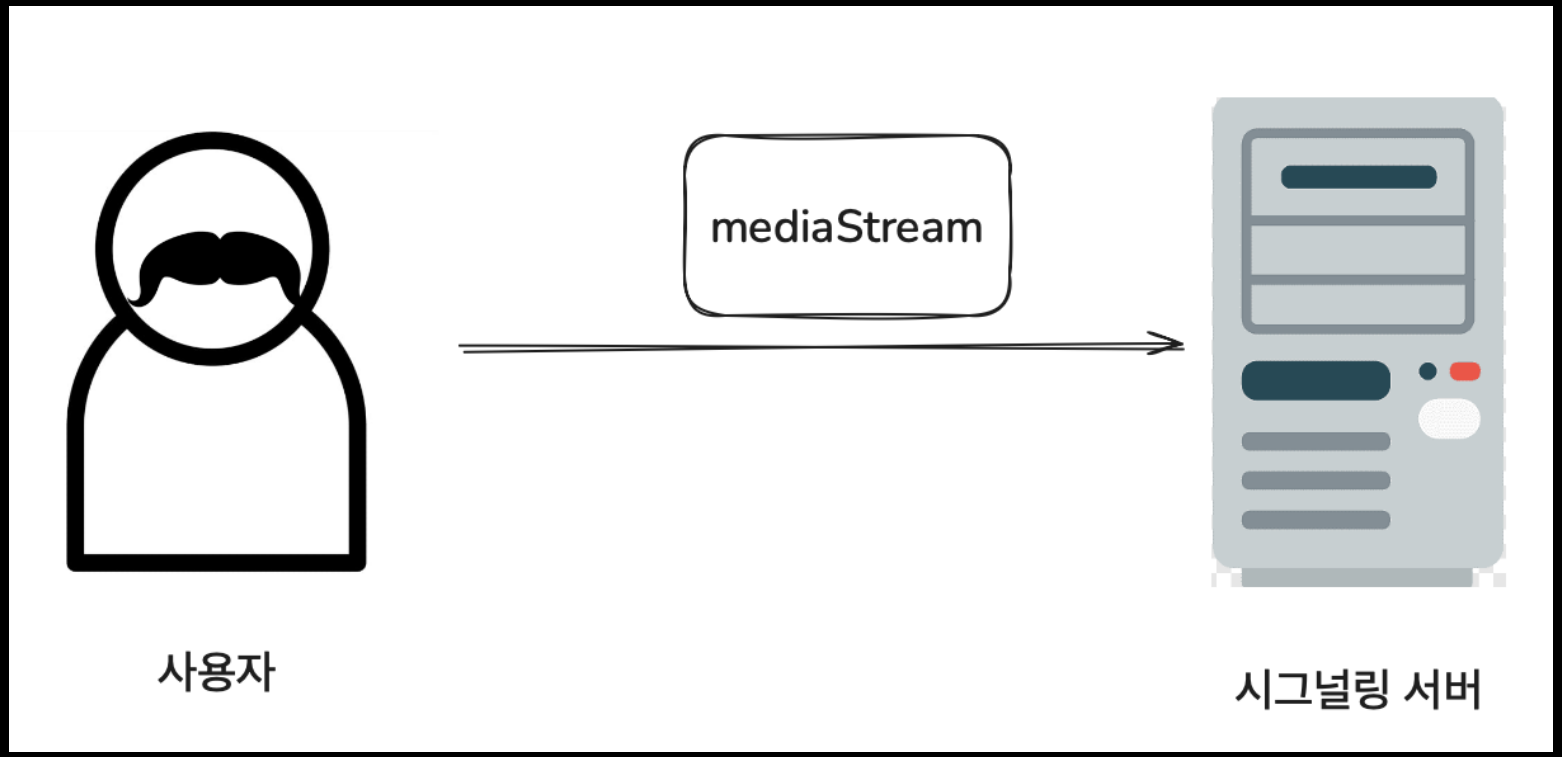

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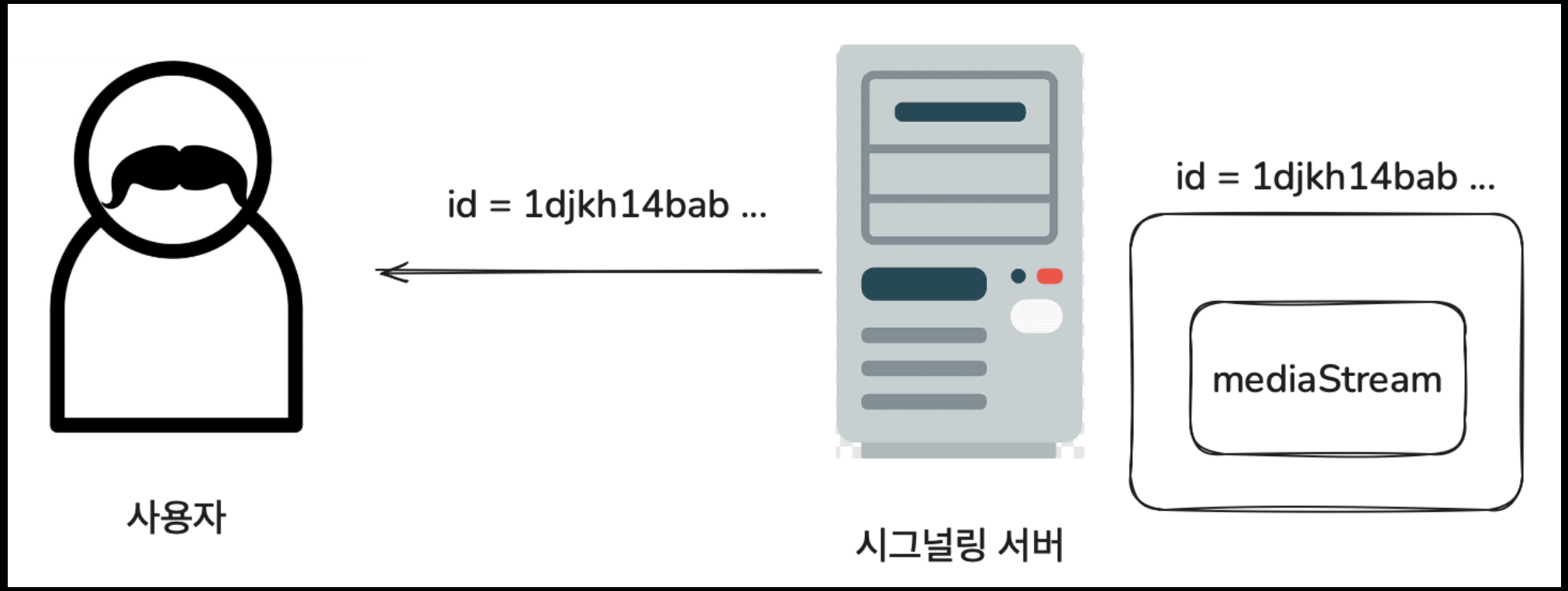

