

People Graph Search Platform

Complete Tech Stack & Pricing Guide

0 to 50,000 Users

Executive Summary

This document outlines the complete technology stack for building a people graph search platform that integrates with Gmail, Google Contacts, Google Calendar, and LinkedIn (via CSV upload). The platform enables users to search through their professional network and enriches profiles with web research.

Key Architecture Decisions

- **Graph Database (Neo4j)** for relationship queries, not vector search
- **Direct API integrations** with Google services (no Merge.dev for MVP)
- **CSV upload** for LinkedIn connections to avoid API restrictions
- **Claude API** for query parsing and result formatting
- **Serverless architecture** with Railway/Vercel for cost efficiency

Cost Summary by Stage

Stage	Dev/Test	0-1K Users	1K-10K Users	10K-50K Users
Fixed Costs	\$0	\$148	\$205	\$585
Variable Costs	\$12	\$75	\$750	\$3,700
Total Monthly	\$12	\$223	\$955	\$4,285
Cost Per User	N/A	\$0.22	\$0.10	\$0.09

1. Core Infrastructure

1.1 Graph Database

Primary Choice: Neo4j Aura

Purpose: Store and query relationship graphs between people, companies, and interactions. Essential for queries like "find VCs in SF from my 2nd-degree network."

Tier	Specifications	Dev/Test	0-1K	1K-10K	10K-50K
Free	200MB, 0.5GB RAM	\$0	-	-	-
Professional 2GB	2GB, 8GB RAM	-	\$65	-	-
Professional 8GB	8GB, 32GB RAM	-	-	\$200	\$200
Professional 32GB	32GB, 128GB RAM	-	-	-	\$800

Alternative: DGraph Cloud (\$49/month starter) - cheaper but less mature ecosystem

Development: Use free tier for testing and development **Production (0-1K):** Professional 2GB - \$65/month **Production (1K-50K):** Professional 8GB - \$200/month **Production (50K+):** Professional 32GB - \$800/month

1.2 PostgreSQL Database

Primary Choice: Supabase

Purpose: User accounts, authentication, API keys, settings, job metadata, and audit logs.

Tier	Features	Dev/Test	0-50K Users
Free	500MB DB, Auth	\$0	-
Pro	8GB DB, 100GB storage	-	\$25

Alternative: Railway PostgreSQL (~\$15-20/month) - simpler but fewer features

Includes: Built-in authentication (OAuth, email/password), file storage, real-time subscriptions

Recommended:

- **Development:** Free tier
 - **Production:** Pro tier - \$25/month
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1.3 Redis Cache

Primary Choice: Upstash Redis

Purpose: Semantic query caching, session storage, and rate limiting. Target 70% cache hit rate.

Tier	Limits	Dev/Test	0-1K	1K-10K	10K-50K
Free	10K cmd/day, 256MB	\$0	-	-	-
Pay-as-you-go	\$0.20 per 100K cmd	-	~\$5	~\$30	~\$150

Alternative: Redis Cloud (starts at \$5/month for 100MB) - more expensive at scale

Usage Calculation:

- 1K users × 50 queries/month = 50K queries
- 70% cache hit rate = 35K cache reads
- Cost: 35K commands / 100K × \$0.20 = ~\$7/month

Recommended:

- **Development:** Free tier
 - **Production:** Pay-as-you-go
-

1.4 Object Storage

Primary Choice: Cloudflare R2

Purpose: Profile photos, cached LinkedIn data, document attachments, log archives.

Item	Cost	Monthly Est (1K users)	Monthly Est (50K users)
Storage	\$0.015/GB/month	~\$0.10	~\$5.00
Egress (data)	\$0 (free!)	\$0	\$0

out)			
Total	-	~\$1	~\$5

Alternative: AWS S3 (\$0.023/GB + egress fees) - 50% more expensive due to data transfer costs

Development: AWS S3 free tier (5GB for 12 months) - \$0

1.5 Message Queue & Background Jobs

Primary Choice: Ingest

Purpose: Process email webhooks, entity resolution jobs, graph updates, and profile enrichment tasks.

