



技术开启新“视”界
Technology Bring New Vision

利用WebRTC为应用赋能 ——从一个工程师的角度

郭奕 全民快乐科技有限公司


1 给音视频实时通讯应用打个分

2 集成WebRTC

3 满足现有应用需求

4 适应网络环境

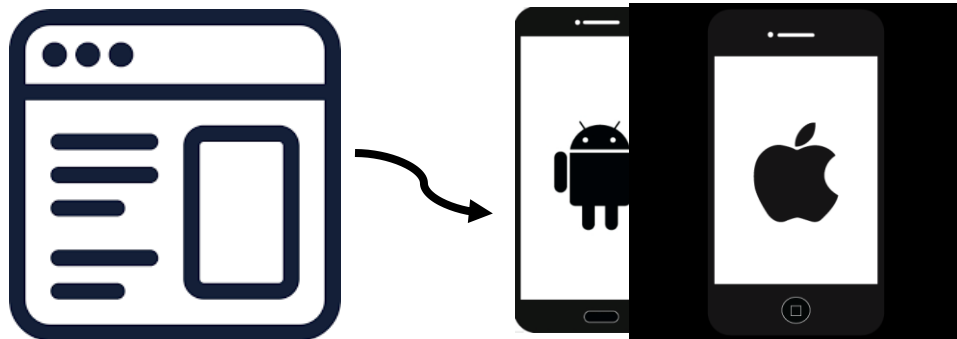
5 更上一层楼



待赋能的APP：StarMaker



待赋能的APP : StarMaker

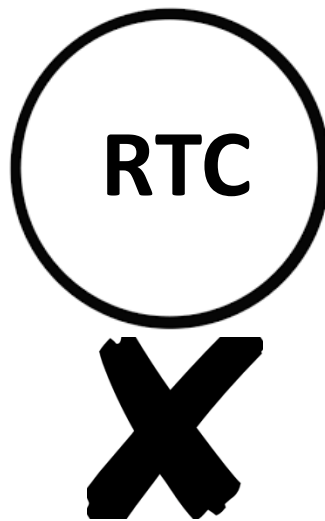




待赋能的APP：StarMaker

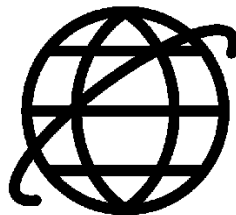


待赋能的APP : StarMaker





一个优秀的RTC应用





定个小目标



70分




100ms延迟

30%丢包

唇音同步

<400ms

2015年+
设备



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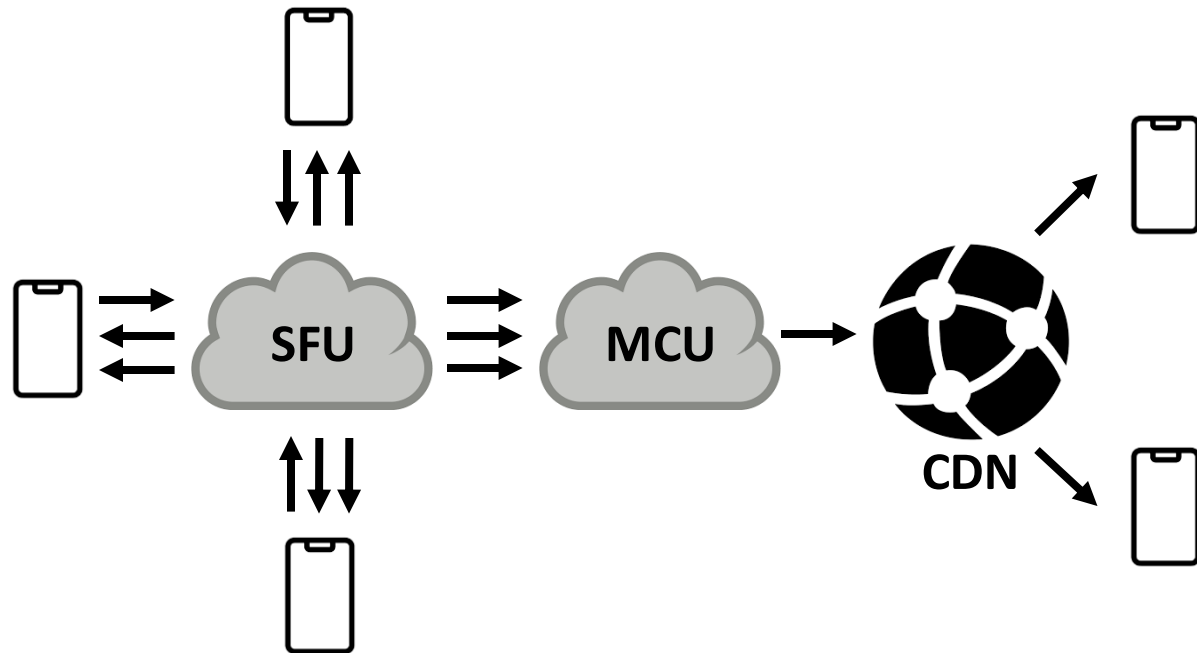



