

# Cloud & Big Data Offer Effortless eBilling Experience

Client: Global Wireless Provider



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## Introduction To The Problem

The client is a large wireless service provider offering online services to their B2B customers, using a legacy eBilling application. The app mainly served B2B customers to manage invoices, manage company/department billing & company structures, manage promotions, generate/schedule reports, and manage user profiles and access.

Due to the weight of the application, our client and their customers faced serious challenges.

# Client & Customers Struggled With 5 Major Challenges

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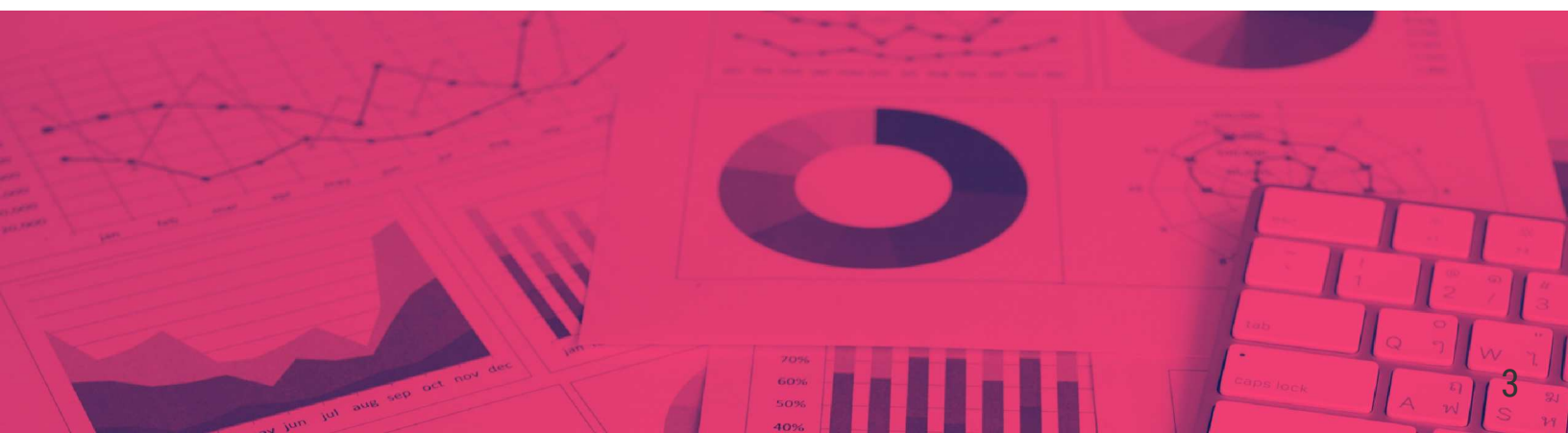
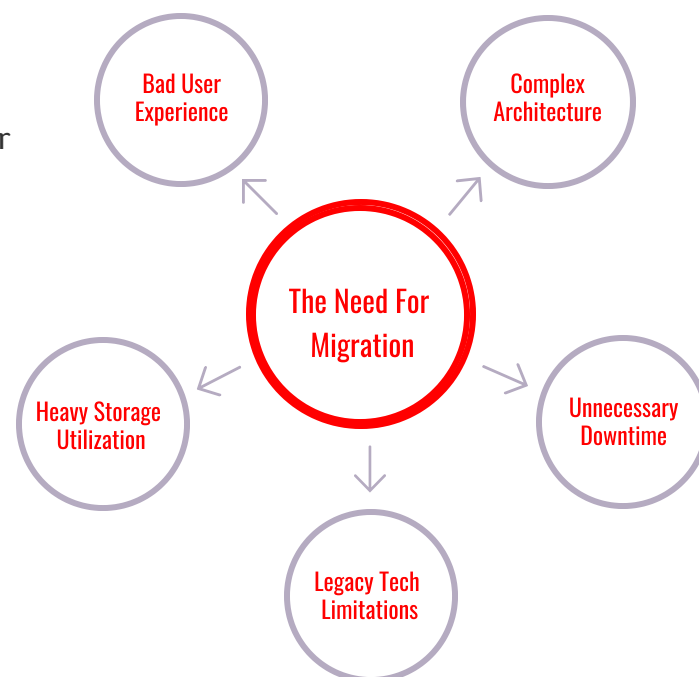
1. **Poor User Experience:** The older MVC (Struts) application used the HTML POST method for client-server communication, which caused poor performance and a bad user experience.

