

DATA WAREHOUSE SCHEMA DOCUMENTATION

Summit Digital Solutions, Inc.

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Classification: Confidential

1. INTRODUCTION

1. This Data Warehouse Schema Documentation ("Documentation") describes the architectural framework, data structures, and operational specifications of Summit Digital Solutions, Inc.'s ("Company") enterprise data warehouse environment supporting the Peak Performance Platform(TM).

2. This Documentation is proprietary and confidential information of the Company and is protected under applicable intellectual property laws and contractual obligations.

2. SCHEMA ARCHITECTURE

1. Core Schema Components

The data warehouse implements a hybrid schema architecture combining:

- Star schema for operational metrics
- Snowflake schema for customer analytics
- Data vault 2.0 methodology for historical tracking
- Dimensional modeling for reporting optimization

2. Primary Data Domains

The warehouse architecture encompasses the following primary domains:

- Customer Master Data
- IoT Device Telemetry
- Process Automation Metrics
- Machine Learning Training Sets
- Operational Analytics
- Financial Transaction Data

- System Performance Metrics

3. TABLE STRUCTURES AND RELATIONSHIPS

1. Fact Tables

The following enterprise fact tables form the foundation of the warehouse:

- FACT_DEVICE_METRICS
- FACT_PROCESS_EXECUTION
- FACT_CUSTOMER_INTERACTION
- FACT_ML_PREDICTIONS
- FACT_SYSTEM_PERFORMANCE

2. Dimension Tables

Core dimension tables include:

- DIM_CUSTOMER
- DIM_DEVICE
- DIM_LOCATION
- DIM_PROCESS
- DIM_TIME
- DIM_ORGANIZATION

3. Bridge Tables

Implemented bridge tables for many-to-many relationships:

- BRIDGE_DEVICE_PROCESS
- BRIDGE_CUSTOMER_LOCATION
- BRIDGE_ML_MODEL_EXECUTION

4. DATA GOVERNANCE AND SECURITY

1. Access Control

The schema implements row-level security through:

- Role-based access control (RBAC)

- Column-level encryption
- Dynamic data masking
- Tenant isolation mechanisms

2. Data Classification

All tables and columns are classified according to:

- Security level (Public, Internal, Confidential, Restricted)
- Data retention requirements
- Regulatory compliance requirements
- Business criticality

5. PERFORMANCE OPTIMIZATION

1. Indexing Strategy

The following index types are maintained:

- Clustered columnstore indexes on fact tables
- Nonclustered indexes on frequently queried dimensions
- Filtered indexes for common query patterns
- Statistics with full-scan updates

2. Partitioning Scheme

Tables are partitioned based on:

- Date ranges for historical data
- Customer ID for multi-tenant isolation
- Geographic location for regional optimization
- Data volume and access patterns

6. COMPLIANCE AND AUDIT

1. Audit Tracking

The schema maintains comprehensive audit trails through:

- CDC (Change Data Capture) implementation

- Temporal table tracking
- Operation logging
- User access history

2. Regulatory Compliance

Schema design accommodates:

- GDPR requirements
- CCPA compliance
- SOC 2 Type II controls
- ISO 27001 standards

7. MAINTENANCE AND UPDATES

1. The Company maintains this Documentation as a living document, subject to regular updates reflecting schema evolution and business requirements.

2. Schema modifications require:

- Architecture Review Board approval
- Impact assessment documentation
- Migration planning
- Rollback procedures

8. PROPRIETARY RIGHTS

1. This Documentation and all schema designs, structures, and implementations described herein are the exclusive intellectual property of Summit Digital Solutions, Inc.

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9. DISCLAIMER

1. This Documentation is provided "as-is" without any warranties, express or implied.

2. The Company reserves the right to modify the schema architecture and this Documentation at any time without notice.

EXECUTION

IN WITNESS WHEREOF, the undersigned acknowledges the accuracy and completeness of this Documentation as of the date first written above.

SUMMIT DIGITAL SOLUTIONS, INC.

By:

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Title: Chief Technology Officer

Date: January 9, 2024