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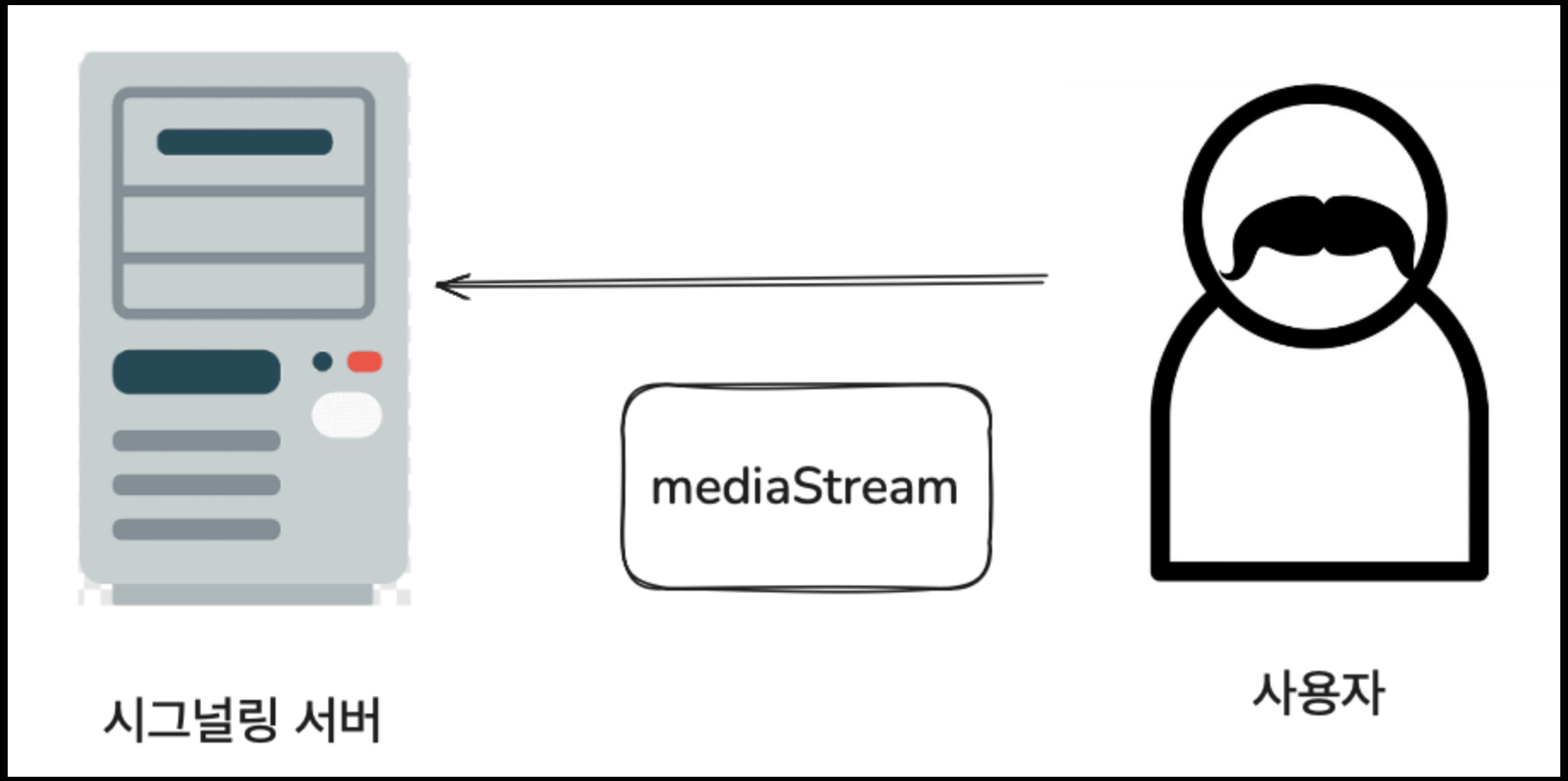

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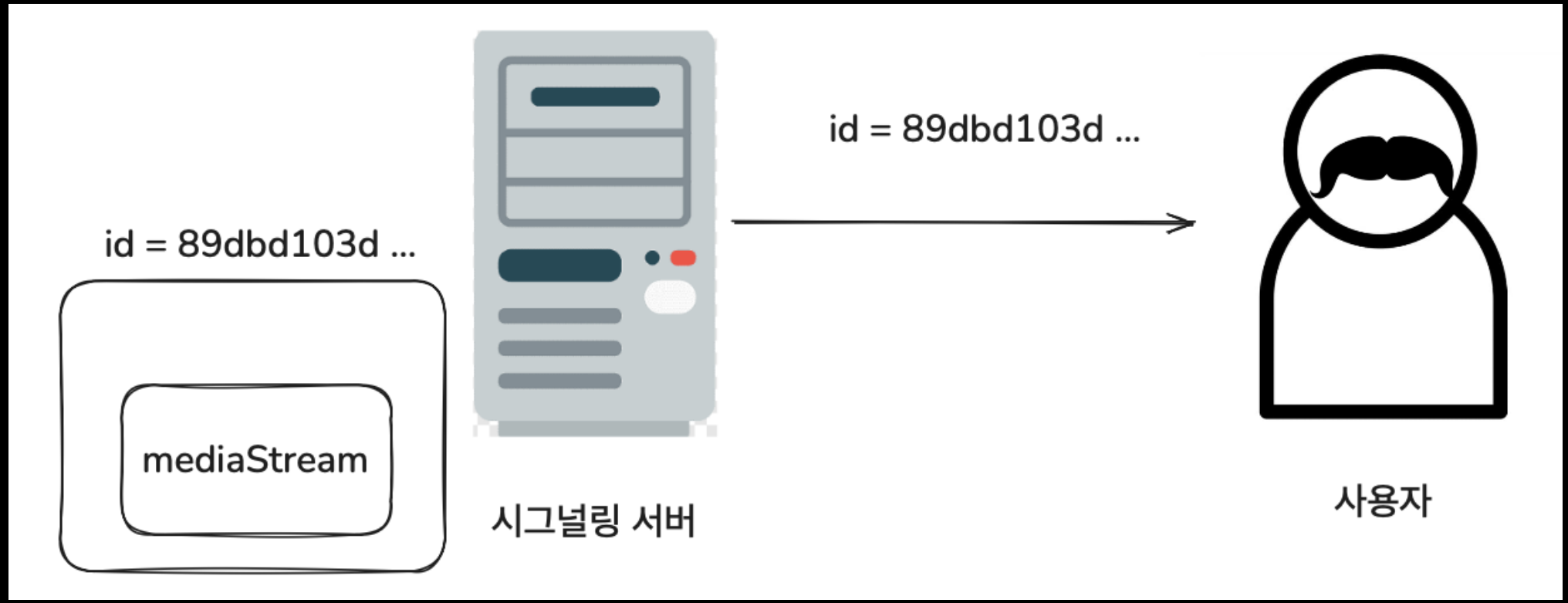