2. **Heavy weight application:** The application was complex and used several dependencies, optional functions and technologies which consumed a lot of disk space.

3. **Limitation of product:** The older application was implemented using dated technologies like jsp, Java 1.4/1.6, jQuery, Ajax, etc. Integrations with new technologies (Microservices, Angular/ReactJS) and migrating to Big Data posed several complications.

4. **Unnecessary Batch Jobs:** The VISION source data system uses the AFP file format, which creates a huge maintenance overhead with batch jobs.

5. **Heavy Storage:** The VISION feed data's AFP file system occupies more space than normal data. The eBilling Phase II project will help gain 4TB of space.



# Migrating To Cloud & Big Data

## Three-Phased Approach

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The long term vision of the eBilling project was to upgrade the platform and database of the application and migrate it to an AWS environment. But, since the legacy application used AFP formatted data, it was very tedious to develop and maintain the application due to the old tools and technologies required. So, the customer's technical team put together a project roadmap that comprised a three phased approach towards a solution.



Migrating the platform to the latest technologies and getting rid of the outdated technology.

Build new user interface, microservices & end sync processes between legacy applications.



Provide complete solution with cloud environment & big data.

# Phase 1

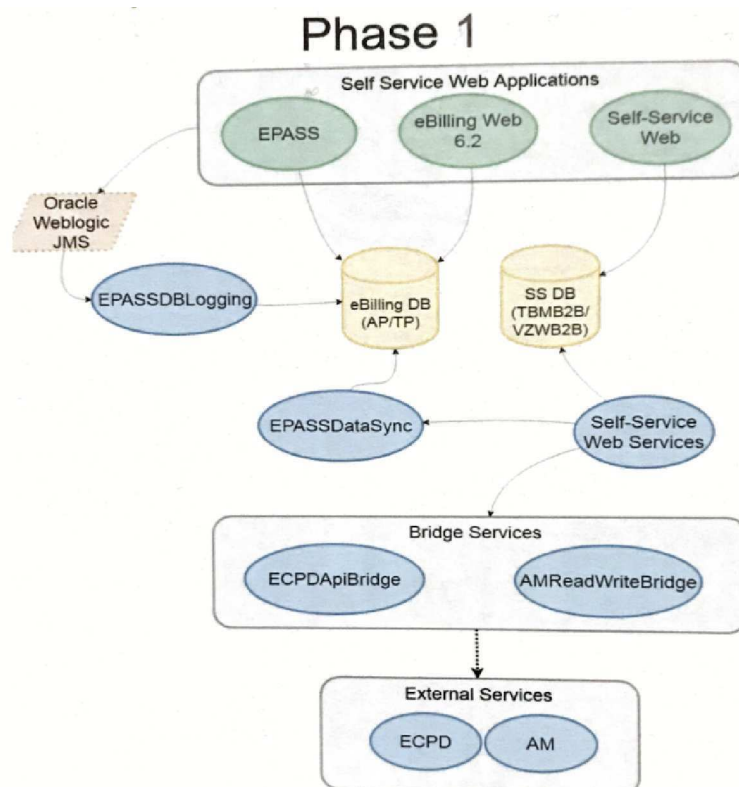
## Phase 1

Phase 1 involved migrating the platform to latest Java/J2EE technologies and Oracle Database (Oracle eBilling product with customization) as the first step in getting rid of the outdated technology.

*This was the first step towards retiring the processing of AFP files, which ultimately saved nearly 4TB of disk space.*

## Technologies and Software Used

Java, JDK 1.8, Spring, Struts, Tiles, JSP, Ajax, jQuery, Hibernate, WebLogic Server, Oracle database, IBM MQ.



# Enabling Simpler eBilling

## Implementation Efforts

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1. Introduce the Oracle eBilling product, an advanced reporting engine to build/generate/schedule billing and reports for B2B customers.
2. Customize the workflows and establish a seamless experience to the users to adapt towards eBilling and other new technology.
3. Create data synchronization jobs between the legacy system and the new eBilling platform.

