Technology Architecture of News Tracker Application

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Technologies Used

1. React
2. Flask
3. Docker
4. Kubernetes
5. IBM DB2

Technology Architectural Capabilities

React

- It is a frontend library for creating single page applications for the end-users using JavaScript.
- As the users will be using the news tracker application on their own browsers on PCs or smartphones, the minimum versions of these browsers needs to be considered.
- We propose the users to use Google Chrome as the default browser for using our product. The latest end-of-life version of chrome is 0.3945. We ensure that our product is supported till that version.
- Along with the browser compatibility, the user also need to ensure that they are on a proper network connection so that the application can download and upload necessary data through the frontend which are necessary for smooth functioning of the app.
- As there could be animations used in the frontend with libraries such as *Animate-On-Scroll,* the user's machine should also be able to perform these kind of animations for an overall better user experience.

Flask

- It is a microframework for building backend servers using Python that can server HTTP/RPC requests.

- The user data needs to be stored and the news needs to be fetched from the API. To facilitate all this, we use Flask as our backend server framework.
- As our product has several interesting and innovative features, we are expecting atleast 100,000 to 1,000,000 users in our platform - if built and marketed properly.
- At that scale, we have planned to use asynchronous programming to serve all the requests for smooth functioning of our product.
- We also plan to horizontally scale the system - add more machines that run the flask server which can in turn server numerous clients.
- Other open source libraries are also going to be used, for example - libraries that can perform CRUD on the DB, send HTTP requests, store cookies, cache the data, etc.

Docker

- Docker is an open source containerization platform that uses OS-level virtualization to deliver software in packages called containers.
- As we wish to horizontally scale our product across many machines because of the high user load, we plan to use Docker to containerize our app and use it across the machines.
- By this, horizontal scaling can be achieved easily.

Kubernetes

- Kubernetes is an open-source container orchestration system for automating software deployment, scaling, and management.
- It allows you to run your Docker containers and workloads and helps you to tackle some of the operating complexities when moving to scale multiple containers, deployed across multiple servers. This can tremendously help serve the enormous load that our product is expected to experience.

IBM DB2

- Db2 is a family of data management products, including database servers, developed by IBM.
- We are primarily interested in the relational database that DB2 offers.
- We plan to us this for storing user data, news API data, user data cache, session IDs and other advertising data.
- For our product to be up and running all the time along with the database, we plan to shard the database which can help us quickly get outputs for queries made on the DB.
- IBM DB2 could also help us tackle the issue of localization of users where we can host our databases at locations where there are users who consume news for a specific topic. This can significantly improve user experience.