INFOMINEZ PRIVATE LIMITED

ISO 9001: 2015 Certified | DPIIT Certificate No.: DIPP165968

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Case Study

ATM Switch Feed Moderation

Background

An ATM is a sophisticated machine that provides essential services such as cash withdrawal, balance inquiry, PIN changes, and mini statements, among others. Each ATM is part of a larger network, connected to a bank switch, which is further linked to a broader network of switches called the National Financial Switch (NFS). During every transaction or event, each ATM continuously sends critical messages to its bank switch. This information is stored by the switch and made available as a **Switch Feed** to authorized entities for further processing.

Since ATMs are geographically distributed across various locations, companies aiming to ensure smooth ATM operations rely on the **Switch Feed** to understand the real-time status of individual ATMs.

Given the complexity of ATMs, several vendors are involved in maintaining their smooth operation. The primary challenge lies in detecting the specific type of fault occurring in an ATM and promptly notifying the appropriate expert in near real-time. This is the only way to ensure uninterrupted operation of ATMs.

To address this, we developed a system that reads the ATM **Switch Feed** from the bank switch, processes the data intelligently to identify incidents at specific ATMs, and notifies the appropriate stakeholders who are experts in resolving the identified issues.

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Challenges

The root cause of all challenges lies in the variety of ATM switches used by different banks. This results in differing formats of ATM feeds and varying delivery methods, such as CSV, SFTP, Socket, or Web services. Even when the ATM switches are the same, the feed format can vary based on how the switch is configured.

The key challenges in this feed aggregation process are as follows:

- Multiple Feed source
- Multiple ways to deliver the feed.
- Diversified format
- Diversified fault type and categories
- Aggregation and moderation
- Store them as uniform data in the system
- Volume of data
- Multiple faults associated with one ATM and Weight of faults
- Isolated and dependent faults

Solutions

- Provision a separate program for each feed type
- Provide separate programs for each delivery type. (Socket, ESQ)
- Maintain separate data dictionary for each format
- Created a master fault list and category and map them with the above data dictionaries
- Read a feed and map pull the type based on feed level data dictionaries, the map them with the equivalent fault type from master faults list and same will be used for the ticket generation
- Store them in the DB as uniform data using proper aggregation and moderation (Ticket using fault type and category) (see – Feed moderation diagram)
- Separated program for each feed type and divide the processing into Multiple smaller modules just like for ESQ we separate downloader and processor into 2 parts

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- Ignore new fault is it already exist for same ATM and fault type and make sure that faults having severe impact must be treated as critical

Some faults do not associate with other faults, but a few faults are having association with other Multiple faults which will trigger all together new faults.

Technology Used

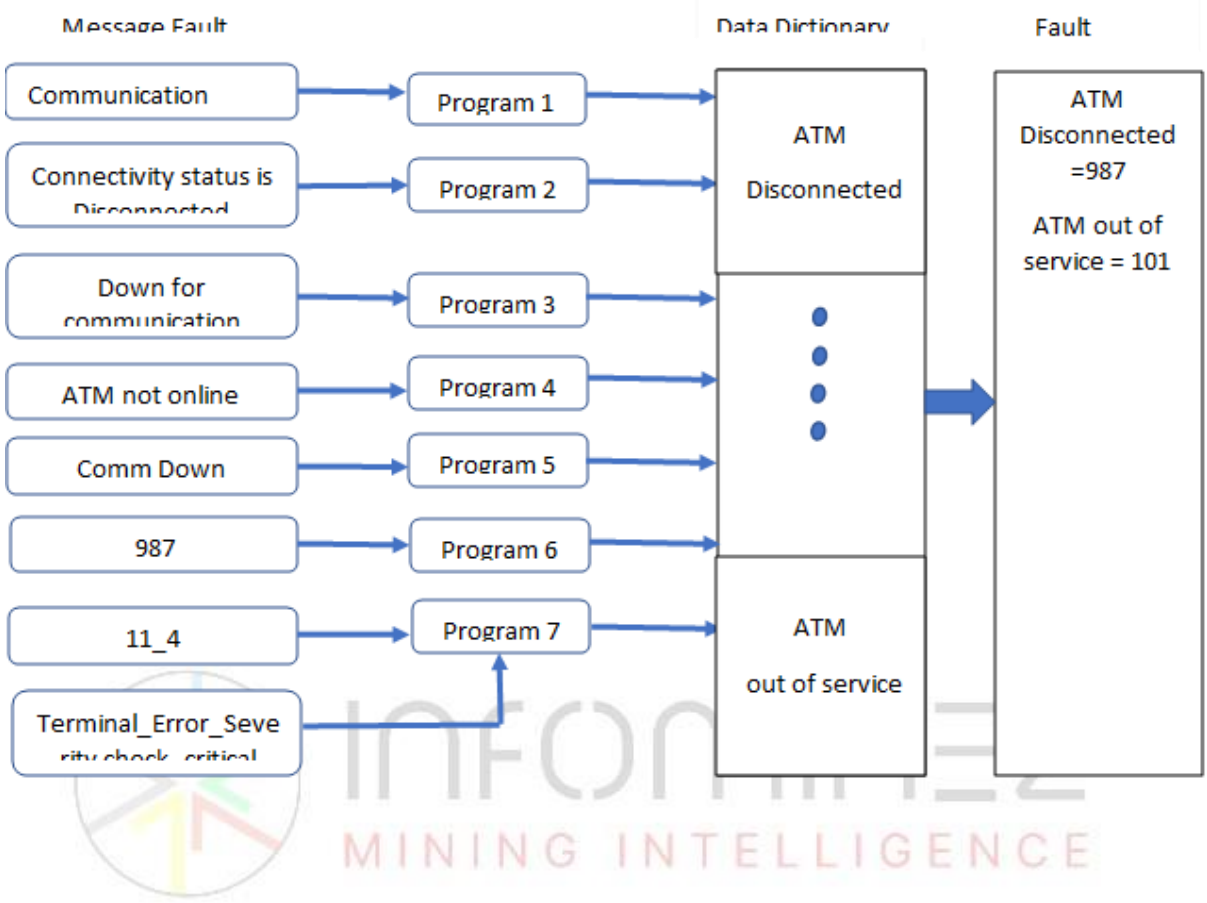
- Backend
  - Socket**:** Core Java.
  - SFTP**:** Core Java.
  - Web**:** Core Java, Selenium.
  - Database**:** RDBMS.
  - Cache**:** HashMap based internal caching using Core Java.
- Frontend **-** No frontend - these are command line executable programs.
- Deployment
  - Feed Server**:** EC2 of AWS.
- Database**:** RDS of AWS

Benefits

- Able to handle complex use cases successfully.
- Able to handle feed and data diversification problems.
- Able to handle huge volume of data.
- Able to moderate and generate uniform tickets.
- Separated this complex and processing heavy task from the core system.

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Diagram for Feed Moderation



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