

CryptoWeather Nexus - Technical Documentation

1. Project Overview

CryptoWeather Nexus integrates weather forecasts, cryptocurrency data, and news into a unified platform. It provides real-time updates, interactive charts, and historical data analysis.

2. Features

- Live cryptocurrency price tracking with CoinGecko API.
- Real-time weather updates via OpenWeatherMap API.
- Latest financial and weather news through NewsData.io API.
- Historical cryptocurrency and weather data visualization.
- Interactive charts using Recharts.
- Responsive design with Tailwind CSS.
- Centralized state management using Redux Toolkit.
- WebSockets integration for real-time price updates.

3. Technology Stack

- Frontend: Next.js (React Framework), Tailwind CSS, Recharts
- Backend: Next.js API Routes, Node.js
- State Management: Redux Toolkit
- Real-time Updates: WebSockets (CoinCap API)
- Data Sources: CoinGecko API, OpenWeatherMap API, NewsData.io API
- Deployment: Vercel

4. API Integration

CryptoWeather Nexus fetches data from multiple APIs:

- OpenWeatherMap API
- CoinGecko API
- NewsData.io API
- CoinCap WebSockets

5. Project Folder Structure

```
crypto-weather-nexus/  
|-- src/  
|   +-- app/  
|       |-- layout.jsx  
|       +-- page.jsx
```

```
| | +-- weather/
| | | +-- page.jsx
| | | +-- [city]/page.jsx
| | +-- crypto/
| | | +-- page.jsx
| | | +-- [id]/page.jsx
| +-- components/
| | +-- Header.jsx
| | +-- CryptoList.jsx
| | +-- WeatherCard.jsx
| +-- store/
| | +-- store.js
| | +-- features/
| | | +-- weatherSlice.js
| | | +-- cryptoSlice.js
| | | +-- newsSlice.js
| +-- pages/
| | +-- api/
| | | +-- news.js
| | | +-- weather.js
| +-- public/
| +-- styles/
| +-- .env.local
| +-- package.json
| +-- README.md
|-- .gitignore
|-- vercel.json
```

6. Deployment Process

1. Push the latest code to GitHub.
2. Ensure the .env.local file contains valid API keys.
3. Run `vercel` in the terminal for deployment.
4. For manual redeployment, use `vercel --prod`.
5. Check logs with `vercel logs <project-name>`.

7. Error Handling & Debugging

Common issues:

- API errors: Check .env.local for correct keys.
- Build errors: Run `npm run build`.
- WebSocket issues: Verify CoinCap WebSocket.
- Deployment failures: Use `vercel logs <project-name>`.

8. Conclusion

CryptoWeather Nexus integrates weather forecasting, cryptocurrency trends, and global news into a single platform. It is a scalable and real-time solution for tracking financial and environmental trends.