

Infrastructure Documentation

Architecture, Data Flow & Third-Party Services

1. System Architecture

1.1 High-Level Architecture Diagram



1.2 Component Details

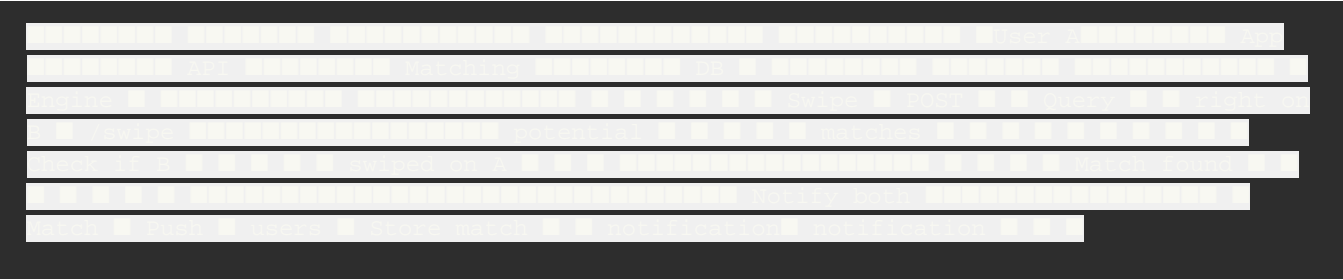
| Component | Technology | Purpose | Scaling |
|----------------|---------------------|------------------------|--------------------------|
| API Servers | Node.js / Express | Request handling | Horizontal |
| Database | PostgreSQL (RDS) | Primary data store | Vertical + Read replicas |
| Cache | Redis (ElastiCache) | Session, rate limiting | Cluster mode |
| Object Storage | S3 | Photos, media | Unlimited |
| CDN | CloudFront | Static assets, photos | Global edge |
| Load Balancer | ALB | Traffic distribution | Managed |

2. Data Flow Diagrams

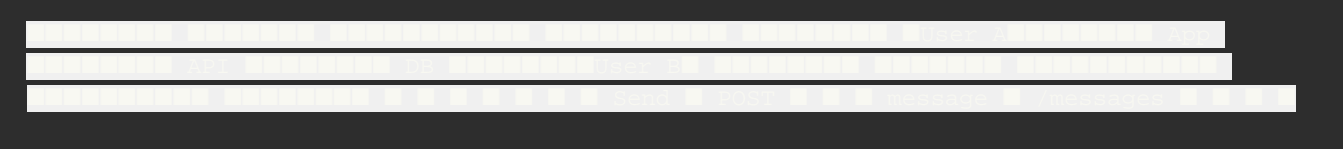
2.1 User Registration Flow

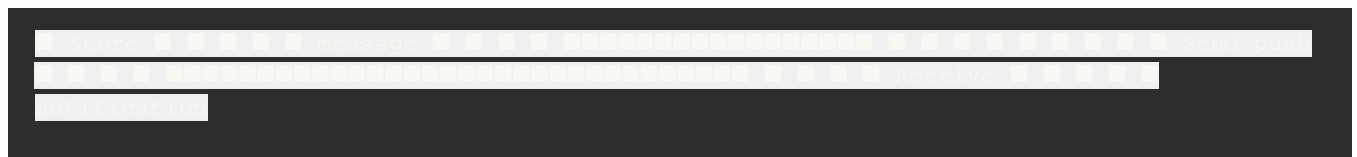


2.2 Matching Flow



2.3 Message Flow





3. Third-Party Services Inventory

3.1 Infrastructure Services

| Service | Provider | Purpose | Data Processed | DPA Status |
|------------------|-----------------------|-------------------|----------------|------------|
| Cloud Hosting | AWS/GCP | Infrastructure | All user data | ■ Required |
| CDN | CloudFront/Cloudflare | Content delivery | Static assets | ■ Required |
| DNS | Route53/Cloudflare | Domain management | None | N/A |
| SSL Certificates | ACM/Let's Encrypt | Encryption | None | N/A |

3.2 Application Services

| Service | Provider | Purpose | Data Processed | DPA Status |
|--------------------|--------------|---------------------|-----------------|------------|
| Email | SendGrid/SES | Transactional email | Email addresses | ■ Required |
| SMS | Twilio | Phone verification | Phone numbers | ■ Required |
| Push Notifications | FCM/APNs | User notifications | Device tokens | ■ Required |
| Maps/Location | Google Maps | Location features | Coordinates | ■ Required |

3.3 Analytics & Monitoring

| Service | Provider | Purpose | Data Processed | DPA Status |
|---------|----------|---------|----------------|------------|
|---------|----------|---------|----------------|------------|

| | | | | |
|----------------|--------------------|------------------|------------------|------------|
| Analytics | Mixpanel/Amplitude | Usage analytics | User events | ■ Required |
| Error Tracking | Sentry | Error monitoring | Stack traces | ■ Required |
| Logging | CloudWatch/Datadog | Log aggregation | App logs | ■ Required |
| APM | New Relic/Datadog | Performance | Performance data | ■ Required |

