

# EBAY ENTERPRISE MARKETING SOLUTIONS

By Greg Harman

## ABSTRACT

eBay Enterprise Marketing Solutions (EEMS) contracted with BigRio to build fundamental components of a new Customer Engagement Engine (CEE) for their Commerce Marketing Platform.

The CEE, a demand generation marketing solution, creates feedback loops that are extremely data rich and integrated with marketing analytics. eBay Enterprise Marketing Solutions and its clients leverage those analytics to improve the accuracy and preferences of customer profiles and maximize campaign results.

BigRio's expertise enabled the CEE to handle data from tens of millions of end users every day with 99.999% availability at peak traffic. This state-of-the-art system integrates the eCommerce operations of eBay partners, such as major retailers, Fortune 500 consumer brands, professional sports leagues, and major U.S. airlines.

## BACKGROUND

eBay Enterprise, formerly known as GSI Commerce, was acquired by eBay in 2011 and promptly renamed as eBay Enterprise two years later. eBay Enterprise Marketing Solutions, a division of eBay Enterprise, creates, develops, and operates online shopping sites for more than 1,000 brands and retailers.

The company delivers consistent omnichannel experiences across all retail touch points to attract and engage new customers, convert browsers into loyal buyers, and deliver products with speed and quality. Among the services that eBay Enterprise Marketing Solutions provides are marketing, consumer engagement, customer care, payment processing, fulfillment, fraud detection, and technology integration. The company has offices in North America, Europe, and Asia.

The CEE is the central component of the EEMS Commerce Marketing Platform (CMP).

## THE CMP CONTAINS NINE COMPONENTS:

- Customer Engagement Engine
- Display Engine
- Affiliate Engine
- Attribution Engine
- Media Planner
- Audience Insights Engine
- Social Engine
- Optimization Engine
- Loyalty Engine

## PROBLEM

Using eBay Enterprise Marketing Solutions, the parent company wanted to reestablish its competitive advantage as the premier e-commerce vendor by re-architecting GSI's legacy e-commerce platform from a hodgepodge of disparate technologies and frameworks into a single, powerful, and efficient platform.

The new platform had to outperform its predecessor in terms of transactional data velocity while reasserting their dominant position as one of the most reliable, highest volume e-commerce vendors in the world.

## OBJECTIVES

As the developer of CEE's core Data-Ingest Module, BigRio had the task of architecting and building an edge server and data ingest component that had three primary functions:

- Transparently redirect customer browsers from a vanity URL embedded within their messages to a final destination
- Log customer metadata to a NoSQL store for marketing analysis
- Perform additional logging of open detect and click-to-sale conversion events.

Because the Data Ingest Module is the most critical component in the CEE, it must operate at higher availability (99.999%), higher performance, and with more robust security than the other components. BigRio's responsibility included architecting and developing the data store - CEE's system of record for security metadata, encryption keys, and critical marketing metadata - as well as the load balancing and disaster recovery functionality.

BigR.io had to build all this functionality with the following constraints in mind:

- Capable of handling on the order of 120 billion messages annually
- High-Availability: 99.999 percent uptime
- Multi-layered security measures to thwart phishing attacks
- Distributed operations across multiple data centers and logical pods
- Integration with numerous other system components; produced both in-house and by third-party vendors

The project business case for the CEE included the following requirements:

- A foundation characterized by a scalable, extendable, and maintainable architecture
- Increased marketing campaign management control and functionality
- The capability to funnel and capture more and more detailed customer data than was possible at the project outset
- A richer marketing analytics feature set

## METHODS

To meet eBay Enterprise Marketing Solutions objectives for the CEE, BigRio first determined appropriate technologies and frameworks for the engine. This was a significant challenge as EEMS had been operating a mixed bag of legacy systems pieced together stemming from several corporate acquisitions. BigRio architected, deployed, and managed the following:

- A portfolio of Apache & other open-source projects
- Modern DevOps (Continuous Integration)
- Cloud computing
- Content management systems
- Marketing analytics systems
- NoSQL
- Cutting edge development tools, languages, and databases

## RESULTS

BigRio's Data Ingest module is the functional center of the CEE. This ensures that incoming and archived data is available to CEE's powerful analytics technologies – providing the commerce insights and demand generation necessary to optimize the relevancy and value of each customers' purchasing journey.

With the CEE in place, eBay Enterprise Marketing Solutions enabled its marketers to drive and optimize one-to-one commerce at scale. Both EEMS and their clients can now capture and utilize more customer data than ever before. As a result of BigRio's work on the CEE, EEMS expects to double performance across a number of metrics.

## FUTURE IMPLICATIONS

This business case for the investment in the CEE was based upon the enormous, yet previously unrealized value in the data represented by the customers of eBay and its downstream business partners. That data enabled the targeting of marketing campaigns more precisely than ever before. With so much data available from customers, marketers can speak to them virtually on a one-on-one basis.

BigRio helps organizations exploit big data by specializing in the development and support of enterprise-level data projects. We can help your company pool and normalize your data with our cutting-edge custom data integration, cleansing, and validation services. Thanks to the volumes of transactional and behavioral data that customers are sharing through their multichannel interactions, there are tremendous opportunities for digital organizations to identify new ways to drive internal efficiencies and optimize the customer experience. Our teams of data scientists and engineers can now pave the way to efficient analytics, new business insights, and better decision making.

BigRio LLC, Harvard Square, One Mifflin Place, Suite 400, Cambridge, MA 02138  
(617) 500-5093 | [info@bigr.io](mailto:info@bigr.io) | [www.BigR.io](http://www.BigR.io)