信令

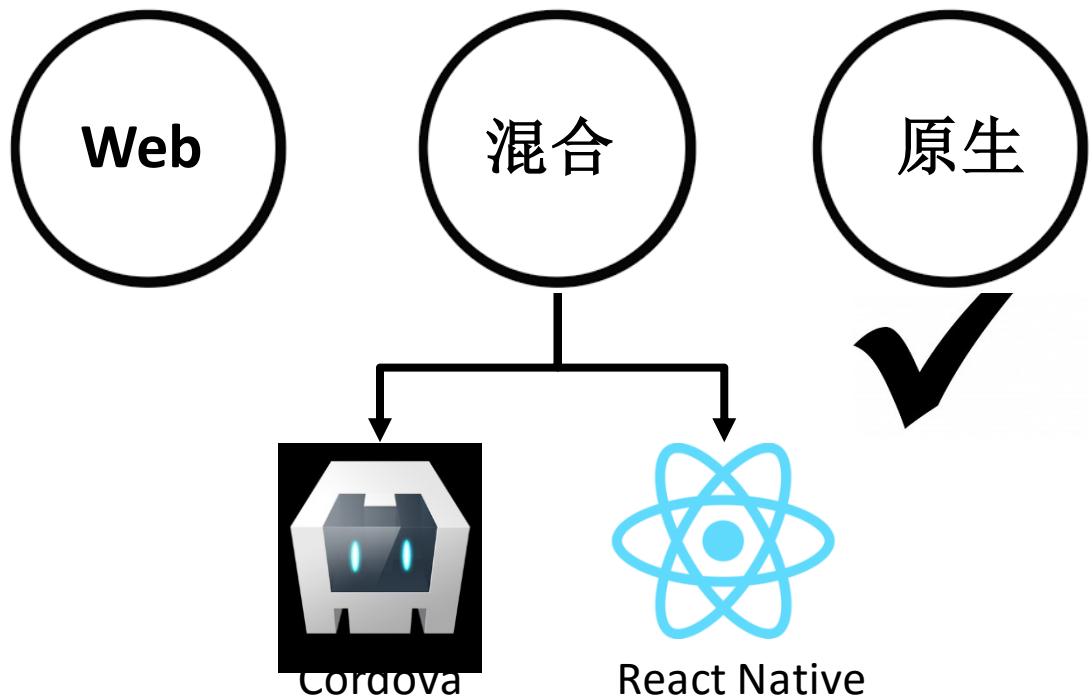
NAT穿透

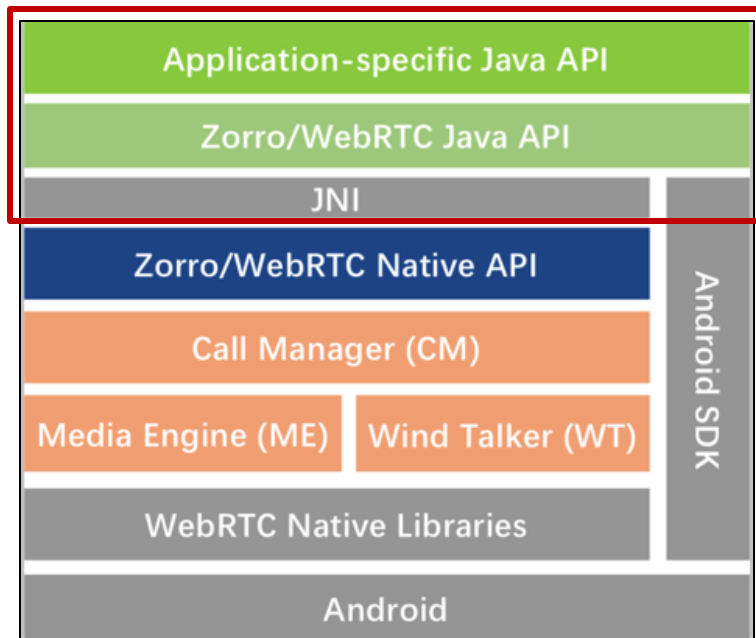
媒体

互动直播架构图



SFU	 Licode	 Janus	 Jitsi	 mediasoup
SFU/ MCU	 Kurento			







自定义

Websocket/
Unix Socket



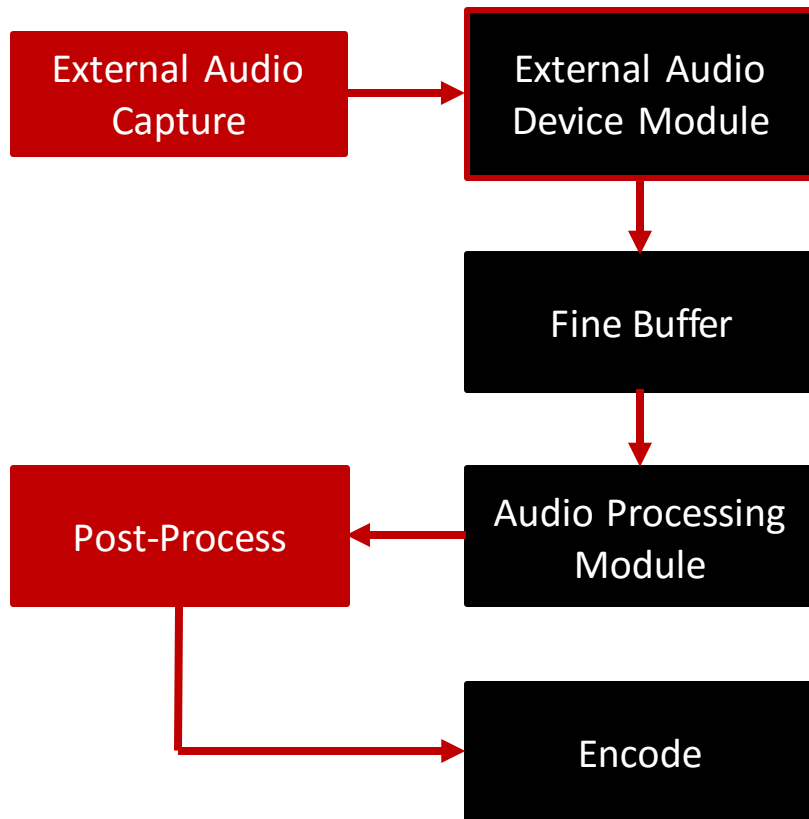
Jingle

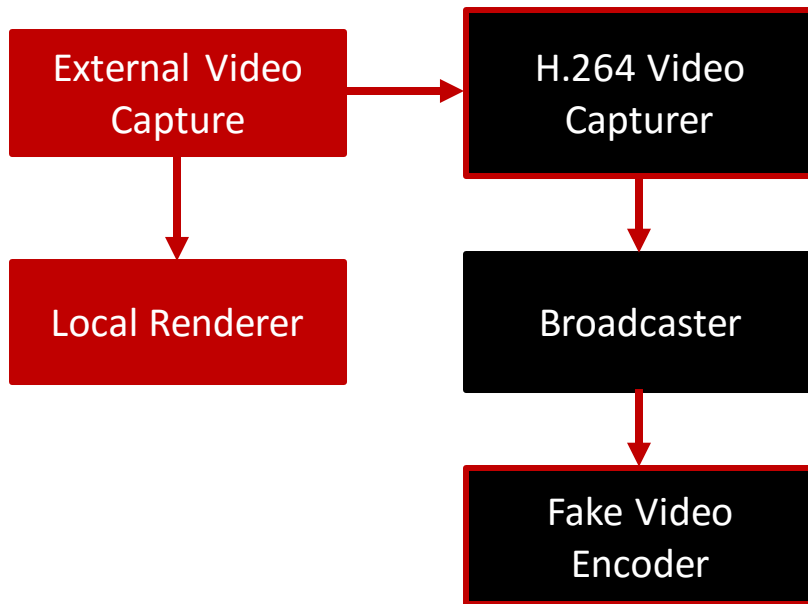
XMPP

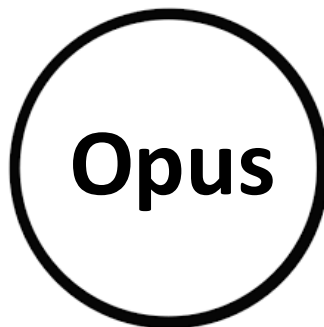
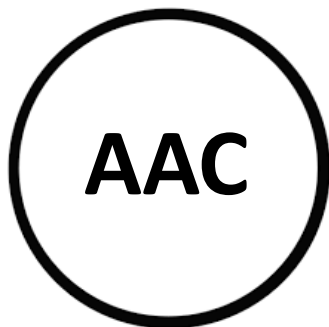


SIP

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H.264



VP8/9



