Couchio

Aptela – Replication and Scaling with CouchDB

Situation

The Aptela platform achieves massive scalability by dynamically distributing load across all available nodes using REST-based APIs. These APIs power a host of applications ranging from simple phone widgets to complex web-based applications. The APIs also cover all telephony interactions, ranging from routing phone calls to delivering intricate auto-attendants.

The distributed nature of Aptela's platform allows for consistent and extremely scalable access to data across all the nodes. Furthermore the telephony side of the platform requires the ability to operate in a quasi-disconnected mode, i.e., real-time access to other nodes cannot be guaranteed. Aptela needed to address the additional burden of the volume of data being generated – millions of Call Detail Records (CDRs) are generated daily, all of which have to be accessible in near-real time.

Previous iterations of the Aptela platform have used everything from the file system to SQL databases (Oracle/Postgres/MySQL) to provide persistence. Each of these worked up to a point, but the joint imperatives of performance, manageability, maintainability, cost and (massive) scalability invariably took its toll.

Solution

Initially, Aptela's developers were considering using CouchDB solely for reporting, with the schema-less design proving particularly useful when every day seemed to bring a new reporting requirement. It proved to be such a perfect fit that it ended up replacing most of the existing "centralized data store" based persistence requirements - and should shortly be the only persistence used by the Aptela platform. Its REST-based API fits transparently into the Aptela infrastructure, and its Erlang code-base didn't hurt either (Aptela is an Erlang/OTP based platform). In the final implementation, replicated instances of CouchDB are scattered across a variety of nodes, with the documents being replicated dependent on the function of the node. For example, all profile information (contacts, speed-dial, etc.) are replicated across all application nodes for maximum performance.

Results

The results have been striking. What started off as a simple point solution - moving reporting to CouchDB – has now ended up with the migration of the entire persistence infrastructure. Reliability has been exceptional and performance management has become somewhat trivial, with replication solving a lot of performance issues. The only hurdle now is finding the time to migrate the rest of the persistence infrastructure to CouchDB.

About Aptela

Aptela is a leading provider of business-class phone service, answering the communication and collaboration needs of small businesses and mobile workers nationwide who seek a robust and easy-to-use solution. Aptela's v5.0 platform is extensible by design and easily integrated into the workflow of today's entrepreneurs and increasingly mobile workforce. Aptela's service is delivered from the cloud and its features can be accessed—anywhere, anytime—through the Internet, traditional wire-line or mobile networks. Aptela was recently recognized as a 2009 Deloitte Technology Fast 500 company with a #78 ranking overall and a #15 ranking amongst telecommunications/network providers. Aptela is headquartered in Herndon, Virginia.
www.aptela.com

Quote

Mahesh Paolini-Subramanya, CTO at Aptela, says "Creating a true cloud-based infrastructure for telephony applications would have been challenging without CouchDB, which provides the reliability, replication and performance required for our mission-critical, 'always on' platform. With CouchDB handling all persistence, our developers are free to focus on creating new and innovative applications and extensions for our small business customers using the Aptela Anywhere infrastructure."

Who we are

About CouchDB

Apache CouchDB bridges the cloud and the local network by making it simple to write web apps that can scale up to the datacenter and scale down for local use on a smartphone. The synchronization engine (inspired by Lotus Notes) allows sharing of data and applications across ad-hoc groups. Offline replication gives mobile devices better performance (lower latency) while saving battery life by avoiding radio usage. With offline replication solved in a simple way, application developers are free to focus on the code that matters

CouchDB is popular with developers because it's document model is a closer fit for many domains, leading to less overall complexity. The JSON HTTP API allows developers to write dynamic database-backed applications without a middle tier: 2-tier CouchApps require only a web-browser and a CouchDB, and can be written by anyone with Ajax / jQuery experience. We firmly believe that empowering people to share data and custom applications at the edge of the network will lead to a more humane web.

Apache CouchDB is currently deployed by the BBC, Meebo, Assay Depot, Engine Yard, (among others) and is an integral part of the Ubuntu operating system.

Couchio

About Couchio

Couchio http://couch.io (founded by 3 CouchDB core committers) offers support, hosting, and professional training for CouchDB.

Contact CouchDB

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