

# Billing For SMS Aggregation System

*Client is a mobile interaction and payment specialist that delivers a combination of software and services that allow businesses and solution providers to create mobile solutions with the greatest possible reach. Client offers a network of more than 800 operators in over 180 countries, covering over 90% of the world's population.*

## The Vision

The project vision was to unify the billing processes by replacing the old systems and processes with next generation advanced routing and billing mechanism.

The client was facing operational issues in existing process due to routing and billing mechanism on different applications. So, client wanted to come up with a solution for unifying the bill calculation process for the various messaging services provided by them.

## Application Overview

The client provides the services of sending the bulk messages to different intended mobile users. The application is used to send out this bulk messages which involves routing the processed messages to the gateway through proxy platform. The desired change in the application was to update the billing mechanism so that no manual intervention is required to complete the process.

## Technologies Used

- Java 1.5
- Spring Framework 3.0
- Hibernate 3.2
- Web-services

## Tools Used

- Quartz Scheduler: Full-featured, open source job scheduler
- Eclipse: Multi-language software development environment (Helpful for rapid application development)
- PMD: Automatic code review product
- ER Studio and SQLyog: To manage MySQL database.
- Ant: To automate building application
- Whizible: e-Zest project management tool
- SVN: Subversion version control system

## Challenges and Solutions

- No prior knowledge of the client legacy application.
  - e-Zest team had to gain the operational knowledge hence the learning curve was steep.
- Technical and regulatory complexities of message charge calculation for different countries had to be collated and managed.
- Tightly constrained project schedule
  - e-Zest had provided accurate estimations and followed highly disciplined project management practices.
  - e-Zest had provided onsite resources to speed up the requirement gathering process and QA support
  - e-Zest had provided complete transparency to customer which helped for better reporting, monitoring and controlling of project execution
- High volume of data flows from the system. Hence the application had to be highly scalable and accurate
  - Latest tools and best practices were followed to overcome this challenge.
- Information had to be gathered from distributed sources
  - Onsite-Offshore model with best project management practices and tools was followed to execute the project. The onsite coordinator was made available to coordinate the onsite-offshore development activities.

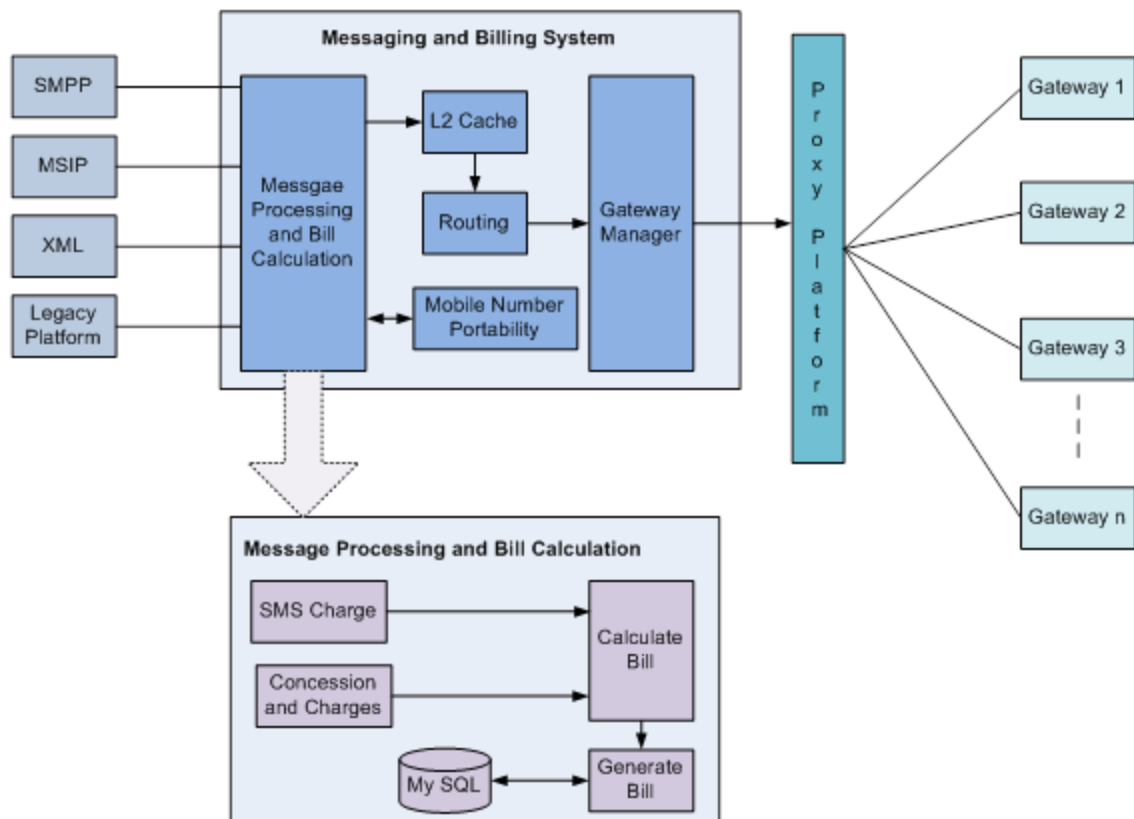
## Solution Architecture

The SMS Aggregation system enables the user to send the bulk messages to various mobile users at a time. Messages can be sent through Mobile or using internet. The architecture shows that messaging and billing system gets the input messages through one of the channels: SMPP / CPP (Client Proprietary Protocol) / Internet / Legacy Platform. The messages are routed to desired gateway through proxy platform and gateway manager. The system also had a provision for mobile network portability.

The building blocks of the bill calculation were –

- SMS Charge – This block handles the charge to be applied to the messages sent depending on the type and length of messages.

- Concession and Charges – This block handles the type of concessions to be considered for the messages to be sent. The concession includes the concession for corporate and favored accounts. Also, the concession offered on festive offers.
- Calculate Bill – This block is the heart of billing system which calculates the bill on the basis of inputs from 'SMS Charge' and 'Corporate Concession and Charges' block. It also considers the source of message to apply the National / International Charges accordingly. The complex billing algorithm was implemented to achieve high throughput with accuracy.
- Generate Bill – This block provides the capability to generate bill for particular customer. The provision to export the bills in PDF format was provided with multilingual support.
- MY SQL Database – All the invoices / bills are stored in MY SQL database



## Technical Breakthroughs

- Billing mechanism was automated in the system leading to no human intervention
- Code optimization to improve auto schedule process performance
- Jmeter was used for automating the performance based testing
- The modules of existing system were reused to improvise the system
- Maven was used to make the build process much easier and centralize module dependency

## Business Benefits

- Reduction in Operational Cost
- Performance enhancement of the product
- Standardization of technology architecture

- e-Zest's SCRUM process approach ensured the smooth delivery
- Well-defined processes and documentations
- Faster time-to-market for product

## *Bottom Line*

The project was implemented by combining time-tested methodology, tools and best practices followed by e-Zest and with quick turnaround client maintained its leadership position.