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Augmented Traffic Control Demo UI

Turn Off

Notifications

No notifications.

Authentication

Profiles

Shaping Settings

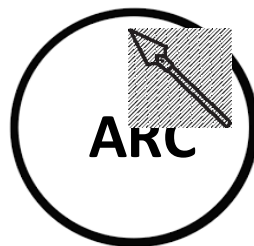
Uplink:

Bandwidth

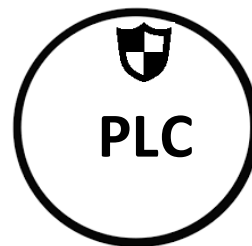
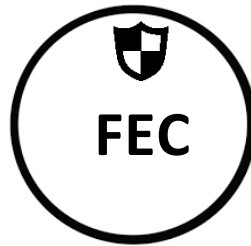
Rate

5000

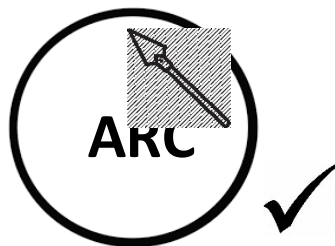




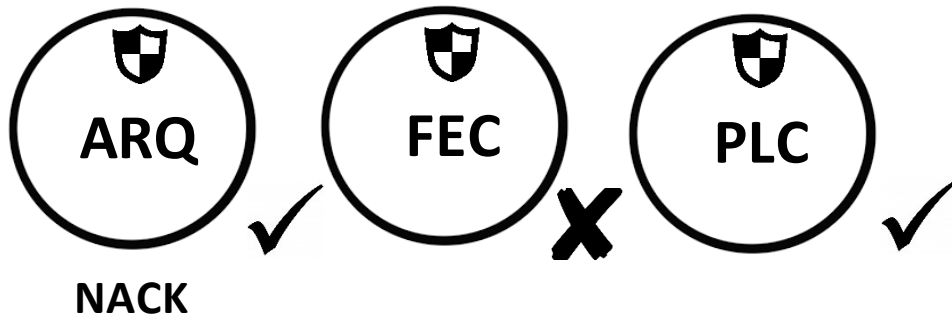
Google Congestion Control



