



Openet

Openet is a leading independent supplier of real-time business support systems (BSS) to communication service providers. Openet software ensures that more than 600 million mobile telecommunications users around the world enjoy the best network and data experience while enabling mobile operators to monetize data use in real-time. Since its founding in 1999, Openet has been at the forefront of telecommunications software development and innovation. This is characterized by its open platform, domain experience, and engineering expertise. Its success is evident in the many long-term relationships it has fostered with the largest, most progressive, and demanding telecommunications service providers across the globe.

Openet technology manages the decision making and interactions that translate network activity into revenue. Openet's real-time BSS systems process the massive volumes of data streaming through a network, use that data to track activity such as network usage for many millions of users simultaneously, and perform real time actions such as billing and managing connection quality.

Objective

The Openet Fusionworks Framework is the advanced software architecture upon which all of the company's solutions are built. It is a high-performance environment for Openet's modular software, enabling seamless integration, centralization of common functionality, and support for custom logic. Fusionworks delivers a flexible environment to support configurations that meet a service provider's unique needs. Openet applications provide the functional foundation for the world's most advanced telecom business support systems.

Openet enables the world's largest network operators to innovate service offerings in an increasingly mobile, data-driven society. Applications include Policy Manager, Evolved Charging, and Converged Mediation. Openet's modular software architecture enables infinite configurability to meet the specific needs of a service provider. This modularity provides Openet with the flexibility to meet future needs at much lower cost and risk than possible with systems purpose-built to solve a single business need.

Mobile operators across the globe facing the challenge of keeping up with the explosion in data usage and the proliferation of smart devices have increasingly turned to virtualization to improve flexibility and reduce both Opex and Capex. Openet has been at the vanguard of virtualization with many successfully deployed solutions scaling to meet the need of the world's leading Tier 1 service providers. All Openet solutions are available fully virtualized, vendor agnostic and built using Open standards. Openet is a member of the ETSI Network Functions Virtualization Industry Specification Group.

In late 2012, Openet began evaluating potential replacements for its database infrastructure, primarily to drive down the total cost of ownership of its applications and solutions and to better support the real-time demands of mobile data. According to Oisín Loftus, Executive Director of Product Development for Openet. "We wanted to move toward a higher-performance, in-memory database that could combine the capabilities of an operational database, real-time analytics, and stream processing in one easy-to-use platform. We needed an in-memory database that could handle fast data, and we needed a database technology that would be complimentary to our innovative software solutions and suitable for virtualized deployments. We also needed a database that was elastically scalable and could grow and contract as needed."

Solution

Openet selected VoltDB as the logical choice for a cloud-deployable, transactional database that can flexibly handle high-volume data streams for service providers to monitor and leverage in real time. VoltDB provides the performance of in-memory, the scalability of NoSQL, and the transactional consistency of traditional relational databases. Traditional database systems were simply too slow to ingest data, analyze it in real-time, and make decisions at the rate required. With VoltDB, Openet now offers transactional, database-oriented applications against data feeds that were previously limited to stream processing methods because of scale.

Since Openet solutions are always inline in a service provider's call path, Openet required latencies for its transactions to be sub 20ms, so performance and scalability were major requirements. "Our solutions are primarily deployed by Tier 1 and Tier 2 operators worldwide, so we need a virtualized database platform that can provide elasticity while supporting ease of operations," said Loftus. "VoltDB not only meets the latency requirements of our customers but also simplifies deployments with Atomic, Consistent, Isolated, Durable (ACID) properties and built-in high availability for risk-averse service provider customers, and offers the performance and scalability necessary to provide real-time control of network resource consumption. VoltDB offers the TCO, performance, and scalability we need while enabling us to handle fast data and the real-time feeds of service provider traffic."

Results

Openet integrated VoltDB to provide the in-memory database infrastructure that supports its wide range of business support systems (BSS) and enable automated, real-time decisions. VoltDB is a fast in-memory database that supports SQL and ACID compliance to provide the high-throughput and low-latency response Openet applications need to make decisions in real time.

“Because we can deploy VoltDB on virtualized infrastructure, Openet can scale VoltDB up or down and easily create new instances of VoltDB to support new customers,” said Loftus. “This provides us with the flexibility to scale our deployments and a more attractive economic model than possible with our legacy database infrastructure.”

VoltDB is embedded into the Openet FusionWorks Framework and supports all major Openet applications. “Our customers primarily care about the features we provide and how fast our solutions perform,” Loftus explained. “For example, customers want to know that our policy and charging applications are completely virtualized and elastically scalable. VoltDB provides Openet with an in-memory database that helps us take advantage of fast data and scale to meet the needs of our customers.”

The VoltDB scale-out, distributed architecture allows Openet to maximize performance, elasticity, and utilization of its application framework model. VoltDB provides full SQL at the speed of memory to very large datasets, limited only by cluster size. VoltDB clustering implements a shared-nothing, active/ active, fault tolerant environment, providing strict SQL ACID semantics and only persisting changes to disk at all replicas for durability/recovery and exports. This is in contrast to traditional SQL and other in- memory NewSQL systems, all of which use disk-based persistence as part of computation, causing both scale-out and performance to be limited by storage. “Active/active replication is a more viable and effective proposition for our customers because it allows them to take advantage of distributed computing architectures to cost-effectively improve resilience,” Loftus stated.

Partnering with an innovative technology leader has also been a major benefit. “VoltDB has been very responsive to our needs and continues to work closely with our engineers to help us meet our goals,” said Loftus. “At Openet, we have high expectations, and we’ve driven VoltDB into domains that are new to them and the VoltDB development team has responded well. The product is very good and continues to evolve, and the VoltDB team continues to work closely with us to address the real-time database demands of major service providers.”

About VoltDB

VoltDB is the only in-memory transactional database for modern applications that require an unprecedented combination of data scale, volume, and accuracy. Unlike other databases, including OLTP, Big Data, and NoSQL, that force users to compromise, only VoltDB supports all three modern application data requirements: **1. Millions** – VoltDB processes a relentless volume of data points from users and data sources. **2. Milliseconds** – VoltDB ingests, analyzes, and acts on data in less than the blink of an eye. **3. 100%** – Data managed by VoltDB is always accurate, all the time, for all decisions. Telcos, Financial services, Ad Tech, Gaming, and other companies use VoltDB to modernize their applications. VoltDB is preparing energy, industrial, telco and other companies to meet the challenges of the IoT. VoltDB was founded by a team of world-class database experts, including Dr. Michael Stonebraker, winner of the coveted ACM Turing award.

