

Case Study

CREATING A CUTTING EDGE, FUTURE-PROOF ONLINE CHARGING SYSTEM

Avoiding Churn and Increasing Customer Experience



About Viettel

Viettel, Vietnam's largest telecommunications provider owned by the country's military, is growing at 34% annually. However, the company serves 11 countries across many poor and remote areas that cannot afford modern telecom bundled services. Instead, their offerings included the typical 4G/5G phone services, as well as TV and broadcast, but they also bundle in electricity bills, water bills, and even charging for non-stop toll roads. Going forward, they plan to add even more utilities to the portfolio of services they charge for - while an increasing number of third-party operators and service providers are adopting their rating and charging software solution.

Challenge

Given the current global economic climate, Viettel reported it would provide telecommunications services at lower fees to lessen the financial burden on hard-hit customers. In another effort to serve areas where physical banking is difficult, Viettel boosted the daily money transfer cap and cut transfer fees for customers using Movitel, its mobile money/wallet service.

Despite these moves, the company was looking to stave off the Telecom industry's biggest challenge: customer churn. It knew that providing great personalized experiences and enabling customers would be the antidote. As new mobile devices allow modern customers to pay their bills, shop, navigate their cars, and use an increasing number of services online, the number of devices found in a single family home has exploded. This proliferation of devices creates significant charging issues, and the number of business partners necessary to deliver all of these services has grown exponentially. As a result, Viettel needed a charging platform that would handle charging for consumers and corporate partners as well as hybrid services, bundled services and multi-device services.

Goals

In order to create an online charging system that could service the lower cost and unique service needs of many of its customers, while also enabling great customer experience and support service partners, Viettel needed to:

- **Create a next-gen data platform** that has the infrastructure to support all of the services that customers need.
- **Provide personalization of each user's service** along with the option to share services among family members to make everything affordable for a variety of people and family situations.
- **Configure the solution via containers and VMs** because the demand for charging services was taking them into new countries and to new operators across Asia Pacific.
- **Develop all of this in a cutting edge, future proof platform** with a lifespan of at least ten years in order to seamlessly take advantage of new and emerging 5G, IoT and networking technologies

Efficient storage and retrieval of the necessary data is critical to the firm's business, leading to their decision to find and deploy the highest performance, most scalable data architecture currently available.

Benefits with Aerospike

- Provide outstanding customer experience at scale
- Enable growth from 170M users to 400M users across 11 countries
- TCO reduction of 40% over Oracle TimesTen
- Sub-millisecond latency for read/write 2 kB/packages
- 60k transactions per second (TPS) in a cluster of 20M users.
- 99.999% reliability
- Project completed in just 6 months

"The OCS, enabled by Aerospike's unique technology, is designed for convergence of traditional telecom system communication services like broadcast, television and mobile to a new environment that includes services, capabilities and business support."

Quan Nguyen-Hoang,
Technical Leader for OCS
Viettel

The Plan

Viettel's technical leader for Online Charging Services, Quan Nguyen-Hoang, wanted the new platform to provide a future-ready set of services that would enable a better customer experience and at the same time make it easy to manage all the new complexity in their business. Because Viettel is headquartered in Vietnam, where the internet infrastructure was not as robust as other countries, he wanted to be able to provide a digital payment application that could be accessed without the Internet.

"We want to serve more than 90 million people in Vietnam, regardless of who they are," says Pham Trung Kien, general director of Viettel Digital Services.