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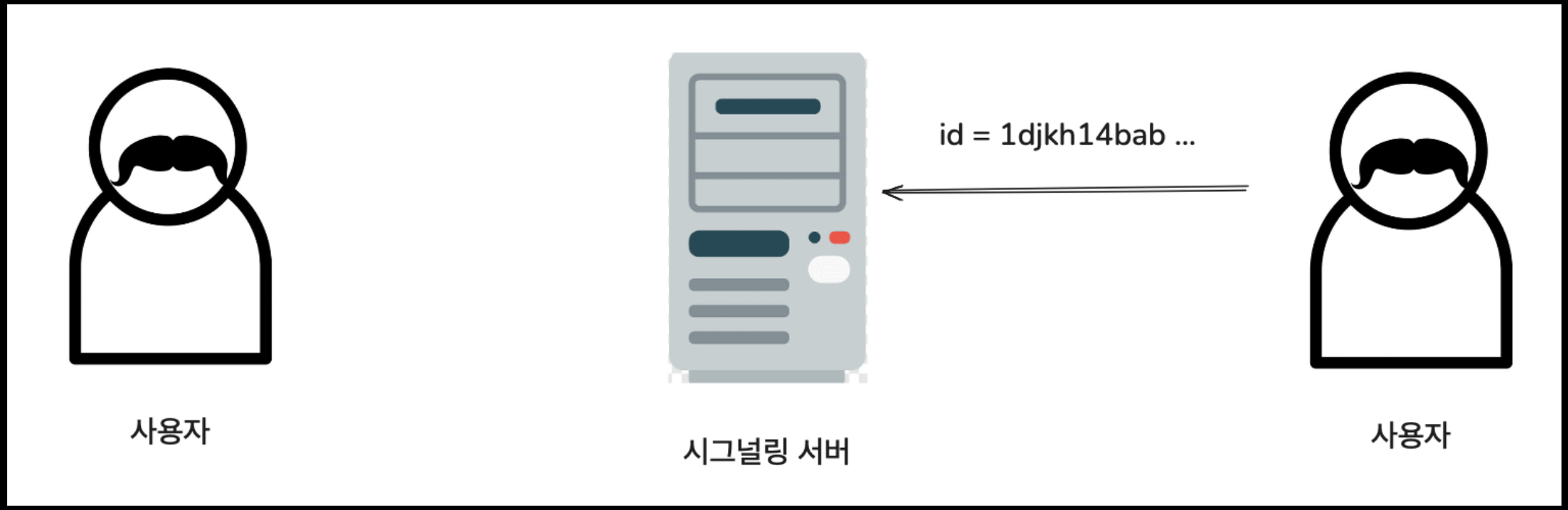

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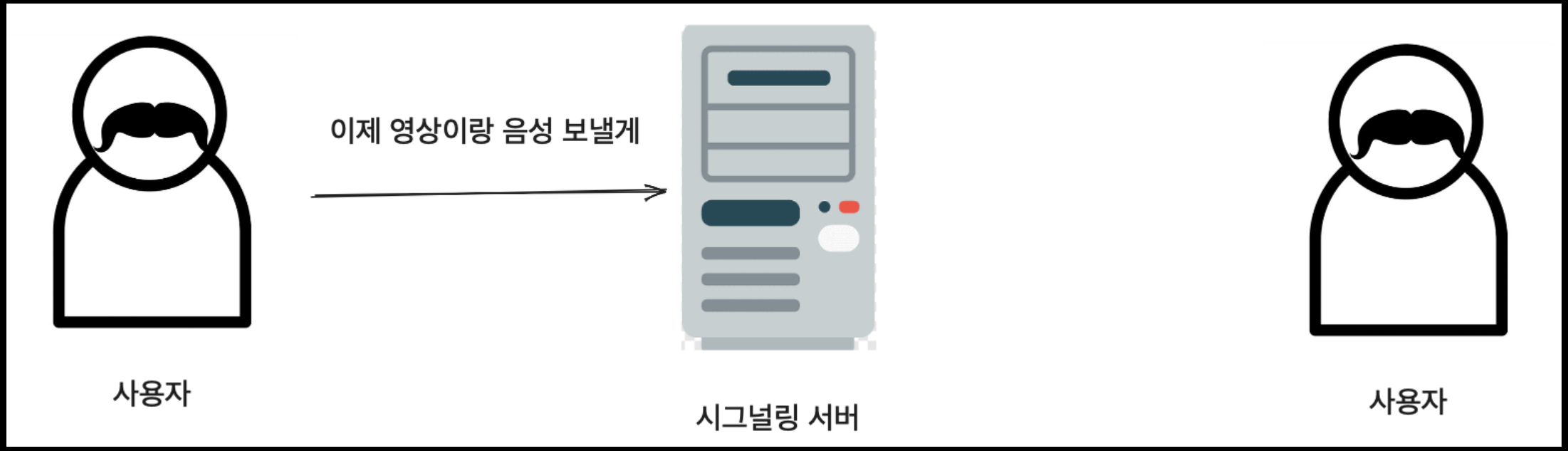

