

Nokia uses Chronon to help diagnose SMS processing issues

Over the past 150 years, Nokia has evolved from a riverside paper mill in south-western Finland to a global telecommunications leader connecting over 1.3 billion people. During that time, they've made rubber boots, car tyre and generated electricity. In 1987, GSM (Global System for Mobile communications) is adopted as the European standard for digital mobile technology. With its high-quality voice calls, international roaming and support for text messages, GSM ignites a global mobile revolution. Nokia has since joined forces with Microsoft to strengthen its position in the smartphone market. The strategic partnership sees Nokia smartphones adopting the new Windows 7 operating system. Their goal is to establish a third ecosystem to rival iOS and Android.

Challenges:

As Nokia has expanded into the Smartphone market and experienced new competitive pressures its reliance on a back end to complete connections and develop greater efficiencies and provide *Value-Added Services*, VAS, for media processing, gateway, and signalling. Rapid growth, the billions of signals being processed and reliability of the backend to process these requests has put insurmountable pressure on developers to quickly resolve complex issues and provide a reliable back end for customers.

Within the application Nokia is developing, executing any simple use case involves translation of a mobile phone generated SMS into http request and further processing this as a Servlet Request. The primary difficulty in this setup is the huge amount of time it takes to reproduce any bug in the local environments. Nokia was looking for innovative solutions to debug their application server easily and effectively. Through an extensive search of productivity tools they found Chronon Systems LLC, a small start-up offering a way to find and resolve server side bugs in their Java Code.

Harikishore Tadigotla, Technical Development Lead within Nokia's VAS Solution group for the Emerging Markets leads a team of 15 developers tasked with resolving these issues. As Harishishore explained, ***"Before Chronon, we used to take a huge amount of time in reproducing production bugs. Some bugs were simply impossible to reproduce since our local environments were never exact replicas of production environment."***

Solution:

The proposed solution involved using the Chronon Recording Server to collect the recordings on Nokia's UAT servers (User acceptance Test servers) where the external testing teams were finding bugs in the pre-production builds. Then with the help of the Chronon Time Travelling Debugger, Nokia was able to quickly find and fix bugs that would have been almost impossible to reproduce using traditional debugging methods. Harikishore further adds, ***"Reproducing the bugs in our local environments was usually a very huge and cumbersome process as it involved a long and tedious process to redeploy server builds onto local environments before we got to verify them. Verifying local environments involves running simulations of SMS requests, which was not very accurate. Using Chronon we could switch to the payload of accurate SMS requests, which increased the accuracy of tests run in local environments."***

Chronon facilitated in communicating and resolving bugs among team members, which would have been difficult with the use of traditional log files. Developers were able to isolate bugs in the test environment and communicate to developers the root cause to resolve these issues. Nokia found this to be beneficial and reduce tedious cycles of isolating and communicating issues in a complex environment. The Chronon Time Travelling Debugger and the use of Post Execution Logging enabled Nokia's developers to expedite the root cause detection process. The greatest time saving was gained in the cases where developers had less familiarity to our code base.

Results:

Nokia found Chronon to be a very useful tool to increase the productivity of the developers and testers when the team understands the potential of the tool. Harikishore sums it up this way; ***“The primary benefit is the ease with which bugs can be reproduced ‘offline’. Another major benefit we found with using Chronon is it offers an understanding the existing codebase in a large team. This was found to be particularly helpful in our team since we had a huge codebase and only few developers had familiarity to major portions of our codebase.”*** The development team saw a drastic shift in the way programming can be done using Chronon.

Nokia found the technical team from Chronon was in constant touch throughout the pilot phase and ensured every single issue Nokia faced was solved. Nokia’s experience had been that it received support from the Chronon team round the clock. ***“The support was both informative and educational which gave us the confidence to spend time and money on Chronon. I would say the entire journey with Chronon team had been very fruitful. Our team in Nokia recommends Chronon to any team working on JVM based technologies. Discovering Chronon is making our team rethink the way we do development.”***

About Chronon Systems LLC

Chronon Systems, LLC is a labor of love. Located near San Francisco, CA, with offices in New Jersey. Chronon develops a DVR for Java and debugging solution, which makes developers’ life easier. Chronon allows you to record the entire execution of your Java program and a novel way to debug it. www.chrononsystems.com