

## **Steering Clear of IT Pitfalls**

# **Mapping Your Way to Enterprise-wide Visibility into Real-time Applications with Transaction Monitoring**

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## **Abstract**

As retail architectures transform from the traditional offline, batch model to an online, real-time, cross-channel model, everyone from the CIO to the help-desk needs to gain enterprise-wide visibility into the customer experience at every customer contact point (e.g. e-commerce, point-of-sale, mobile, etc.).

Today, most retailers struggle with a siloed and inconsistent range of information pouring in from dozens of point monitoring tools – device statistics from one, network traffic analysis from another, log messages from a third. Operations leaders grapple with a growing number of blind spots, longer problem resolution times, and limited information on how to optimize the environment for success.

The solution lies in a new approach to transaction monitoring, and a pragmatic roadmap towards monitoring what really matters – the customer experience.

This white paper outlines a roadmap to monitoring what really matters – the customer experience. It outlines how IT operations can deliver consistent tactical wins with demonstrable ROI, while executing against the broader strategic goal of enterprise-wide visibility into every customer contact point.

## Introduction – Monitoring What Really Matters

As retailers and financial services organizations fight to attract and retain customers, they are investing heavily in customer contact points and multi-channel infrastructure to deliver a seamless, best-in-class customer experience..

The success of these initiatives hinges not only on traditional considerations like application design, data integration, and usability, but increasingly on application reliability, performance, and availability – the traditional domains of IT operations.

To align their efforts with the broader strategic goal of consistent, unified monitoring of the customer experience across all customer contact points, IT operations teams need to create an action plan for enterprise-wide visibility into the customer experience at every contact point.

## Retail IT Architecture in Transition

The classic offline, batch mode retail IT architecture is rapidly disappearing. Replacing it is an online, real-time infrastructure that presents incredible new opportunities for robust intelligence gathering, superior customer service, improved operational visibility, and increased efficiency.

Amidst this change, the basic requirements have remained the same: the retail IT infrastructure must be extremely reliable, always available, and perform efficiently.. The challenge for IT operations is catching up with the impact of a decade of significant infrastructure change, while keeping pace with what promises to be another decade of rapid evolution for retail IT architecture.

### The classic model

The classic retail IT architecture consisted of a resilient, loosely federated POS system at the store level, and a powerful centralized application environment in the home office. Achieving the necessary reliability, performance efficiency, and availability required:

1. Keeping a relatively small number of highly standardized, purpose-built hardware units operating normally.
2. Managing the periodic data synchronization between store servers and the home office.

3. Carefully monitoring a handful of business-critical applications running in a single primary datacenter (and often on a single mainframe or mini-computer system).

While not a trivial task, the approach to monitoring this environment was relatively straightforward:

1. Deploy agents (usually provided by the POS vendor) to monitor key device and software attributes.
2. Design data synchronization processes that either log or alert when processes fail.
3. Create scripts or purchase 3<sup>rd</sup> party application monitoring technology to watch application components, process execution times, and other key application characteristics in real-time.

Most retailers built their monitoring framework around this model, using a combination of home grown application monitoring technology and 3<sup>rd</sup> party device monitors. Five minute polling, alerting and a centralized alarm console brought 80% of the required information together for operations staff.

## The first cracks appear

In the past decade, three significant architectural changes have stretched retail monitoring frameworks:

1. E-commerce websites. Retailers struggled to manage the performance and availability of first and second-generation e-commerce websites. The lack of visibility into the online customer experience meant customers often discovered performance problems before IT operations, and existing monitoring tools provided little help in detecting or troubleshooting these issues. As a result, site monitoring teams adopted a range of tools for testing sites from outside the firewall, and monitoring live user browsing patterns for select areas of the site.
2. Networking of the store. A new set of network-related problems appeared as retailers used high bandwidth links to integrate store and home office applications. The classic up/down approach to network management provided no visibility into application contention, chatty protocols, or bandwidth usage patterns. To combat this problem, network operations teams acquired network performance monitoring tools and application acceleration devices.

3. Application integration. The replacement of point-to-point application integrations with enterprise service buses led to a new host of resource contention and application coordination issues. Server monitoring technologies couldn't tell operations staff which applications and processes were overloading database or application servers. To get answers, application development teams brought in J2EE or .NET application monitoring tools to provide deeper visibility into these processes.