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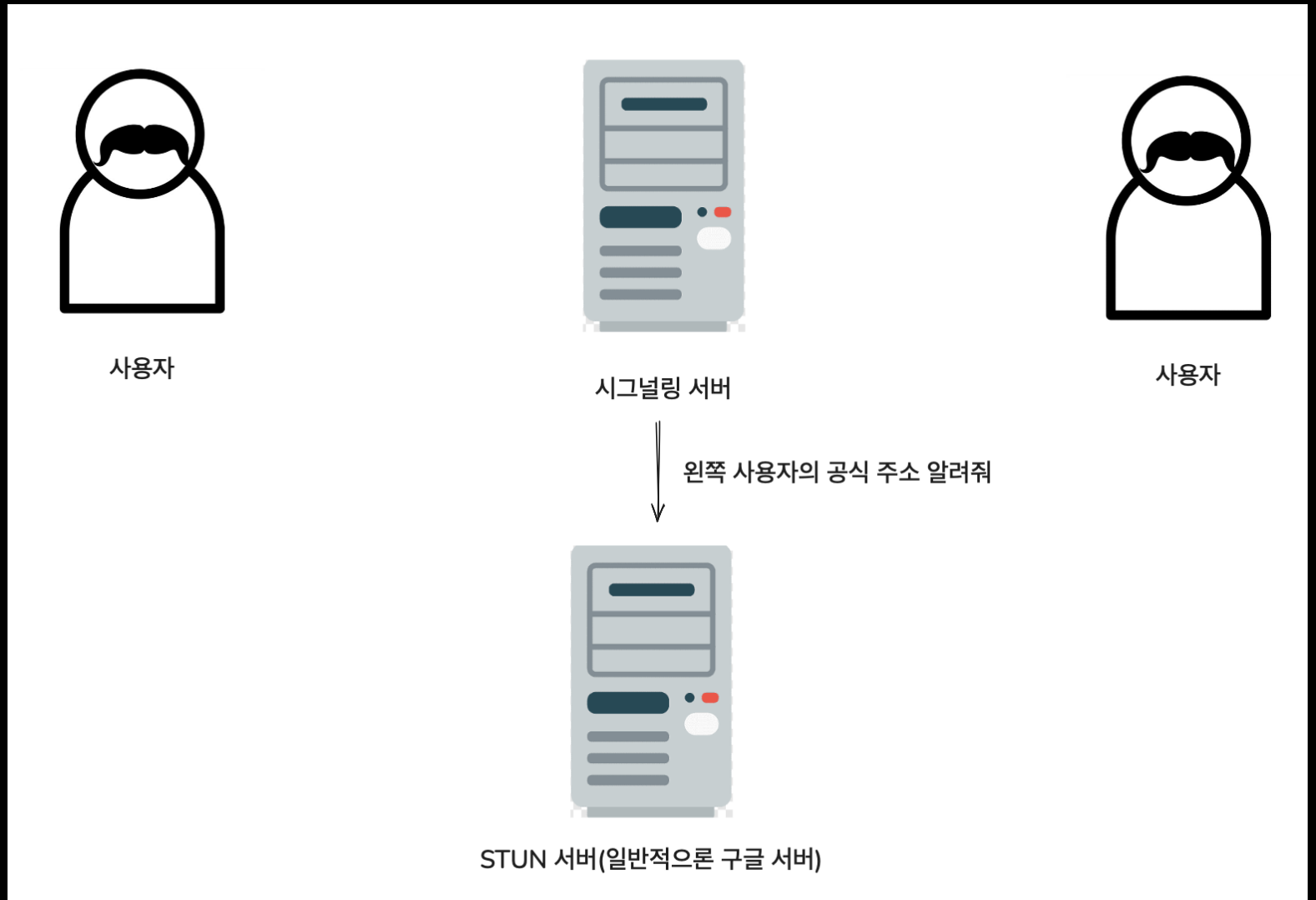

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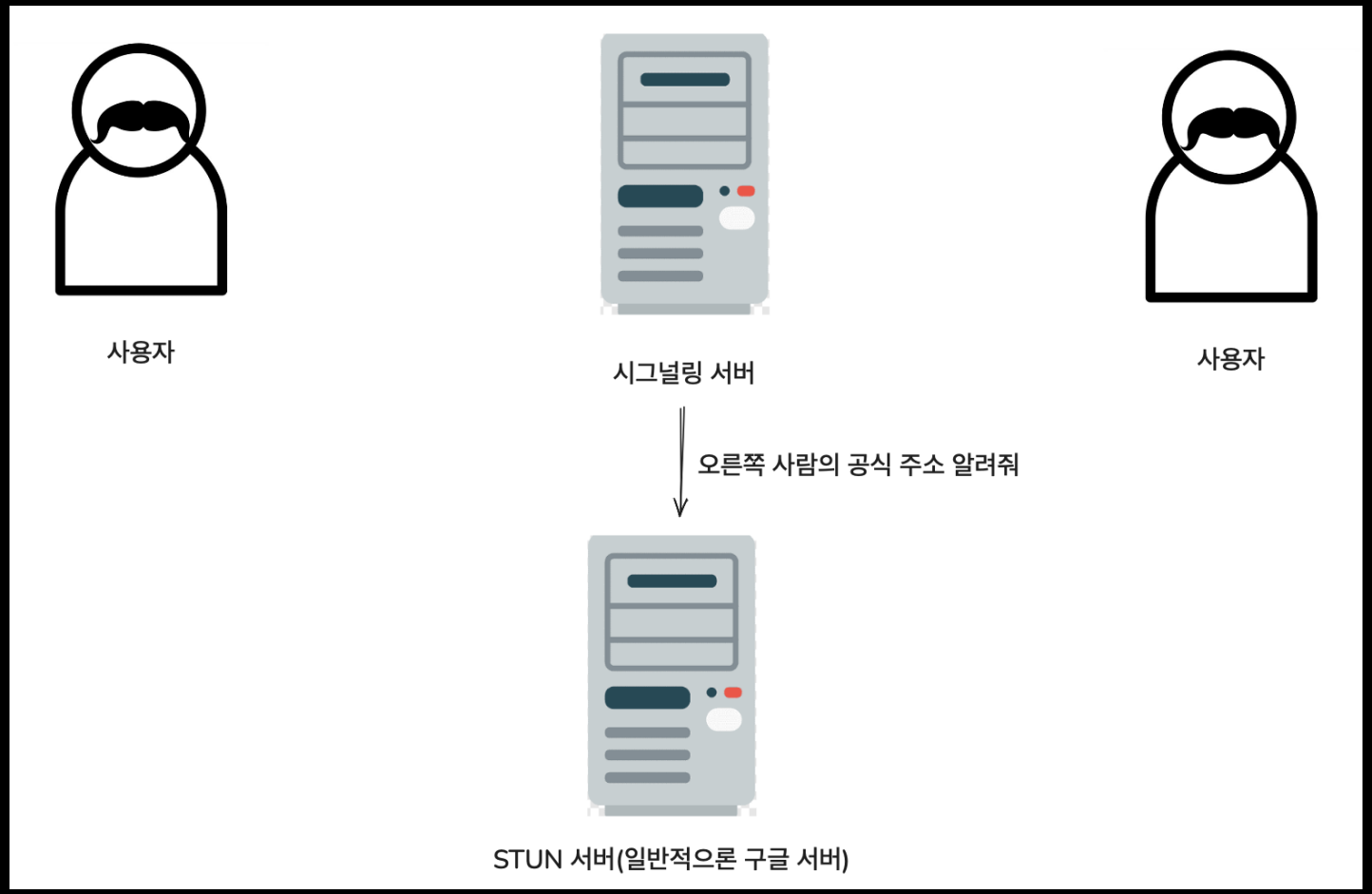