Tier	Steps/Month	Dev/Test	0-1K	1K-10K	10K-50K
Free	100K	\$0	-	-	-
Pro	5M	-	\$20	\$20	-
Team	50M	-	-	-	\$100

Alternative: AWS SQS (free for first 1M requests) - requires more manual setup for retries and monitoring

What's a "step": Each function execution in a workflow (e.g., parse email → extract contact → resolve entity → update graph = 4 steps)

Recommended:

- **Development:** Free tier
 - **Production (0-10K):** Pro - \$20/month
 - **Production (10K-50K):** Team - \$100/month
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2. API Integrations

2.1 Google APIs (Direct Integration)

Approach: Build Custom OAuth Integration

Purpose: Integrate with Gmail, Google Contacts, and Google Calendar to extract professional connections.

Service	Quota	Cost
Gmail API	1 billion calls/day	\$0
Google Contacts API	10 requests/second/user	\$0
Google Calendar API	1M calls/day	\$0
OAuth 2.0 Setup	Unlimited	\$0
Total Cost (All Stages)	-	\$0/month

Alternative: Merge.dev (\$299-799/month) - unified API but not cost-effective for MVP. Use after reaching 1,000 paying users.

Why Direct Integration:

- Google APIs are free with generous quotas
- Full control over data processing
- No monthly fees
- Sufficient for 100K+ users

Development Time: 2-3 weeks for all three integrations

2.2 LinkedIn Integration

Approach: CSV Upload (User-Driven)

Users download their LinkedIn connections as CSV from LinkedIn:

1. Go to Settings > Data Privacy > Download Your Data
2. Select "Connections"
3. Upload CSV to your platform

Benefits:

- No LinkedIn API restrictions
- No scraping legal risks

- User has full control
- Zero cost

Method	Cost
CSV Upload Processing	\$0 (file parsing only)
LinkedIn Official API	\$0 but severely restricted
Scraping (Apify) - NOT RECOMMENDED	\$0.50 per 1K profiles (legal risk)
Recommended Approach	CSV Upload - \$0

Alternative (For Research Mode Only):

- Apify LinkedIn Scraper for profile enrichment when user specifically requests research
 - Only use for individual profile lookups, not bulk connections
 - Cost: \$49/month base + \$0.50 per 1000 profiles
-

3. AI & LLM Services

3.1 Claude API (Anthropic)

Purpose: Query parsing (convert natural language to graph filters), results formatting, and entity matching decisions.

Model	Use Case	Input Cost	Output Cost	Cost/Query
Claude 3.5 Haiku	Query parsing	\$0.25/1M	\$1.25/1M	\$0.00016
Claude 3.5 Sonnet	Result formatting	\$3.00/1M	\$15.00/1M	\$0.0014

Monthly Cost Estimate:

Stage	Queries/Month	Total Cost	Cache Optimized (70%)
Dev/Testing	1,000	\$2	\$2
0-1K Users	50,000	\$78	\$23
1K-10K Users	500,000	\$780	\$234

10K-50K Users	2,500,000	\$3,900	\$1,170
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Cache Optimization: Assumes 70% of queries hit Redis cache (no LLM call needed), reducing costs by 70%.

Usage Breakdown per Query:

1. Query Parsing (Haiku):

- Input: 150 tokens (user query + context)
- Output: 100 tokens (structured filters)
- Cost: ~\$0.00016

2. Results Formatting (Sonnet - only 30% of queries):

- Input: 2,000 tokens (query + results + context)
- Output: 500 tokens (formatted response)
- Cost: ~\$0.0014

Total per query (with cache): ~\$0.0015

Alternative: OpenAI GPT-4o-mini (\$0.15/1M input, \$0.60/1M output) - slightly cheaper but less capable for complex reasoning

3.2 Embeddings (For Entity Resolution)

Primary Choice: Voyage AI

Purpose: Generate embeddings for entity matching (detecting duplicate people across platforms)

Model	Cost	Use Case
voyage-2	\$0.01/1M tokens	Entity matching

One-Time Cost (Initial Data):

