

localhost

Jasper Lowell
Steven Tudo
Edward Dai
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BACKGROUND

DEMO

DESIGN

Q&A

Background

Real-Time Auction Platform for
Single Night Accommodation

Problem

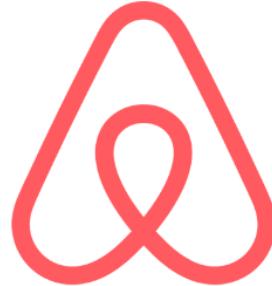
Solution

Our Team

Problem Domain

"Sydney has 600,000 bedrooms not being used according to data compiled by EY"

*- Michael Cranston,
Australian Financial Review*



Hosts have a convenient marketplace to rent out rooms or properties

Guests have an affordable alternative to hotels

Problem

Fixed pricing does not
optimise occupation rates
with profit

Price does not change
with demand

Sydney Airbnb Occupancy Rate



33% of Airbnb listings vacant*

*statistic from insideairbnb.com

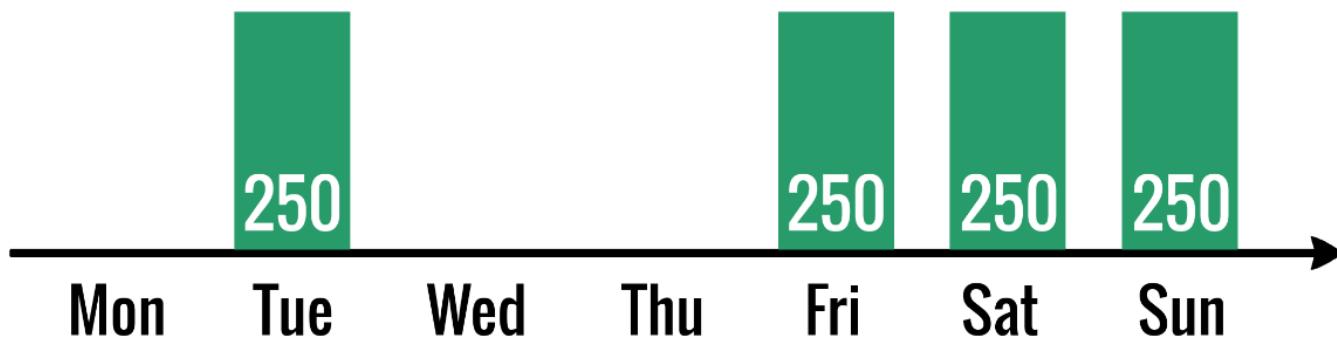
Solution

