

BioWare

CONTINUOUS INTEGRATION, PREFLIGHT BUILDS AND TESTS



FAST FACTS

Studio of Electronic Arts

Employees: 220

HQ: Edmonton, Alberta, CN

Founded: 1995

BioWare is a leading electronic entertainment company specializing in creating computer and console video games. Based in Edmonton, Canada, the company is known for its rich narrative-driven role-playing games. BioWare's popular gaming titles include Mass Effect™, Jade Empire™, Baldur's Gate™, and NeverWinter Nights™. Now as a division of Electronic Arts, BioWare looks to continue to bring its unique brand of compelling titles to an even larger consumer base.

SITUATION:

Multi-platform game development.

BioWare has recently unveiled its latest PC title called Dragon Age: Origins, a highly anticipated dark heroic fantasy role-playing game set in a world created solely by BioWare. Dragon Age: Origins is under development using BioWare's next-generation technology and it will feature stunning visuals with a tantalizing blend of exploration and combat. While Dragon Age: Origins is a PC game, its team of 30 engineers is exploring the viability of bringing the franchise to additional platforms, including the Xbox 360 and Playstation 3. A complete build of Dragon Age: Origins, including its powerful toolset was taking up to 2.5 hours to complete.

To maintain high quality, ensure production goals are met and to coordinate the work of a large team, BioWare learned it needed a fast, efficient software build-and-release process with continuous integration. BioWare initially set-up its own continuous build system using a few off-the-shelf products, which built the full product and did unit testing every hour. However, BioWare recognized the intense demands of next generation development and sought a better solution.

At the end of each month, the team generated a full release deliverable which often resulted in a spike in build breakages (see diagram on next page). One spike resulted in over 300 build problems of various degrees in one month.

"Once the team expanded and the game began to take shape, there were so many different ways we could break the builds," noted Aaryn Flynn, Director of Programming & Technology at BioWare. "During crucial phases of development, the continuous integration system took too long, and there wasn't enough rigorous testing to prevent build breakages before check-ins had occurred. It was clear that we needed a next generation solution for next generation development."

"Since using Electric Cloud's solution, every month has yielded a record low number of breaks. Because there are so few broken builds, the developers are able to really focus on what happened in a particular instance and fix it so that the next time the build goes even more smoothly."

— **Sam Johnson,**
Lead Technical QA,
BioWare

CUSTOMER SUCCESS STORY

BUSINESS ISSUE:

Broken builds sap development resources and momentum.

In the fast-paced and competitive gaming industry, meeting time-to-market goals with innovative, high-quality software and exciting content is critical and demands high productivity from every member of the development team. The issue of broken builds dramatically impacted development time and it was clear that BioWare needed a better solution.

“Broken builds had become a big pain. There was downtime because of the slow progress. We recognized that this was costing us a lot in terms of productivity—as a Top 10 Employer in Canada, we wanted to do better,” said Flynn.

As a first step to address this problem, BioWare developed a set of criteria that a replacement software production system must meet:

- It must give developers the ability to do a full build and test on production-class hardware before each check-in.
- The check-in to the source depot should only be allowed if the build and tests are successful.
- All unit tests and in-game automation tests must be done at the push of a button.
- All supported platforms must be built and a system test performed on each platform in less than 15 minutes.

SOLUTION:

Automate and accelerate software production with Electric Cloud.

To meet the stringent criteria for its software build and release process, BioWare looked to Electric Cloud, a leading provider of Software Production Management (SPM) solutions. BioWare has deployed both ElectricCommander® software to automate the build and test process, as well as ElectricAccelerator® for faster and more accurate builds.

Using patented dependency management technology, ElectricAccelerator accurately executes parallel builds across a cluster of inexpensive servers, delivering up to a 20x reduction in build times over sequential builds. The BioWare ElectricAccelerator cluster currently has 25 agents in it, and engine builds are done using this cluster.

BioWare installed ElectricCommander to give centralized control of the build environment, including a build host and three testing resources. A procedure runs to sync the source, copy in the user's changes, and then do a build on each platform in parallel. After each platform completes, unit tests are run and subsequently an in-game system test is run by ElectricCommander. The procedure queues each submission so that only one user's build is run at a time.

BioWare also takes advantage of ElectricCommander's integration with the Perforce system for software configuration management. Perforce makes implementing continuous integration even easier, with no need for manual scripting. The integration between the tools is such that any time source code is changed in a specified Perforce depot, it is immediately detected by ElectricCommander and a build is started. This integration is an important enabler to BioWare's push-button, agile build and test process.

