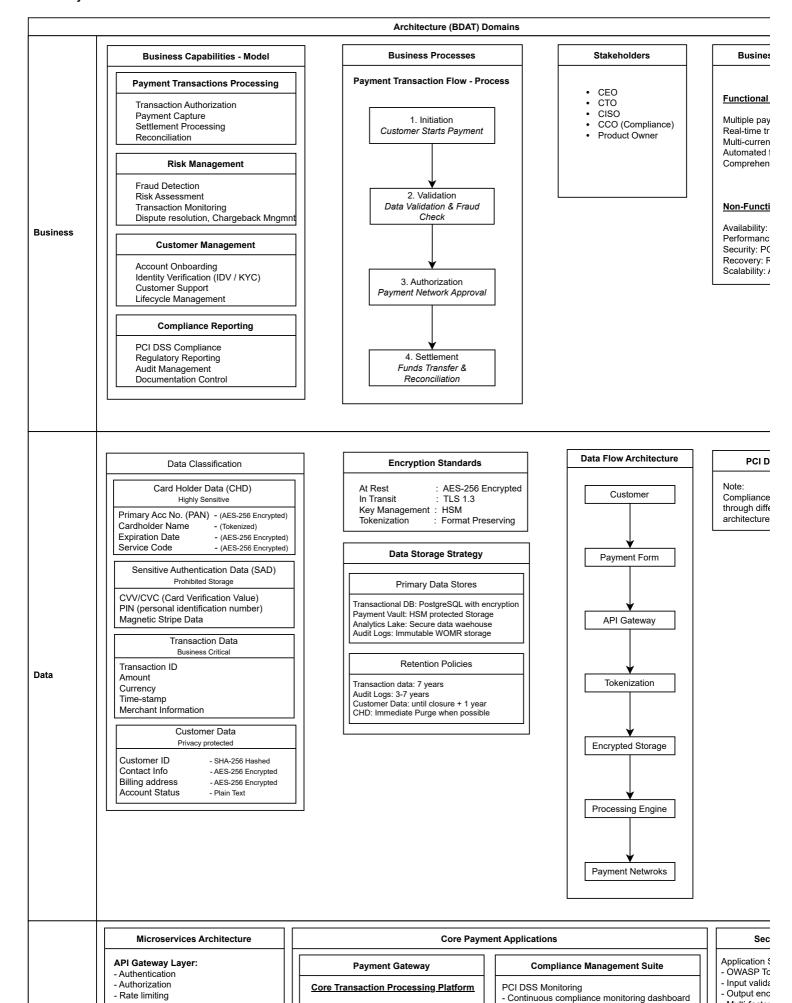
Author: Syam Nair

Monitoring



Transaction Processing API

- Multi-factor

- (Grafana, Prometheus, ELK Stack)

ss Requirements

Requirements

yment methods support ransaction processing tcy capabilities fraud detection tsive audit trails

ional Requirements

99.9% uptime e: 10,000 TPS CI DSS Level 1 RTO < 4 hours Auto-scaling

ISS Compliance

requirements met erent elements of the

curity Controls

Security Controls op 10 protection ation (server-side) coding (XSS prevention) r authentication

