Technical Paper

Test Tools and SAP

How to provide speed and precision with best-in-class test automation and service virtualization for SAP environments.

SAP Partner

Testing is of paramount importance to any organization. Testing tools play a pivotal role in providing an organization with the required setup to accelerate testing. Many of today's testing tools are targeted towards GUI based applications and fit the bill. However they are falling short when they are used for testing specialized applications such as SAP, and integration technologies such as SAP PI, TIBCO BW, etc.

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Executive Summary

Customers in SAP space have recognized the benefits of early testing, service virtualization and test automation and are enthusiastic to adopt these techniques in business for ROI and better utilization. Customers are looking at the existing test tools in the customer landscape and wondering how these tools can be leveraged to deliver outcomes. Some of the common problems encountered are:

› They do not support SAP specific transport and message formats such as IDoc, BAPIs, XI, etc. Hence, tests have to be driven from the presentation layer, which requires user availability, intervention and time, thereby reducing test coverage.

› Real time testing of the integration touch points is intrusive and requires application customization, a maintenance overhead and nightmare.

› Data setup for testing and Regression testing changes in SAP environments is complex and interconnected.

› Customer Expectations for SAP testing are different to the traditional testing requirements, and are ever changing. Test tools should align their roadmap to the SAP product roadmap to deliver.

SAP Specific Transports

In a company, applications interact with SAP using message formats like BAPIs, RFCs, IDocs. Legacy and specialized applications/in-house applications may not have the capabilities to generate messages in these formats to be able to interface with SAP.

Problem: Companies employ an integration technology like SAP PI (SAP's ESB product) that can do the transformation to these SAP message formats. Often, than not, this integration part of the solution is unit tested by application developers/designers in isolation. Any defects/issues introduced at these integration points (Legacy App-Integration tool, Integration tool-SAP) of the communication process, like invalid message formats, or application connectivity issues with security, etc, only surface when integration testing is scheduled, which comes very late in the lifecycle. The later defect fixing is done, the costlier it is to handle. Would it not be a good idea to try and fix these integration defects early on in the lifecycle?

Solution: Lightweight test scripts using test tools with capabilities to trigger SAP specific message formats like IDocs, XI 3.0 (for PI) like Rational Integration Tester can be created for unit testing the integration layer and automating them would result in lowering time spent in unit testing. Any future changes to the interfaces in SAP PI, can now be regression tested using these automated light weight test scripts. At one of our customer sites, a manufacturing major, we have successfully employed Rational Integration Tester to create, automate and regression test the integration solution developed in SAP PI in isolation. A pictorial representation of how RIT was used in GreenSAP to trigger IDocs directly to the PI system and validate the results:
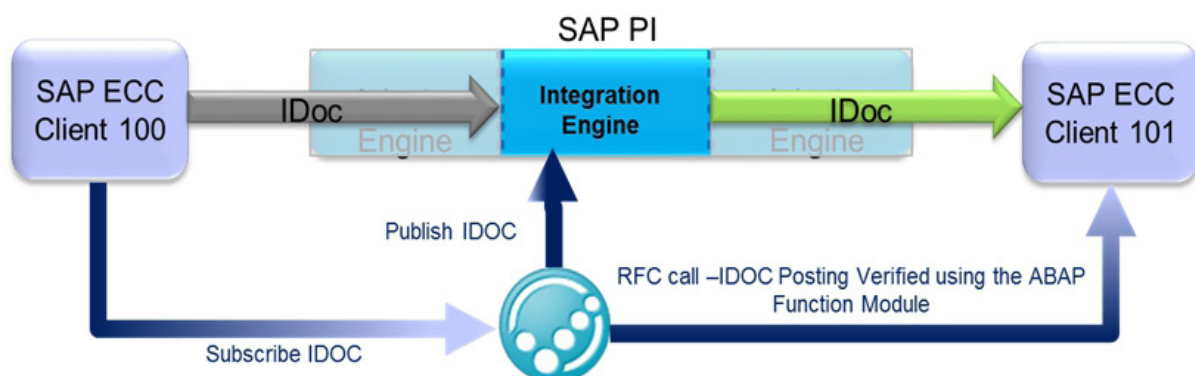
These test scripts can also extended to respond synchronously in the required SAP format, IDOC or XI 3.0, or RFC response and testing performed synchronously.

Intrusive Integration and maintenance overhead

Problem: Even if the test tool is capable of triggering messages in the required format for SAP PI or SAP, it requires additional configuration within the application to be able to send or receive messages. Often, say in SAP PI, it could mean creating completely new configuration scenarios, or in case of ECC, it could mean creating new RFC destinations, for test tool's exclusive use. Given the complexity of SAP systems, customers are unenthusiastic to introduce additional maintenance overhead for testing.

Solution: A test tool that integrates well with SAP systems with minimal to no changes in the existing configuration, is the need of the hour. Hacks such as - introducing proxy servers at communication channel configuration level in PI for SOAP/XI channels, recording traffic on MQ queues, etc. could be employed to avoid entirely new communication paths. As part of our Green SAP implementation, we have successfully demonstrated these minimally intrusive techniques to test SAP PI interfaces using Rational Integration Tester. These changes are minimal and do not require any additional regression testing.