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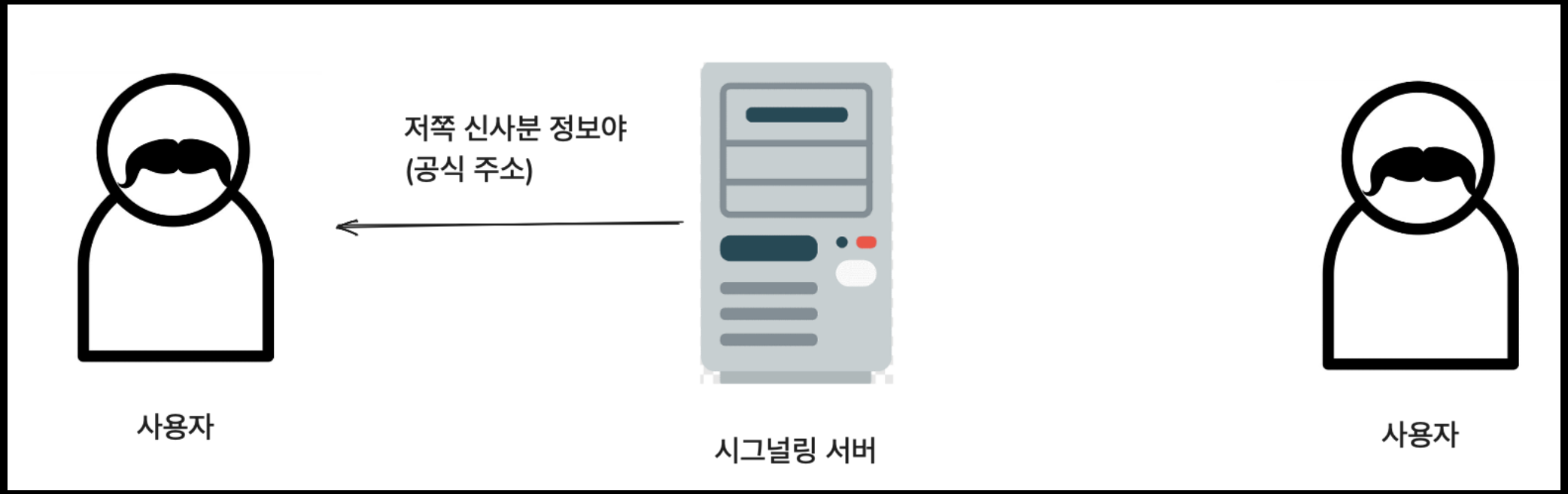