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Real-Time Auction Platform

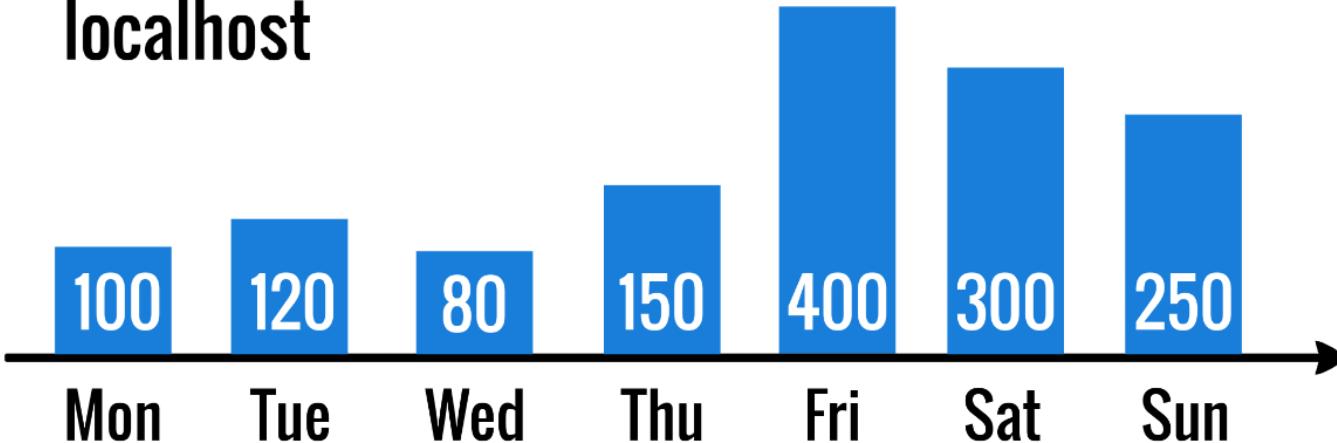


Traditional Platforms



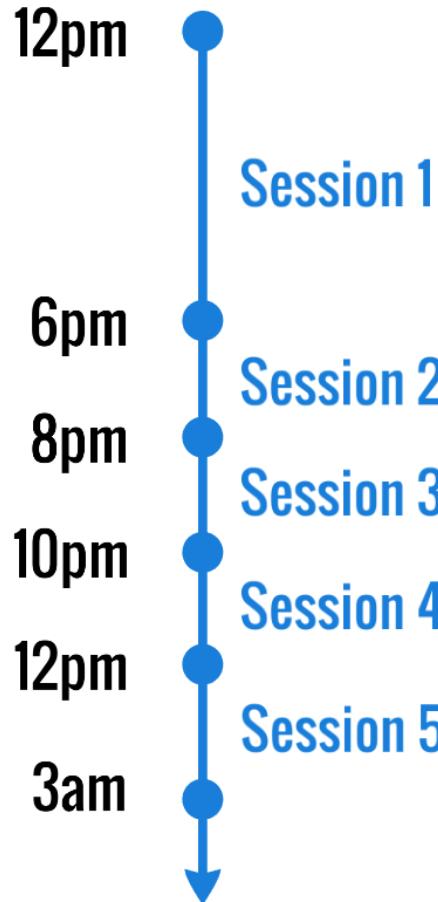
\$1000
Total

localhost



\$1400
Total

Auction Sessions



At the end of a session, highest bidder wins the item

Shorter sessions during peak hours

Multiple chances for guests to find accommodation

Multiple chances for hosts to find guests

Buyout

Buyout option if guests do not wish to wait

Guests trade affordability for convenience

Highly profitable for hosts

Undergrads

Jasper Lowell

Full Stack

Real-Time
Sysadmin
Scrum Master

Steven Tudo

Front End

UI Design

Edward Dai

Back End

Real-Time

Thomas Lam

Back End

Event Scheduling

Agile

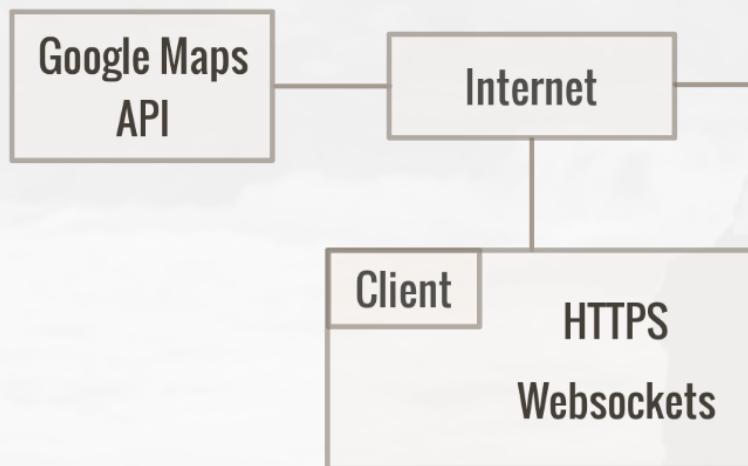
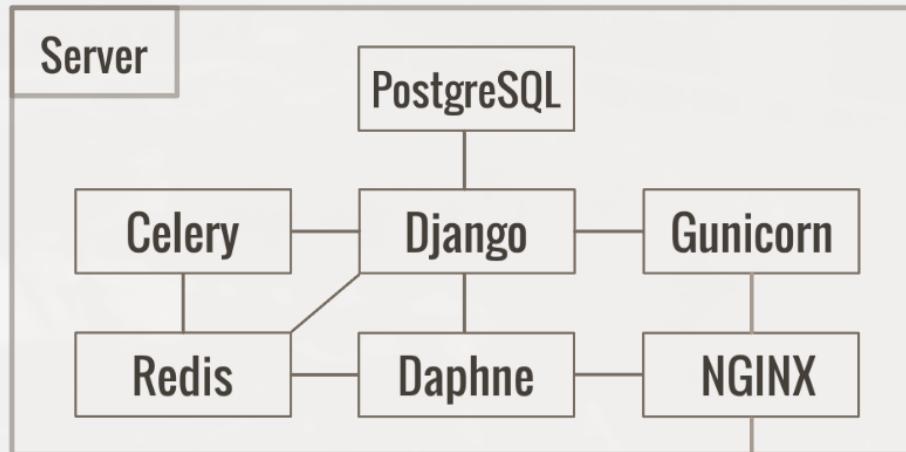
Weekly Schedule