Application	Data Services Layer - Tokenization - Encryption - Audit - Notification - Reporting Infrastructure Service Layer - Logging - Monitoring - Configuration - Service Discovery	Merchant Portal - Self service merchant mngmnt interface - (React.js, Material-UI) Customer Payment Interface - Secure customer-facing payment forms - (Vue.js, PCI-compliant widgets)	- (Open Policy Agent, YAML configs) Reporting Dashboard - Executive and regulatory reporting interface - (Power BI, Tableau, REST APIs)	
		Risk Management Platform	Integration Layer	Integ
		Fraud detection engine - real time fraud analysis & scoring - (Python ML, TensorFlow, Kafka) Risk Scoring service - Transaction risk assessment algorithms - (Python, scikit-learn, Redis) Rule Engine - Configurable business rules processing - (Drools, java, MongoDB) Machine Learning Models - Adaptive fraud detection models - (MLflow, Docker, Kubernetes)	- (Kong, NGINX, OAuth 2.0) Message Queue - Asynchronous message processing - (Apache Kafka, RabbitMQ) Event Streaming - Real-time event processing and routing - (Apache Kafka Streams, Akka)	ernal Integervice Me vent-Drivv PI Gatewaircuit Brea dernal Integrament N anking: S hird-Party egulatory
	Technology Stack	Security Stack	Network	N
	Technology Stack Cloud Platform (AWS/Azure) - multi-region auto-scaling deployment	Perimeter Security - WAF (Web Application Firewall)	Network Internet Gateway - Public internet access point	Syster
	Cloud Platform (AWS/Azure)	Perimeter Security	Internet Gateway - Public internet access point Security Perimeter	Syster - 99.9° - SLA
	Cloud Platform (AWS/Azure) - multi-region auto-scaling deployment Container Orchestration	Perimeter Security - WAF (Web Application Firewall) - DDoS Protection (CloudFlare) - VPN Gateway (IPsec) Data Security - HSM (Hardware Security Modules)	Internet Gateway - Public internet access point	Syster - 99.9° - SLA
Technology	Cloud Platform (AWS/Azure) - multi-region auto-scaling deployment Container Orchestration - Kubernetes with Istio Service Mesh Runtime Environments	Perimeter Security - WAF (Web Application Firewall) - DDoS Protection (CloudFlare) - VPN Gateway (IPsec) Data Security	Internet Gateway - Public internet access point Security Perimeter - WAF, DDoS Protection, Load Balancer, SSL Termination	Syster - 99.9' - SLA Respc - < 2s - 95th
Technology	Cloud Platform (AWS/Azure) - multi-region auto-scaling deployment Container Orchestration - Kubernetes with Istio Service Mesh Runtime Environments - Java 17, Node.js 18, Python 3.11, Go 1.19 Data Layer	Perimeter Security - WAF (Web Application Firewall) - DDoS Protection (CloudFlare) - VPN Gateway (IPsec) Data Security - HSM (Hardware Security Modules) - Key Management (Vault, AWS KMS) - Database Encryption (TDE) Identity & Access - SSO/SAML (Okta, Auth0)	Internet Gateway - Public internet access point Security Perimeter - WAF, DDoS Protection, Load Balancer, SSL Termination DMZ (Public Subnet)	Syster - 99.9' - SLA Respc - < 2s - 95th Transa - 10K - TPS
Technology	Cloud Platform (AWS/Azure) - multi-region auto-scaling deployment Container Orchestration - Kubernetes with Istio Service Mesh Runtime Environments - Java 17, Node.js 18, Python 3.11, Go 1.19 Data Layer - PostgreSQL Redis MongoDB InfluxDB Message Queues	Perimeter Security - WAF (Web Application Firewall) - DDoS Protection (CloudFlare) - VPN Gateway (IPsec) Data Security - HSM (Hardware Security Modules) - Key Management (Vault, AWS KMS) - Database Encryption (TDE)	Internet Gateway - Public internet access point Security Perimeter - WAF, DDoS Protection, Load Balancer, SSL Termination DMZ (Public Subnet) - API Gateway Web Servers Reverse Proxy Application Tier (Private)	Respc - < 2s - 95th Transa - 10K

- RESTful APIs

- (Java Spring Boot, PostgreSQL)

Payment Method Management
- Multi-payment method support and Routing

- (Node.js, Redis Cache)

Business Services Layer

- Payment Service

- Customer Service

- Merchant Service

Data Services Layer

- Risk Service

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- Internal and external audit coordination - (Angular, .NET Core, SQL Server)

- (Open Policy Agent, YAML configs)

- Automated policy enforcement and validation

Audit Management

Policy Engine

- Secure ses

PCI DSS Ap

- Req 6: Sec

- Req 7: Role

- Req 8: Use

- Req 10: Lo

ssion management

oplication Requirements cure development le-based access er authentication ogging & monitoring

gration Patterns

gration esh: Istio en: Apache Kafka ray: Kong aker: Hystrix

egration Vetworks: Direct API SWIFT, FedACH y: Webhooks r: Automated FTP

Monitoring

m Uptime Target

onse Time

Percentile

action Volume

Capacity

ity Score

Compliance