



*A Search for New Services*



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## HOST CONNECT

### 2005 COMPUTERWORLD HONORS CASE STUDY

#### FINANCE, INSURANCE & REAL ESTATE

A LEADING PROVIDER OF ONLINE BROKERAGE SERVICES, DEVELOPED AN IN-HOUSE BOOKS AND RECORDS SYSTEM TO DELIVER LOW-COST, UNINTERRUPTED ONLINE TRADING WITH FAST EXECUTIONS. [20055202]

#### SUMMARY

Scottrade, a leading provider of online brokerage services, developed an in-house books and records system to deliver low-cost, uninterrupted online trading with fast executions.

#### APPLICATION

Scottrade President and CEO, Rodger Riney, decided in early 2000 to switch from a service bureau provider of transaction processing to an in-house, internally developed solution. Our choices were to develop a system from the ground up or purchase a system already in existence and modify it to meet Scottrade's customers' and business needs. Following months of evaluation and analysis, Scottrade determined that purchasing a pre-existing system would deliver a faster, more comprehensive solution for our customers. Denver-based Computer Research, Inc. (CRI), was selected as the software provider. This solution allowed for in-house processing, Scottrade ownership of the source code and the ability to prioritize Scottrade's customers' needs.

Scottrade's philosophy has always been to internalize IT processing and development. This allows us to maximize functionality to our customers and minimize cost. Scottrade's customers expect high value for their commission dollars. Owning our own data and having access to that data is pivotal in meeting our clients' expectations. This data includes market data, industry research and news, and customer transaction information. In the ever-quickening pace of the Internet world, it is vital to also provide new functionality in extraordinarily short time intervals.

Our approach to the delivery of this system required a full commitment of Scottrade's internal IT groups as well as external consultants and developers. The initial system was benchmarked in Rochester, Minn., to develop a capacity and performance baseline. In general, brokerage IT processing requires high capacity in transaction processing capability at the market open followed by a downward trend throughout the market session with a smaller spike toward the market close. Once adequate benchmark results were achieved in the lab, various business segments of Scottrade were engaged to provide a functional gap analysis. The development of missing system components as well as enhancements to meet Scottrade's business and customer needs were assigned to internal and external development groups. As development efforts moved forward, modular components of the system were tested and retested. Following months of this development and testing cycle, mock conversions and full system tests were completed to ensure the system met capacity, integrity and availability requirements.

#### BENEFITS

Return on investment is always a determining factor in the viability of any project. Using a service bureau provider typically results in a transaction-based cost model. Once on the CRI in-house system, Scottrade would be on a new flat-rate cost structure that allows for virtually unlimited transaction processing at an ongoing fixed rate. This cost savings created a return on investment timeline of months, not years. Cost savings of this magnitude are passed on to the customer in the form of new products and services at no additional cost, continuing our commitment of value to our customers.

The new in-house solution gave Scottrade unlimited and unrestricted access to previously inaccessible segments of our customer data and rapid program development to streamline back office processing. Access to this new data allowed us to make key enhancements to our system, such as adding tax lot accounting, house-holding statements and accounts, and improving transaction history reporting.

Providing a completed execution back to the customer is only the first step in the life cycle of a trade. A myriad of tasks must be performed by back office personnel to ensure the successful execution of a trade. The CRI system enabled Scottrade IT personnel to customize and streamline our back office accounting systems to more efficiently and accurately process trades on behalf of our customers.

While access to new and different data may please some customers, the most fundamental of all customer needs are fast trades under any market condition. The new CRI system provided Scottrade customers with completed trades in times that were unprecedented in the industry. Scottrade's execution times, which were already exceeding customers' needs, decreased more than 500%.

## **IMPORTANCE**

Scottrade's technology selections were crucial to the success of the CRI project. All components of the system had to be highly scalable and easily manageable without single points of failure. Scottrade selected IBM's AS/400 platform to process customer transactions and back office accounting systems. IBM has continually proven their commitment to the AS/400 product line of hardware and software. This ongoing commitment by IBM to deliver a cost effective but "mainframe-like" environment through the AS/400 was a key component in the selection process.

Speed and redundancy were also critical in determining platform and technology selections. EMC was selected to provide high availability and disaster recovery capabilities across all computing platforms. EMC's Timefinder product met Scottrade's requirement to create and deliver multiple system images for backup, testing and capacity benchmarking purposes. EMC's SRDF product enabled our IT staff to easily replicate multiple-host data to a remote site to meet our regulatory and business requirements for disaster recovery.

## **ORIGINALITY**

During Scottrade's original functional and gap analysis efforts, several deficiencies were uncovered as the system was initially benchmarked. The original system had some capacity issues and it was not equipped with an Internet interface or several key back office subsystems that are unique to the online brokerage industry.

CRI's previous customer base was mainly comprised of banking and fixed income institutions without any need for a true Internet transaction processing system. Scottrade's Internet and service bureau systems at the time handled more than 98% of our trading business. CRI and Scottrade IT personnel developed a unique Web-to-back-office (WBO) interface to quickly integrate CRI's trading software with our Internet presence.

Scottrade's outstanding customer service is delivered through the Internet and more than 225 branch offices in 47 states. Branch employees must have the ability to input customer orders and answer customer inquiries through a non-Internet-based application. This order entry and account inquiry application is needed to allow customers to place orders through branches if an Internet event prevents customers from accessing their own data. This additional interface into the order and accounting systems was specifically and uniquely designed using completely different hardware and software than the customer interface. This maximizes application availability and ensures that customers will have a positive trading experience with Scottrade.

The benchmarking process in Rochester, Minn., identified key components of the system that bottlenecked at very high transaction levels that were similar to Scottrade's environment at the market open. The early detection of these deficiencies allowed IBM and CRI to make changes to IBM's native I/O processing. Subsequent benchmark tests proved the new system could handle more than 800% of Scottrade's current transaction load.

## **SUCCESS**

Management, customers and IT personnel generally view system conversions as a necessary evil. In most cases, a successful conversion is merely laying the groundwork for future enhancements. Scottrade's needs for a more scalable system were met by the new system when the firm experienced its ten largest trading days in the company's history within months of the conversion.

Industry and new customer requirements, such as tax lot accounting, after hours trading and active trading platforms (ScottradeELITE) were also delivered shortly after the conversion.

The most significant enhancement to the customer's experience that was brought about by this conversion was the seamless return of timely trades through almost any market condition. Customers tend to react to world and financial news in different ways, but if a customer decides to "get in" or "get out" of a stock based on an event, their expectations are that the system works as though they were the only person using it. The CRI system met this goal.

## **DIFFICULTY**

A project of this scope and magnitude is difficult to deliver on time, under budget and without problems. The CRI implementation plan spanned several years and involved hundreds of Scottrade business and technical personnel as well as multiple external consultants, developers and technology partners. The most significant challenge during the project was to keep Scottrade's various business segments from changing the original application requirements to a more dramatic improvement over the old system. Scottrade management made it clear early and often that the dramatic return on investment for implementing the new system could not be realized unless implementation actually took place. This focus allowed the conversion to take place seamlessly and positioned Scottrade to deliver value to our customers like never before.