- 1K users × 1,000 contacts = 1M contacts
- Average contact: 100 tokens (name, email, company, title)
- Total: 100M tokens = **\$1.00** one-time

Ongoing Cost: Negligible (<\$1/month for new contacts)

Alternative: OpenAI text-embedding-3-small (\$0.02/1M tokens) - 2x more expensive

4. Enrichment & Data Services

4.1 Web Scraping (Research Mode - Optional)

Primary Choice: Apify

Purpose: Profile enrichment when users research specific people (e.g., "Research Sam Altman")

Service	Cost	Monthly Est
Platform fee	\$49/month base	\$49
LinkedIn Profile Scraper	\$0.50 per 1K profiles	~\$0.13
Web Scraper	\$0.001 per page	~\$0.05
Total	-	~\$50/month

Usage Assumptions:

- 5% of users use research mode
- $50 \text{ users} \times 5 \text{ profiles} = 250 \text{ profiles/month}$
- Cost: $250 \times \$0.0005 = \0.13

Recommendation:

- **MVP:** Skip research mode entirely - \$0
 - **Post-Launch:** Add when users request it - \$50/month
-

4.2 Web Search API

Primary Choice: Serper.dev

Purpose: Web search for profile enrichment (news, company info, recent activity)

Tier	Searches	Cost

Free	2,500	\$0
Hobby	10K/month	\$50
Pro	100K/month	\$200

Usage: Only for research mode (5% of users)

- 50 users × 3 searches each = 150 searches/month
- **Cost:** Free tier - \$0

Alternative: SerpAPI (100 searches/month free, \$50 for 5K searches) - similar pricing

4.3 Web Content Extraction

Primary Choice: Jina Reader API

Purpose: Convert any URL to clean markdown for LLM processing

Tier	Requests/Month	Cost
Free	1M	\$0
Pro	10M	\$10

Use case: When scraping LinkedIn/company websites for profile enrichment

Recommended: Free tier - \$0

5. Hosting & Compute

5.1 Application Hosting

Primary Choice: Railway

Purpose: API server, background workers, webhooks

Cost Calculation:

- vCPU: \$0.000463/vCPU-minute
- RAM: \$0.000231/GB-minute

Typical Setup (0.5 vCPU, 1GB RAM):

- vCPU: $0.5 \times 43,200 \text{ min/month} \times \$0.000463 = \$10$
- RAM: $1\text{GB} \times 43,200 \times \$0.000231 = \$10$
- **Total:** \$20/month

Scaling:

- 0-1K users: \$20/month (1 server)
- 1K-10K users: \$30/month (1.5x resources)
- 10K-50K users: \$60/month (3x resources or multiple instances)

Alternative: Vercel

Plan	Features	Cost
Hobby	100GB bandwidth, serverless	\$0
Pro	1TB bandwidth, team features	\$20

Good for: Frontend + API routes (Next.js) **Not good for:** Long-running background jobs

Alternative: Render

- Web service: \$7/month
- Background worker: \$7/month
- Total: \$14/month (cheaper but less flexible)

Recommended:

- **Development:** Vercel free tier - \$0
- **Production:** Railway - \$20-60/month depending on scale

5.2 Serverless Functions

Primary Choice: AWS Lambda

Purpose: Process email webhooks, one-off tasks

Resource	Free Tier	After Free Tier

Requests	1M/month	\$0.20 per 1M
Compute	400,000 GB-seconds	\$0.0000166667 per GB-second

Usage Estimate:

- Email processing: 100K invocations/month
- Entity resolution triggers: 50K invocations/month
- Total: 150K invocations = **\$0** (within free tier)

Alternative: Cloudflare Workers (\$5/month paid tier) - similar pricing

Recommended: AWS Lambda free tier - \$0

5.3 CDN & Edge Network

Primary Choice: Cloudflare

Service	Free Tier	Pro Tier
CDN	Unlimited bandwidth	Unlimited
DNS	Unlimited	Unlimited
DDoS protection	Yes	Enhanced
Cost	\$0	\$20/month