Fortnightly Sprint

Friday	Sprint Planning Meeting (Fortnightly)
Sunday	Stand-up Meeting
Wednesday	Sprint Review Meeting (Fortnightly)
Thursday	Sprint Retrospective Meeting (Fortnightly)



DEMO

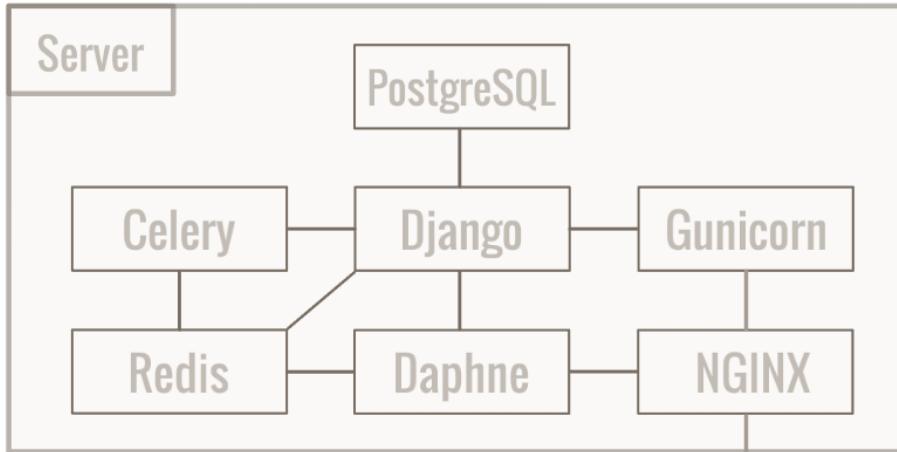


UI

Back End

Real-Time

Deployment



User Interface

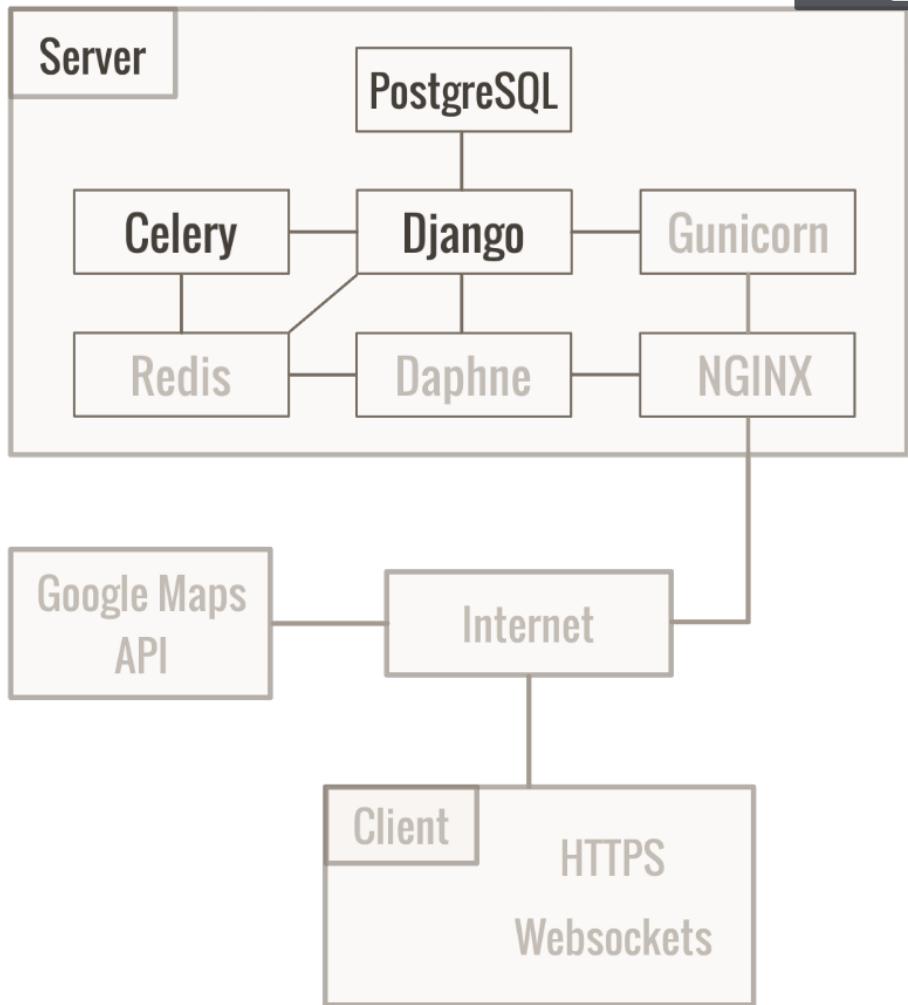
Simple and minimalist UI

- Decluttered search results
- Text reduction

