Zero to 50 million users in three years is a rapid rate of growth by anyone’s standards and not all systems can keep pace with such a steep curve. 2ndQuadrant was asked to step in to help with this monster database...
SCALING A MONSTER DATABASE

Social networking’s all the rage, and there’s no reason children should be excluded. CEO Michael Acton-Smith’s last throw of the dice resulting in a £7m investment...

...in a virtual world called Moshi Monsters. Designed for kids, it allows them to adopt, customise and care for their own pet monsters. Monster owners can make new friends and connect with existing friends through a wide variety of safe social networking features such as Monster blogs, Newsfeeds, pinboards and buddy lists. Users create a home for their pet monster in Monstro City, play games and make friends, and show off their monster and home to everyone else.

In addition, the kids can have their own virtual rooms, which can be fitted out with virtual goods and solve puzzles to earn virtual currency.

Although Mind Candy is branching out into online TV, merchandising and perhaps traditional media, Acton-Smith says that the website is the heartbeat of their business.

Moshi is a graphically rich virtual world and needs high performance systems that are also secure to underpin the virtual world. With a classic “hockey stick” growth curve (see graph), expansion has to be fast, simple and effective.

The Moshi Monsters game relies heavily on the IT platform managed by Mind Candy CTO Toby Moore and his IT staff. In Moore’s view, the technology has to be totally reliable and very responsive so that players come away from each session with the feeling that they have had a great experience and want to return.

The Moshi Monsters infrastructure is based on Java Platform, Standard Edition (Java SE) 6 running Debian GNU/Linux. It includes Apache Tomcat Web application servers, memcached and PostgreSQL databases as well as open source frameworks such as Spring and Hibernate.

The scalability challenge...

Mind Candy was formed in 2003 and had some initial success with a project called Perplex City.
which was played by thousands of people around the world. But things really took off with the launch of Moshi Monsters, some keen marketing and the introduction of some savvy features.

The IT team were aware that, whilst they had a PostgreSQL implementation, they needed to find the best help available to help them manage this unique implementation.

The explosive growth of Moshi Monsters (see chart previous page) meant that IT team had to work hard to ensure that Mind Candy was able to continue to offer the kind of responsive user experience that was so essential to their success.

Their own traffic forecasting and business modeling showed by how much the load would be increasing as well as the unique traffic patterns, a daily post-school “burst” caused by the rush of their young users checking their monsters’ health as soon as they get home from school.

The Mind Candy team wanted to be ready for the traffic growth with enough expert advice and support on hand so that they would be prepared to meet this challenge. They also did not want the site to outgrow the hardware it was based on.

If Mind Candy wasn’t careful, their success would be their downfall, so they contacted 2ndQuadrant for advice and support.

“We’re strongly in favour of storing our critical data in PostgreSQL because it is mature, robust and has well understood recovery features and processes” Ben Burry, Site Reliability Engineer, MindCandy

**The Solution...**

The Database Lifecycle Management services offered by 2ndQuadrant includes “continuous touch” services as well as high value “point” services. Combinations of these were brought to bear on the Mind Candy situation.

One of the high value point services, Hardware Benchmarking, was performed to ensure the hardware platforms were specified and configured correctly for the predicted exponential future growth. This entailed a database move onto the new platform, which 2ndQuadrant was instrumental in supporting, project managed by the Mind Candy team.

While this move to new physical servers helped remove performance ceilings, a new PostgreSQL database architecture was also devised with more efficient partitioning and data access mechanisms.

Despite these improvements in system performance, the interaction between PostgreSQL and Mind Candy’s Linux operating system needed further work. 2ndQuadrant designed, developed and implemented a new PostgreSQL feature to reduce the number of instances of database speed drops in Mind Candy’s deployment. Portions of this have subsequently been added to the core PostgreSQL code, ensuring that database performance is optimised for all users.
Further to this the Mind Candy have benefited from 2ndQuadrant’s training courses, consultancy, support SLA and by referencing groundbreaking and highly regarded books written by Simon Riggs, Hannu Krosling (PostgreSQL 9.0 Administration Cookbook) and Greg Smith (PostgreSQL 9.0 High Performance).

