

📄 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`

Hybrid Search: Protocol # keyword match → Voyage embedding → pgvector cosine similarity → Top results → Claude RAG → Formatted response with citations