Most retailers responded by adding these point solutions alongside their existing monitoring frameworks, as integration was expensive, and offered little perceived benefit.

## The floodgates open

The new online retail infrastructure consists of multiple customer contact points (including e-commerce, networked POS, mobile, and kiosks) that are tightly integrated with multiple home office and outsourced applications over high-bandwidth network links. This new infrastructure introduces two disruptive changes that will further challenge existing monitoring frameworks:

1. Cross-channel. True cross-channel operation demands deep linkages between customer contact points and home office applications. A single customer interaction may invoke dozens of related transactions with inventory, payments, promotion, loyalty, and supply chain systems. As a result, all of these systems will have to work effectively in concert, and increasingly in real-time, to deliver the right customer experience.
2. Changes in application delivery. The triple play of SOA, SaaS, and virtualization completely decouples applications from the underlying hardware and network infrastructure they run across.

## No Single Version of the Truth

Most retailers are now challenged with a fragmented, inconsistent view of application performance. Correlating information from the various network, device, and server monitoring solutions to isolate and remediate issues is difficult and extremely time consuming for IT operations staff. As a result, IT operations is constantly reacting to outage or slowdown reports, problem isolation is time-consuming and tends to encourage finger-pointing between various teams (and 3<sup>rd</sup> party vendors), and troubleshooting starts with manual correlation of results from multiple disparate monitoring systems.

“For the first time, infrastructure concerns, over the investment expense of store systems, topped the list as a barrier to improving the customer experience,” according to Nikki Baird, managing partner of RSR in a recent article (*Sometimes IT for IT’s Sake can be a Good Thing*, June 7, 2008).

It's no wonder this is so difficult. The enterprise-wide monitoring framework approaches universal coverage, but only reports on up/down status. Web site monitoring tools have the right level of granularity, but only see the client side of a web transaction and can't be used for non-HTTP applications or web services integration. Network performance monitoring tools lack application context (and end-to-end visibility). It's like assembling a jigsaw puzzle without the picture on the box lid.

## Putting the Pieces Back Together

There is a better way to correlate this information – by monitoring transactions. Transactions contain all the information and context IT operations teams need to understand how a customer-facing application is performing. A transaction provides the reliable, real-time, and intelligent link retailers are missing between data centers and customer contact points. Response times, network versus application delays, failure rates – all of this rich information is available by monitoring transaction flow.

By capturing transaction intelligence, retailers can optimize real-time application performance, consolidate network infrastructure, and streamline processes related to troubleshooting, while minimizing the risk of service impacts on revenue, customer retention and IT productivity. This results in an improved end-to-end customer experience.

Transaction monitoring has been common practice within financial institutions for close to a decade. It did not take long for the financial industry to realize that transaction monitoring made a significant strategic impact on operational efficiency, speeding up approval and remediation cycles for customers, providing useful information for infrastructure consolidation and SLA management, and minimizing disruptions of the real-time capabilities for online banking, POS terminals and ATMs.

While retailers share many challenges with financial services – distributed environments, complex architectures, high transaction volumes – the economics of transaction monitoring have never quite worked in the lower margin world of retail. Heavy customization was often required to recognize transaction types unique to each retailer, and agent-based technologies necessitated massive investments and disruption at the store level. The benefits were appealing, but the costs were too high.

Today, retail technology leaders are looking towards transaction monitoring as a strategic technology that can lead to reduced service disruption and significant operational efficiencies. Transaction monitoring is becoming even more accepted as the complexity of both online and in-store retail business transactions grows.

Fortunately, a new breed of out-of-the-box transaction monitoring products, dramatically reduces the deployment barriers for retailers. These developments make it possible for IT managers to achieve consistent tactical wins and incrementally fund initiatives that lead to enterprise-wide visibility into the customer experience.

## **A Pragmatic Roadmap to Enterprise-wide Visibility**

So what transactions should you monitor first? The answer lies in which customer contact points are the most important to customer retention and revenue generation. Retailers can achieve instantaneous tactical wins with transaction monitoring by aligning deployments with major customer contact point initiatives, such as the check-out process.

### **Deploy at in-store point-of-sale**

An obvious starting point for transaction monitoring is at the point-of-sale. The impact of outages or slowdowns is well understood by the business, architectural plans call for increasing complexity, and most retailers lack real-time visibility into key aspects of the point-of-sale process today.

