PARAGON
APPLICATION SYSTEMS
CELEBRATING 30 YEARS

Performance Testing
For the Payment Industry

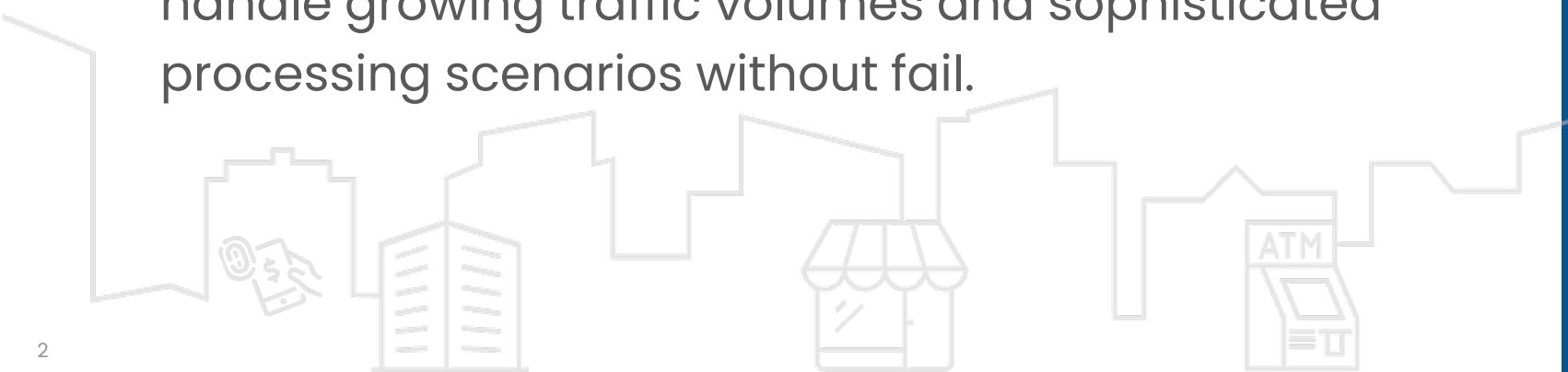
Best Practice Guide

Introduction

Global commerce is faster, more interconnected, and more complex than ever before. This makes the safety, availability, and reliability of our payment systems the responsibility of all industry participants.

Every financial services company should consider performance testing and analysis as integral components in a comprehensive testing strategy designed to ensure mission-critical systems can handle growing traffic volumes and sophisticated processing scenarios without fail.

> ***Payment firms have been warned by the Bank of England that they must step up preparations for new 'operational resilience' standards that will come in next year.***
>
> https://www.finextra.com/newsarticle/44069/



Integrate Performance Testing

Setting up and running performance tests on your mission-critical payment systems and applications no longer requires specialized resources or custom simulators that are difficult to use and expensive to maintain – removing issues that caused performance testing to be marginalized and only done infrequently.

This legacy approach is inconsistent with the requirements for Agile development or DevOps practices, where regular performance testing is considered an absolute requirement.

> *The strategic timing for performance testing is clear:*
>
> *It should be an* integral part of your software development process *right from the start.*
>
> Abstracta

Achieve Operational Resilience

A comprehensive performance testing strategy enables your organization to consistently deliver a superior payment experience that builds consumer loyalty - driving revenue growth and profitability.

To achieve this goal, you need to:

1. Plan for Success
2. Run Realistic Test Scenarios
3. Monitor What Matters
4. Test Early, Test Often
5. Take Action

> *The majority of outages now cost companies more than $100,000 per event.* The business case for investing more in resiliency is stronger than ever.
>
> The Uptime Institute

1. Plan for Success

As with any major new initiative, it is important to understand what your organization wants and needs to accomplish by developing and maintaining an active performance testing program.

It is important to establish starting benchmarks, then identify and clearly document your goals, objectives, and the tactics you will use. Creating and executing against your plan will help achieve your targets.

