Industry:
Consumer Products

Organization:
AuctionRover.com

Description:
AuctionRover.com provides auction enthusiasts of all kinds an on-line community with news trends and message boards. They also allow their customers to search the millions of items up for auction on the Internet listed on over 800 different auction sites. They provide a single comprehensive view of the information they requested.

Business Problem:
AuctionRover.com needed to build the most powerful cross auction search on the Web, delivering the most responsive, accurate and timely results available. It needed to be very robust and scalable, as it needed to run continuously — 24 x 7. Downtime was not an option.

Rational Solution:
Rational Purify to track down and eliminate memory leaks and other reliabliliby defects which are ofton the cause of unpredictable failures.

Key Benefits:
• Ability to quickly isolate COM related leaks

• The power to test a wide range of components using Object Code Insertion, even when the source code is unavailable

• Instantaneous learning curve-plug in and go

• Integration with Microsoft Visual Studio

At AuctionRover.com, Rational Purify is a Developer's Best Friend

Meet Scot Wingo, president and CEO of AuctionRover.com. As top dog at a high-tech start-up, Scot is the envy of many in the e-business gold rush. But running a successful e-business is no walk in the park. In e-business, the software is the business and software failures impact the entire organization, from top to bottom. Crashes of e-business sites are now notorious for producing the kind of headlines that make CEOs like Scot cringe. On any given day there are hundreds of things for Scot to worry about, and making sure AuctionRover.com's software is reliable is always near the top of the list. That is why the developers at AuctionRover.com use Rational Purify® for Windows NT throughout the entire development process to build in quality and reliability from the start.

Everyone at AuctionRover.com is working toward a common goal — to become the number one resource for on-line auctions. For on-line auction sellers, AuctionRover.com offers hit-counters, image hosting, and the ability to list items across multiple auctions. For auction enthusiasts of all kinds, AuctionRover.com provides an on-line community with news, trends, and message boards, to name a few. And for buyers there is RocketRover, the most powerful cross-auction search on the web, delivering the most responsive, accurate and timely results available. Every day there are millions of items up for auction on the Internet listed on over 800 different auctions sites — and there are more items and more sites added every day. Finding the right item at the right price can be a time-consuming and frustrating process. With RocketRover, buyers get a single comprehensive view of the information they need in one easy-to-use interface.

We Absolutely Cannot Have Memory Leaks Building RocketRover

AuctionRover.com was founded in July, 1999 and the site was launched just a few months later. "We've been very busy," Scot explains, "and RocketRover is the largest piece of code we've written for the site." RocketRover, written largely in C++, has two main components: a SQL Server database and "the spiders". These spiders are actually multi-threaded Windows NT services that run non-stop, continuously gathering information from the Internet's most popular auction sites. "The spiders have to be very, very robust in that they have to be scalable and they have to run for long periods of time. They run 24 hours a day, seven days a week. That is very important to us, since we always want to have the most up-to-date information out there." Scot continues, "If the spiders have a memory leak, bad things happen. We absolutely cannot have memory leaks."

The developers at AuctionRover.com, led by CTO Aris Buinevicius, use Rational Purify to track down and eliminate memory leaks and other reliability defects. Rational Purify automatically detects a wide array of defects, including uninitialized memory errors, out-of-bounds reads and writes, invalid or null pointer reads and writes, memory leaks, resource leaks, invalid API calls, and COM-related errors. For Aris and his team, Rational Purify's ability to quickly isolate COM-related leaks was crucial, "We are heavily involved in COM development. Purify helped us track down referencing errors — places where we did not free COM objects, and left them hanging around in memory." Scot recalls one problem in particular, "We had a memory leak problem with some of our spiders. They would run for about 5 hours, and then conk out because they had run out of memory. The problem was with the way we were calling one of Microsoft's COM libraries. Now the spiders run all the time. Rational Purify found the leak right away."

No source code? No problem.

As any experienced developer will attest, bugs are not always in the code that they write. As more and more applications are built using third-party components, the ability to effectively test those components is becoming

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AuctionRover.com's Web site runs smoothly 24 x 7 without a hitch from unexpected reliability error, thanks to Rational Purify.

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imperative. Rational Purify's patented Object Code Insertion (OCI) technology gives you the power to test a wide range of components-including COM and DCOM modules, DLLs, ActiveX controls, and ODBC components, among others-even when source code is unavailable. And Rational Purify requires no special builds, so you can test the release version of your entire application, including third-party components.

AuctionRover.com used Microsoft's Windows Distributed interNet Application (Win DNA) architecture and variety of other components to create much of its software. Rational Purify provided just what they needed to locate leaks in their own code, in the modules, and at the interface. "We build heavily on a lot of the Microsoft Internet libraries," Scot acknowledges, "The really nice thing about Purify is that it lets us debug those libraries when we don't have source code. Many times we've found leaks in libraries we don't own. Purify pinpointed the function call that was causing the problem, and we either wrote code to get around it, or used a different function." Aris agrees, "Purify has been very helpful in detecting system resource leaks both in modules that we didn't have source code for, and in our own code."

