

# Customer Success Story

## Verifying Middleware Interactions with SAP:

### A Use Case in Service Virtualisation and API Test Automation

#### THE CHALLENGE

A financial organisation was embarking on a technology upgrade, involving SAP as its core replacement technology partner to migrate off its legacy backend systems. Wanting to leverage the existing Middleware platform to seamlessly switch from old to new without impeding the customer experience, the organisation sought a solution that could provide them with confidence in the changes being made within its Middleware system.

#### THE SOLUTION

The organisation moved from manual to automated testing, adopting Parasoft's Continuous Testing platform to create an automated test suite that could be run after each new build of middleware.

#### Key Challenges:

One of the key technical risks was ensuring that the mapping and transformation logic in the middleware system was correct once migrated. After reviewing options, it was determined that the most cost effective and reliable approach was to remove the dependency between the middleware and back-end systems by virtualising SAP. This would provide a means of building the switching logic within its Middleware component before the SAP interfaces were available, as well as being able to repeat tests without the overhead of data setup and teardown.

The organisation's next challenge was to justify the investment to change from a manual testing approach (at the service layer), to an automated approach without end-to-end functionality. The ROI was a simple metric that stakeholders could understand and relate to - defect cost avoidance. If they could find 3 defects per operation during the development phase, this would avoid a greater cost of resolving defects during

the system integration phase. At the completion of the development phase, they had exceeded the ROI by 68%.

#### Moving from Manual to Automated Testing

Before the upgrade project, the team's existing manual testing process was able to keep pace with the rate of application updates. However, once the project was fully scoped, it became clear that the existing manual process would not be sufficient, considering the time required to set up data in SAP, waiting for SAP to be made available, as well as the number of software iterations expected.

#### Virtualising

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**Additional benefits included:**

- They no longer had to wait to get the test data needed for each test or to have the test data reconfigured to the desired state (for example, reopening an account that a test closes so that it is ready for the next automated test run).
- They could easily mimic a broad set of back-end system response conditions (e.g., data variations, failure conditions, performance variations), which helped them catch complex issues prior to deployment.
- Since the virtualised responses were validated and consistent, the team knew that any detected problems with the response messages actually stemmed from an issue with the Application Under Test — not a back-end system update, reconfiguration, or failure.
- The team started building automated tests for each SAP operation as the associated middleware code was being modified. Tests were defined with Parasoft SOAtest, which works alongside Parasoft Virtualize in the Parasoft Continuous Testing platform
- Backends that the application under test communicated to, but were not part of the testing scope, were virtualised to always give a successful response. This made tests more reliable (as these backends were sometimes unavailable or had

authentication issues with our data) and able to focus on testing what the test’s purpose was.

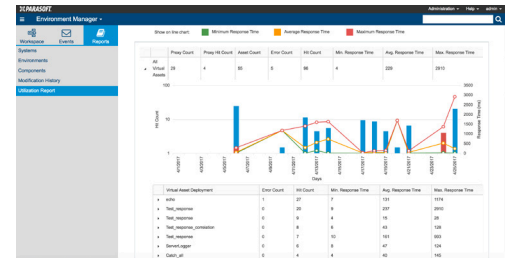
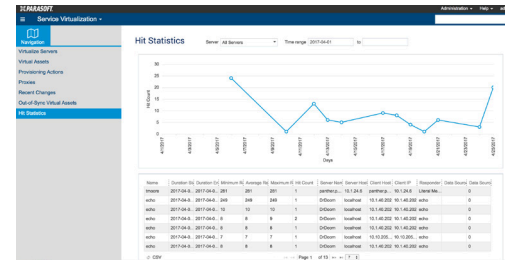
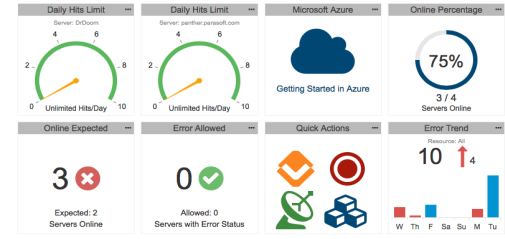
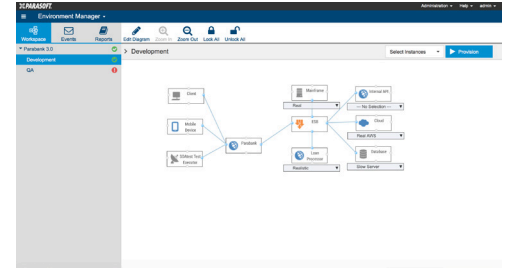
- Since virtualisation required the team to replicate the behaviour of the back end, this forced them to dig deeper into how the back end worked.
- In one of the more complex systems, they worked with the Middleware developer and the SAP developers to work out how the mapping would take place and were able to simulate a response from the SAP developers in Virtualize to help the developer to build the Middleware code correctly.

**White Box Testing**

From a development perspective, it was not sufficient to simply validate the requests and responses were returned as expected, but the internal orchestrations, workflow and downstream output were correct. The team integrated Parasoft’s event monitoring with the middleware system to inspect each message flow and assert that the results were as expected.

**Outcome**

At the completion of the delivery the team amassed an automated test suite that could be run after each new build of middleware. The number of backends virtualised amounted to 8.



**ABOUT PARASOFT**

Parasoft helps organizations perfect today’s highly-connected applications by automating time-consuming testing tasks and providing management with intelligent analytics necessary to focus on what matters. Parasoft’s technologies reduce the time, effort, and cost of delivering secure, reliable, and compliant software, by integrating static and runtime analysis; unit, functional, and API testing; and service virtualization. With developer testing tools, manager reporting/analytics, and executive dashboarding, Parasoft supports software organizations with the innovative tools they need to successfully develop and deploy applications in the embedded, enterprise, and IoT markets, all while enabling today’s most strategic development initiatives — agile, continuous testing, DevOps, and security.

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