

Protocol Guide - System Architecture

EMS Protocol Search & RAG System | LA County Focus

49,201
PROTOCOL CHUNKS

2,713
EMS AGENCIES

51
STATES

1,536
VECTOR DIMS

446
LA COUNTY PROTOCOLS

QUERY FLOW

USER Query



VOYAGE AI Embedding



PGVECTOR Semantic Search



CLAUDE RAG Response



ANSWER + Protocol Refs

FRONTEND

React Native / Expo

- iOS + Android + Web
- Voice input (transcription)
- Offline cache (50 protocols)
- County/Agency selection

React Query Expo Router AsyncStorage

DATABASES

TiDB Cloud (MySQL) - Primary Data

- protocolChunks - Protocol content
- counties - 2,713 agencies
- users , queries , feedback

Supabase (PostgreSQL + pgvector) - Search

- manus_protocol_chunks - Vectors
- search_manus_protocols() RPC
- Hybrid: Keyword + Semantic matching

AI SERVICES

Voyage AI

- Model: voyage-large-2
- 1,536 dimensions
- Medical-optimized

Claude (Anthropic)

- Haiku → Free tier
- Sonnet → Pro tier
- Retrieval-only prompting

BACKEND

Node.js + tRPC

- search.semantic - Vector search
- query.submit - RAG pipeline
- voice.transcribe - Audio → Text
- Tiered LLM: Haiku (free) / Sonnet (pro)

Express Drizzle ORM Stripe

LA COUNTY (ID: 240009)

Ref 814 - Death Determination	Ref 817 - HERT Team
TP 1210 - Cardiac Arrest	TP 1242 - Crush Injury
TP 1335 - Needle Decompression	TP 1200.3 - Provider Impressions

DATA SOURCES

Protocol Sources

- LA County DHS PDFs
- State LEMSA protocols
- County-specific manuals

Key Files

- routers.ts
- embeddings.ts
- schema.ts