Data setup for Testing

Problem: Organizations with SAP implementations will very well remember the times spent by their teams to setup the products, vendors, customers, materials, roles, and relations between them in SAP ECC/industry specific solution. It is not always possible to replicate this setup in the lower environments as – hosting multiple SAP environments is expensive, interacting applications may not have same number of environments as SAP, departments/projects sharing a single SAP instance. This compels companies to plan their test cycles around system availability, test data availability in the identified instance, etc. This causes delays in implementing changes to production.

Solution: A tool that can be used to generate relevant test data and simulate the unavailable system or service is the perfect missing piece in this scenario. This tool should give the test team flexibility to create or record relevant test data and trigger it, as appropriate. Recording traffic flowing through a system and using it to create a virtual system that behaves like the live system would resolve the data unavailability and instance availability issues. We have explored the IDoc, JDBC, and HTTP traffic recording features available in RIT as part of GreenSAP methodology that demonstrates how, a tool with record and instantiate virtual services, can help customers stay in control of the release cycles of their SAP implementations.

Specific requirements for SAP

Problem: More often than not, customers with SAP implementations have different requirements to the traditional customers. Requirements like – integrating with SAP Netweaver Gateway, SAP BODS, generate a system landscape representation from Meta data, find the status of an ABAP transaction/report execution, find the status of a message in SAP PI, etc. to report exact test status are highly technical, and require test tool developers, and test team to have good understanding of SAP/ SAP PI and other associated tool architectures. Test tools companies should work closely with SAP to be able to align their tool features and roadmap with SAP to deliver these requirements and many others specific to the SAP world. Unsurprisingly, SAP testing is manual and functional testing is majorly driven from presentation layer by users.

Solution: A fair solution to testing driven by users' problem would be to have Developers with understanding of SAP systems and processes as part of your test team. These members are unlike the traditional testers who perform a series of tests and verify the outcomes. They understand the intricacies and relationships between various actors in your landscape and are able to script meaningful test scenarios and ensure maximum coverage. Aligning test tools to SAP product roadmap would assist greatly in this process. With a combination of SAP SMEs, who are Developers in Test and a test tool that supports the testing process, SAP customers can be confident that a feature released is a feature thoroughly tested!

GreenSAP – Sandhata's Implementation Strategy for SAP Testing and Virtualization
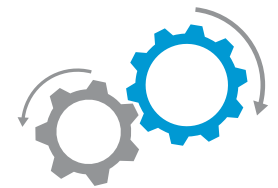
Sandhata's GreenSAP implementation strategy is a tried and tested method of leveraging IBM's Rational Test Workbench (RTW) to provide best-in-class test automation and service virtualization for SAP environments.

Key differentiators of Sandhata's offering:

> Sandhata is a SAP Certified partner.

> Sandhata certified RTW on behalf of IBM as a SAP-Certified solution

> Sandhata understands the bottlenecks, complexities and pain points in SAP testing.

> Sandhata has a Centre of Excellence in SAP testing and service virtualization that helps us to provide these services for our clients successfully in complex environments.

> Sandhata's service offerings provide our clients with both the tactical and strategic options to implement SAP testing.

> Sandhata's processes and methodologies not only offer the best practices relevant to RTW but also provides a framework for a successful and scalable implementation.
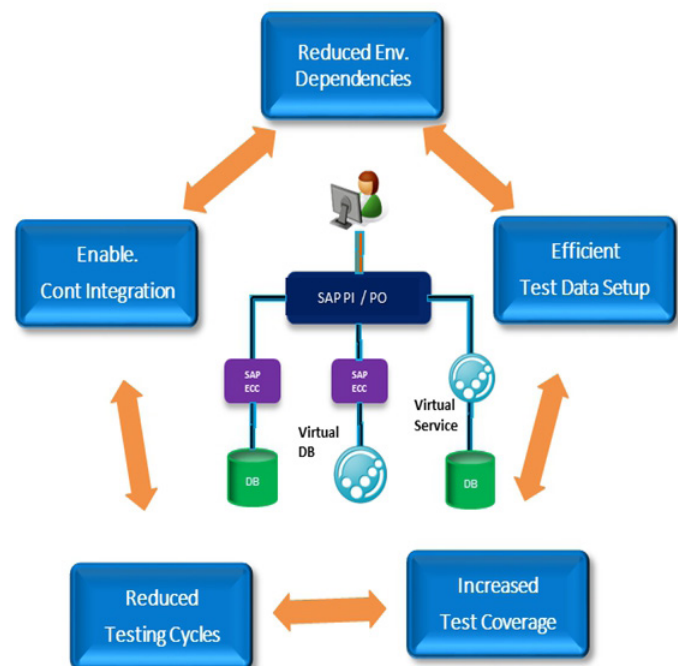
About Sandhata

Sandhata's experience in SAP technology and in-depth understanding of how RTW works in the SAP landscape has helped our clients to reduce their environmental dependencies. We have successfully industrialised SAP software delivery by introducing component and integration testing.

We Transform the Business of IT

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