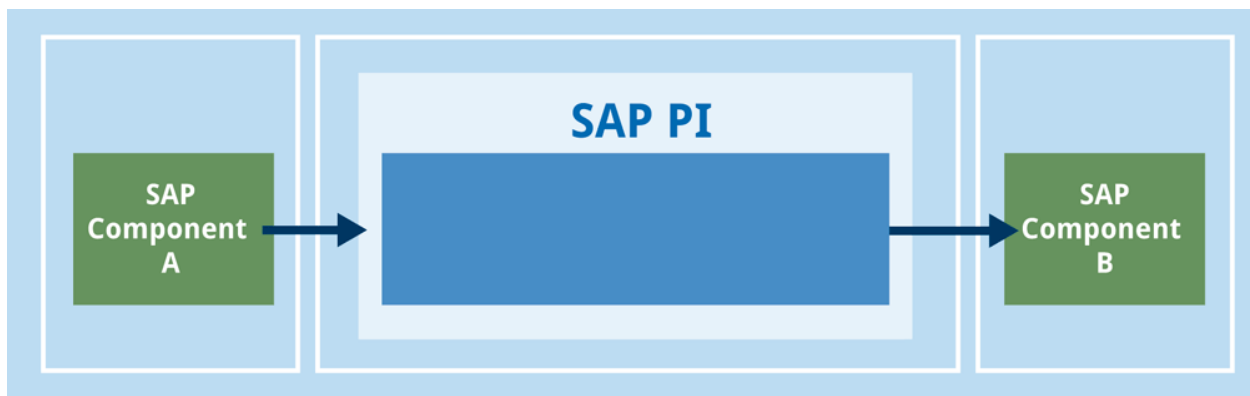# Continuous Testing for SAP

There are three primary quality challenges associated with ensuring that SAP is achieving goals associated with system reliability, security, and performance:
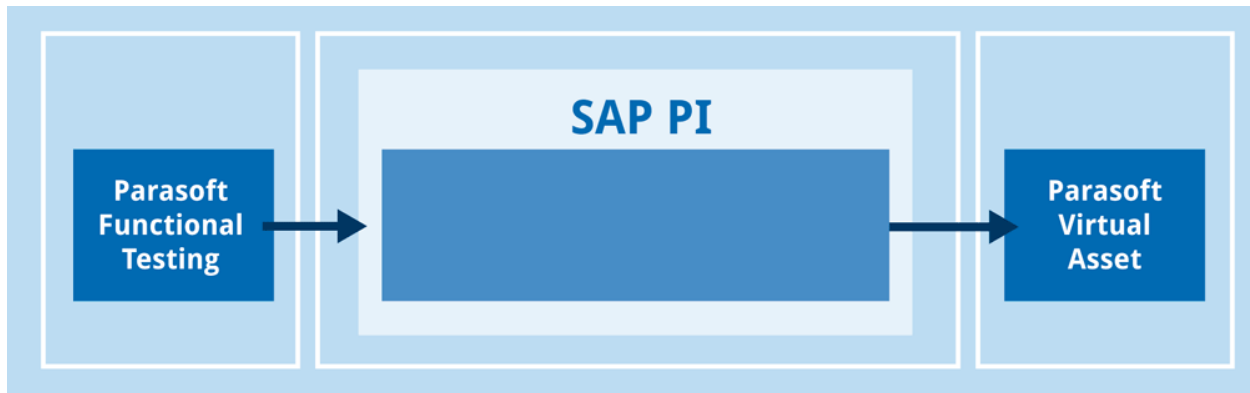
- **Exercising a complete end-to-end workflow** is impeded by the high number and complexity of system dependencies (databases, file transfers, remote procedure calls, service, etc.) involved in a typical process.
- **Continuously testing that workflow** as the system is being developed or migrated is complicated by the challenge of constructing, initiating, and evaluating tests for such a specialized environment.
- **Realistic performance for dependent applications** is difficult to achieve in a test environment due to access constraints and system complexity, but it is nevertheless critical for achieving thorough and accurate validation—and thus more effective optimization— prior to deployment.

With comprehensive native support for working within the SAP ecosystem, Parasoft's integrated functional testing and service virtualization (lab management) solution addresses these challenges, enabling you to effectively test your SAP workflows as you're configuring and evolving them.

"Shift Left" End-to-End Testing

Parasoft's industry-leading support message/protocol support enables complex tests and validations to be rapidly constructed from an intuitive graphical test construction and management interface. Testing can be performed from the familiar dev/test environment, pushing transactions into the SAP infrastructure without requiring direct access to SAP. Tests are constructed to support fully-automated, continuous regression testing—alerting you to unexpected changes while ignoring insignificant differences. Moreover, as systems evolve, automated intelligent updating helps you keep test assets in sync with changes.

Moreover, if any dependencies (SAP, database, mainframes, third-party services, etc.) are not yet implemented or are not readily-available in a test environment, they can easily be replaced with "virtual assets" that assume the appropriate behavior, data, and performance profiles. For dependencies that are difficult to configure for specific testing needs (e.g., due to access constraints or the specialized nature of the technology), service virtualization gives developers and testers the freedom to easily control their behavior as needed to complete a broad set of tests, including negative testing, corner cases, various performance scenarios, and so on. With a simulated test environment, team members and partners can have secure, 24/7 access to complete test environments.