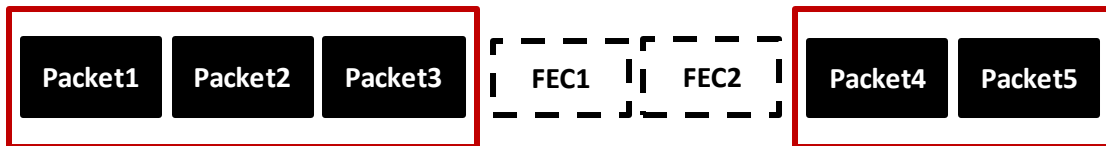
NACK



Google Congestion Control



同时使用NACK和FEC



```

      0 1 2 3 4 5 6 7
      +--+--+--+--+--+--+--+
      |X|R|N|S|PartID| (REQUIRED)
      +--+--+--+--+--+--+--+
X:    |I|L|T|K| RSV   | (OPTIONAL)
      +--+--+--+--+--+--+--+
I:    |M| PictureID  | (OPTIONAL)
      +--+--+--+--+--+--+--+
L:    |  TLOPICIDX   | (OPTIONAL)
      +--+--+--+--+--+--+--+
T/K:  |TID|Y| KEYIDX | (OPTIONAL)
      +--+--+--+--+--+--+--+
```

