

Authentication Service Technical Design

CONFIDENTIAL AND PROPRIETARY

Summit Digital Solutions, Inc.

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1. Overview and Scope

1. This Authentication Service Technical Design Document ("Design Document") sets forth the technical specifications, architecture, and implementation requirements for Summit Digital Solutions' enterprise authentication service ("Authentication Service") integrated within the Peak Performance Platform(TM).

2. This Design Document is considered confidential and proprietary information of Summit Digital Solutions, Inc. ("Company") and is subject to the terms of the Master Confidentiality Agreement.

2. System Architecture

1. Authentication Service Components

- Identity Provider (IdP) integration layer
- Multi-factor authentication (MFA) orchestration engine
- Token management system
- User directory service interface
- API gateway with rate limiting
- Audit logging system

2. Security Standards Compliance

- OAuth 2.0 and OpenID Connect protocols
- SAML 2.0 federation support
- FIPS 140-2 cryptographic modules
- SOC 2 Type II controls
- ISO 27001 security framework alignment

3. Technical Specifications

1. Authentication Methods

- Username/password with complexity requirements
- TOTP-based multi-factor authentication
- Hardware security key support (FIDO2/WebAuthn)
- Biometric authentication integration
- Single sign-on (SSO) capabilities

2. Performance Requirements

- Maximum latency: 250ms at 99th percentile
- Minimum throughput: 10,000 authentications per second
- High availability: 99.99% uptime
- Automatic failover within 30 seconds
- Geographic redundancy across three regions

4. Integration Requirements

1. API Specifications

- RESTful API endpoints with OpenAPI 3.0 documentation
- GraphQL interface for complex queries
- WebSocket support for real-time status updates
- Rate limiting: 1000 requests per minute per client
- JWT token format with RS256 signing

2. Client SDK Support

- Java SDK (Version 11+)
- Python SDK (Version 3.8+)
- Node.js SDK (Version 14+)
- .NET SDK (Version 6.0+)
- Go SDK (Version 1.16+)

5. Data Management

1. Storage Requirements

- Encrypted data at rest using AES-256
- Separate key management service

- Regular key rotation (90-day maximum)
- Backup retention: 90 days
- Geographic data residency compliance

2. Audit Trail

- Complete authentication attempt logging
- User session tracking
- Administrative actions recording
- Compliance event capture
- Minimum 1-year retention

6. Security Controls

1. Access Control

- Role-based access control (RBAC)
- Attribute-based access control (ABAC)
- Just-in-time access provisioning
- Privileged access management
- Session timeout controls

2. Threat Protection

- Brute force attack prevention
- DDoS mitigation
- SQL injection protection
- XSS prevention
- CSRF protection

7. Compliance and Certification

1. Regulatory Compliance

- SOX compliance for public company clients
- GDPR data protection requirements
- CCPA privacy controls
- HIPAA security rules

- PCI DSS requirements

2. Industry Certifications

- ISO 27001:2013
- SOC 2 Type II
- CSA STAR Level 2
- FedRAMP Moderate
- HITRUST CSF

8. Intellectual Property

1. All aspects of this Authentication Service Technical Design, including but not limited to the architecture, specifications, algorithms, and implementation details, are the exclusive intellectual property of Summit Digital Solutions, Inc.

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10. Document Control

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