What you need: Free tier is sufficient for 50K users

Alternative: Vercel CDN (included in hosting)

Recommended: Cloudflare Free - \$0

6. Monitoring & Observability

6.1 Error Tracking

Primary Choice: Sentry

Plan	Events/Month	Cost

Developer	5K	\$0
Team	50K	\$26
Business	100K	\$80

Recommended:

- **Development:** Free tier
 - **Production (0-5K):** Free tier - \$0
 - **Production (5K+):** Team - \$26/month
-

6.2 Application Logs

Primary Choice: Better Stack

Plan	Log Retention	Cost
Free	3-day retention	\$0
Starter	7-day retention	\$10
Growth	30-day retention	\$50

Alternative: DataDog (starts at \$15/month) - too expensive for early stage

Recommended: Better Stack Free - \$0

6.3 Uptime Monitoring

Primary Choice: UptimeRobot

Plan	Monitors	Checks	Cost
Free	50 monitors	5-min interval	\$0
Pro	50 monitors	1-min interval	\$7

What you monitor:

- API endpoint health

- Neo4j connection
- Background job queue
- Response time

Alternative: Better Uptime (\$10/month for 20 monitors with SMS)

Recommended: UptimeRobot Free - \$0

6.4 LLM Observability

Primary Choice: Helicone

Plan	Requests/Month	Cost
Free	100K	\$0
Pro	1M	\$20

What you track:

- LLM calls (Claude API usage)
- Query → retrieval → response pipeline
- Latency per stage
- Cost per query

Alternative: LangSmith (5K traces/month free, \$39/month paid)

Recommended: Helicone Free - \$0

6.5 Analytics & User Tracking

Primary Choice: PostHog

Plan	Events/Month	Cost
Free	1M	\$0
Paid	Unlimited	\$0.00045/event after 1M

Events you track:

- User signup
- Platform connected
- Search performed
- Result clicked
- Profile enriched

Usage Estimate (1K users):

- 1K users × 100 events/month = 100K events
- **Cost:** \$0 (within free tier)

Alternative: Mixpanel (free for 100K events/month, \$25/month paid) - PostHog is better value

Recommended: PostHog Free tier - \$0

6.6 Infrastructure Monitoring

Primary Choice: Grafana Cloud

Service	Hosting	Cost
Self-hosted	Railway	\$10/month
Grafana Cloud	Managed	\$0 (free tier)

Metrics you track:

- Database CPU/memory
- API response time
- Queue depth
- Cache hit rate

Recommended: Grafana Cloud Free tier - \$0

7. Development Tools

7.1 Version Control & CI/CD

GitHub

Plan	Features	Cost
Free	Unlimited private repos, 2K CI/CD minutes	\$0
Team	3K CI/CD minutes, advanced features	\$4/user/month

CI/CD Minutes Usage:

- Each push: tests + build + deploy = ~10 minutes
- 50 deployments/month = 500 minutes
- **Cost:** \$0 (within free tier)

Recommended: GitHub Free - \$0

7.2 API Development & Testing

Postman

Plan	Features	Cost
Free	Unlimited requests, 3 team members	\$0
Basic	10 team members	\$14/user/month

Alternative: Insomnia (free, open-source)

Recommended: Postman Free or Insomnia - \$0

7.3 Design & Prototyping

Figma

Plan	Editors	Files	Cost
Starter	1	3 projects	\$0
Professional	Unlimited	Unlimited	\$15/editor/month

Recommended:

- **Development:** Free tier - \$0
 - **With designer:** Professional - \$15/month
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8. Communication & Support

8.1 Transactional Email

Primary Choice: Resend

Plan	Emails/Month	Cost
Free	3,000	\$0
Pro	50,000	\$20

Emails you send:

- Welcome email
- OAuth confirmation
- Weekly digest (optional)
- Password reset

Usage: 1K users × 5 emails = 5,000 emails/month

Alternative: SendGrid (free for 100 emails/day = 3,000/month) - similar

Recommended:

- **Development:** Resend Free - \$0
 - **Production (3K+):** Resend Pro - \$20/month
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8.2 Customer Support

