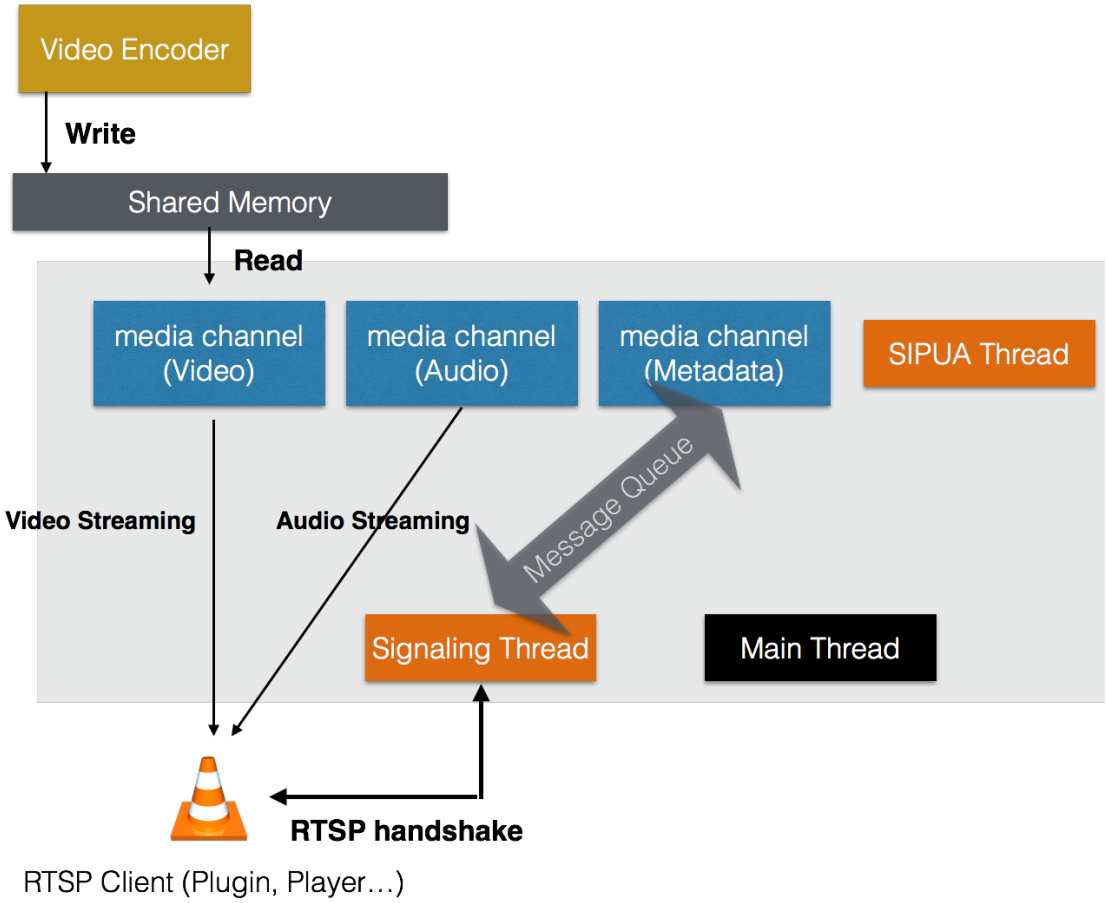
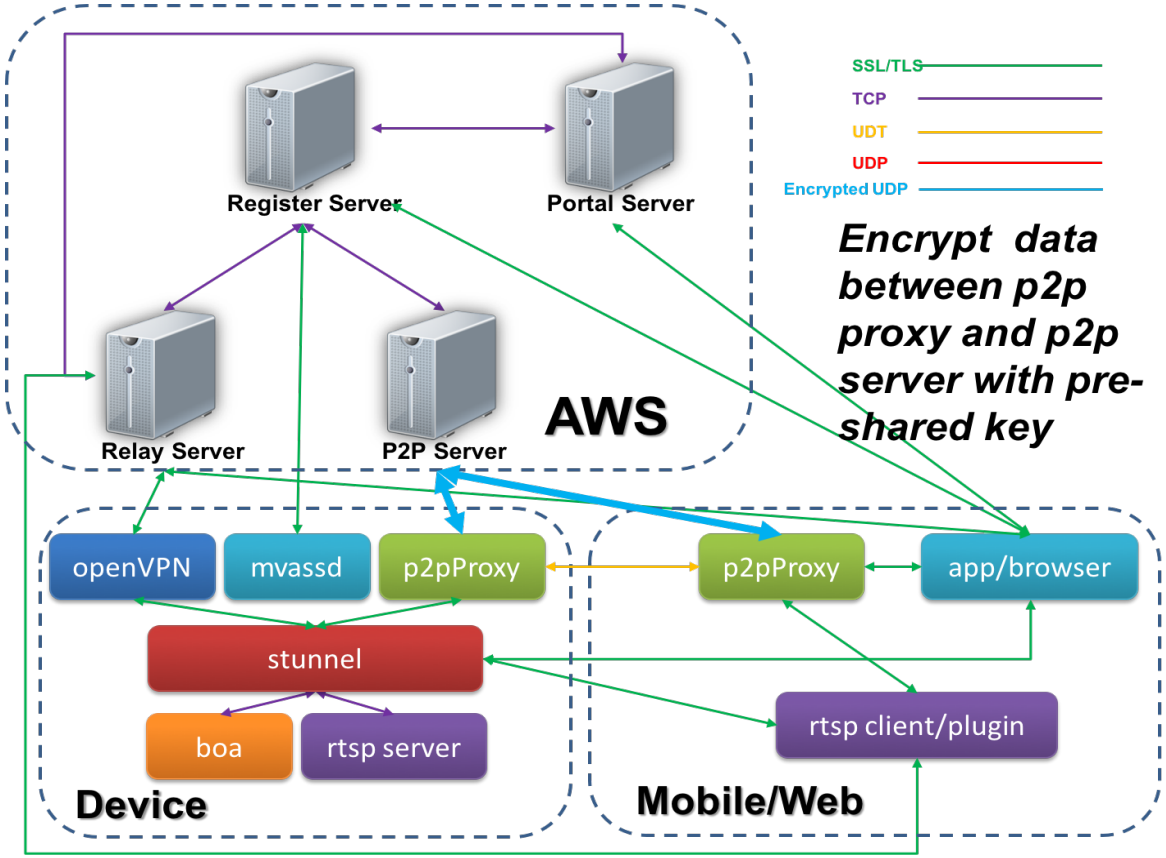
[Project] RTSP Streaming Server