Bootstrap Material is a CSS, HTML and JavaScript library with mobile and cross-browser compatibility.

Client side scripting and fluid navigation with **jQuery**.

Google Maps API for address searching and map generation.



Back End

Django is a Python web framework for rapid development and clean, extensible design.

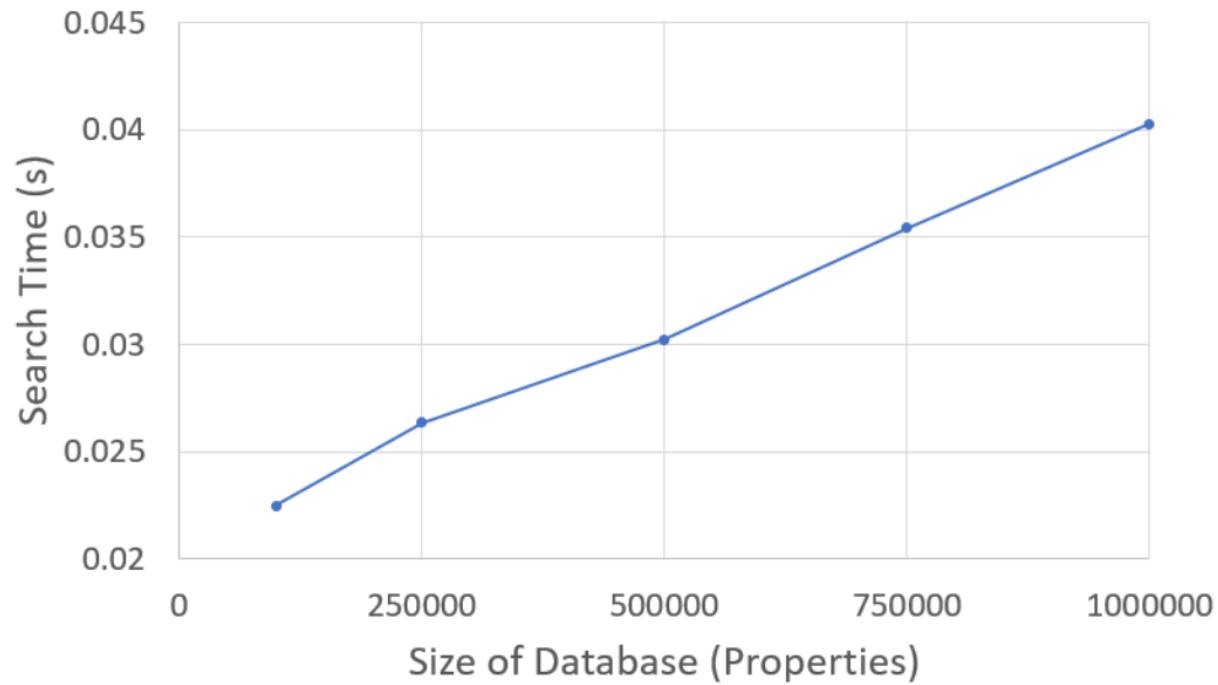
PostgreSQL used for high scalability and stability.