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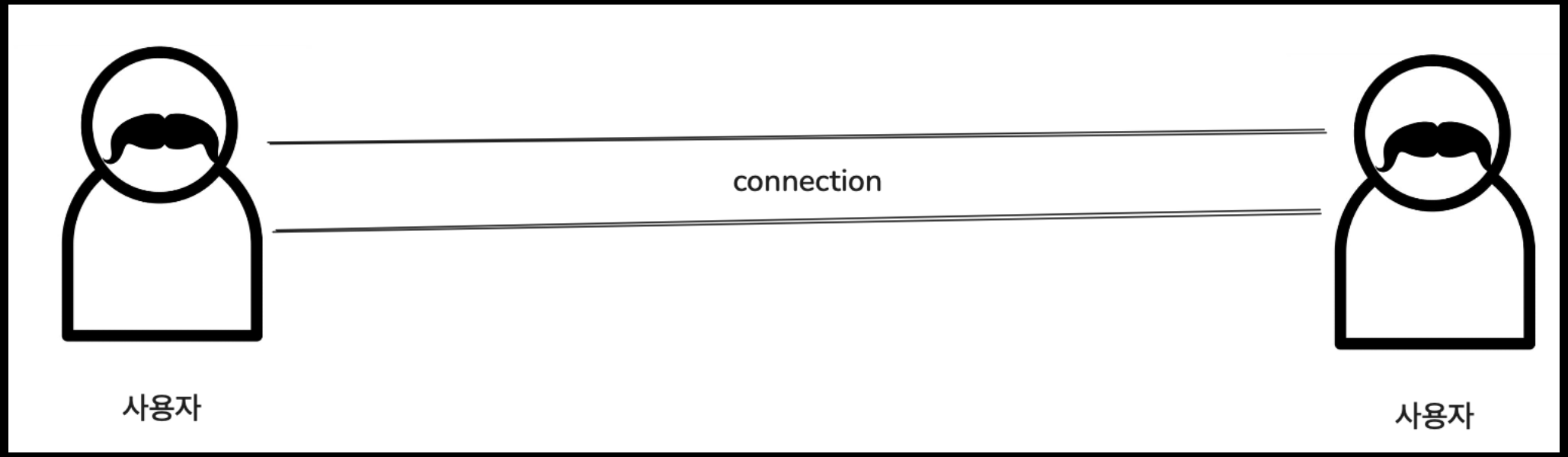
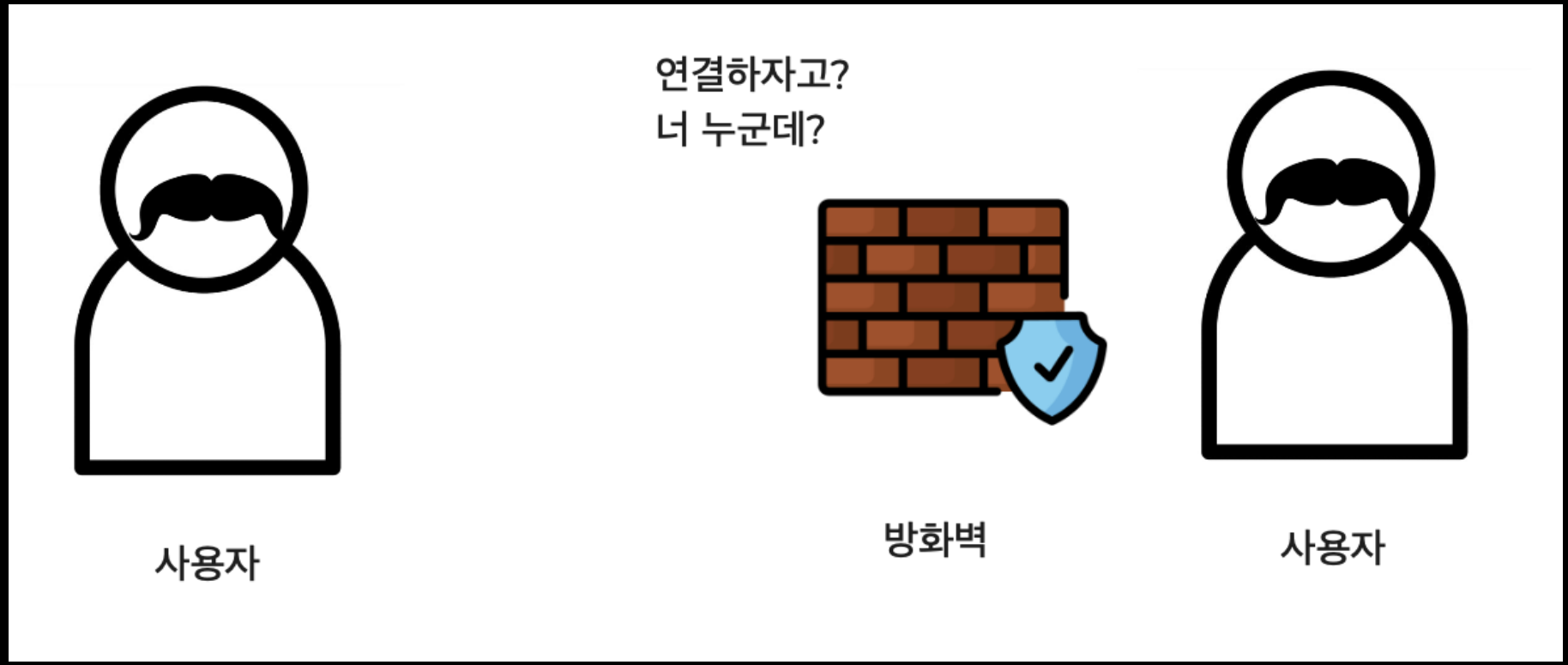


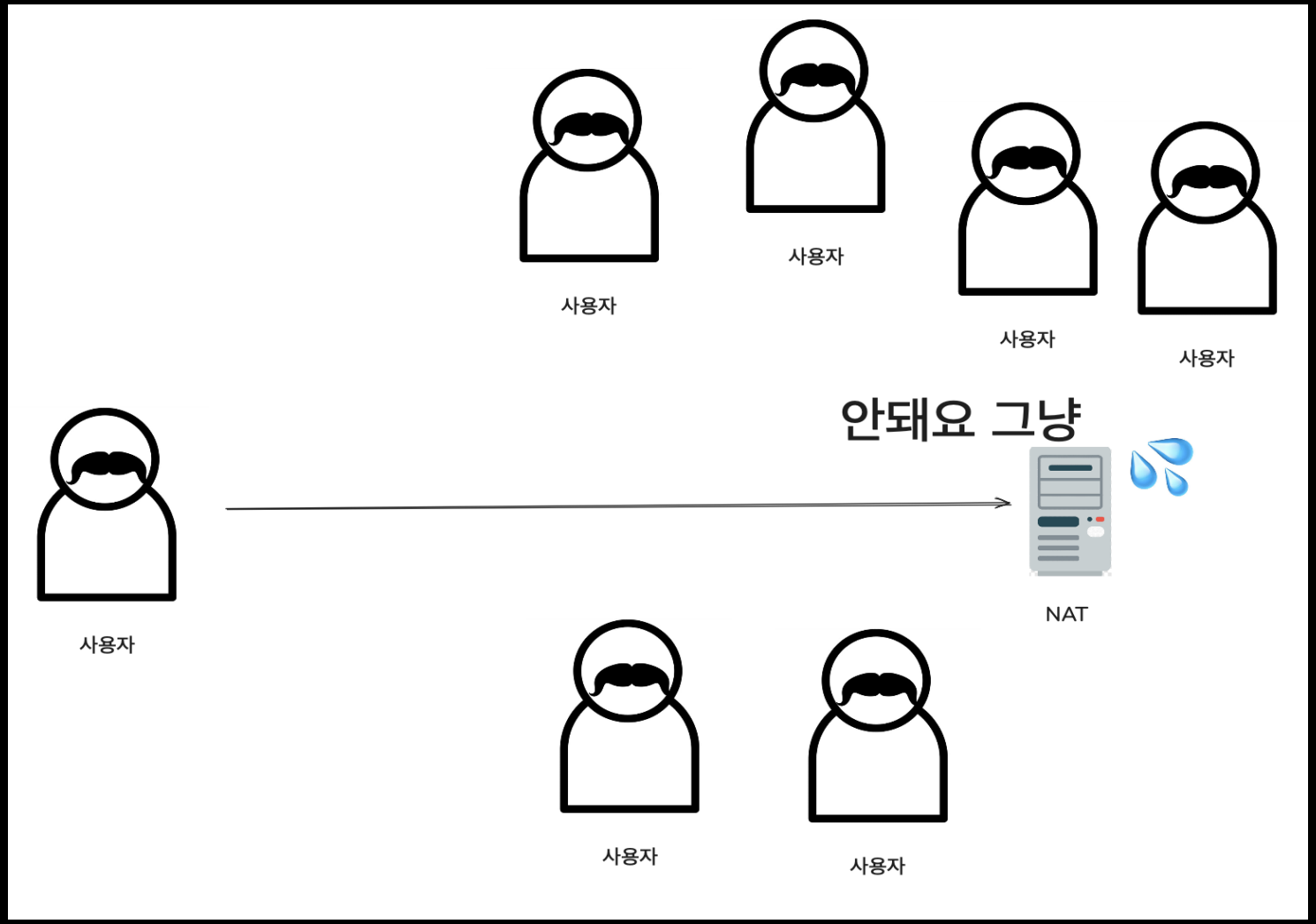
3. 📄 WebRTC 실습

1. git clone ~
2. cd 10min-seminar/15th-최재영-webrtc/code/
3. npm install
4. node server.js
5. 127.0.0.1:3011/client.js