- Responsible for developing this crucial module inside IP cameras, using C on embedded Linux.
- Constructed 6 threads: Main thread, signaling thread, SIPUA thread, and three media channel threads (video, audio, metadata).
- Used shared memories (ring buffers) for encoders to write frame data & media threads to read frame data.
- Implemented protocols such as RTSP/RTP over UDP/TCP/HTTP, RTCP and SIP. Dedicated to RFC compliance while keeping compatibility with other third-party software.
- Implemented H.265 streaming and knew how to encode raw data, composed the corresponding headers, and packetized video data into RTP packets.
- Resolved over 30 issues on networks, OS, video/audio encoding, and software vulnerability.

[Project] MVaaS (Managed Video as a Service) Cloud System



- Users can easily manage their devices (IP cameras) by logging into our system. Once the camera connects to the cloud platform, users can freely watch streaming by mobile devices without additional installation.
- Developed a cross-platform P2P library both for IP cameras and mobile apps, using C++. The P2P hole punching procedure is based on UDP and the data transmission is based on UDT.
- Designed a novel port prediction algorithm to improve the success rate of P2P hole punching by 20%.
- The messages exposed to the public network are all well encrypted.

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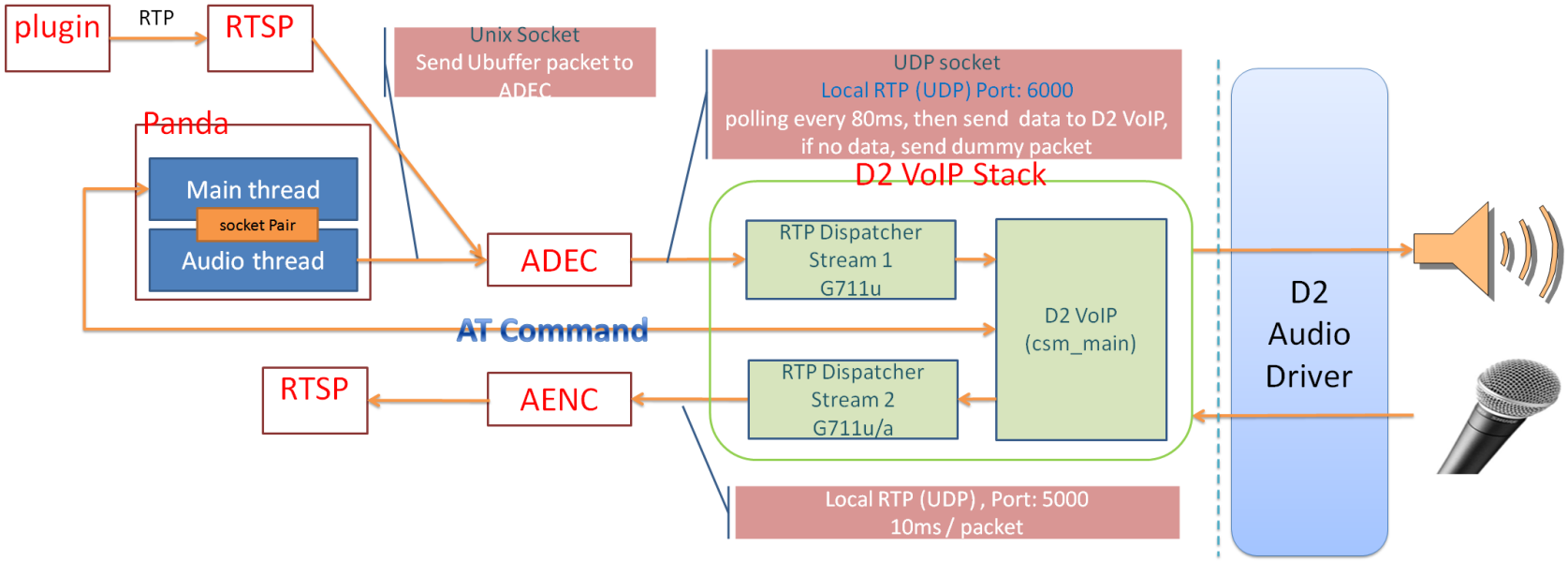
[Project] SIP Based Video Doorbell (ODM Project)



- Built a time-critical VoIP system. The SIP protocol stacks is a kernel driver, ensuring audio delay is no more than 10ms.
- The video doorbell is compatible with general SIP phones and RTSP Clients.

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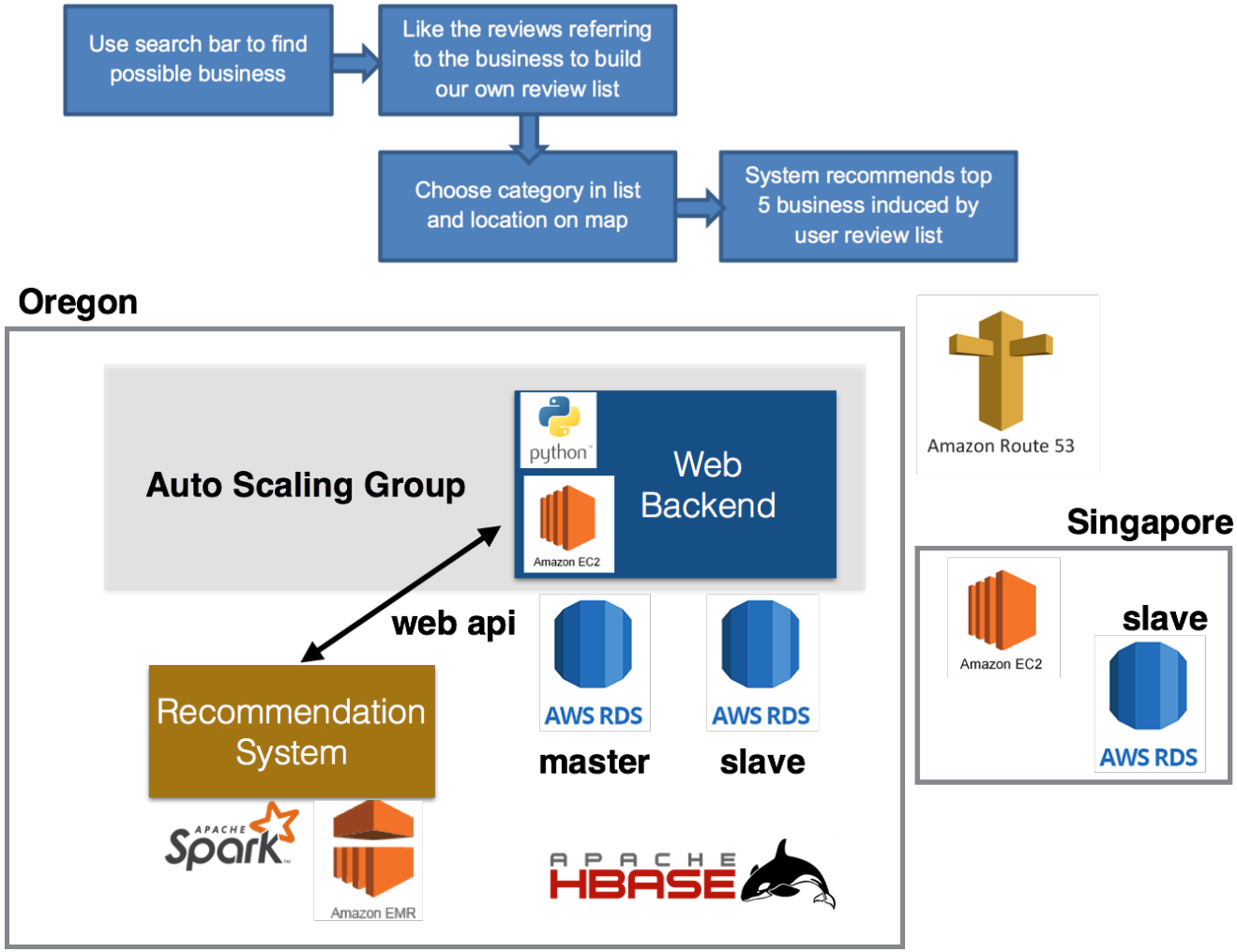
[Cloud Programming Project] Yelp Recommendation System