By providing a comprehensive, easy-to-use solution for enabling and continuously executing end-to-end testing through SAP processes, Parasoft enables organizations to test earlier, faster, and more completely.

Test Client-SAP, Internal SAP, and SAP-to-SAP interactions

Beyond virtualizing and testing client application communications with SAP, Parasoft's functionality also supports internal SAP or SAP-to-SAP interactions. This facilitates the development and testing of both non-SAP applications and SAP internal applications. In addition to standard protocols commonly used in SAP environments (JDBC, JMS, SMTP, FTP, SFTP, EDI, etc.) Parasoft's broad set of supported environments provides SAP-specific support including:

- SAP PI
- SAP XI
- SAP RFC
- SAP IDoc
- SAP ABAP
- SAP BAPI
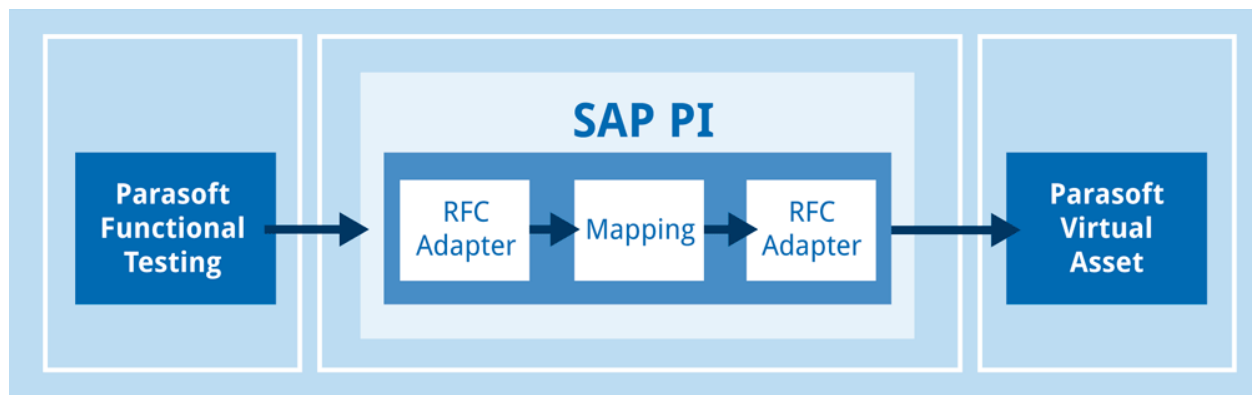- SAP JCo
- SAP NCo
- SAP Adapters

For example, Parasoft's testing and service virtualization can cover:

- Communication between SAP server/modules
- PI/XI calls to other SAP servers or components
- API-based calls from third-party applications to SAP servers
- SAP server calls to third-party applications
- SAP database calls

No matter what protocols and message formats you're working with, it's simple to create virtual assets that can replace the dependencies in a simulated test environment as well as tests that can exercise and validate the system under test in the context of that complete environment.

Determine Whether Migrations and Upgrades Are Implemented Correctly

Migrations and updates of complex SAP systems have always been precarious, but are even more daunting now that migrations typically involve re-implementing workflows using a different core technology. Parasoft can help you determine whether the current system is behaving as expected by placing "bracers" around the legacy functionality, then detecting whether the migration or upgrade has been implemented successfully.

Gain Deep Visibility and Traceability within and Across Processes

To help you understand and debug anomalies detected (e.g., during functional testing or regression testing for migrations/updates), Parasoft visualizes and validates how messages and events flow through distributed architectures as tests execute. Specifically for SAP, the solution monitors tests and traces requests and responses throughout the integration workflow, including tracking of payloads before and after PI mappings.

When tests fail, the exact point of failure is pinpointed. For example, say you have a process that sends an IDoc to SAP, then another process performs actions for the included records—such as inserting records into the SAP database, performing remote functional calls, etc.). In addition to checking whether the IDoc was successfully received, your tests can also verify whether the insertions and calls met expectations.

Emulate Realistic Performance of Dependencies

When validating whether end-to-end transactions satisfy performance expectations, teams need to test and tune the AUT against realistic and consistent performance from dependencies. Yet, this can be particularly difficult to achieve in a test environment that involves SAP since your ability to configure dependencies may be limited by access constraints as well as system complexity. With service virtualization, the performance of each dependency is completely under your control. It's simple to configure and adjust the performance of "virtualized" dependencies to check various what-if scenarios—providing a fast and easy way to apply the various performance profiles needed to truly exercise the AUT.

About Parasoft

For 27 years, Parasoft has researched and developed software solutions that help organizations define and deliver defect-free software efficiently. By integrating Development Testing, API/Cloud Testing, and Service Virtualization, we reduce the time, effort, and cost of delivering secure, reliable, and compliant software. Parasoft's enterprise and embedded development solutions are the industry's most comprehensive—including static analysis, unit testing, requirements traceability, functional & load testing, dev/test environment management, and more. The majority of Fortune 500 companies rely on Parasoft in order to produce top-quality software consistently and efficiently.

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