Primary Choice: Crisp

Plan	Features	Cost

Basic	2 operators, unlimited conversations	\$0
Pro	Unlimited operators, chatbots	\$25/operator/month

Alternative: Intercom (starts at \$74/month) - too expensive

Alternative: Plain.com (free for 50 conversations/month) - clean, modern

Recommended: Crisp Free tier - \$0

9. Security & Compliance

9.1 Authentication

Supabase Auth (Included)

Features:

- Google OAuth
- Email/password
- Magic links
- **Cost:** \$0 (included in Supabase)

Alternative: Clerk

- Free: 10K MAUs
- Pro: \$25/month + \$0.02/MAU
- Better UX, easier integration

Recommended: Supabase Auth - \$0 (already included)

9.2 Rate Limiting

Upstash Rate Limiting (Redis-based)

- Included with Upstash Redis
- **Cost:** \$0

Alternative: Arcjet (free for 100K requests/month)

Recommended: Upstash - \$0

9.3 Secrets Management

Primary Choice: Doppler

Plan	Secrets	Environments	Cost
Free	Unlimited	5	\$0
Team	Unlimited	Unlimited	\$20

Alternative: GitHub Secrets (free) or .env files

Recommended: Doppler Free or GitHub Secrets - \$0

9.4 SSL/TLS Certificates

Let's Encrypt (via hosting provider)

- **Cost:** \$0
 - Included in: Railway, Vercel, Render, Cloudflare
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9.5 Terms of Service & Privacy Policy

Primary Choice: Termly

Plan	Features	Cost
Free	1 website, basic templates	\$0
Pro	Advanced compliance, GDPR	\$13

Alternative: DIY with templates (not recommended for legal reasons)

Recommended: Termly Free for MVP - \$0

10. Domain & DNS

10.1 Domain Registration

Namecheap, Google Domains, Cloudflare

- .com domain: **\$10-15/year**
- .ai domain: **\$80-100/year**

Recommended: .com domain - **\$12/year**

10.2 DNS Hosting

Cloudflare DNS

- **Cost:** \$0 (included with free tier)
-

Complete Cost Summary

Development & Testing (Zero Users)

Category	Tool	Cost
Core Infrastructure		
Graph Database	Neo4j Aura Free	\$0
PostgreSQL	Supabase Free	\$0
Redis	Upstash Free	\$0
Object Storage	AWS S3 Free Tier	\$0
Message Queue	Inngest Free	\$0
API Integrations		
Google APIs	Gmail + Contacts + Calendar	\$0
AI Services		
Claude API	Testing	\$10
Voyage AI	Testing	\$2

Hosting		
App Server	Vercel Free	\$0
Serverless	AWS Lambda Free	\$0
CDN	Cloudflare Free	\$0
Monitoring		
All Tools	Free tiers	\$0
Development		
All Tools	Free tiers	\$0
Domain	.com registration	\$12/year
TOTAL		~\$24 one-time + \$12/year

Production: 0-1,000 Users

Category	Tool	Tier	Cost/Month
Core Infrastructure			
Graph Database	Neo4j Aura	Professional 2GB	\$65
PostgreSQL	Supabase	Pro	\$25
Redis	Upstash	Pay-as-you-go	\$5
Object Storage	Cloudflare R2	Pay-as-you-go	\$1
Message Queue	Inngest	Pro	\$20
Subtotal			\$116
API Integrations			
Google APIs	Direct	Free	\$0
Subtotal			\$0
AI Services			

Claude API	Usage-based	50K queries	\$23
Voyage AI	One-time	Initial	\$1
Subtotal	\$24		
Hosting			
App Server	Railway	Standard	\$20
Serverless	AWS Lambda	Free tier	\$0
CDN	Cloudflare	Free	\$0
Subtotal	\$20		
Monitoring	All Tools	Free tiers	\$0
Communication	All Tools	Free tiers	\$0
Domain	Renewal	Amortized	\$1
TOTAL FIXED	\$161		
TOTAL VARIABLE	\$62		
GRAND TOTAL	\$223/month		
Cost Per User	\$0.22		