VP8 RTP payload header



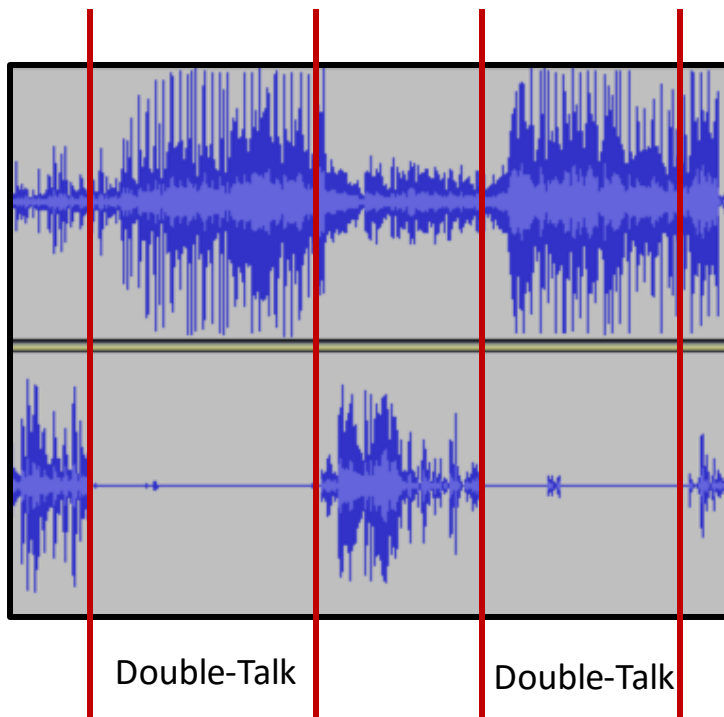
1. 适用于低延迟;
2. 防止重传风暴;
3. 丢包率统计受影响。



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- 2 集成WebRTC
- 3 满足现有应用需求
- 4 设备兼容性的几点考虑
- 5 适应网络环境
- 6 更上一层楼

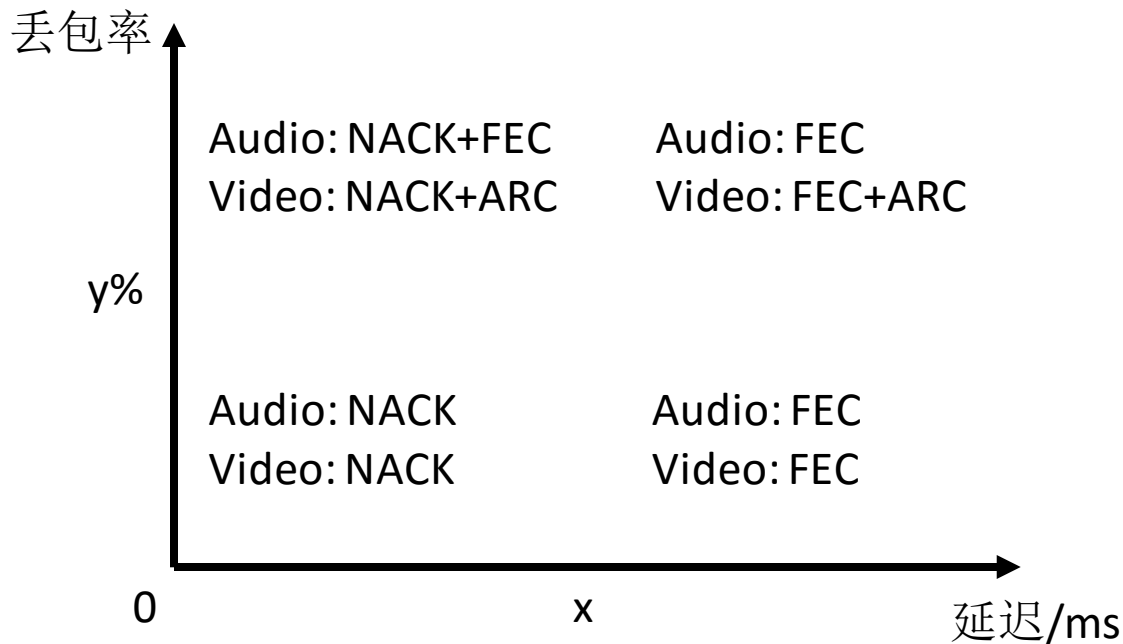
AECM处理前

AECM处理后





Hybrid抗丢包方案



第一位用户



Thank you