## Business Benefits

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1. A new UI, with Velocity templates to build pages dynamically.
2. A large number of ready-to-use, out-of-the-box features and enables quick customization of billing and reports.
3. Being developed on Java/J2EE, Spring and Hibernate, it allows easy integration with systems such as microservices, advanced messaging systems etc.
4. OLAP & OLTP enable rapid fetching of data as compared to the AFP (file system) database.
5. Configurable Authorization, Authentication and Resource Ownership based on roles.
6. Avoids a legacy technology stack, which may lead to more security vulnerabilities and stability issues.
7. Built-in plugins enable integrations such as payment, messaging, scheduling reports, SSO(Single Sign-on), analytics.

# Phase 2

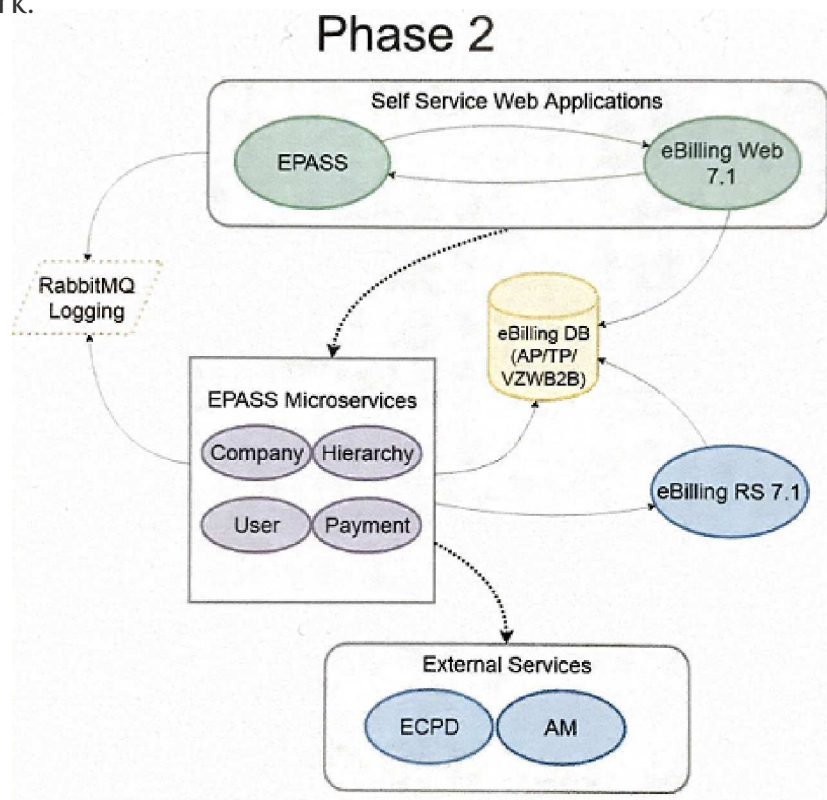
## Phase 2

Phase 2 involved building a new UI with AngularJS, developing REST web services to interact with the back-end, implementing microservices (for Phase 3) and retiring legacy application sync processes.

*This enabled fast page loads and a responsive customer experience.*

## Technologies and Software Used

Java, JDK 1.8, Springboot, Spring JPA, Oracle eBilling, Oracle database, Rabbit MQ, Netflix OSS, Zuul proxy, Docker, Kubernetes, AWS cloud, JUnit, Cucumber framework.



# Improved User Interface

## Implementation Efforts

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1. End to end design and development of microservices .
2. Develop new UI screens using AngularJS for rebranding the pages.
3. Expose microservices to all eBilling consumers for consuming the services from the new UI. (AngularJS)
4. Retiring data replication overhead and synchronization issues across legacy and eBilling databases.
5. Containerization of microservices for deployment on the cloud environment.

## Business Benefits

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1. Fast page loads and responsive customer experience from the new UI.
2. BDD and TDD-oriented development helps automate the application which reduces significant production issues overhead.
3. More flexibility for application deployment with AWS Cloud, quick deployments, horizontal scaling, CI/CD pipeline configuration, etc.
4. Since microservices are being implemented at the enterprise level, the entire organization under the B2B umbrella can leverage these services, lowering costs and reducing effort.
5. Microservices offer flexibility to choose the technology to migrate to.
6. The AWS management console, tools and dashboards help monitor the logs and analyze the issues occurring in production.
7. Mature security gateways for application access, with API gateway tools like Zuul.