It is also critically important to identify the key system metrics that you will monitor and measure.

> *Payments companies need to* take concerted action *to bolster their operational resilience.*
>
> McKinsey: Risk and Resilience

Types of Performance Tests

Load Testing

Helps ensure that an application performs correctly under anticipated user loads. The goal is to identify & correct performance issues before the software is put into production.

Stress Testing

Applies very heavy workloads to an application or system to see how it handles the high volume. The test may be run until the system fails in order to determine its breaking point.

Spike Testing

Similar to a stress test, a spike test is used to analyze and evaluate how an application or system responds to a rapid (abnormal) surge or spike in volume from one or more sources.

Scalability

Scalability tests are used to analyze how an application or system scales while various processing parameters or resources, such as CPU or memory, are manipulated.

Endurance

Endurance testing is commonly used to validate that a specific component or an entire system can effectively handle an expected workload over an extended period of time.

2. Run Realistic Test Scenarios

To ensure that your load test or stress test results are accurate and valid, your performance testing environment should be configured as closely as possible to your production environment.

Performance test runs should simulate typical daily transaction patterns by using existing functional tests to configure variables such as:

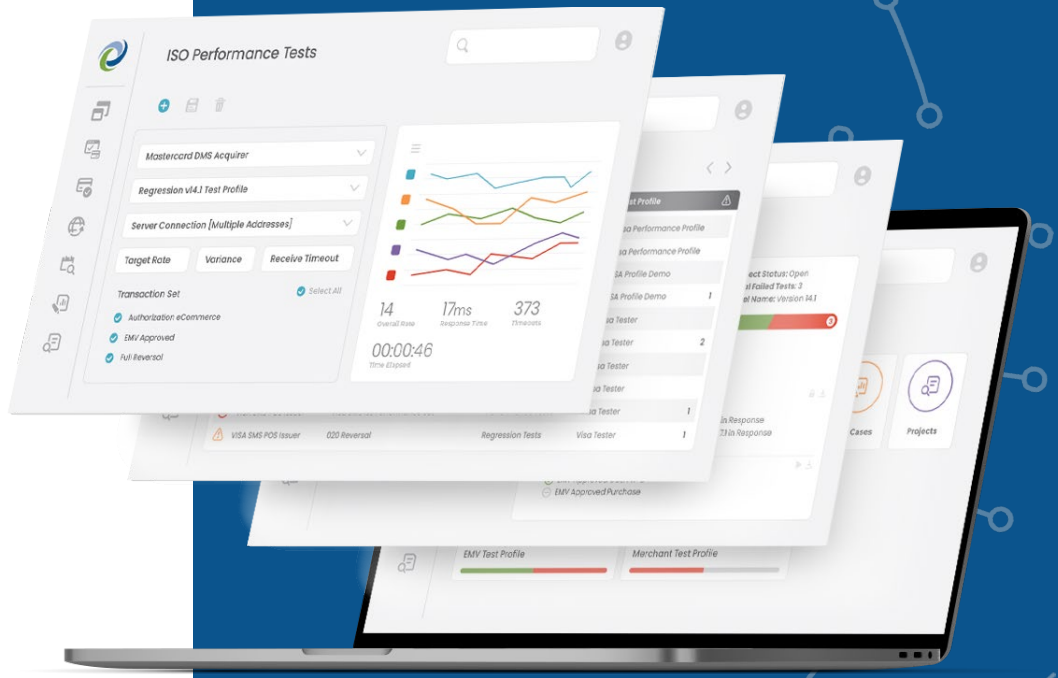
- Network connections (Visa, Mastercard, etc.)
- Cards & BINs (Credit/Debit, mag stripe, EMV, etc.)
- Transaction types (Card present, CNP, ATM, etc.)

> *Operational resilience of critical banking services is important to the* safety and soundness *of both banks and to overall financial stability.*
>
> US Comptroller of the Currency

3. Monitor What Matters

During your tests, you should monitor key performance metrics to help identify when and where any performance issues or bottlenecks begin to occur.

