EDGE COMPUTING IMPLEMENTATION TECHNICAL SPECIFICATIONS

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1. OVERVIEW AND SCOPE

1. This Technical Specification Document ("Specification") sets forth the mandatory technical requirements and implementation standards for Edge Computing deployments within Summit Digital Solutions, Inc.'s ("Company") Peak Performance Platform(TM) ecosystem.

2. This Specification applies to all edge computing implementations, including but not limited to:

a) Industrial IoT edge nodes

b) Smart gateway deployments

c) Edge data processing units

d) Local compute infrastructure

e) Edge-enabled AI/ML processing systems

2. DEFINITIONS

1. "Edge Computing Infrastructure" means the distributed computing architecture deployed at or near the source of data generation.

2. "Edge Node" means any computational device or system operating at the network edge, including industrial PCs, smart gateways, and embedded systems.

3. "Peak Performance Platform(TM)" means the Company's proprietary digital transformation platform, including all associated hardware, software, and systems.

3. TECHNICAL REQUIREMENTS

1. Hardware Specifications

a) Minimum Processing Requirements:

- CPU: Intel Xeon E-2278GE or equivalent
- RAM: 32GB DDR4 ECC
- Storage: 1TB NVMe SSD
- Network: Dual 10GbE ports

2. Software Stack Requirements

a) Operating System: Hardened Linux (RHEL 8.4 or later)

b) Container Runtime: Docker Enterprise 20.10 or later

c) Orchestration: Kubernetes 1.24 or later

d) Security: SELinux in enforcing mode

3. Network Requirements

a) Bandwidth: Minimum 1Gbps dedicated connection

b) Latency: Maximum 10ms round-trip to local aggregation points

c) Protocol Support: IPv6-ready with IPv4 fallback

4. SECURITY STANDARDS

1. Authentication and Authorization

a) Multi-factor authentication for all administrative access

b) Role-based access control (RBAC) implementation

c) Certificate-based device authentication

d) Hardware security module (HSM) integration

2. Data Protection

a) AES-256 encryption for data at rest

b) TLS 1.3 for data in transit

c) Regular key rotation (maximum 90-day intervals)

d) Secure boot verification

5. PERFORMANCE REQUIREMENTS

1. Processing Metrics

a) Maximum latency: 50ms for real-time analytics

b) Minimum throughput: 10,000 events per second

c) Data retention: 72 hours local storage minimum

2. Availability Requirements

a) Minimum uptime: 99.99%

b) Maximum planned downtime: 1 hour per quarter

c) Automatic failover capability: Required

6. COMPLIANCE AND MONITORING

1. Monitoring Requirements

a) Real-time performance monitoring

b) Automated alerting system

c) Resource utilization tracking

d) Security event logging

2. Compliance Standards

a) SOC 2 Type II compliance

b) ISO 27001 certification requirements

c) GDPR compliance where applicable

d) Industry-specific regulations as required

7. IMPLEMENTATION PROCEDURES

1. Deployment Process

a) Site survey and assessment

b) Network infrastructure verification

c) Hardware installation and configuration

d) Software deployment and testing

e) Security validation and compliance verification

2. Testing Requirements

a) Load testing under maximum anticipated capacity

b) Security penetration testing

c) Failover testing

d) Performance validation

8. MAINTENANCE AND SUPPORT

1. Regular Maintenance

a) Quarterly security patches

b) Monthly software updates

c) Annual hardware inspections

d) Bi-annual disaster recovery testing

2. Support Requirements

a) 24/7 technical support availability

b) Maximum 15-minute response time for critical issues

c) Regular system health checks

d) Proactive monitoring and maintenance

9. PROPRIETARY RIGHTS AND CONFIDENTIALITY

1. All specifications, designs, and implementations detailed herein are the exclusive property of Summit Digital Solutions, Inc. and are protected under applicable intellectual property laws.

2. This document contains confidential and proprietary information and may not be disclosed to third parties without written authorization from Summit Digital Solutions, Inc.

10. DOCUMENT CONTROL

Approved by:

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Michael Chang

Chief Technology Officer

Summit Digital Solutions, Inc.

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