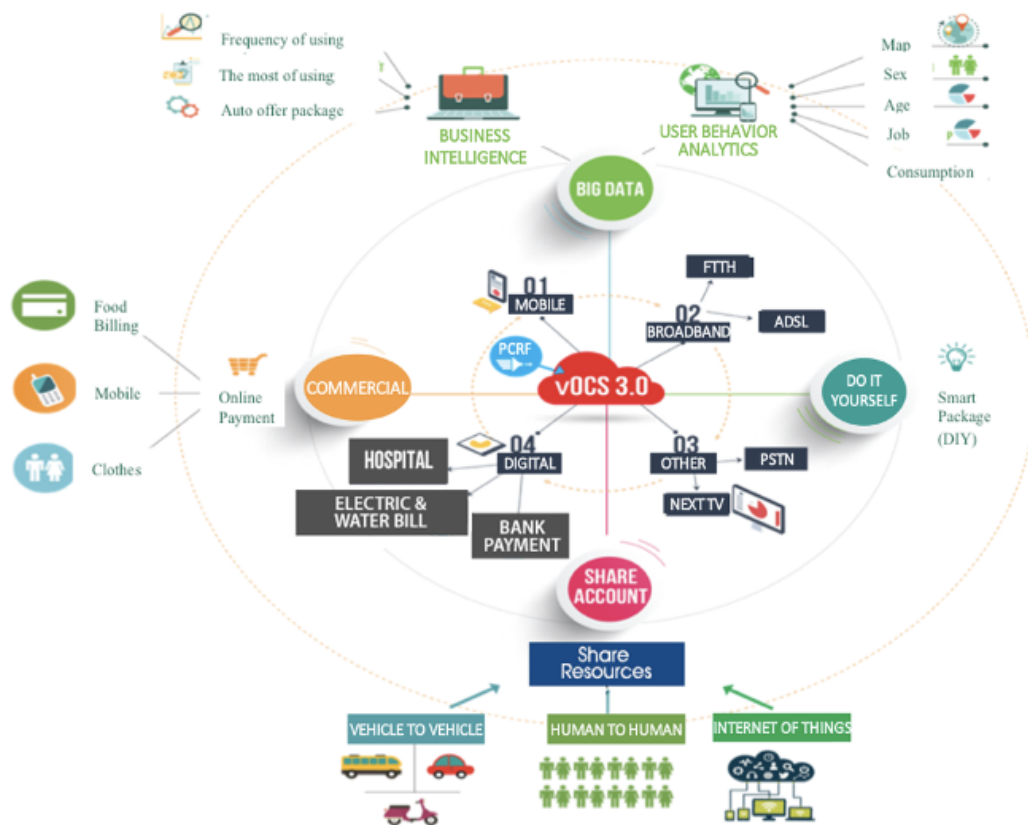
The Solution

Customer 360 and Personalization

With Aerospike's help, Viettel developed a cutting edge, future-proof online charging system. The Viettel Online Charging System (vOCS) was designed as a convergence system that supports multiple services. Core to the solution is a highly scalable database architecture that can now seamlessly support growth from 170 million to more than 400 million users with speeds exceeding 60,000 transactions per second for reads/writes and sub-millisecond latency. By moving from OracleTimes10 to Aerospike, they also reduced their total cost of ownership by over 40%.

"It was easier for us to use Aerospike in in-memory mode to get the best performance. We are free to model our data with no worry about scaling our system. Aerospike was a very young challenger then, but it showed us a nearly perfect 100% uptime. It saved us a lot, not only the cost, but the development effort also,"

Quan Nguyen-Hoang,
Technical Leader for OCS
Viettel



The Viettel Online Charging System (vOCS) is an evolved charging platform providing consumer and corporate, hybrid, bundle, multi-device services

vOCS, enabled by Aerospike's unique, highly patented Hybrid Memory Architecture™, now serves as the background and environment for service providers to develop business policies from more traditional telecommunication services like broadcast, television, and mobile services to new general-purpose charging systems like mobile payment, commercial digital, and Internet of Things (IoT) services for hospitals as well as for electric and water billing systems. vOCS is also the core charging for traffic systems like non-stop toll road collection in Vietnam, to mention only a few of the services enabled.

