



Monitoring Your Active/Active Payments Environment

How you can minimize the risk of downtime through real-time transaction monitoring

Overview

You are an IT operations person working for a major bank, card service or payment processing company. Any lag or downtime within your payment processing system is unacceptable, so you go through great lengths to install an active/active environment to re-route transactions should a bottleneck or failed switch occur in your payments environment.

You have now solved the problem of controlling unplanned downtime, right? Sort of...

Sometimes in the process of solving one problem, we inadvertently create new ones. In the scenario we have just walked through, it is safe to say you have eliminated potential bottlenecks and downtime issues due to a switch failure. But this was done at the cost of increased infrastructure complexity and expansion of your data centers. Increased infrastructure complexity and multiple data centers often translate into more places where things can go wrong within your payments environment. There is more potential for network or application performance issues to start festering in operational “blind spots”, causing transaction slowdowns or failures to occur. The more potential transaction paths there are, the higher the risk of third party and host connection issues, as well.

This whitepaper was written to explain how banks, card service providers and payment processors can maintain their end-to-end view into every transaction path within complex active/active environments. It outlines the benefits of working with trusted solution providers that understand the challenges posed by active/active architectures, and of deploying a real-time transaction monitoring solution that is independent of your payments network architecture.

What does an active/active application environment look like?

It is a fact that most payments systems fail at some point. This is why, in environments that have a growing volume of time sensitive transactions to be processed, it is becoming a best practice to have an independent back-up system in place to maintain service availability.

With an active/active solution, you have two or more independent processing servers running online, in unison. Should one of your servers fail, you can avoid major service disruptions by re-routing transactions over other (often geographically) distributed processing servers in your payments network. A switchover is usually completed in seconds, before a service outage is noticed by your customers. Either system can handle the full transaction load of your entire payments environment. They run independently of each other, but notify the partner server about transactions that are relevant for the partner server to know about.

Typical Postilion Transaction

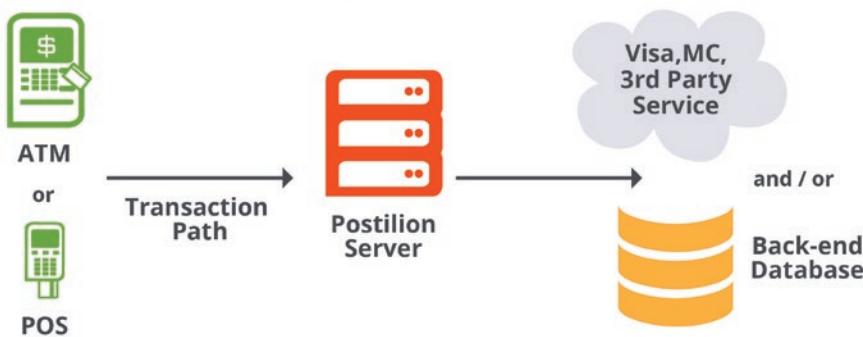


Diagram 1: Example of simple Postilion payments environment within a bank. Transaction switching applications route financial transactions. In this scenario, servers are set up so that transactions flow into the switch, which then sends them through to their appropriate destination.

Simple Active / Active Postilion Transaction

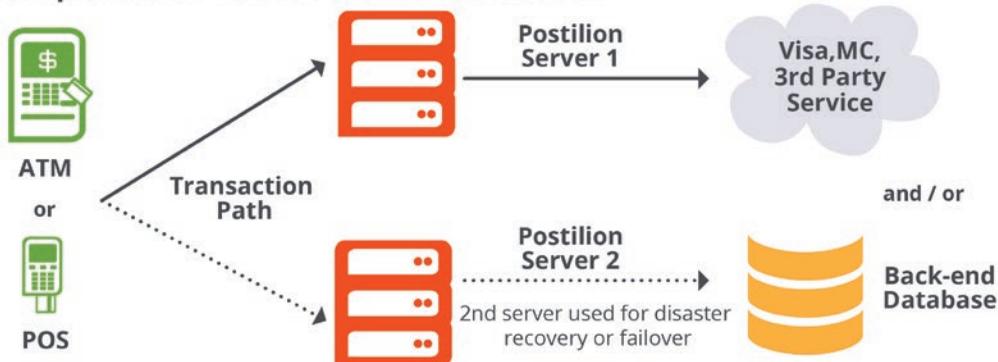


Diagram 2: Example of an active/active Postilion architecture, used to ensure higher ATM and POS network availability within a bank. Transactions will keep flowing through one Postilion switch unless there's some sort of problem with that particular path, at which point a secondary route exists.