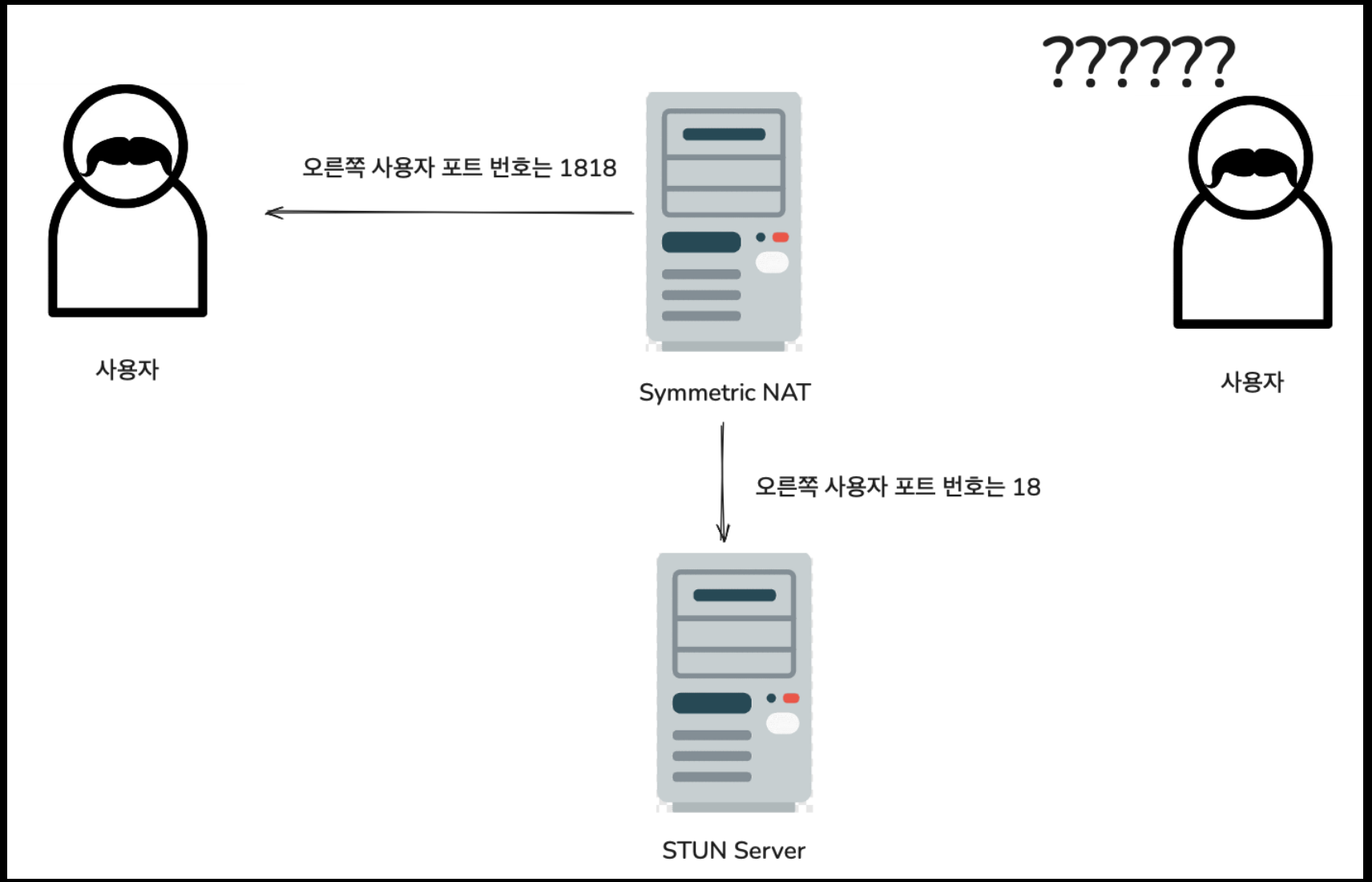
4. 🤔 WebRTC 한계 - 방화벽



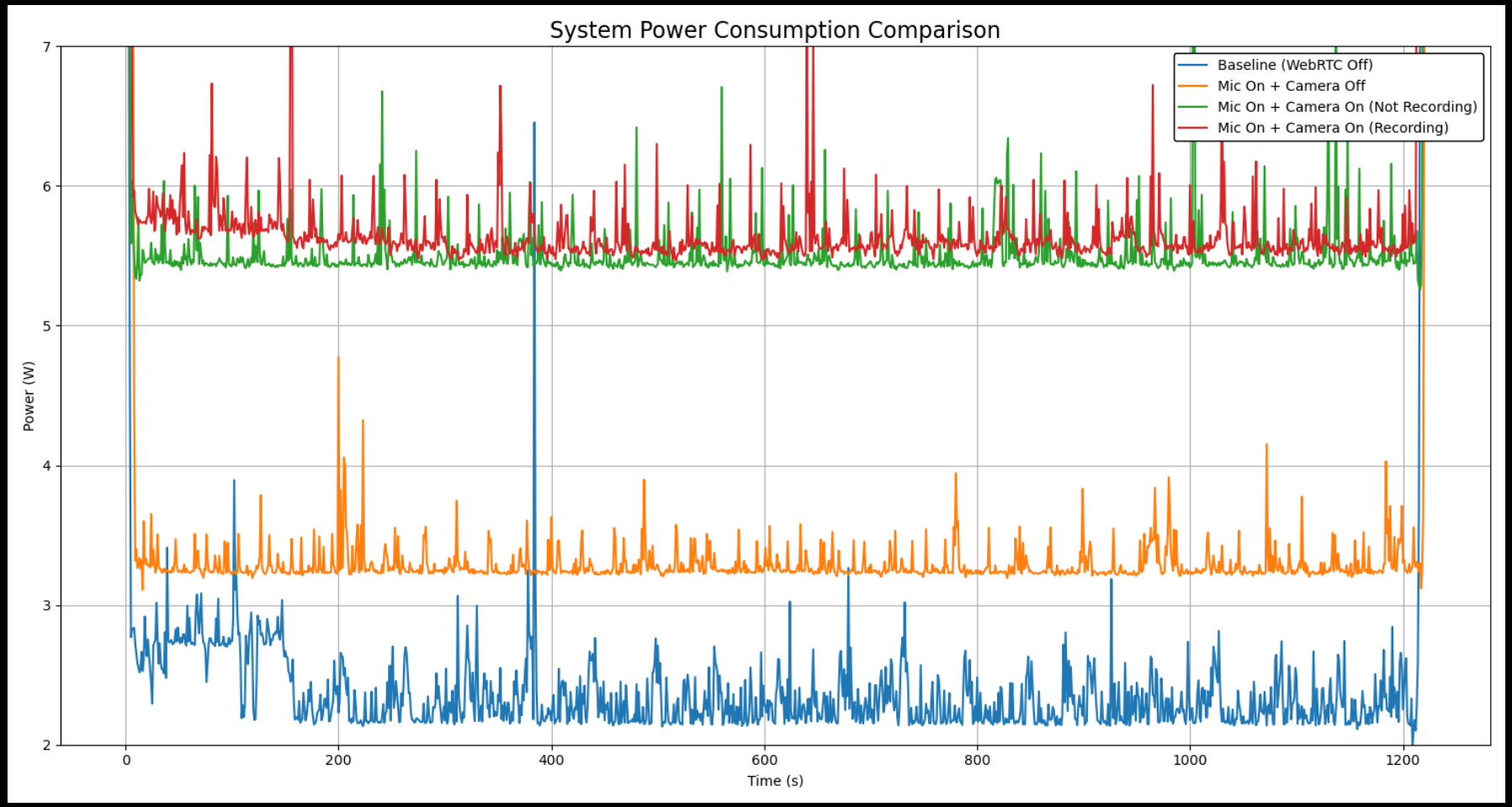
4. 🤔 WebRTC 한계 - 환경



4. 🤔 WebRTC 한계 - NAT



4. 🤔 WebRTC 한계 - 부하



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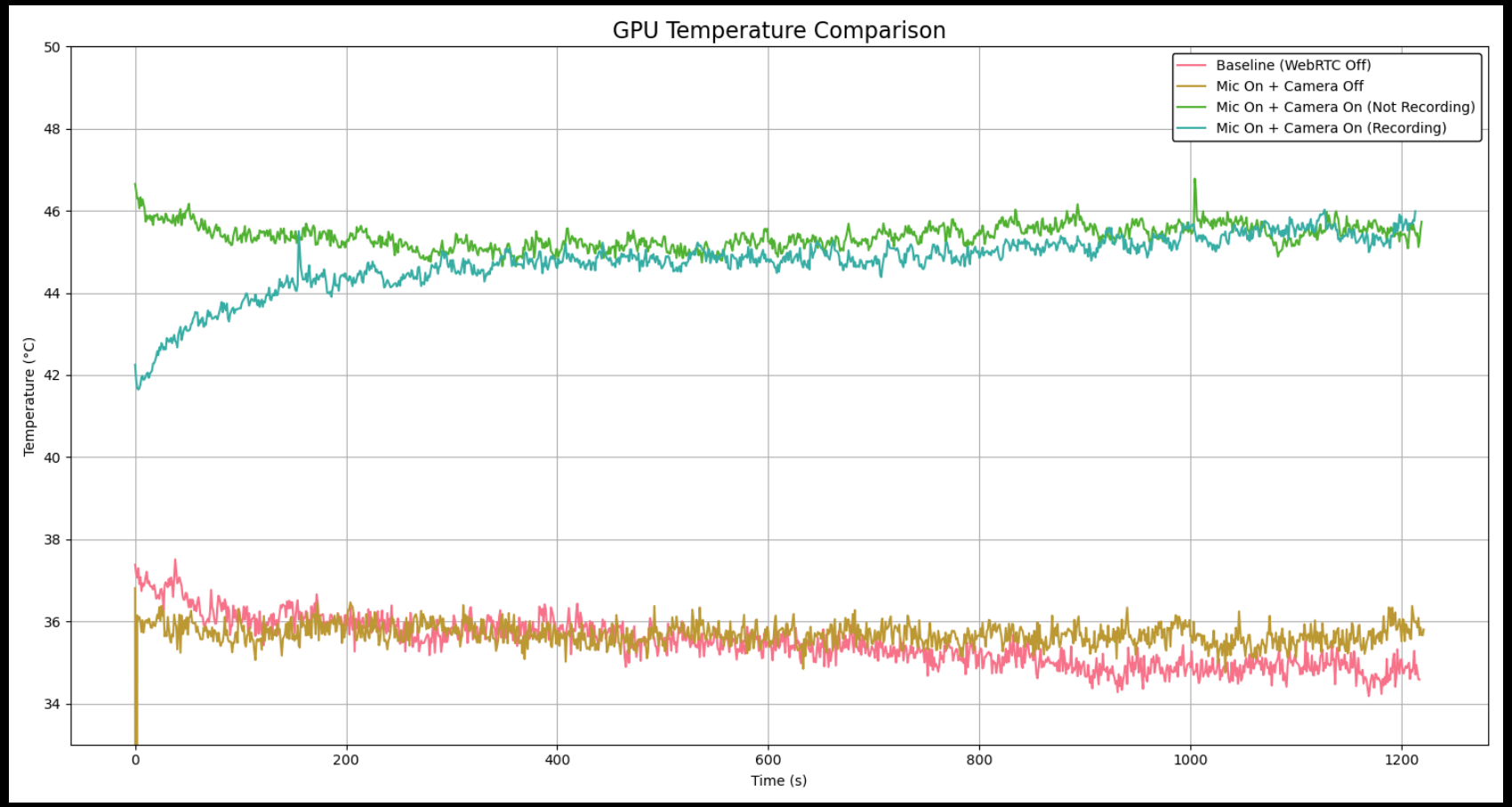

5. 💡 WebRTC 개선 방향

SFU 개선 결과

Mesh vs. SFU

	Mesh 5명		SFU 5명
시스템 소비 전력	13.42W		11.58W
CPU 온도	65.89°C	→	55.10°C
P-CPU 점유율	17.64%		9.11%
네트워크 트래픽	14.4Mbps		9Mbps

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