

ARRIS: Pushing a Commitment to Quality to Higher Levels

“We have created an infrastructure to integrate Coverity analysis into the weekly builds of our latest software changes. Our developers want to fix the bugs that Coverity uncovers as soon as they are revealed. Coverity has become a key component of our quality commitment.”

—Gordon Thompson, Senior Development Director, ARRIS



Coverity customer since: 2005

Industry: Cable Networking

Business Problem:

ARRIS competes with the largest networking companies in the world for mission-critical cable telephony, video, and Internet business. Its key differentiator: Quality. With a focus on designing highly available systems, ARRIS is able to deliver the most robust solution on the market to the world's largest cable service providers. ARRIS employs state-of-the-art design and QA practices and has built one of the world's best testing platforms to enable its quality advantage. With Coverity's help, ARRIS learned how the best can get even better.

Results:

Using Coverity to catch complex and hard-to-find defects in its code, ARRIS has deployed a critical line of defense against threats to its reputation for highly available systems.

The ARRIS Challenge

ARRIS is a global communications technology company specializing in the design and engineering of broadband networks. The company is a leading developer, manufacturer, and supplier of cable telephony, video, and high-speed data equipment, as well as outside plant construction and maintenance equipment for cable system operators. As a supplier for such major operators as Comcast, Time Warner Cable, and Cox Communications, its products serve millions of people worldwide in over 25 countries. ARRIS devices enhance the reliability and value of converged services from the network to the subscriber.

Today in the cable industry, products are standards-based and equipment providers, at a minimum, have to deliver to these standards. What ARRIS does better than its giant rivals is deliver superior quality. With the convergence of voice, video, and data on the cable network, cable services deployed around the world have become a lifeline to emergency calls, friends, and family, rather than only an entertainment portal for television and video. The largest cable providers in the world choose ARRIS because ARRIS delivers the highest-quality products in the industry. This quality culture drives the company to seek out every opportunity to push its commitment to quality to higher levels.

To ensure the integrity of its over 4 million lines of code, ARRIS relies on extensive testing and QA to eliminate defects that could cause software failures or service interruptions. ARRIS has developed a testing lab with over 30,000 individual cable modems that is the world's premier testing facility for cable networking equipment. The best stay the best by constantly getting better. “We're always on the lookout for things we can do better,” said Gordon Thompson, Senior Development Director at ARRIS. “Better tools, processes and architecture that allow us to deliver highly available systems.”

The Solution

In 2005, an ARRIS supplier recommended Coverity's source code analysis solution as a potential way to raise the bar in software quality. “We invited Coverity in to do a trial on one of our code bases,” said Thompson. “We were surprised at the defects Coverity found considering the other tools and processes we already had in place.” ARRIS selected Coverity, according to Gordon, because it had the optimal ratio of real issues vs. noise. “We discovered that the Coverity technology identified issues that should be looked into more closely. We knew that our

developers wouldn't adopt a tool that reported a high number of false positives," added Thompson. ARRIS was also impressed with the precise identification of potential issues in all paths of the code, saving developers' time.

Coverity had to pass another important challenge: ARRIS wanted to select a tool that developers would use by choice, rather than by force. ARRIS' evaluation of the results Coverity uncovered and the user experience with Coverity's flagship product, Prevent, convinced the ARRIS team that the investment in Coverity would pay off. In 2005, Coverity was selected to analyze the software in its C4 CMTS and D5 DMTS systems. By early 2006, Coverity Prevent was adopted across all the Network Technologies and Customer Premise Equipment development organizations.

Developer Adoption

With three sites in Georgia, Illinois, and Ireland, successfully deploying Coverity into the development process was important. Because of ARRIS' culture of quality, managers didn't need to force developers to use Coverity—developers wanted to use it because they know how much quality matters. "We set goals for cleaning up certain releases of different products," said Thompson. "We've never had management get involved to force meeting these goals. Developers view Coverity as a resource to get their job done as opposed to a management imperative."

By picking a subset of Coverity reported defects the company thought were most important and publishing those results, ARRIS raised the awareness of the solution to its developers and has cultivated champions within the development teams for Coverity usage. The ARRIS engineers now submit their code to the regular builds and get feedback from Coverity as their changes are integrated into the main code line. The goal is to fix all of the new Coverity-found defects that are reported as soon as they are revealed.

The Net Result

"We have created an infrastructure to integrate Coverity analysis into our formal load build process. As developers submit their code for integration into the main branch, they are able to get feedback as to how it fits with other new submissions using Coverity's interprocedural analysis. On a weekly basis, we create a production load also scanned with Coverity that's being used for extended SQA testing as appropriate depending on where we are in the life cycle of the release. Making sure there are zero Coverity discovered defects allows our QA team to have a more reliable release cycle."

—Gordon Thompson, Senior Development Director, ARRIS

Conclusion

Coverity Prevent was selected by ARRIS as the source code analysis solution that could help differentiate the company in delivering the highest-quality broadband access solutions for delivery of converged voice, data, and video services. The use of the Coverity product has permitted ARRIS to improve the quality of the software products that are ultimately delivered to the customer.

About ARRIS Group

ARRIS was founded in 1995 and is publicly traded on NASDAQ (ARRS), where it has a market capitalization of \$1.7 billion. Based in Suwanee, Georgia, it operates design, engineering, distribution, service, and sales offices throughout the world, providing high-speed, high-availability systems to leading cable operators in over 25 countries. www.arrisi.com

About Coverity

Coverity (www.coverity.com), the leader in improving software quality and security, is headquartered in San Francisco, California. Coverity's groundbreaking technology removes barriers to delivering complex software by automating the identification and resolution of critical defects and security vulnerabilities in C/C++ and Java source code. More than 250 leading companies have chosen Coverity Prevent SQS because it scales to tens of millions of lines of code, has the lowest false positive rate in the industry, and provides total path coverage. Companies like Ericsson, HP, Samsung, EMC, and Symantec work with Coverity to eliminate security and quality defects from their mission-critical systems.

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