Application Performance Engineering

Case Study

Florida Assessments in Informative Reading (FAIR)

Statewide reading assessment Web Assessment Module (WAM) & Progress Monitoring and Reporting Network (PMRN)

For Florida Department of Education, USA

Florida Department of Education is responsible to administer online reading assessments for K-12 students across the Statewide public and charter schools. They had designed the assessment program in collaboration with Florida Center for Reading Research (FCRR). This program was developed by large IT firm. FAIR is a popular program and is used by 2.2+ millions of students and thousands of teachers and parents during three assessment periods within an academic year.

Florida Assessments in Informative Reading (FAIR) comprises of two major modules; Web Assessment Module (WAM) used for assessments for students from 3rd grades to 12 grades, and a K-2 EST module used for screening students from Kindergarten through 2nd grades. This scientifically designed product was very popular and was being used to assess students 3 times during 3 assessment periods in an academic year. This would help teachers in determining the Probability of Reading Success (PRS) for their students. A widely used and very mission oriented program was critically troubled due to inability to scale up as the concurrent user sessions grew little over couple of thousands in number. There were about 90 serious bugs that were compromising the reliability of the program for accuracy and consistency.

In short, the challenge was to resolve reliability and scalability concerns while this massive hardware and software system was already in production. This program was highly visible and was hitting the news media for all wrong reasons causing lot of embarrassment to the elected political leaders in the FL State government. FL Department of Education has exhausted all their options to resolve these issues including offering help to the current vendor and

consulting with resources from platform vendors likes of Microsoft and Oracle corporations. Yet, there was no resolution in sight. As a last resort, ArnAmy was chosen to offer help because of our high reputation and successful work history with Department of Education.

Solution

In solution, ArnAmy carefully chosen the team of IT professionals to tackle this massive challenge against extremely aggressive deadline. After successful implementation of staffing plan then ArnAmy collaborated with FCRR and FDOE resources to successfully transfer from vendor's private data center, the entire infrastructure, to the State's own data center at NWRDC. ArnAmy team methodically approached in acquiring all the artifacts of the solution from the vendor and then validating the source code, build and deployment processes.

The efforts included but not limited to-
- Assessment and optimization of the configurations for Network Components, Operating

Systems, Storage Area Networks (SANs), Load Balancers, Database Servers, Web Servers, Run-times, and Application Configurations.

- Assessment and optimization of database tablespaces, partitions, indexes, and PL/SQL routines.
- Review and refactoring application architecture to optimize response times, and fixed all bugs to address reliability concerns.
- Optimization of ASM, Oracle Real-time Application Clusters (RAC), network bandwidth, web-farms, web-gardens, load-balancing algorithms, connection pooling, session state services, etc.

We also programmed 11 new functional enhancements required for the next school year in very aggressive manner to meet the deadline.

Technologies

Operating Systems: RedHat Linux, Windows 2008 Advanced Servers

Hardware: F5 load balancer, Dell Servers, Dell EMC SAN Storage, Firewall

Database: Oracle Realtime Application Cluster (RAC), SQL Server 2008

Application Servers: Microsoft.Net, C#.Net, ASP.Net, Windows Communication Foundation (WCF), Windows Workflow Foundation (WWF), Internet Information Services, ASP.Net State Service, SSRS, SSIS

Benefits

- Reliable & bug free program.
- Scalable solution – promised about 40K student assessment per day, however delivered over 145K plus assessments per day, while not going above the average CPU usage of 40% on any of our servers in the cluster.
- Improved maintainability.
- Happy stakeholders.

Why ArnAmy?

Many of the world's successful organizations rely on ArnAmy to deliver competitive business solutions. ArnAmy combines rich technical expertise, industry's best proven practices, and dynamic workforce metrics to provide excellent technology solutions.

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Why Not?

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An award winning team, we are recognized by our customers and peers as 'industry thought leaders'. We are often called upon to rescue mission-critical projects and have a 100% success rate in such rescues. So there are lots of good reasons for you to begin your next project with us.

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