Production: 1,000-10,000 Users

Category	Cost/Month
Core Infrastructure	
Neo4j Aura (8GB)	\$200
Supabase Pro	\$25
Upstash Redis	\$30
Cloudflare R2	\$2
Inngest Pro	\$20

Subtotal	\$277
Variable Usage (500K queries)	
Claude API	\$234
Hosting	
Railway	\$30
Monitoring	
Sentry Team	\$26
Better Stack Starter	\$10
Communication	
Resend Pro	\$20
TOTAL	\$597/month
Cost Per User (avg 5K)	\$0.12

Production: 10,000-50,000 Users

Category	Cost/Month
Core Infrastructure	
Neo4j Aura (8GB or 32GB)	\$200-800
Supabase Pro	\$25
Upstash Redis	\$150
Cloudflare R2	\$5
Ingest Team	\$100
Subtotal	\$480-1,080
Variable Usage (2.5M queries)	
Claude API	\$1,170

Hosting	
Railway (scaled)	\$60
Monitoring	
Sentry Business	\$80
Better Stack Growth	\$50
Communication	
Resend Pro	\$40
TOTAL	\$1,880-2,480/month
Cost Per User (avg 30K)	\$0.06-0.08

Detailed Cost Comparison by Stage

Fixed vs Variable Costs

User Count	Fixed Monthly	Variable Monthly	Total Monthly	Per User
Dev/Test (0)	\$0	\$12	\$12	N/A
100	\$148	\$15	\$163	\$1.63
500	\$148	\$37	\$185	\$0.37
1,000	\$161	\$62	\$223	\$0.22
5,000	\$277	\$320	\$597	\$0.12
10,000	\$380	\$470	\$850	\$0.09
25,000	\$480	\$1,175	\$1,655	\$0.07
50,000	\$680	\$2,350	\$3,030	\$0.06

Cost Optimization Strategies

1. Cache Aggressively

- **Target:** 70-80% cache hit rate
- **Savings:** Reduces Claude API costs by 70%
- **Implementation:** Redis semantic caching

2. Defer Expensive Features

- **Skip for MVP:**
 - Research mode (\$50/month)
 - LinkedIn scraping (\$49/month base)
 - Advanced monitoring (\$60/month)
- **Add when:** Revenue reaches \$5K/month

3. Use Free Tiers Maximally

- **Services with generous free tiers:**
 - Google APIs (completely free)
 - AWS Lambda (1M requests/month)
 - Cloudflare (unlimited bandwidth)
 - PostHog (1M events/month)
 - All monitoring tools

4. Scale Infrastructure Just-in-Time

- Don't upgrade Neo4j until you hit storage limits
- Stay on Railway basic until CPU hits 80%
- Monitor actual usage vs. projected

5. Optimize Query Patterns

- Implement query result caching
- Pre-compute common searches
- Batch entity resolution jobs
- Use graph indexes properly

When to Upgrade Each Service

Neo4j Aura

- **Free → Professional 2GB:** When storage exceeds 150MB
- **2GB → 8GB:** When you have 5K users or storage exceeds 1.5GB
- **8GB → 32GB:** When you have 50K users or storage exceeds 6GB

Inngest

- **Free → Pro:** When you exceed 100K steps/month (~1K users)
- **Pro → Team:** When you exceed 5M steps/month (~10K users)

Upstash Redis

- Free tier sufficient until ~1K users
- Upgrade when you exceed 10K commands/day

Railway

- \$20/month sufficient until 2K users
- Scale to \$30-40 for 5K users
- Consider multiple instances at 10K+ users

Break-Even Analysis

Assumptions

- 5% conversion to \$15/month Pro
- 1% conversion to \$49/month Business
- 10% monthly churn

Revenue Projections

Users	Paying Users	Monthly Revenue	Monthly Cost	Profit

1,000	60 (6%)	\$1,390	\$223	+\$1,167
5,000	300 (6%)	\$6,950	\$597	+\$6,353
10,000	600 (6%)	\$13,900	\$850	+\$13,050
50,000	3,000 (6%)	\$69,500	\$3,030	+\$66,470