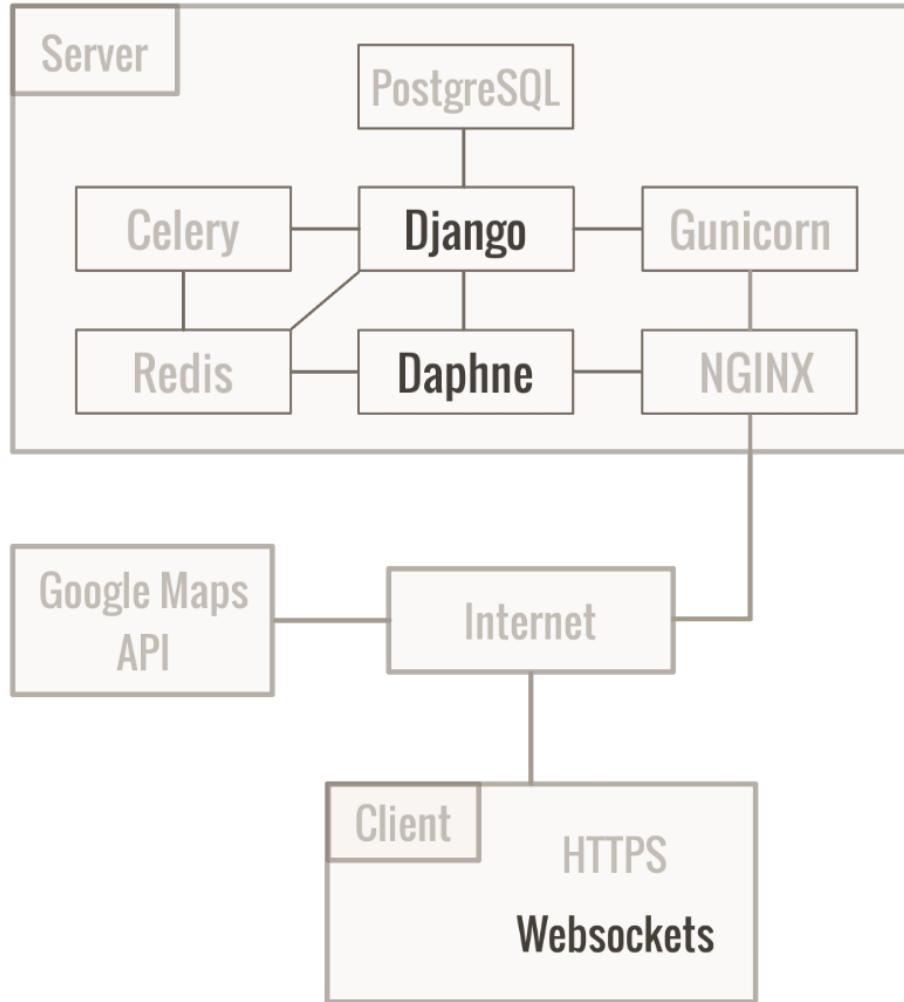
Schedule tasks in Django are implemented using Celery.

Haversine formula provides faster distance computation compared to Vincenty's formula.

Back End

Search Time for Large Data sets





Real-Time

Django Channels is an extension for Django that provides support for real-time communication.

