Data Integrity System Technical Documentation

System Overview

The Data Integrity System is designed to compare and verify the integrity of files between their original uploaded version and their received version. This verification ensures that file contents remain unchanged and complete throughout the transmission process.

Technical Infrastructure

- **Platform**: Windows Service running on .NET Framework 4.7.2
- **Database**: SQL Server 2018
- **Main Parameter Table**: `FLX_INTEGRITYCHECKPARAMETER`
- **File Storage Paths**:
  - Original files: Defined in `FILEORIGINALPATH`
  - Received files: Defined in `FILERECEIVEDPATH`

File Processing Architecture

The system implements separate adapters for different file types, ensuring specialized handling for each format. To prevent system locks and ensure efficient processing, the system:

1. Creates temporary copies of both original and received files
2. Performs comparisons on these temporary copies
3. Maintains system stability and prevents file locks on production files

Supported File Types and Comparison Logic

1. Internal_ALL.csv

Comparison Fields:

- SDN Name
- Address
- City
- Country
- Program
- Type

Process: Row-by-row comparison based on ID matching

2. TKYMOF.csv

Comparison Fields:

- SDN Name
- Address
- City
- Country
- Program
- Info1
- Info2
- Info3
- Remark
- Type

Process: Row-by-row comparison based on ID matching

3. eulist.xml

Comparison Fields:

- Entity
- NameAlias
- Birthdate
- Citizenship

Process: Node traversal and comparison based on Logical ID

4. sdn.xml

Comparison Fields:

- sdnListPublishInformation
- Entity
- sdnEntity
- ProgramList
- AkasList
- Address
- Citizenship
- nationalityList

Process: Node traversal and comparison based on Logical ID

Reporting and Logging

Discrepancy Reporting

When differences are detected, the system automatically generates and sends an email to the Compliance team containing:

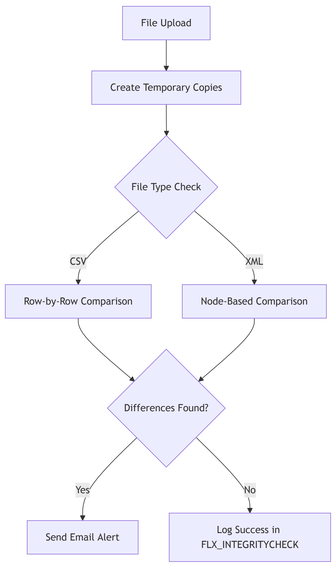
- File upload timestamp
- Specific node location of the difference
- Comprehensive display of differing values

Success Logging

When comparisons complete successfully with no differences:

- A SUCCESS record is created
- The record is stored in the `FLX_INTEGRITYCHECK` table

System Flow Diagram



Key Benefits

1. **Data Security**: Ensures data integrity between original and received files
2. **System Stability**: Temporary file processing prevents system locks
3. **Comprehensive Monitoring**: Detailed reporting of any discrepancies
4. **Audit Trail**: Maintains success logs for all comparisons
5. **Specialized Processing**: Custom adapters for different file formats

This system plays a crucial role in maintaining data integrity and ensuring that all file transfers are completed accurately and completely, with appropriate notifications and logging mechanisms in place for monitoring and auditing purposes.