The Benefits...

Mind Candy’s CEO Michael Acton-Smith, has been able to secure the online growth of his business into a solid platform for eCommerce, social interaction, and as a base to expand into merchandising and other media. He has been able to fulfill his commitments to shareholders, staff and the users of his site, the children.

The CTO has been able to support the business plan as outlined to the shareholders by implementing open source solutions, not least of which is the PostgreSQL database.

The Financial Director has managed to contain costs while the company grew seemingly exponentially. The key to long term profitability is to secure a solid financial base, and this has helped to achieve this.

The improvements that were made to PostgreSQL for Mind Candy’s specific case turned out to be useful for improving other types of heavily loaded systems too. This is one of the benefits of the open source approach.

Finally the site’s users, the children, are safely and thoroughly enjoying themselves in their alternative world of Moshi Monsters.
About 2ndQuadrant...

2ndQuadrant is the world’s leading authority on the open source PostgreSQL RDMS. We provide a range of services that underpin the Database Lifecycle of PostgreSQL implementations.

Our 24x7 “Continuous Touch” and high value “Point” services support over 100 corporate and public sector organisations in 15 countries across US, Italy, France, Germany, Latin America and the Nordics.

We are a Platinum Sponsor of PostgreSQL and with over 5 years of proactive development and significant contributions to PostgreSQL, we are the largest single group of PostgreSQL contributors. We have developed and contributed key PostgreSQL features such as:

- Point In Time Recovery (PITR)
- Warm Standby Replication
- Hot Standby
- Asynchronous Commit
- Partitioning

2ndQuadrant is structured as a low-overhead, dynamic and flexible organisation of independent partners based in England, Italy, Germany and the US. Our international footprint gives us wide exposure to hundreds of PostgreSQL implementations, our local presence allows us to tailor our services to in-country specific requirements.

About PostgreSQL

PostgreSQL is a powerful, open source object-relational database system. It has more than 15 years of active development and a proven architecture that has earned it a strong reputation for reliability, data integrity, and correctness.

It runs on all major operating systems, including Linux, UNIX (AIX, BSD, HP-UX, SGI IRIX, Mac OS X, Solaris, Tru64), and Windows.

PostgreSQL is fully ACID compliant, has full support for foreign keys, joins, views, triggers, and stored procedures (in multiple languages). It includes most SQL:2008 data types, including INTEGER, NUMERIC, BOOLEAN, CHAR, VARCHAR, DATE, INTERVAL, and TIMESTAMP.

It also supports storage of binary large objects, including pictures, sounds, or video. It has native programming interfaces for C/C++, Java, .Net, Perl, Python, Ruby, Tcl, ODBC, among others, and exceptional documentation.

PostgreSQL has been warded the Linux New Media Award for Best Database System and is five time winner of the Linux Journal Editor’s Choice Award for best DBMS.

Contact us

2ndQuadrant Ltd
7200 The Quorum
Oxford Business Park North
Oxford OX4 2JZ
United Kingdom
Phone: +44 870 766 7756
Fax: +44 870 838 1077
Website: http://www.2ndquadrant.co.uk/
E-mail: info@2ndquadrant.com

2ndQuadrant US LLC
7472 German Hill Road
Baltimore, MD 21122
United States
Phone: +1 888-333-5136
Website: http://www.2ndquadrant.us/
E-mail: info@2ndquadrant.us

2ndQuadrant France
13, avenue des Pyrénées
31810 Venerque
France
Phone: +33 9 72 17 01 31
Website: http://www.2ndquadrant.fr/
E-mail: contact@2ndquadrant.fr

2ndQuadrant Italia
viale Vittorio Veneto,
60 59100 Prato PO
Italia
Phone: +39 0574 870600
Fax: +39 0574 870601
Website: http://www.2ndquadrant.it/
E-mail: info@2ndquadrant.it

2ndQuadrant Deutschland GmbH
Spielberger Str. 49
70435 Stuttgart
Germany
Phone: +49 711 55076995
Website: http://www.2ndquadrant.de/
E-mail: info@2ndquadrant.de