

Bally Technologies

Coverity delivers on demand for defect-free code for distributed game systems



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> RAJESH SWARNA SENIOR MANAGER, SYSTEMS ENGINEERING AT BALLY TECHNOLOGIES

Business Overview and Challenge

Bally Technologies, Inc. is a diversified, worldwide gaming company that innovates, designs, manufactures, operates and distributes advanced technology-based gaming devices and systems, as well as interactive and mobile solutions. The company began as a manufacturer of pinball machines in 1936 and built precision equipment used by Allied forces in World War II.

Today, Bally offers marketing, data management, analysis, accounting, player tracking and security tools to gaming operators to allow them to effectively manage their operations.

Gaming systems operate in a heavily regulated environment and new games must pass a rigorous approval process. Updates to existing games cannot go into production until the changes are tested by third party auditors and approved by regulators. Changes can take months before they are approved for rollout. During that time, the game may be taken offline, denying the operator of revenue from the machine.

The modern gaming system is a sophisticated mixture of entertainment and technology. Beyond the game that is seen on-screen, the system must interact securely with other games, a back-office accounting system and a player loyalty system -- all while ensuring that physical and network attacks are prevented, logged and reported.

To ensure the trust that game operators place on them, Bally Technologies demands the highest quality from their developers. When they recognized they needed an automated development testing process, they turned to the Coverity platform to meet their quality goals.

BUSINESS BENEFITS

- Dedicated Process: Software that operates in a heavily regulated industry requires a dedicated quality process. Defects in the field may be difficult or impossible to patch after they are released. Coverity static analysis helps ensure that developers are building the highest quality code they can while increasing efficiency.
- Accurate Results: The Coverity static analysis verification engine delivers highly accurate results. The low false positive rate ensures that your developers are fixing real issues that could lead to real problems in deployed products.
- Seamless Integration: Developers use many tools as part of their daily workflow. The Coverity[®] Software Testing Platform is flexible enough to work with a variety of programming languages, including Java, C/C++ and C#, and integrates seamlessly with the many development tools that your teams require.
- Customized Services: Focus on what you're good at. We're here to help. Our Professional Services team will work with you to create a tailored plan for implementation, driving developer adoption, and ultimately to deliver high-quality software, faster.

Solution Evaluation

Bally began with a trial deployment of Coverity static analysis in November 2011. Some developers at Bally had used static analysis tools previously and they worked with managers to define the success criteria used during the evaluation. An internal C++ project was chosen as the subject of the evaluation.

During the trial period, a number of critical defects were surfaced by the Coverity platform. These defects were NULL deferences, uninitialized variables and buffer violations. As Stan Jones, Director of Embedded Development at Bally Technologies' SDS Division, recalls: "These were the types of bugs that left us scratching our heads and wondering how that happened."

Following a two-month trial period, Bally chose the Coverity platform. A key factor in choosing Coverity solution was the credibility the developers felt for the results of analysis. The low false positive rate meant they were focused on potential problems and not chasing issues created by the tools itself.

Rajesh Swarna, Senior Manager, Systems Engineering at Bally Technologies, recalls the process: "The main driver for my team in choosing Coverity was the broad base of support for languages and compilers we use. Also, the one stop reporting capabilities for managing and tracking the progress of defects."

As a result of the positive results experienced during the evaluation, Bally began deploying the Coverity platform in early 2012.



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Coverity Deployment and Benefits Realized

Engineering managers from Bally Technologies worked with the Coverity Professional Services team to create a deployment plan for the more than 600 developers who use C/C++, C# and Java at locations across the United States and India. The deployment plan included understanding Bally's unique environment and processes, followed by custom training sessions for each group of Coverity administrators. Once the Bally team leaders were trained, they in turn trained their larger development teams.

Once implementation was complete, Bally's developers began to see the benefits of using the Coverity Software Testing Platform immediately. Stan shares: "Coverity integrated into our process and was adopted by developers pretty easily because of the types of issues we found – real, serious issues that we knew we had but couldn't find or replicate."

In the following months, more projects at Bally were submitted to the Coverity analysis. New issues found during this process were prioritized and assigned to developers as technical debt. Throughout the next nine months, developers emptied the backlog of all serious and critical defects.

The ongoing process at Bally requires that developers analyze new code before submitting it to source control and new defects cannot be checked in. Further, every project runs a nightly build with static analysis and the teams respond immediately to these issues. The result of this commitment to quality is that critical issues are fixed much earlier in the lifecycle and fewer issues occur in the field, ultimately saving time, cost and resources.

Coverity has been instrumental in eliminating NULL pointer errors, uninitialized variables, dead code, and data movement errors. As a result of using Coverity, our code is more robust, more stable, and helps makes a better product for our customers.

> STAN JONES DIRECTOR OF EMBEDDED DEVELOPMENT AT BALLY TECHNOLOGIES SDS DIVISION

G The cost of getting a fix to the field is ten times what it would be if found in development or testing. A one line change could take from 6 to 10 weeks to get through testing and approval by regulators. If the error is critical, we might have to pull a product from the field until it can be fixed. We just can't afford any kind of errors. Anything we can do during the development process to eliminate defects will pay for itself in our industry. **STAN JONES**

DIRECTOR OF EMBEDDED DEVELOPMENT AT BALLY TECHNOLOGIES SDS DIVISION

Conclusions

Two years later, Bally Technologies continues to use the Coverity platform as an integral part of their development lifecycle, assuring the quality of more than 20 million lines of code. The highly accurate analysis ensures that Bally's developers are fixing real issues and not wasting their time looking at false positives.

As a partner in their success, Coverity assists by providing technical support everywhere that Bally's developers are located. When new developers and administrators need training, Coverity is there to help.

Development teams are creating better code with few defects in the field. Bally is currently planning a company-wide rollout of the latest version of the Coverity platform to all of their developers. Of particular interest to their development groups are consistent user experiences in all their development environments and the ability to synchronize analysis results across teams.

In the highly-regulated and fast-paced environment of gaming, any down time is crucial. With better code and fewer defects in production, Coverity helps keep Bally Technology moving all the time.



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