1. Overall transaction rate
2. Average response times
3. Time outs
4. Approvals
5. Declines



4. Test Early, Test Often

It is important to incorporate performance testing and analysis into your standard testing processes.

Ideally, you can conduct performance tests as a part of every build or release cycle, certainly before and after major events or software updates.

You should be able to easily leverage any tests and data that have been created for functional testing purposes into comprehensive and customizable performance testing sets that can be run any time.

> *Frequent application releases are now* essential for business survival, *making their performance and ability to handle anticipated loads crucial.*
>
> Cigniti.com

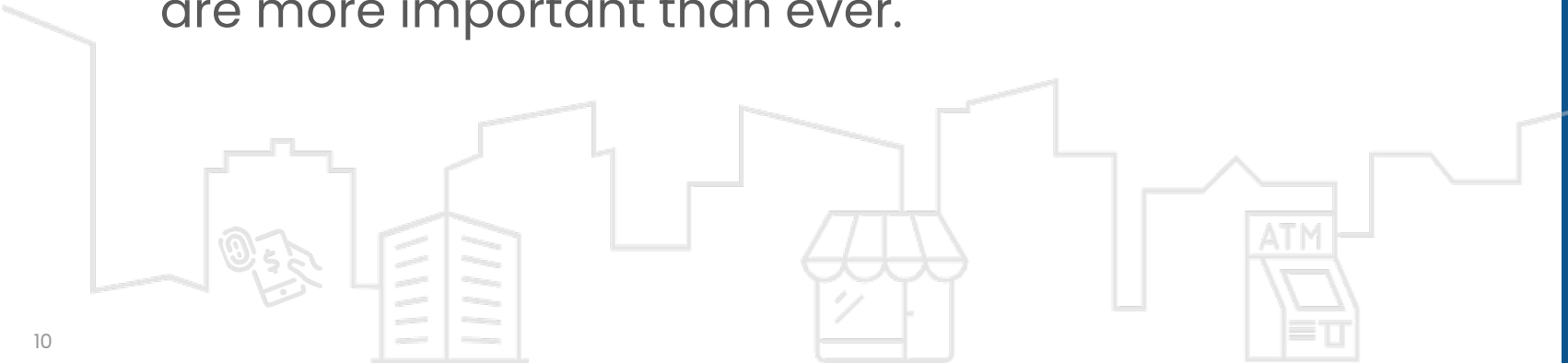
5. Take Action!

Once you have the performance testing assets and processes in place, you need to work on continually improving the process based on what you learn.

The marketplace has become very unforgiving for organizations who know they have issues that need to be corrected but choose to ignore them.

In a world where we increasingly compete on nothing more than the customer experience, first impressions are more important than ever.

> *In a highly competitive payments landscape, customers & regulators demand* faster & more secure *transactions.*
>
> McKinsey: Risk and Resilience



Success is a Process

Ultimately, the goal of performance testing is not just about uncovering bugs in your software or finding bottlenecks in your processing environment. It is about ensuring that your products and services always work perfectly on every transaction, anytime and anywhere.

The platform you use for performance testing should be flexible and easy to work with. It should integrate with your other testing processes.

> *Performance testing is the shield that* protects applications from the chaos *that could happen when users flood the system.*
>
> Global App Testing

Summary

Performance testing and analysis must be considered mission-critical components of your overall payment testing strategy that help safeguard both your revenue and your reputation.