Of course the problem is not always found within a module-sometimes the problem stems from the way a component is used. Scot adds, "COM can be really tricky, because when your reference counting is off you can get screwed up really easily. Purify helped us track down those problems very quickly."

What learning curve?

AuctionRover.com's development team uses Rational Purify directly, as they are developing. Because Purify is integrated with Microsoft Visual Studio, there is no need to leave the IDE — it is always just a click away. By using Purify themselves, as they develop, AuctionRover.com developers get immediate feedback on memory errors and other reliability defects. This approach eliminates the delays and communication problems that commonly occur in the development/ testing cycle. Aris found Rational Purify exceptionally easy to use, "It is integrated into the IDE very well, and is very intuitive." Testing throughout development has helped the developers at AuctionRover.com avoid the problems that are inherent in organizations that begin testing only at the end of the development cycle — there are no major surprises found just before they are ready to release, and therefore there is no need for long, tension — filled debugging session with a deadline approaching.

Scot was impressed with how quickly his developers were able to get valuable results with Rational Purify, "The learning curve was non-existent; you just plug it in and go." Many times, software developers can be the harshest critics as software users, especially when a tool is difficult to use or technical support is hard to get. Scot reports there are no such complaints about Rational at AuctionRover.com, "We've had no reason to call for support. Things have just worked." — exactly what a developer wants from a new tool.

Speedy Spiders

Even as the developers at AuctionRover.com were using Rational Purify to track down memory leaks in their spiders, they realized that the spiders would need to run faster. They turned to another award winning Rational product, Rational Quantify®, to help them speed up their code. Rational Quantify is a powerful performance profiling tool that helps developers find and eliminate performance bottlenecks in their software. As Scot says, "We are high-performance, down-to-the-metal kind of guys — these spiders need to run as quickly as possible. We have to deal with Internet delays and database access delays, but we don't want any of our own algorithms or code to slow things down further. We use message queues and a lot of other external systems, and Rational Quantify has been great at finding out what is taking the most time. We can find out if delays are caused by data-base insertions, the message queues, or the specific order in which we do certain operations. And the visual nature of Rational Quantify is really nice when you are trying to pin-point what's going on."

Like Rational Purify, Rational Quantify uses Object Code Insertion, allowing developers to pinpoint performance bot-tlenecks in their own code and in third-party components without source code. And like Rational Purify, Aris and the AuctionRover.com developers use Rational Quantify through-out development, to improve performance as they go, "We use Rational Quantify for profiling in our development stage to find out what calls are taking the most time, and to tweak our spider code."

More Powerful Features and Seamless Integration

Aris was surprised at the amount of information that Rational Purify collected, "Rational Purify has the most comprehensive results that I've seen-I get all of the detail I need, in a format that helps me identify and solve problems fast." While Rational Purify has the ability to collect large amount of infor-mation, it does not burden you with the task of wading through it. With Rational Purify's PowerCheck, you control how much error checking Rational Purify will do on a module-by-module basis. PowerCheck can help speed up both your testing and the analysis of results, by limiting Rational Purify to only those tests that you find most useful. Alternatively, you can use Rational Purify filters, to highlight specific types of problems in your Rational Purify results.

The AuctionRover.com team also took advantage of Rational Purify's ability to identify and report errors in multi-threaded applications. Aris reports that while his developers try to iso-late individual threads as much as possible during testing, "it is very helpful to see all of the different threads running."

Rational Purify is tightly integrated with other Rational tools, including Rational PureCoverage® for code coverage analysis. When you use Rational PureCoverage with Rational Purify or

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Rational Quantify, you can see exactly what lines of code you have exercised, and identify sections of your code that still need testing. And when you use Rational Purify together with Rational ClearQuest™ for automated defect tracking and change request management, you can enter defects found by Rational Purify into your change request management system with a single click.

Rational Purify is also an integrated part of Rational Suite™ PerformanceStudio, the industry's most effective performance testing solution. The AuctionRover.com team uses Rational Suite PerformaceStudio to ensure that their software will be able to scale to high-volume production loads and handle thousands of concurrent bidders without delays or crashes.

"Anything that uses any C++ is a good application for Rational Purify... working without it is like trying to walk a tightrope blindfolded-both unnecessarily difficult and risky"

Looking Ahead

Why mess with a good thing? Scot and Aris plan to continue reaping the benefits of Rational Purify and other Rational tools for the foreseeable future. "Anything that uses any C++ is a good application for Rational Purify... working without it is like trying to walk a tightrope blindfolded-both unnecessarily difficult and risky," Aris concludes.

AuctionRover.com's customers depend on them for continuous, reliable service and up-to-the-minute information, and AuctionRover.com counts on Rational Purify to help them deliver just that.

Rational®
the *e-development* company™

Corporate Headquarters:
Rational Software
18880 Homestead Rd.
Cupertino, CA 95014

Toll-free: (800) 728-1212
Tel: (408) 863-9900
Fax: (408) 863-4120
E-mail: info@rational.com
Web: www.rational.com

International Locations:
www.rational.com/corpinfo/
worldwide/locations.jtmpl