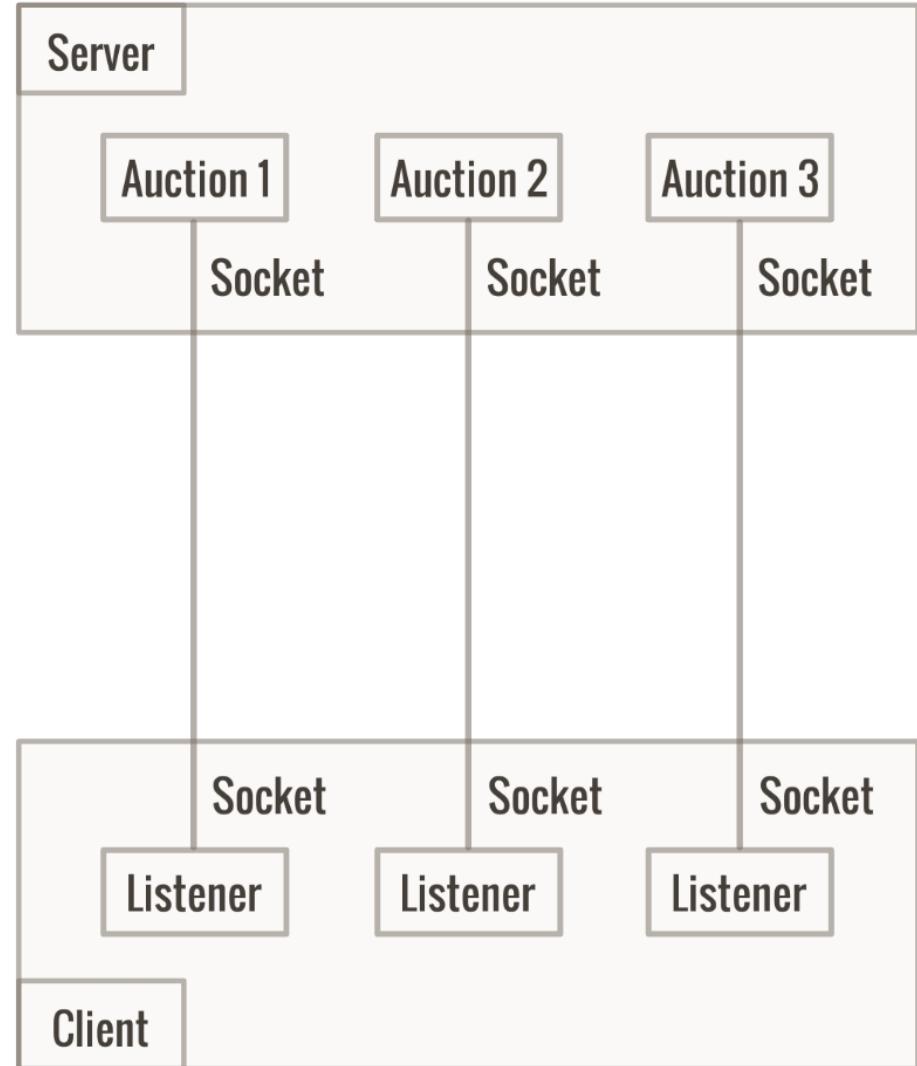
Daphne is a WebSocket protocol server used to power Django Channels.

Real-Time

Django Channels lacks native socket multiplexing.

Designed a cooperative multiplex **Websocket** protocol for real-time event broadcasting.

- Developed generic and extendable JavaScript library implementation.
- Extended Django Channels with support.

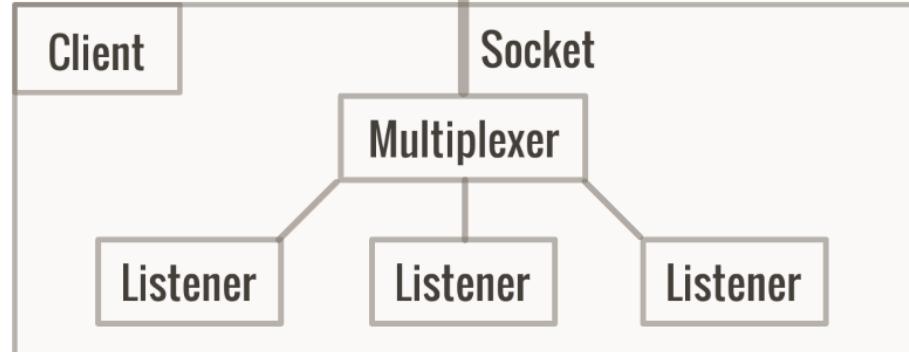
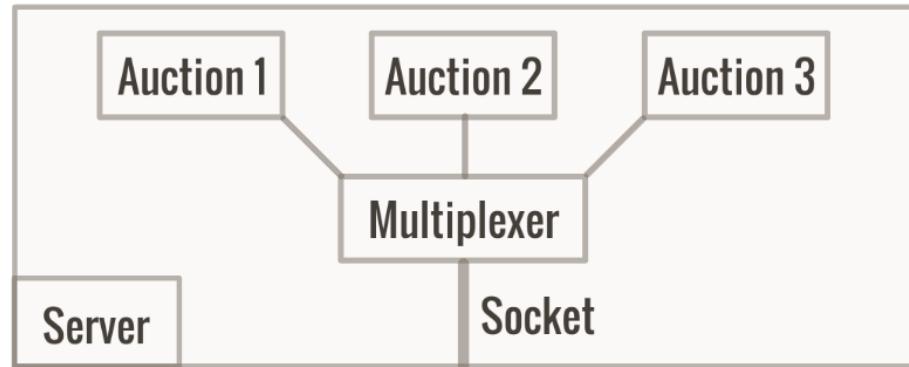