One of the major blind spots at point-of-sale for many retailers is the payment (e.g. credit/debit/gift/loyalty) transaction. Payment processing at point-of-sale exhibits all of the characteristics that will become more common in online, real-time retail infrastructure. It often involves:

- Multiple software and hardware components that must work in concert
- 3<sup>rd</sup> party dependencies (payment processors are the original SaaS vendor),
- Real-time operation (especially with growing consumer preference for PIN debit)
- Sub-second expectations for end-to-end response time
- High reliability and availability requirements.

Deploying transaction monitoring at point-of-sale allows IT operations to demonstrate its value in a measurable, high-visibility, and high-stakes environment. Focusing on the payments component of point-of-sale provides a manageable first project and a beachhead that can be expanded as point-of-sale functionality rapidly expands.

## Deploy across critical web transactions

Complex web transactions are also a natural opportunity for transaction monitoring. As retailers increasingly integrate back-office systems with their e-commerce platform in real-time, better visibility into both the front-end and back-end of these transactions will become important. Site monitoring tools will be unable to look deep enough into the infrastructure (most will go from the browser to the web tier, but do not extend beyond to the processor or bank) to provide the necessary visibility.

Deploying end-to-end transaction monitoring in front of and behind the web tier allows IT operations to demonstrate value in a rapidly growing component of the retail operation. Focusing on complex real-time transactions, be they payments or inventory lookups, provides a complement to existing site monitoring technologies, and a beachhead that can be expanded as e-commerce integration continues.

## Deploy at lower-cost in-store contact points

For many retailers, driving customers to lower-cost in-store contact points like kiosks and self-checkouts will become more strategic and acceptable to customers used to shopping on the web.

Deploying transaction monitoring across these contact points ensures customers are successful in using these new in-store assets. And, if retailers already have transaction monitoring deployed to monitor POS, extending it to cover these new in-store assets is a straightforward and incremental project.

## Expand deployment at point-of-sale

Growing support for services-oriented POS architecture (e.g. the NRF-ARTS initiatives) means retailers can rapidly expand POS capabilities to offer custom promotions, update inventory in real-time, check the progress of a product through the supply chain, or arrange home delivery of large items through the e-commerce operation.

Transaction monitoring is the ideal complement to this increased complexity at point-of-sale. Adding visibility into these new transactions again becomes an incremental project.

## Deploy at emerging contact points

A retailers increasingly experiment with emerging contact points like mobile phones, in-store digital advertising, and social network integration, quick ways to assess the success of these initiatives and rapidly evolve the customer experience will become critical.

With transaction monitoring already available as part of both the store and e-commerce infrastructure, retailers can easily tie powerful monitoring into new cross-channel initiatives.

## Summary

Retail IT architectures are rapidly evolving from offline models to online, real-time infrastructures that can support multiple customer contact points and seamless cross-channel operation.

Most retailers IT operations teams are ill-equipped to manage this new, more complex environment. Their existing monitoring frameworks and tools provide a fragmented and inconsistent view of the customer experience. Left unchecked, this lack of visibility will significantly impact the success of new contact point and cross-channel initiatives, and dramatically reduce IT productivity.

Retailers need to outline a clear monitoring strategy to ensure their systems continue to be reliable, available, and high-performance. Central to this strategy is a pragmatic roadmap to achieve enterprise-wide visibility into the customer experience.

The availability of a new breed of easier-to-deploy transaction monitoring products provides an attractive foundation for these efforts.

## INETCO as your Partner

INETCO develops transaction monitoring software that gives companies revolutionary visibility into the operation of real-time applications and the intelligence to optimize their performance. With over 20 years of experience in retail, financial services, and telecommunications, INETCO understands how to make sure your critical business applications are performing to expectations.

INETCO Insight is the first of a new breed of end-to-end transaction monitoring products. It offers an easy-to-use interface for operations staff, powerful real-time intelligence for senior IT, and easy deployment in even the most complex retail and financial architectures.

Using INETCO Insight, retailers can deliver consistent tactical wins with transaction monitoring, demonstrate rapid return on investment, and incrementally achieve enterprise-wide visibility into the customer experience at every contact point.

For additional information, please visit: <http://www.inetco.com/docs>.