Why deploy an active/active application architecture?

If you are processing a large number of individual transactions, and lags or unplanned downtime is unacceptable, you will most likely want to consider deploying an active/active architecture. This type of architecture is most often used for disaster recovery or failover situations. With an active/active system solution in place, unplanned downtime results in an imperceptible impact to the customer.

In addition to avoiding major service disruptions, there are many other advantages to an active/active architecture, including:

- **More controlled planned downtime – A server can be upgraded by simply switching customers to another server**
- **Capacity expansion – Capacity can easily be added by installing a new server, then switching some of your customers to the new server**
- **Load balancing – The load across your payments network can be rebalanced by moving users from a high volume switch to a lightly loaded switch**

Monitoring challenges within an active/active architecture

Even with a back-up system in place, the faster you can isolate and fix performance issues, the better. But monitoring the real-time performance of transactions within active/active architectures can be quite challenging.

Payments transactions and other banking service requests pass through numerous application components or “hops” before they can be completed—moving from an ATM, POS, Mobile banking or Internet banking application, through a complex processing environment consisting of multiple switch servers and data centers, multiple backend databases and sometimes third party services (such as Visa or Master Card). As your payments infrastructure grows, so does the complexity of monitoring transactions.

Another key consideration when it comes to managing all your various traffic routing potentials includes making sure that your monitoring solutions do not impact the ability to run your payments system at full efficiency. During non-peak times this is usually not an issue. But it might not be practical to run a monitoring tool that impacts the payments system during peak times while the system is under load.

Why your log files are not enough

When application, network, server or host connection issues occur within your payments network, these issues are usually sporadic and not easy to reproduce. Customers may know that running trace files is your only option for catching a certain issue, but the invasive, reactionary nature of the task still leaves them feeling frustrated. Only issues that are either reproducible or happening frequently are easy to catch.

Although log files deliver valuable information on how components of your overall system are performing, watching the performance of each individual application would require multiple reporting screens. The data does not provide any information on what is happening between these application components, or how well these components are holistically working together. Nor can you look at log files to determine how well external systems are responding. The very nature of log file data also limits proactive or real-time remediation processes. Often, by the time you realize something occurred, the log files have been overwritten. Running transaction log files have also been known to have a negative effect on system performance.

Monitoring real-time transaction data from the network

To manage transaction performance and guarantee the completion of critical transactions, operations teams need full visibility of traffic coming in from various POS, ATM, Mobile banking or Internet banking systems. They will need to see the processing times of each switch, as well as the request and response times for each network communications link, external host authorization connection and third party application. This timing data is a very clear measure of transaction performance, and is the key to knowing if external systems received the message or not.

A real-time transaction monitoring system such as **INETCO Insight®** is designed to make sure that the source of transaction slowdowns and failures are found in complex application environments - before they affect end-customers or merchants. Proven to improve problem isolation times by an average of 75%, this lightweight software captures and correlates data off the network, making it extremely easy to see the transactional information passed into the system as well as the timings of the various legs of every banking service request you process. Data such as the request and response timings, transaction dollar values, error codes and network address information is easily accessible to investigate where and when a problem occurred, so that you can quickly determine the “why” and resolve it. Because this is an agentless data gathering approach, the logging and processing of transaction data has no impact to your online payments system.

INETCO Insight allows you to gain a visual representation of the entire payments network at any given time, and to quickly determine how real-time transactions are travelling through the system. Being able to visually see transactions traversing a complex configuration such as an active/active application architecture means various operations teams, including application, network and server teams, can now research and troubleshoot from one common view, receive proactive real-time alert notifications, and expedite the remediation of costly, service-impacting performance issues.

