**Hindu Business Community (HBC) - Technical Architecture**

**Version**: 1.0  
**Last Updated**: 2024-06-20

**1. Overview**

A scalable, cost-efficient architecture for the HBC platform, designed to support:

* 15,000+ users
* Real-time lead management
* Multilingual business directories
* Monetization via subscriptions/ads

**2. Architecture Diagram**

*(Visual representation of the flowchart provided in the previous response)*

**3. Component Details**

**3.1 Frontend Layer**

| **Component** | **Technology** | **Purpose** |
| --- | --- | --- |
| Web Application | Next.js 14 | SSR/ISR for SEO, dynamic business pages |
| Hosting | Vercel Pro | Global CDN, auto-scaling |
| Edge Middleware | Cloudflare Workers | Geolocation, A/B testing |

**3.2 Backend Layer**

| **Component** | **Technology** | **Purpose** |
| --- | --- | --- |
| Database | Supabase PostgreSQL | Business/user data with RLS |
| Authentication | Supabase Auth | Email/OTP, social logins |
| Realtime Updates | Supabase Realtime | Websockets for lead notifications |
| Serverless Logic | Cloudflare Workers | Payment webhooks, PDF generation |

**3.3 Data Layer**

| **Component** | **Technology** | **Purpose** |
| --- | --- | --- |
| Primary Database | PostgreSQL | Normalized tables (3NF) |
| Cache | Redis | High-frequency queries (offers, dates) |
| Analytics | Metabase | Self-hosted dashboards |

**3.4 Integrations**

| **Service** | **Technology** | **Purpose** |
| --- | --- | --- |
| Payments | Razorpay/Cashfree | UPI/card processing |
| Notifications | WhatsApp Cloud API | OTPs, alerts |
| Maps | Google Maps API | Business location search |

**4. Cost Optimization**

**4.1 Phase 1 (0–6 Months)**

| **Area** | **Strategy** | **Savings** |
| --- | --- | --- |
| Payments | UPI-first flow (1% fee) | 50% lower fees |
| Storage | Backblaze B2 + compression | 60% cheaper |
| Hosting | Cloudflare CDN for static assets | Free bandwidth |

**4.2 Phase 2 (6+ Months)**

* Migrate DB to **DigitalOcean PostgreSQL** if Supabase costs spike.
* Replace Vercel with **self-hosted Next.js** on Kubernetes (long-term savings).

**5. Security & Compliance**

* **Data Encryption**: AES-256 for storage, TLS 1.3 in transit.
* **Access Control**: Supabase RLS + JWT validation.
* **Audit Logs**: All admin actions recorded in PostgreSQL.

**6. Deployment**

**6.1 CI/CD Pipeline**

Diagram

Code

Download

Push

Deploy

Migrations

GitHub

Vercel

Next.js Frontend

Supabase

PostgreSQL

**6.2 Infrastructure as Code (Sample)**

terraform

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# Example: Supabase + Cloudflare Setup

resource "supabase\_project" "hbc" {

name = "hbc-production"

region = "ap-south-1"

}

resource "cloudflare\_worker\_script" "payment\_webhook" {

name = "payment-webhook"

content = file("${path.module}/webhook.js")

}

**7. Appendices**

**7.1 Glossary**

* **RLS**: Row-Level Security
* **ISR**: Incremental Static Regeneration

**7.2 References**

* [Supabase Documentation](https://supabase.com/docs)
* [Cloudflare Workers Pricing](https://developers.cloudflare.com/workers/platform/pricing/)

**Export Instructions**:

1. **For Word**: Copy this document into Microsoft Word and replace diagram-placeholder.png with the actual architecture diagram.
2. **For PDF**: Use a Markdown-to-PDF tool like [Pandoc](https://pandoc.org/" \t "_blank):

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pandoc hbc-architecture.md -o hbc-architecture.pdf

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