- Designed a recommendation system by implementing the collaborative filtering algorithm, using Apache Spark and AWS EMR. The system handled requests from backend servers, trained new data set, and provided new recommendations to clients.
- Deployed applications and databases on different AWS regions. Used AWS Route 53 to route clients to suitable services.
- Implemented the search engine, using MapReduce and HBase.

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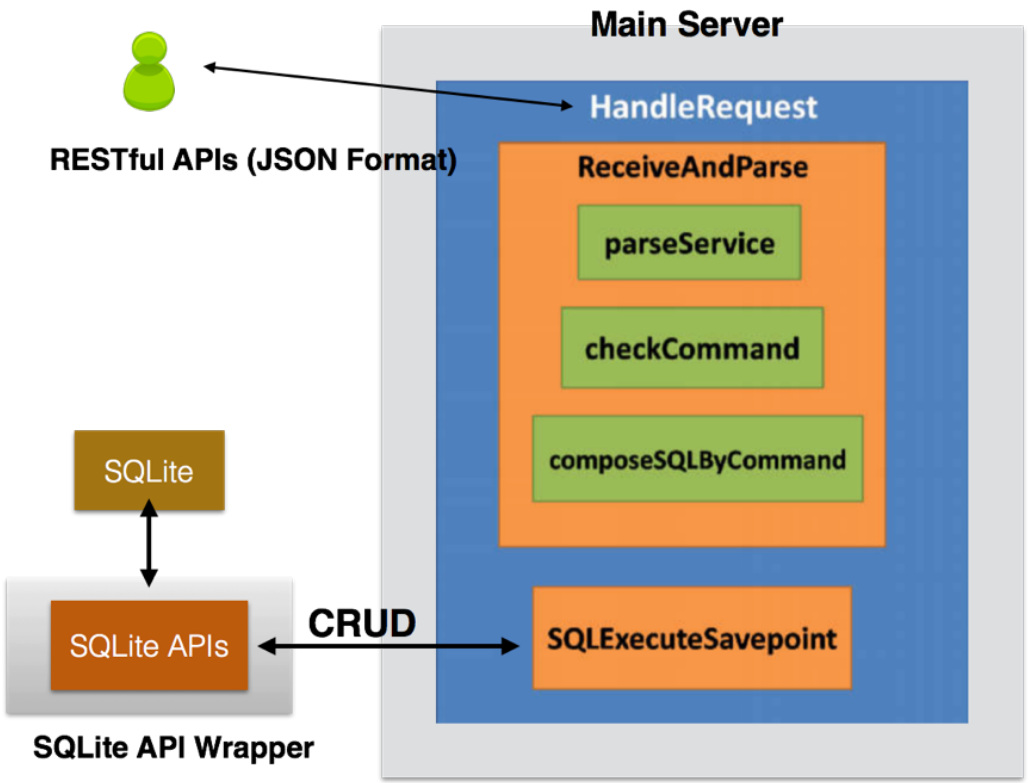
[Network Programming Project] Social Networking Service



- Users can register, login, post articles, respond others, add friends, instant chat, and transfer files.
- Implemented a single-threaded (asynchronous non-blocking) server, using C and event-driven programming.
- Encapsulated SQLite APIs into a series of higher level APIs. Through these new APIs, programmers could register callback functions (called before or after CRUD) and conveniently manage SQL commands and Transactions.