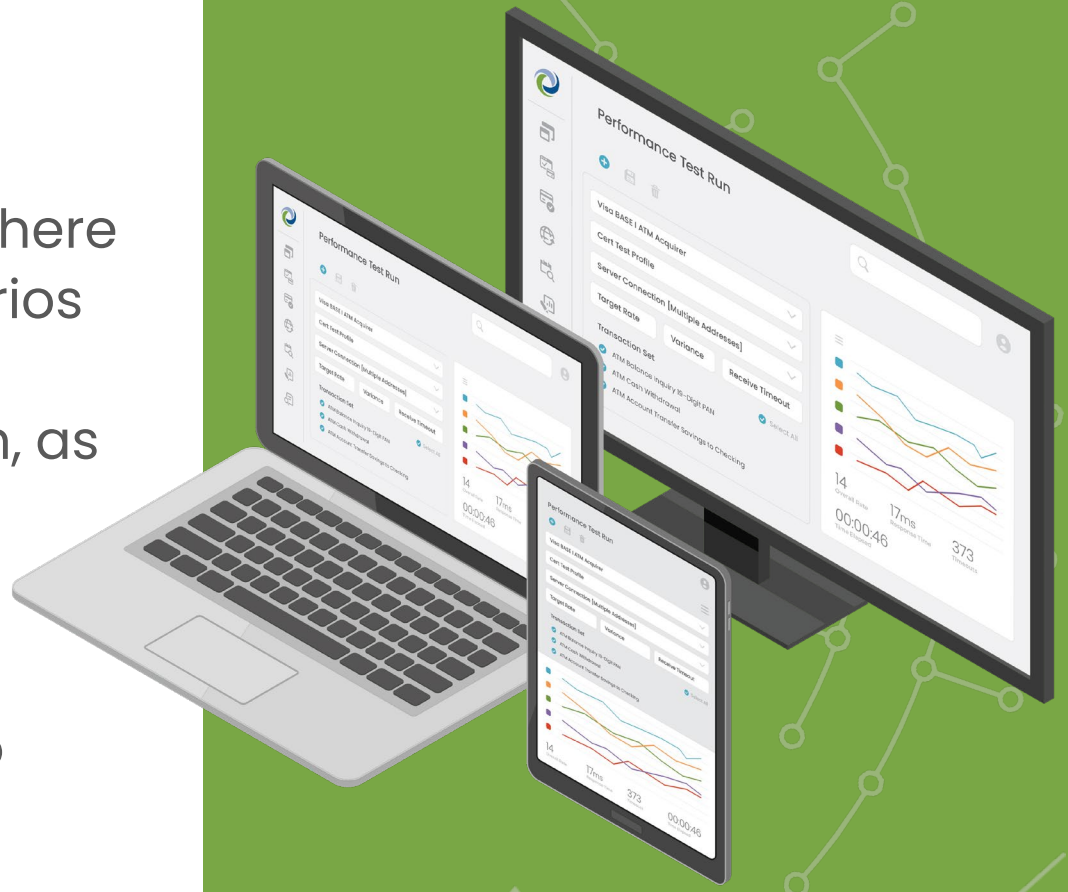
Developing a comprehensive performance testing strategy will help improve quality, optimize transaction response times, and minimize production outages - enabling your organization to consistently deliver a superior payment experience that builds loyalty and drives both revenue growth & profitability.

> *When not managed properly, information and communication technology (ICT) risks can lead to* disruptions of financial service delivery.
>
> European Securities and Markets Authority

About Web FASTest

Web FASTest is a server-based, payments testing platform designed to provide 24/7 anytime, anywhere access to support a wide variety of testing scenarios and industry use cases, including functional, regression, both pre-certification and certification, as well as performance reviews and analysis.

Robust out-of-the-box functionality, along with centralized control of user roles, permissions, and data, means that your organization will be able to expand test coverage, improve quality, increase collaboration, & boost productivity.



About Paragon

Paragon Application Systems has been the leading independent provider of digital payment simulation & payment testing solutions for the global financial services community, since 1994.

Our testing tools and simulators increase control, expand access, and enhance collaboration - creating a robust and flexible payment testing platform to improve the quality, productivity, and profitability of your organization's testing processes.

Contact Details:

Paragon Application Systems
326 Raleigh St
Holly Springs, NC 27540
+1 919-567-9098

www.paragonedge.com