Active / Active Postilion Transaction

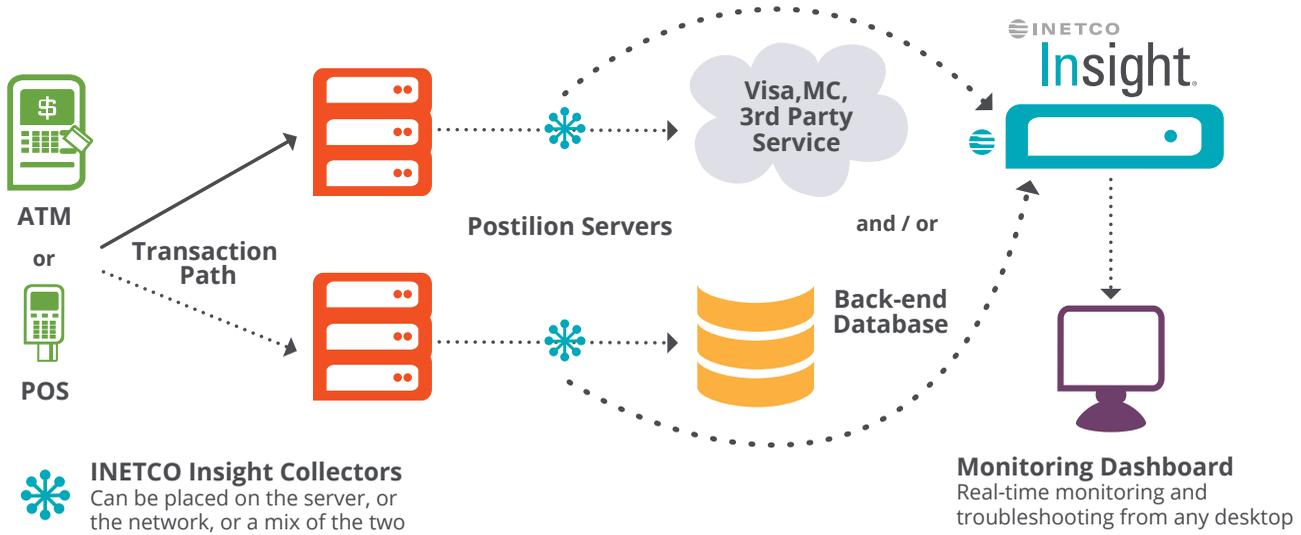


Diagram 3: Example of deploying a network-based, real-time transaction monitoring solution to manage a Postilion active/active payments system within a payment processing environment.

An active/active deployment case study

The Middle-Eastern division of a global payment services provider processes large credit and debit transactions for high-net-worth customers across 14 countries in the Middle East and North Africa.

To ensure they could handle growing transaction volumes without lag or downtime, the technical infrastructure team, with the help of their trusted solution provider **Stanchion Payment Solutions**, implemented a Postilion active/active architecture that could route a transaction through different Postilion servers based on transaction volumes being experienced at any given time. Because end customer experience is paramount, even a one-second improvement in transaction speed translates into significant returns.

The deep knowledge Stanchion Payment Solutions has of the Customer’s infrastructure lead to a quick and seamless active/active implementation, with mitigated risk of downtime or availability issues. But their support did not end there.

Monitoring a newly implemented Postilion active/active network environment that included two data centers, a third party telecom and 54 other ATM, POS and back-end service providers brought new challenges when it came to ensuring large credit and debit transactions are processed, without a hitch. The reactive process of pulling and analyzing transaction logs from each Postilion server to determine where an issue occurred was taking the Customer days, or in some cases, weeks. Other challenges included:

- **Legacy monitoring and tracing tools did not provide the end-to-end transaction visibility needed**
- **It was getting tougher to ensure network and service level regulations for six-second authorization completion times were being met**
- **There was no way to quickly identify the root cause of an issue: Is it the payments switch? Card management system? Internal network? Telco provider? One of 54 service providers?**

Stanchion Payment Solutions understood the challenges related to the deployment of an increasingly complex network infrastructure, and recommended the INETCO Insight solution to monitor the Customer's critical payment processing environment.

