Modern composite applications are aggregating and consuming private, partner, and public APIs at a staggering pace in order to achieve business goals. As applications grow increasingly interdependent, the security, functionality, and performance of the composite “mashup” is only as strong as its weakest link. The success of an end-to-end transaction depends upon all the parts working flawlessly all the time; even small glitches from a popular API can singlehandedly choke thousands of transactions.

Ensuring API integrity is complicated by a number of factors:

- Extensive testing is required to ensure that APIs will satisfy expectations under the extreme conditions they might face in the field
- Validating end-to-end test scenarios typically requires access to third-party systems that are often unavailable or offline
- Each of the many continuously-evolving components involved in modern applications requires very specialized domain expertise to test and analyze
- Manual testing efforts lack the breadth, depth, and repeatability that is critical for identifying application risks prior to production

Without an enterprise-level automated solution for ensuring the integrity of APIs and API-driven applications, organizations risk:

- Brand erosion as faulty software drives away customers
- Time-to-market delays that diminish market share
- Exposure to legal liability associated with application failure
- Failure to comply with applicable regulatory standards and technical contracts

Ensure that interconnected applications meet expectations

Parasoft’s API Testing solution was built from the ground up to simplify the complex testing that’s vital for secure, reliable, and compliant composite applications. The result:

- **Reduced costs** by reducing testing costs, reducing technical debt, and exposing defects earlier in the SDLC
- **Reduced risks** by applying more exhaustive testing techniques, increasing test coverage, and immediately exposing any defects introduced by modifications
- **Increased efficiency** by leveraging sophisticated automation and enabling artifact reuse

An API Testing solution is commonly applied in the following situations:

- **Complex composite applications**: To visualize and validate how messages and events flow through the distributed architecture as tests execute
- **Cloud-based applications**: To facilitate cloud migration and ensure functionality, security, and performance expectations are met in dynamic environments
- **Mobile development**: To ensure the continued functionality, security, and performance of the frequently-evolving APIs that drive mobile applications
- **End-to-end functional testing**: To automate and analyze test scenarios across the many disparate, specialized endpoints involved in a single business transaction
Parasoft API Testing successes include:

- **AT&T**: To ensure the reliability of iPhone billing systems
- **IRS**: To ensure the accuracy and performance of corporate tax e-filing systems
- **CDC**: To validate rule-based specimen management systems
- **Sabre**: To ensure the reliability of the world’s largest travel network
- **Cisco**: To audit business processes
- **Fidelity Investments**: To create and manage emulated service assets
- **HP**: To validate complex business scenarios
- **Vanguard**: To ensure expected quality of service
- **Bloomberg**: To validate performance expectations
- **MedicAlert**: To safeguard personal health record management services
- **Siemens**: To ensure secure, reliable account management and email services
- **Lufthansa**: To ensure that cargo shipments are planned and fulfilled flawlessly

**Parasoft API Testing Solution**
Parasoft’s comprehensive enterprise-grade solution dramatically simplifies the complex testing needed for today’s interconnected business systems.

**Simple Generation of Flexible, Extensible Tests**
From a user-friendly interface, generate tests by monitoring live application traffic or analyzing key application resources. Intuitive GUIs visualize message structures, making it simple to fine-tune test messages and validations for GUI-less services and APIs. Parasoft’s tests are engineered for easy sharing, reuse, and extension.

**Repeatable Automated End-to-End Testing**
Using automatically-generated tests as building blocks, rapidly define complex test scenarios that exercise and validate business transactions across multiple endpoints. From the messaging layer, to the web UI, to the database, ESB, and mainframes, the intuitive interface makes it simple to validate whether business logic satisfies expectations. Easy integration with continuous integration platforms ensures that critical errors are exposed immediately upon introduction.

**Simulate the Behavior of Dependencies**
Testing efforts are often delayed and/or compromised due to difficulty accessing or configuring dependent components (3rd party applications or services, databases, mainframes, etc.). Parasoft Service Virtualization enables rapid, flexible simulation of these dependencies’ behavior, giving functional and performance testers unconstrained access to—and unparalleled control over—the dependent components they need to test against. This promotes earlier, faster, and more complete testing.

**Key Features**
Built from the ground up for message-layer testing; industry “gold standard” since 2002
- From a single intuitive interface, automate complex end-to-end scenarios across multiple endpoints (services, databases, Web UI, ESBs, mainframes...)
- Leverage broad, flexible support for protocols, transports, message formats
- Automatically generate tests that are robust, reusable, and easily shareable
- Keep test assets in sync with evolving systems via automated intelligent updating
- Visualize and validate how messages and events flow through distributed architectures as tests execute
- Seamlessly integrate functional testing with load testing, service virtualization, and development testing

**Real Results**
From a single browser-based interface, team members can create a simulated test environment in less than a minute, then immediately start defining and executing tests against the appropriate test environment configurations.

**Technologies & Protocols**
Parasoft supports the industry’s broadest set of protocols and message formats. For a detailed list, see www.parasoft.com/api-testing.