Overview

Today's travel industry is seeing rapid growth, high customer expectations, fierce competition and pressure on margins. It's a market driven by new technologies, new entrants and new business models. Amadeus, the leading Global Distribution System (GDS) and the biggest processor of travel bookings in the world, looks to NoSQL and Couchbase to meet stringent data management needs within a demanding industry.

The Needs

The mission of Amadeus is to be the leading provider of IT solutions that enable success in the travel and tourism industry. The company is a Global Distribution System (GDS), meaning they take travel and tourism data from airlines, car companies, hotel chains, cruise lines, etc., and distribute it to travel agencies, corporations, travel websites, airports, and other distributors. As the world's leading GDS, Amadeus must manage a huge workload daily, with absolutely no room for service outages, supporting:

- 3.7 million bookings per day

- 1.6 billion transactions per day

- 45 billion database accesses per day

- 13 petabytes of storage

- Response time of less than 0.5 milliseconds

- Thousands of developers pushing new features (100+ changes per day)

Amadeus became interested in NoSQL technology and Couchbase because they needed greater scalabilty and flexibility for the service-oriented architecture (SOA) on which the business runs. Specifically they needed a low-latency key-value store to achieve the required service levels for their architecture, including:

- Consistent high performance (submillisecond latency)

- Elasticity to support frequent capacity expansions of their server farms, needed to handle traffic growth

- Seamless topology changes

- Data persistence to support a very write-heavy environment

Couchbase at Work

To get started with Couchbase, Amadeus implemented Couchbase Server for two applications. The first, the Amadeus Selling Platform Connect, is the website professional travel agents rely on for doing business. The Platform supports 500,000 terminals and 150,000 simultaneous users. All web sessions are long-lived, usually lasting the entire business day, and the amount of session data that needs to be stored is about a half a terabyte. Amadeus wanted to offload the user sessions, which were stored in JVMs, and move them to a distributed, scalable robust system, enabling them to reduce TCO and increase scalability. With Couchbase they can achieve this goal, and maintain a responsive experience for the end users.

The second application, the Availability Processing Engine, is the engine behind many popular travel sites. If you have ever booked travel online, you have encountered this engine. which displays travel information such as prices, flights, and dates. This is a critical application for Amadeus, and the one with the most pressing need for the performance improvements that key-value technology offers. The original system had 28 relational databases and over 20 terabytes of data. Peak traffic is two million reads of objects per second, and 400K writes per second. The average object size is about 1 KB.

About Amadeus

Amadeus is a leading provider of advanced technology solutions for the global travel industry. Customers include travel providers (airlines, hotels, rail and ferry operators, etc.), travel sellers (travel agencies and websites), and travel buyers (corporations and travel management companies).