Product Specification Document

1. Introduction

This document provides a comprehensive specification for the next generation platform. It covers architecture decisions, API design, security requirements, and deployment considerations.

2. Architecture Overview

The system follows a microservices architecture with the following key components:

- API Gateway — handles authentication and rate limiting
- User Service — manages user accounts and permissions
- Order Service — processes orders and payments
- Notification Service — sends emails and push notifications
- Analytics Service — collects and processes usage telemetry

3. API Design

All APIs follow RESTful conventions with JSON payloads.

Endpoint	Method	Description

/api/users	GET	List users
/api/users	POST	Create user
/api/orders	GET	List orders
/api/orders	POST	Create order
/api/orders/:id	PUT	Update order
/api/orders/:id	DELETE	Cancel order
/api/notifications	GET	List notifications
/api/notifications	POST	Send notification

4. Security Requirements

The platform must meet the following security standards:

1. All data at rest must be encrypted using AES-256
2. All data in transit must use TLS 1.3
3. Authentication via OAuth 2.0 with PKCE
4. Role-based access control (RBAC) for all endpoints
5. Audit logging for all state mutations
6. Rate limiting at the API gateway level

5. Deployment

The system will be deployed on Kubernetes with the following resource allocations:

Service	CPU	Memory	Replicas
API Gateway	2 cores	4 GB	3
User Service	1 core	2 GB	2
Order Service	2 cores	4 GB	3
Notification Service	0.5 cores	1 GB	2
Analytics Service	4 cores	8 GB	2

6. Monitoring and Observability

All services emit structured logs, metrics, and distributed traces. A centralized observability stack (Prometheus, Grafana, Jaeger) provides dashboards, alerting, and end-to-end trace correlation.

7. Conclusion

This specification provides the foundation for the next generation of our platform. All teams should review and provide feedback by end of Q1 2026.

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