

Database Optimization for a Leading provider for online training in the Healthcare domain

CUSTOMER PROFILE

The Client

Our client, Ascend Learning, is a well-known provider of online training solutions for healthcare certifications. Their services are used by large hospitals, staffing organizations as well as individuals to keep skills in the nursing field

The Requirement

ATI Testing, the online portal of Ascend Learning, is a multi-tenanted, multi-user SaaS application that has been in service for over 10 years. It was experiencing a continuing slow down as new customers and users were added and was unable to provide key metrics to their customers about their performance or proactively suggest required certifications that could benefit the same customers.

The ATI Testing platform was a two-tier platform built upon IIS and SQL Server with a JSP based front-end. Upon analysis it was discovered that the solution was incrementally architected with a database schema that was not optimally designed, production DB that had grown really large (upwards of 20GB) tables that had ballooned (with one table having nearly 2 Billion rows), application security and logic coded in SQL Server stored procedures and reports that cross-joined large datasets for metrics.

Our Solution

Nidaan Systems provided a multi-pronged solution with both near-term and long-term benefits.

1. For immediate performance boost, the Database server was thoroughly analyzed for performance optimization so that the business could continue to run more efficiently and without the constant administrative headaches. With the following optimizations, a nearly four-fold increase in performance was delivered which allowed time for the longer-term solution-
 - a. The SQL Server was upgraded to v2012 to leverage the best features.
 - b. The large tables were replaced by time-partitioned slices with indexed views ensuring that the existing application logic would work seamlessly.
 - c. The older time partitions were moved to different filegroups on separate drives to optimize hardware performance.
 - d. The backup and replication strategy was tuned to address only active partitions on a continuous basis and non-active partitions on a rolling basis.
 - e. Indexing of tables was redesigned based on a review of all the stored procedures to align them with most often used combinations of data.
 - f. Large metric reports were refreshed asynchronously on a periodic basis rather than on-demand so that they could be presented without performance impacts.
2. For a long-term solution, a re-architecture plan was proposed which would align the application based on current standards and technology:
 - a. The 2-tier platform was redesigned to leverage MVC design pattern on the Microsoft .NET platform.
 - b. A services layer was designed that would provide the application management and administration framework and allow it to be hardware load balanced.
 - c. Such a design would allow the application to be more responsive as well as extensible to the mobile platforms as well.
 - d. An multi-release implementation and upgrade project plan was proposed.

The Outcome

The analysis and performance optimization upgrade was completed in under 3 months. Ascend Learning and its customers were extremely satisfied with the result. Consultation was provided on the initiation of the larger re-architecture plan which Ascend chose to implement using its in-house technology team. If you'd like to hire our experienced software professionals, or want to outsource software development services to us, please feel free to get in touch with our expert team.