## Phase 3

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Phase 3 achieved successful implementation of a **complete solution** in a cloud environment and microservices with big data systems. This also delivered over 4TB in storage space savings and significantly reduced licensing costs.

## Technologies and Software Used

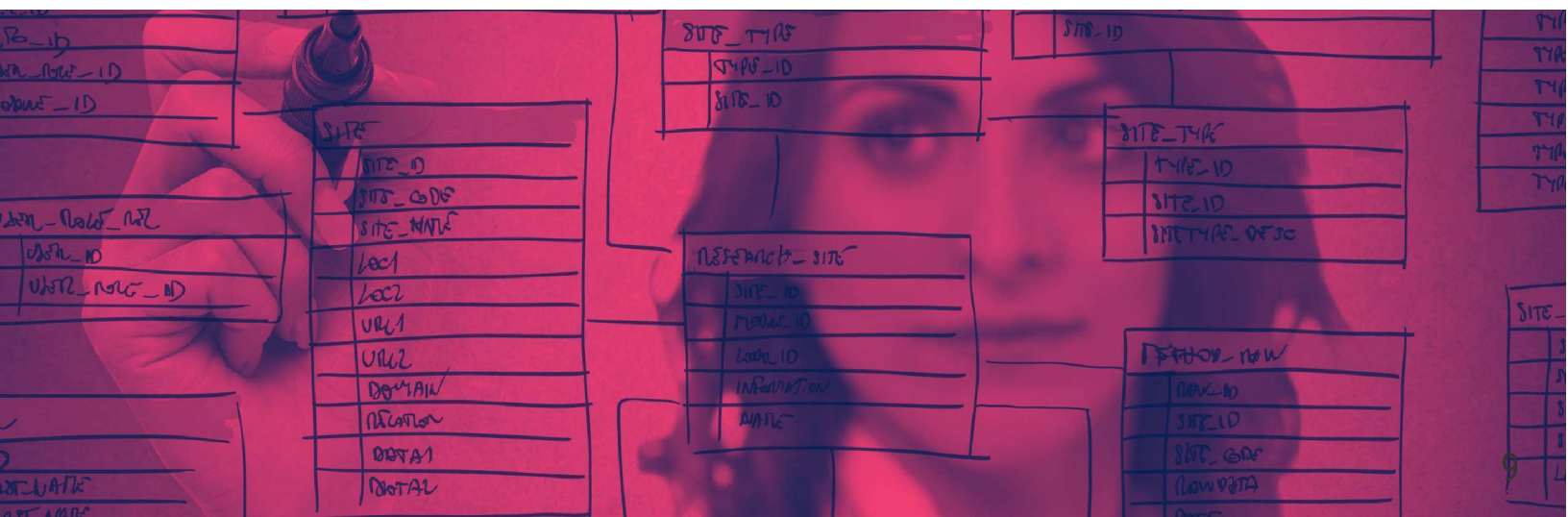
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Java, JDK 1.8, Springboot, Spring JPA, Cassandra, Rabbit MQ, Netflix OSS, Zuul proxy, Docker, Kubernetes, AWS cloud, JUnit, Cucumber framework.

## Implementation Efforts

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1. Retire eBilling platform completely, which is the ultimate goal of the transformation project.
2. Develop independent services for user management, hierarchy management, company management, payment management, for which we currently leverage the eBilling product's complex features.
3. Migrate Oracle database to Cassandra (Big data system).
4. Integrate microservices with Cassandra.



# Cutting-Edge, In-House eBilling Solution

Paramount helped the client transition from a legacy, complex and slow eBilling system that was cumbersome for their customers to use to a modern, cloud and big data based system that utilized microservices.

The upshot - a speedy, modern eBilling experience for the client's customers; a complete in-house product eliminating licensing costs for the organization. Driven by the cloud, big data and microservices, the new system helps customers manage billing faster, presents intuitive dashboard views for analytics and a visually appealing user interface that is both functional and responsive.

## How can we help you?

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