INETCO Insight provides the Customer with end-to-end visibility into every payments interaction—a window into the real-time performance of a transaction as it moves across multiple applications, systems, and third party networks. With a holistic view of the payments environment, the Customers' transaction services team is proactively alerted to customer transaction bottlenecks before they become failures. INETCO Insight gives this team the transaction level detail required to isolate whether transaction slowdowns or failures are due to the internal network, applications, or other third party service providers, speeding up average mean-time-to-repair by 65%.

Through the help of Stanchion Payment Solutions to implement and design actionable dashboards and proactive transaction alert notifications, the global payment services provider was able to realize a full return on their INETCO Insight investment within four months. Some of the measurable gains included:

- **75% reduction in transaction timeouts occurring within internal network components**
- **Network availability gains from 99.92% to 99.96%**
- **33% reduction in transaction authorization times (from 6 seconds to 4)**
- **65% reduction in mean time to repair (MTTR) through streamlined troubleshooting**
- **Real-time alerts to:**
 - **Lack of telco, third-party service or acquirer activity**
 - **Data line outages**
 - **Slow segment flows**
 - **Low application response rates (Postilion, HSM, card mgmt.)**

“Now rather than five people getting a phone call at 3am to let them know something isn't working, when I arrive in the morning one of my operators is able to tell me that there was a problem and that they were able to take care of it on their own. Through the improved service delivery, faster problem isolation and reductions in failed revenue-generating transactions, we achieved a full return on our INETCO Insight investment within four months.”

PAUL GRIEVE, TECHNICAL INFRASTRUCTURE MANAGER FOR A GLOBAL PAYMENT SERVICES PROVIDER

Download the full case study here: <https://www.inetco.com/resources/case-studies/global-payment-provider-reducing-transaction-time-outs-by-75/>

Conclusion

If you are investing in an active/active payments architecture, you may want to consider working with an experienced solutions provider such as Stanchion Payment Solutions, that knows how to minimize the risk of downtime when it comes to deployment.

Investing in a transaction monitoring solution that will provide real-time alerting and visibility into the complex, multi-node path of every transaction is an important consideration, as well. INETCO Insight is a proven real-time transaction monitoring solution designed to tackle transaction complexity and quickly get to the heart of any transaction issues affecting the end customer or merchant experience. This software will enable you to:

- **Improve operational efficiency by establishing end-to-end transaction visibility**
- **Easily access rich transaction intelligence to speed up problem isolation and remediation within active/active application architectures - by an average of 75%**
- **Keep your growing number of ATM, POS, Mobile banking and Internet banking customers happy by reducing the risk of service disruptions**

For more advice and best practices around deploying Postilion active/active environments, contact info@stanchionpayments.com.

For more information on the INETCO Insight real-time transaction monitoring software, contact insight@inetco.com.

About INETCO® — Every transaction tells a story®

INETCO Systems Limited provides market leading real-time transaction monitoring and banking analytics software that helps business managers and IT operations teams improve profitability, reduce operational costs and deliver an amazing omni-channel customer experience. INETCO's proven technology solutions are currently deployed in over 50 different countries. Happy INETCO partners and customers include some of the world's largest global companies spanning the banking, ATM, retail, telecommunications and payment processing markets. www.inetco.com

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About Stanchion Payment Solutions

Stanchion Payment Solutions was established in 2001 and has helped implement and manage payment environments and card applications for retailers, banks, credit unions, card schemes, payment processors and payment system vendors ever since. Privately owned, primarily by management, Stanchion has subsequently grown to a staff compliment in excess 60 people with over 160 years of payment experience, supporting six continents from four offices in the United Kingdom, Middle East and Africa.

Stanchion has world class people bound with a best practice range of methodologies, processes, knowledge and expertise to drive stellar business results. www.stanchion.co.za