



# Accelerate delivery and reduce the risk and cost of major enterprise integrations

For today's leading companies, the challenge of integrating new technologies is to reliably deliver faster and more responsive change in the face of increasing system complexity.

Most enterprise systems are comprised of integrated applications that communicate via messages. Message-based frameworks offer rich interoperability and scalability, but their complexity requires specialist understanding to test. Most organisations do not have the capability in their testing teams to provide sufficient quality assurance to business users for these mission critical systems.

This paper explains a tailored approach that enables earlier testing, driving business value and reducing the risk and cost of delivering new systems and applications. This approach also facilitates Continuous Integration Testing for organisations undertaking Agile development. At StarBase, we have integrated this capability across our team and into our methodology. We believe that in future, this testing capability will become a standard requirement for all organisations.

## Integrating message-based systems requires specialist expertise

Modern enterprise systems often deliver business functionality through integrated, inter-communicating applications. These applications can be both internal and external to the enterprise. External applications may include customer and supplier systems, payment gateways such as SWIFT, and third party databases such as credit checkers.



Despite the increased system complexity, business users, as ever, expect IT to deliver a seamless customer experience. IT must be able to ensure that this wealth of interconnected applications functions and scales to required levels of performance.

Most organisations' testing teams struggle to address:

- Understanding and testing real-time interactions in complex message-based systems
- Testing the system impact of new components while other key components are still in development
- Reducing the high cost of using internal and external test environments

Programme managers know they need a better way to test that reduces risk by allowing the testing process to begin earlier. Waiting for the whole system to be ready means that the time and cost of fixing critical defects will be much higher than if identified earlier.

## StarBase's solution reduces the risk and cost of integration

StarBase's testing approach mitigates much of this risk by using specialist tools to simulate and track messages across applications. Many business transaction decisions are made through message-based interactions between applications, so understanding their behaviour is crucial.

***“The testing teams are working 24/7 to keep the release cycle going. People just won't wait that long.”***

The StarBase approach can also model and simulate the behaviour of each component application, which enables us to run end-to-end system tests even when components are still in development. Development and test teams no longer have to wait until the whole system is complete and all environments are ready to test their applications.

Changes affecting the functionality and performance of the system can therefore be understood well before go-live, and critical defects can be exposed and remedied early. This substantially reduces the time and cost of fixing such defects.



## Assure business delivery through early testing

This approach vastly increases an organisation's capability to assure delivery. Programme management can now get a clearer view of risk from early on in development.

Much of what has been sought, including early and Agile testing, is now possible. We can test components and services iteratively against requirements from early on in their development. Defects impacting system-wide function and performance can be diagnosed at the coding stage rather than after development is complete, greatly reducing the time and cost of addressing such defects. Simulation of mature components enables reduced usage of test environments which significantly reduces cost and delays.

The StarBase approach also lowers the cost of coordinating multiple development organisations. Where different development teams, internal or external, are working on components of the same system, they can test against a set of common interfaces, reducing the risk that major defects will surface only during integration.

## Real world example: Developing an online insurance application

Consider an online application for a car insurance company. Components like application processing and underwriting are typically delivered internally, while services such as car tax and MOT checking and payments processing would be delivered by external systems.

Imagine that the developers of the application processing application want to test how it performs in an end-to-end test, but the underwriting engine is still in development. Traditionally, development teams would have to wait for the whole system to be ready in order to test. They would not be able to assess their application's impact on the function or performance of the system until immediately before go-live.

With our new approach, the team can test their application immediately. A specialist tool like IBM Rational Test Virtualisation Server (formerly Green Hat Virtual Integration Environment) can simulate unfinished or unavailable components based on their interface specifications. An end-to-end test would then be run, substituting any applications not yet ready with simulated interfaces. In this way, the function and performance of the application in a whole-system context can be understood.

External applications, like customer credit checks, must be included in a test in order to understand if the whole system functions properly. Testing on these systems can be expensive, and booking time on them can be a limiting factor. By virtualising the interfaces to external systems, we can simulate these external dependencies. We then only need to test on external environments immediately before going live.

## Good news for testers

We can now be more proactive, testing systems as they are being built. Testing in message-based environments also aligns with the Agile approach favoured by many development organisations. This efficient approach enables testing professionals to add increased value to the business.

At StarBase, we believe this is the most exciting development we have seen for some time. Testing at the message layer with automated tools like those offered by IBM Rational is ideal for the technologies now being deployed and allows quality assurance to happen dynamically throughout the project lifecycle.

## How the approach works

In order to assess whether a mesh of applications will function and scale as an integrated system, we must understand the message flow across the system. Unlike GUI-based testing, which does not reveal much of inter-application interactions, testing at the message layer generates the data needed to enable a proper understanding of system behaviour.

For this, we use a specialist tool such as IBM Rational Test Workbench (formerly GH Tester), which can handle over 70 messaging protocols.

Within the same suite, the Test Virtualisation Server tool enables the virtualisation of all of the message interfaces in a complex system. Each interface – its business logic and message behaviour – is configured in the tool; these simulated interfaces are then stored centrally as a common set of assets against which any of the system's component applications can be tested.

Any component application can thus be tested in a system-wide context from very early on. System components and environments that are ready are included in the test, while applications and environments that are still in development or are unavailable are simulated by the tool. Using the simulation capabilities, we can also run a set of scenario analyses to better understand the circumstances under which system performance will deteriorate.

There are some important advances in the new generation of tools compared to established tools. Rather than having to write new code for each test stub, IBM Rational's new toolset allows complex stubs to be created without the need for developer involvement. It also has the major advantage that scripts developed for functional tests to be used for testing performance under load. This flexibility allows testers to work much more quickly and effectively with the result that it saves time and money.

StarBase is the UK's leading performance testing consultancy, trusted by major enterprises to mitigate IT systems risk since 1992. We ensure the consistent performance of our clients' key systems. As specialists, we possess an unrivalled depth of experience, knowledge and insight, creating smart and value-adding solutions for complex situations.

### Performance Testing

Combining the best testing tools with effective processes can improve the bottom line

### Testing Tools

Guidance on testing tool selection - the right tools for your technology challenges and to improve productivity

### Functional Testing

Smarter processes and greater automation will reduce cost and duration of the project

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