



## Edgewater builds infrastructure to support rapid growth and minimize operating costs for this East Coast eGrocery retailer.

### Edgewater's eSolution:

- ▶ Assisted HomeRuns.com in providing eGrocery services to over thirty-five Boston area communities and twenty Metropolitan Washington, D.C. communities including Virginia and Maryland.
- ▶ Enabled order placement via the website or call center with customer-specified delivery window.
- ▶ Provided integration of order placement, fulfillment, and delivery.
- ▶ Delivered a web-based transaction processing system that integrated HomeRuns' order entry, content management, real-time inventory tracking and financial reporting.

## Scaling Up

As one of the early shop-at-home retailers, HomeRuns.com (HomeRuns) combined the convenience of round-the-clock ordering and next-day delivery with high quality perishable and nonperishable items. HomeRuns needed to ensure that the goods their customers ordered were delivered correctly and on time.

Throughout their rapid expansion, growing order transaction volumes were putting pressure on their systems. Their original best-of-breed approach to functional subsystems was posing integration challenges and reducing the speed with which orders could be processed and disseminated to appropriate people within the organization. HomeRuns had concerns about system availability since a majority of their business was conducted over the Web and any downtime could be detrimental to their business. In addition, HomeRuns required a centrally-located operational system that would support future fulfillment centers.

## First Integrate, Then Expand

The main components of HomeRuns' operational infrastructure – such as order entry, order fulfillment, and delivery – were originally supported by independent computer systems, each of which had its own database. Inventory levels were maintained in both the order entry and the fulfillment system, with file transfer being the only

means of communication, causing vital information to often be out of sync.

An analysis was conducted to determine what information was required, how it should be communicated, and how advanced technology could be leveraged. From the analysis, HomeRuns realized the need to integrate their disparate components into a single development and operational platform. This platform needed to support refined workflow and business processes and allow for scalability, supportability, and maintainability.

After evaluating several vendors, HomeRuns partnered with Edgewater Technology, Inc. to break down the barriers between their disparate systems. With an in-depth understanding of HomeRuns' unique and dynamic business, Edgewater designed and rebuilt a majority of their systems with a solution that would also meet their expansion plans.

## The Business Solution

Consulting closely with HomeRuns' operational and technical personnel, Edgewater redesigned the system infrastructure to allow for workflow flexibility and adaptability while increasing reliability and data integrity which enabled continuous improvement as order volumes increased.

Edgewater's solution consisted of ten key components utilizing object-oriented technology:

1. **(Internet) Retail eCommerce Website:** Allowed round-the-clock service for customer sign-up, shopping, and order placement; utilizing SSL on customer-sensitive information pages, load balancing to spread the processing load across several servers, and advanced HTML scripting and caching techniques to speed the rate at which pages load.
2. **Internal (Intranet) Order Entry and Tracking Application:** Simplified the order entry, order processing and customer service inquiries originating via web, phone and fax that were handled by HomeRuns personnel.
3. **Order Fulfillment Tracking and Reporting Application:** Enabled real-time data collection and reporting, so operations could monitor order progress and accuracy on a proactive rather than a reactive basis. In addition the application was optimized for maximum efficiency and specific order drill-down.
4. **Radio Frequency (RF) Order Fulfillment Application:** Provided item selectors the freedom of movement through the order fulfillment center as they picked multiple orders. Integrated with an automated tote storage and retrieval system for a Van

Loading System, which scanned the bar codes attached to a tote.

5. **Upgraded Centralized Administration and Accounting Application:** Afforded easier addition of remote cities. Provided centralized mechanisms for closing out orders from a financial perspective and enabled maintenance to the item catalog, delivery areas, promotional events, group delivery information, and system parameters.
6. **Intranet Management and Operational Reporting Application:** Allowed facilities to access mission critical data from a browser with the ability to view, print, or export reports to MSWord or MSEXcel.
7. **Real-Time Inventory:** Removed the system-intensive batch process of updating fulfillment and order entry databases. Advanced customer service levels due to radical improvements in the reliability and data integrity of the infrastructure which prevented out-of-stock item orders and offered substitutes in the rare event that a requested item was unavailable.
8. **New Hardware Implementation:** Replaced all system networks and hardware for the relocation of HomeRuns' general headquarters. Integrated new system suites (HQ, Beta, QA, Boston, DC) of DELL and Cisco hardware with fail-over, Microsoft database clustering for automatic fail-over of all database systems and Symbol Spectrum 24.
9. **Disaster Avoidance and Recovery:** Implemented a complete fail-over process in the event of hardware malfunction for all applications and databases which included operator instructions to monitor systems and switch over to the backup server when necessary with very little down time for internal users.
10. **Microsoft Replication Services:** Implemented replication services from HomeRuns' headquarters to each of their fulfillment centers which enabled the transferring of new orders to each of the fulfillment centers and kept inventory levels updated at the general headquarters.

## The Technical Solution

The new infrastructure was based on Microsoft, Symbol, Eprise and PaylinX technology. File transfer mechanisms were used only to communicate with a separate routing and dispatch system as well as a new Van Loading System that was used to organize loaded totes onto temporary holding carousels and distribute them via rollers to the proper vehicle when it was ready to be loaded.

The Internet and Intranet applications were implemented with ASP, Dynamic HTML, Eprise, JavaScript, VBScript and DCOM providing a user-friendly graphical user interface to reduce order taking time and training. Two- and three-tier OLTP architectures were used to develop applications for inventory management, order fulfillment tracking, and reporting functions. Spectrum radio frequency technology communicated the items and orders to the order fulfillment center item selectors and ensured that the correct items were being selected and grouped into orders.

## Technologies and Tools

Eprise Content Management Tool  
 F5 Networks BIG/IP Load Balancing  
 Intermec Label Printers  
 Microsoft Access  
 Microsoft Active Server Pages  
 Microsoft Cluster Server (MSCS)  
 Microsoft Data Access Components  
 Microsoft Distributed Component Object Model (DCOM)  
 Microsoft Internet Explorer  
 Microsoft Internet Information Server  
 Microsoft Site Server  
 Microsoft SQLServer (with Replication Services)  
 Microsoft Transaction Server  
 Microsoft Windows and NT Workstation  
 Microsoft Windows NT Server  
 Microsoft Visual Studio (C++, VB, SQL)  
 PaylinX via ISDN  
 Seagate Crystal Reports  
 Symbol Spectrum 24 RF Technology