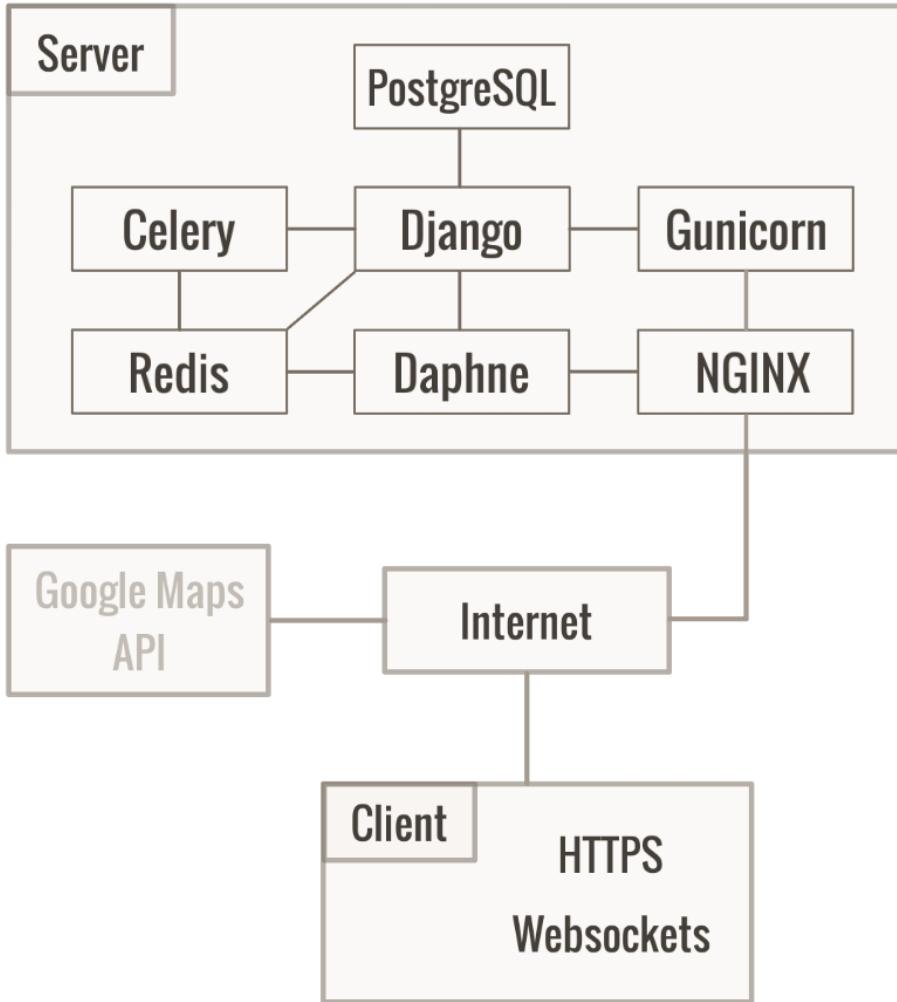
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Deployment

NGINX is a web server

- Available at `h11a.xyz` with SSL enabled
- Handles static requests
- Forwards WebSocket requests to Daphne
- Forwards remaining requests to Gunicorn

Redis is used as an in-memory cache for Django, Celery and Daphne.