3.4 Safety & Moderation

| Service | Provider | Purpose | Data Processed | DPA Status |
|--------------------|----------------------|------------------|-----------------|------------|
| Content Moderation | Hive/AWS Rekognition | Photo moderation | User photos | ■ Required |
| Fraud Detection | Sift/reCAPTCHA | Bot prevention | Behavioral data | ■ Required |
| ID Verification | Jumio/Onfido | Age verification | ID documents | ■ Required |

3.5 AI/ML Services (if applicable)

| Service | Provider | Purpose | Data Processed | DPA Status |
|-----------------|------------|-----------------------|------------------|------------|
| AI Chat | OpenAI | Conversation features | User messages | ■ Required |
| Recommendations | Custom/AWS | Matching suggestions | User preferences | Internal |

4. API Security Requirements

4.1 Authentication

| Requirement | Implementation | Status |
|------------------|-----------------|--------|
| Token-based auth | JWT / OAuth 2.0 | ■ |

| | | |
|----------------------|-------------------------------------|---|
| Token expiration | 24 hours (refresh: 30 days) | ■ |
| Secure token storage | Keychain (iOS) / Keystore (Android) | ■ |
| Token revocation | Server-side blacklist | ■ |

4.2 Authorization

| Requirement | Implementation | Status |
|--------------------|--------------------------------|--------|
| Role-based access | User / Admin roles | ■ |
| Resource ownership | Users can only access own data | ■ |
| Admin permissions | Separate admin endpoints | ■ |

4.3 Input Validation

| Requirement | Implementation | Status |
|--------------------------|----------------------------|--------|
| Request validation | JSON schema validation | ■ |
| SQL injection prevention | Parameterized queries | ■ |
| XSS prevention | Output encoding | ■ |
| File upload validation | Type checking, size limits | ■ |

4.4 Rate Limiting

| Endpoint Category | Rate Limit | Window |
|-------------------|---------------|------------|
| Authentication | 5 requests | 15 minutes |
| General API | 1000 requests | 1 hour |
| Search/Discovery | 100 requests | 1 minute |
| Messages | 100 requests | 1 hour |

5. Backup Policy

5.1 Backup Schedule

| Data Type | Method | Frequency | Retention |
|----------------|-----------------------------|------------|------------|
| Database | Automated snapshots | Daily | 30 days |
| Database | Point-in-time recovery | Continuous | 7 days |
| User media | Cross-region replication | Real-time | Indefinite |
| Configurations | Git version control | Per change | Indefinite |
| Logs | Archive to Glacier/Coldline | Daily | 2 years |

5.2 Backup Locations

| Primary Region | Backup Region | Data Type |
|----------------|---------------|------------|
| us-east-1 | us-west-2 | Database |
| us-east-1 | us-west-2 | User media |
| Global | Global | CDN assets |

5.3 Recovery Testing

| Test Type | Frequency | Last Tested | Next Due |
|------------------|---------------|-------------|----------|
| Database restore | Quarterly | - | - |
| Full DR failover | Annually | - | - |
| Media restore | Semi-annually | - | - |

6. Service Level Objectives (SLOs)

6.1 Availability

| Service | Target SLA | Measurement |
|----------|------------|----------------|
| API | 99.9% | Monthly uptime |
| Database | 99.95% | Monthly uptime |
| CDN | 99.99% | Monthly uptime |

6.2 Performance

| Metric | Target | Measurement |
|-------------------------|----------|-------------|
| API response time (P50) | < 200ms | Continuous |
| API response time (P95) | < 500ms | Continuous |
| API response time (P99) | < 1000ms | Continuous |
| Photo load time | < 2s | Continuous |

6.3 Error Rates

| Metric | Target | Alert Threshold |
|----------------------|--------|-----------------|
| API error rate | < 0.1% | > 1% |
| Payment failure rate | < 2% | > 5% |
| Push delivery rate | > 95% | < 90% |

7. Infrastructure Checklist

Documentation Complete

- ■ System architecture diagram
- ■ Data flow diagrams
- ■ Network diagram
- ■ Third-party inventory
- ■ API documentation
- ■ Backup procedures
- ■ DR procedures

Security Implemented

- ■ TLS everywhere
- ■ Encryption at rest
- ■ WAF configured
- ■ DDoS protection
- ■ Security groups configured
- ■ Secrets management

Monitoring Active

- ■ Application monitoring
- ■ Infrastructure monitoring
- ■ Log aggregation
- ■ Alerting configured
- ■ On-call rotation

Last Updated: December 2024

Review Due: Quarterly