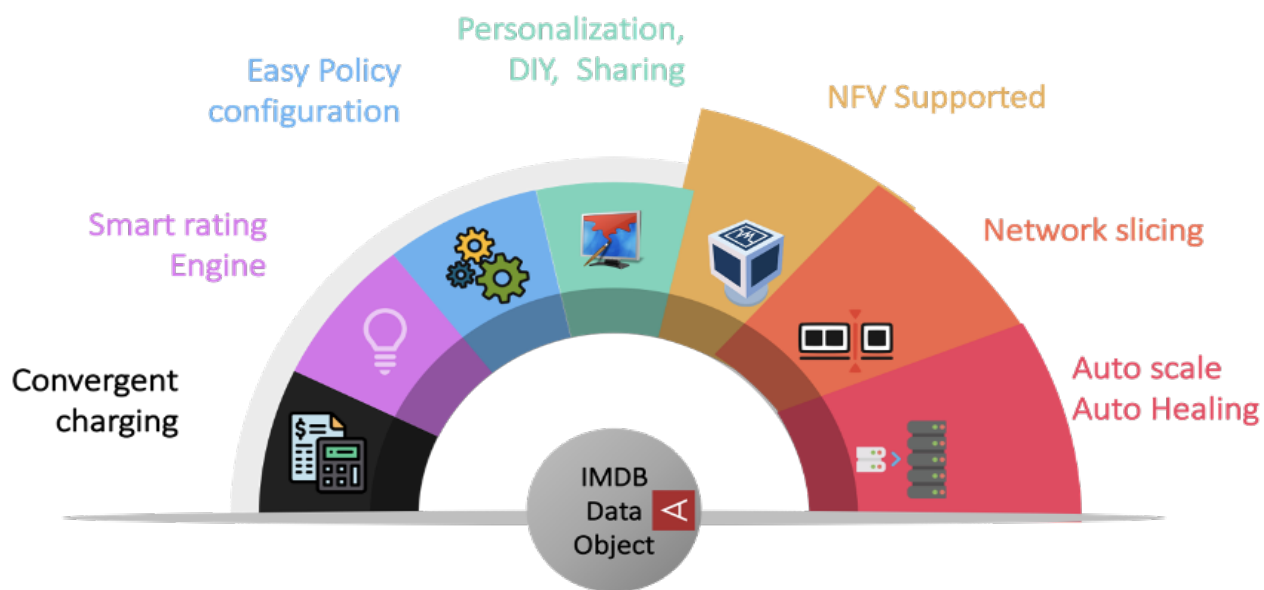
In order to create such a powerful platform, the company developed their own technologies to not only leverage the Aerospike data platform, but to enable their customers to drive their businesses into successful paths easily. This allowed them to provide shared, corporate, hybrid, bundled, and multi-device services to help them to do so.

The resulting solution includes their Cloud group of services, now enabling the company to service new countries and serve them through the cloud. The service creates a highly flexible, high performance, highly scalable cloud solution that includes Network Function Virtualization (NFV), which enables them to quickly spin up a new virtualized VM container to handle unforeseen traffic spikes, Auto Scaling, and Auto Healing. "With these features, our platform is completely matched with the new and emerging 5G, IoT technologies, and new standards," says Nguyen-Hoang.

With the Aerospike data platform, data is centralized, and the services can vary easily - like add-ons - as customer requirements are changed or added.

Results

Working together with Aerospike, Viettel built a very fast, stable, scalable, 99.999% reliable system that is serving over 170 million people in eleven countries in less than six months. They enjoy sub-millisecond latency for read/write 2 kB/package with average latency from 5ms down to 3ms. They are achieving greater than 60k transactions per second in a cluster of 20 million users all at a 40% reduction in their total cost of ownership.



Advanced Features of the Viettel Online Charging System powered by the Aerospike data platform

"The (OCS) platform has been designed (on top of Aerospike) to provide a future-ready set of services enabling an excellent customer experience as well as easier care and management", says Pham Trung Kien, general director of Viettel Digital Services. He went on to say, "Before Aerospike, we could never think about something like 20 million users for each site, but with the ability to scale without affecting the system performance, we can deploy our bigger and bigger clusters while keeping high quality of services for the best customer experience."

Viettel has made a personalized experience on a shared (family) phone accessible to millions more people during a time of extreme financial hardship due to the global climate.

Most importantly, as a result of being able to design a customized package for every customer, Viettel has won several important awards including the Gold Award for the Most Innovative IT service at the 2017 IT World Awards and a Gold Stevie at the 2018 International Business Awards for Best New Product or Service of the year in the Telecommunications area.



About Aerospike

Aerospike is the global leader in next-generation, real-time NoSQL data solutions for any scale. Aerospike enterprises overcome seemingly impossible data bottlenecks to compete and win with a fraction of the infrastructure complexity and cost of legacy NoSQL databases. Aerospike's patented Hybrid Memory Architecture™ delivers an unbreakable competitive advantage by unlocking the full potential of modern hardware, delivering previously unimaginable value from vast amounts of data at the edge, to the core and in the cloud. Aerospike empowers customers to instantly fight fraud; dramatically increase shopping cart size; deploy global digital payment networks; and deliver instant, one-to-one personalization for millions of customers. Aerospike customers include Airtel, Banca d'Italia, Experian, Nielsen, PayPal, Snap, Verizon Media and Wayfair. The company is headquartered in Mountain View, Calif., with additional locations in London; Bengaluru, India; and Tel Aviv, Israel.

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