RESULTS:

Build times reduced by 75% with 90% fewer broken builds.

Electric Cloud's solutions met all of the criteria set for BioWare's software production management system and exceeded most of them. Builds that were taking 60 minutes before now take less than 15 minutes—a 75% reduction. Developers are using a preflight build and test approach, giving them the results of their changes across all platforms and dependencies within 12 minutes. This robust testing, combined with automatic check-ins, gives developers confidence when they submit their code for check-in. When their changes do cause an error, they get quick feedback, the check-in is rejected, and they have not impacted any other developer in the group.

Leveraging preflight builds and tests dramatically reduced the number of broken builds that plagued their continuous integration process. BioWare now experiences fewer than 30 broken builds per month, compared with a peak of 300 before.

“Since using Electric Cloud's solution, every month has yielded a record low number of breaks,” said Sam Johnson, Lead Technical QA, BioWare. “Because there are so few broken builds, the developers are able to really focus on what happened in a particular instance and fix it so that the next time the build goes even more smoothly.”

BioWare took an informal developer survey after deploying Electric Cloud technology and found that their employees were more motivated and excited about their jobs, which has led to even greater productivity benefits.

“Electric Cloud gave us an increased confidence in meeting our goals, and this translated to employees who are more content and fulfilled,” added Flynn. “We are saving a massive amount of time with Electric Cloud, and the increased employee confidence has amplified these gains. It’s a good environment to be developing our latest generation game and intellectual property in.”

Through the use of the Electric Cloud software production management tools, BioWare has been able to achieve a highly reliable process with continuous integration across multiple platforms. The BioWare team is markedly more productive and happier, and the product quality has improved with each release. Based on this success, BioWare is planning to expand its use of ElectricCommander and ElectricAccelerator on future titles.”

ABOUT ELECTRIC CLOUD

Electric Cloud is the leading provider of software production management (SPM) solutions. Electric Cloud solutions automate, accelerate and analyze software build-test-deploy processes to optimize both physical and virtual IT environments. The company’s patented and award-winning products help development organizations to speed time to market, boost developer productivity, and improve software quality. Leading companies across a variety of industries, including semiconductors, enterprise IT, ISVs, mobile devices, and transactional web sites rely on Electric Cloud Software Production Management solutions to transform software production from a liability to a competitive advantage. For customer inquiries please contact Electric Cloud at (408) 419-4300 or www.electric-cloud.com.

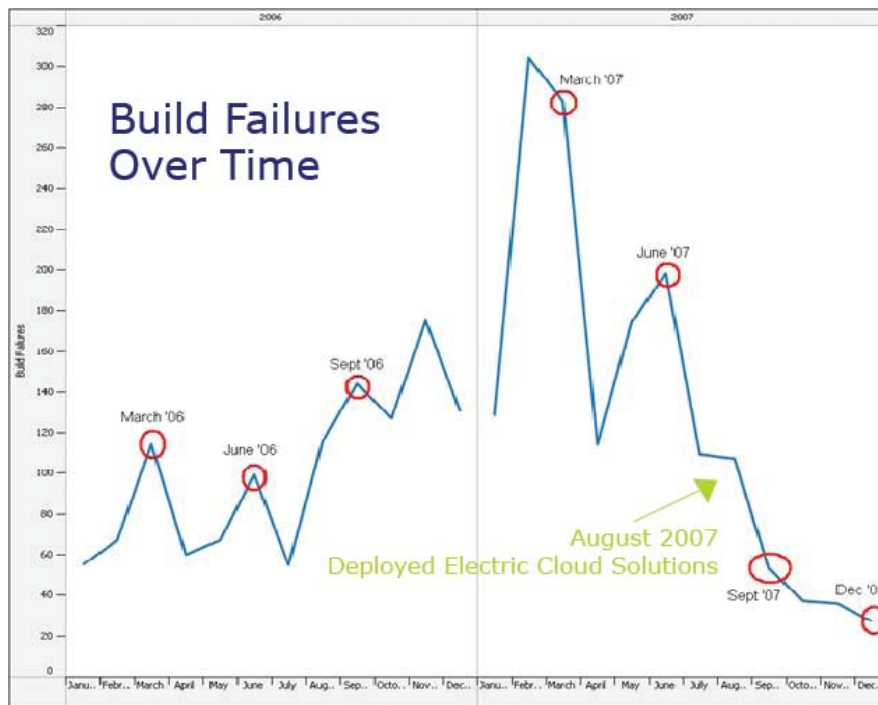


Image Source: BioWare

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