Break-even: ~50 paying users (less than 1,000 total users)

Profitability:

- At 1K users: 84% profit margin
 - At 10K users: 94% profit margin
 - At 50K users: 96% profit margin
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Recommended Tech Stack Summary

For MVP (0-1,000 Users)

Cost: \$223/month

Must-Have:

- Neo4j Aura Professional 2GB: \$65
- Supabase Pro: \$25
- Railway: \$20
- Inngest Pro: \$20
- Claude API: ~\$23/month (with caching)
- Everything else: Free tiers

Skip:

- Merge.dev (build direct integrations)
 - Research mode (add post-PMF)
 - Paid monitoring (free tiers sufficient)
-

For Growth (1K-10K Users)

Cost: \$600-850/month

Add:

- Neo4j 8GB: \$200
- Better monitoring: \$60
- Resend Pro: \$20
- More Railway resources: \$30

Still Skip:

- Merge.dev (direct integrations working well)
 - Expensive monitoring tools
-

For Scale (10K-50K Users)

Cost: \$1,900-3,000/month

Add:

- Inngest Team: \$100
 - Consider Merge.dev if adding more platforms
 - Better infrastructure monitoring
 - Dedicated support tools
-

Alternative Approaches

Budget Alternative (Under \$50/month until PMF)

Stack:

- Neo4j Free (200MB)
- Supabase Free
- Vercel Free
- AWS Lambda Free

- All monitoring free tiers

Limitations:

- Max ~100-200 users
- Storage limited
- No background jobs at scale

Best for: Solo founders validating idea

Premium Alternative (Best Performance)

Additional Costs:

- DataDog instead of free monitoring: +\$200/month
- Merge.dev from day 1: +\$299/month
- Dedicated support: +\$100/month
- Research mode enabled: +\$50/month

Total Premium Cost (1K users): ~\$870/month

Best for: Venture-backed teams prioritizing speed

Development Timeline Estimate

Phase 1: Core Platform (8 weeks)

- Week 1-2: Google OAuth + Gmail integration
- Week 3-4: Entity resolution pipeline
- Week 5-6: Neo4j graph setup + basic queries
- Week 7-8: Search UI + API

Phase 2: Enhanced Features (4 weeks)

- Week 9-10: Google Contacts + Calendar
- Week 11: LinkedIn CSV upload

- Week 12: Polish + testing

Phase 3: Optional Features (4 weeks)

- Week 13-14: Research mode
- Week 15-16: Friend network expansion

Total: 12-16 weeks to full MVP

Final Recommendations

For Bootstrap (\$70K budget):

1. **Months 1-3:** Development - \$60K
2. **Month 4:** Launch - \$223
3. **Months 5-7:** Runway - \$670/month avg
4. **Total:** \$67K gets you to 1K users

For Seed Funded (\$150K budget):

1. **Months 1-3:** Development - \$100K (faster team)
2. **Month 4:** Launch - \$870 (premium stack)
3. **Months 5-7:** Growth - \$1,200/month avg
4. **Remaining:** \$46K for months 8-12

For Lean MVP (\$5K budget):

1. **Months 1-6:** Solo dev (your time)
 2. **Month 7:** Launch on free tiers
 3. **Months 8-9:** Upgrade to \$223/month as you grow
 4. **Total:** \$5K covers all paid services
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Conclusion

This tech stack is designed to:

- Start at near-zero cost for testing
- Scale linearly with user growth
- Maintain 85-95% profit margins
- Support 50K users without major re-architecture
- Use industry-standard, well-documented tools

The total cost from \$0 to 50,000 users remains under \$5,000/month while generating \$50K-70K/month in revenue at reasonable pricing.

Key Success Factors:

1. Build direct Google API integrations (saves \$299/month)
 2. Use CSV upload for LinkedIn (saves \$49/month + legal risk)
 3. Implement aggressive caching (saves 70% on AI costs)
 4. Maximize free tiers in early stages
 5. Scale infrastructure just-in-time, not ahead of demand
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