Executive Summary

The complexity and high level of integration inherent in SAP environments can make development especially challenging and increase the time required to bring solutions to market. For both SOAP-compliant SAP implementations relying on SAP NetWeaver software and implementations utilizing older, legacy integration protocols, persistent development and test challenges include unavailable systems, inability to accurately model performance and complex test data requirements. By employing service virtualization to model the core business logic in SAP systems and integrations, teams can free themselves of these constraints, leading to faster build and test cycles, better quality and lower cost.

Complex Systems and Constrained Development Stifle Innovation

In the modern business world, the most successful organizations are defined by their ability to quickly bring innovative new products and services to market at a higher quality and lower cost than their competitors. It’s easy to see why: When a new product uniquely meets the needs of its target audience, it can take on a life of its own, spreading throughout social media and the public consciousness and becoming synonymous with the brand that delivered it. Think mobile devices with Apple, streaming media with Netflix and customer relationship management (CRM) with Salesforce.com.

As modern as these new offerings and products can be, however, they often rely on business logic residing in mature systems, such as those from SAP. What’s more, development teams have adopted Agile methodologies that do not always match up well with the constraints imposed by dependent SAP systems. These constraints can become especially acute as development shifts toward composite application deployment and development techniques, including service-oriented architecture (SOA), business process management (BPM), cloud and software-as-a-service (SaaS) applications. Consequences can include growing application environment costs and risks due to increasing complexity and frequent unavailability of needed systems.

With the “consumerization of IT” in full effect and the demands of today’s technology users ever increasing, constraints in the software development life cycle can no longer be an excuse for service-oriented products that are delivered late, over budget and with questionable quality.
However, with the “consumerization of IT” in full effect and the demands of today’s technology users ever increasing, these constraints in the software deployment life cycle (SDLC) can no longer be an excuse. IT organizations need to find ways to overcome them, so they can improve communication, integration and collaboration between development and operations (a.k.a., DevOps) and accelerate the delivery of high-quality, new services to the marketplace. How? By reducing or removing these constraints with service virtualization.

### Eliminating Constraints to Speed Delivery

Service virtualization helps remove the development constraints of unavailable systems, conflicting delivery schedules and data volatility by capturing and simulating the behavior, data and performance characteristics of dependent systems and deploying a virtual service that represents the dependent system without such constraints. This allows software to be developed faster, with lower costs and higher reliability.

A good analogy for how service virtualization works is the development of an airplane. Engineers don’t wait until a plane is fully assembled to test it. They model each individual component in a computer simulation and test its viability in a controlled environment, so by the time the first physical prototype is assembled, its component parts have been validated to operate as expected. Swap the plane parts for stages in the SDLC, and it becomes easy to see how service virtualization can drastically improve the software development process.

Additional benefits of service virtualization include:

- **“Shift left.”** Move software development into parallel and test and validate sooner in the software lifecycle, where it is less expensive and issues are easier, less disruptive and less expensive to resolve.
- **Infrastructure requirement reduction.** Reduce or eliminate much of the concurrent demand for environments and hardware requirements Agile methodologies create.
- **Performance readiness.** Solve the challenging problems of properly evaluating the scalability of applications by load testing at the component level instead of waiting until the application is complete, in conjunction with incorporating production network conditions in the test lab.
- **Data and scenario management.** Reduce or eliminate the need for complex test data management, system set-up and other complexities by virtualizing the system behavior to account for edge conditions, negative test scenarios and error conditions.

Organizations can move development and test tasks earlier in the software lifecycle, resulting in reduced time to market, lower infrastructure costs, reduced contention for labs and better overall application quality.
Service Virtualization in SAP Environments

Most new enterprise applications are built in modern, distributed environments and supported by multiple service teams and delivery partners. Existing SAP systems provide system of record and/or dependent system data for these heterogeneous applications. This approach can lead to multiple constraints that slow down application development:

- **Unavailable/inaccessible dependencies.** Systems can become constrained due to schedules, security restrictions, contention between teams or because they are still under development. Each development team needs its own copy of the SAP software to develop against.

- **Poor performance.** Downstream systems and mockups may not provide the functional behavior or performance response needed, network connections in the test lab may not reflect production network conditions and end-user performance can suffer.

- **Parallel development.** Conflicting delivery schedules can keep teams from accessing dependent systems when they need them.

- **Test data constraints.** Complex test scenarios that “burn” test data require significant set up time.

On top of these constraints, it is often too cost-prohibitive for most organizations to purchase the additional test environments it would take to resolve these conflicts.

A service virtualization solution that integrates with SAP environments can help by enabling the teams to capture, emulate and simulate the behavior of services and their underlying mainframes, data and systems of record—without creating conflicts or requiring additional hardware, software or labor.

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**CA LISA® Service Virtualization for SAP Development Environments from CA Technologies**

CA LISA Service Virtualization was built from the ground up to virtualize and validate complex, multi-tier applications. Service Virtualization is highly suited to development challenges faced when using SAP NetWeaver, SAP Process Integration (PI), SAP Exchange Infrastructure (XI) and all of the messaging and adaptor layers to which these applications connect, including RFC, IDoc, SOAP, HTTP, File, JDBC, JMS, JCO and more.

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**Before**

- Development teams are dependent on SAP systems and all integration layers and are subject to system unavailability and conflicting development schedules.

**After**

- CA LISA Service Virtualization simulates the integration layer (NetWeaver SOA services or traditional JCO and NCO clients), SAP systems and downstream systems that utilize ERP Connect.

- Development teams integrate with the virtual service and experience significant increases in productivity.
CA LISA® Service Virtualization has been implemented at over 200 enterprises, including some of the most challenging SAP environments.

**Case study:** Large utility seeks to eliminate constraints associated with environment unavailability, expedite build cycles and enable end-to-end development and test environments.

**Case study:** High-tech manufacturer faces constraints to development of integrations due to scheduling conflicts, system unavailability and a high number of trading partners necessitating significant regression testing.

**Challenge**

- Reduce costs by $100M in OPEX over five years
- Increase application quality and eliminate bugs escaping into production
- Avoid implementing two SAP training environments and associated costs
- Increase access to SAP software

**Solution**

- Use CA LISA Service Virtualization to virtualize core business logic in the application server, SAP PI and downstream systems
- Allow for concurrent access by different test groups, processing of dynamic input parameters and generation of dynamic responses

**Benefits**

- Increased application quality and reduced costs by finding defects earlier in development, when they are easier to remediate
- Reduced demand for physical hardware, software and energy in labs
- Achieved payback in five months and more than 989% ROI over three years
CA LISA Service Virtualization 7.1

The most recent release of CA LISA Service Virtualization, version 7.1 offers native SAP support for enhanced validation and virtualization capabilities and increased protocol support for non-SOAP compliant implementations. Additionally, LISA now fully supports JCO and NCO clients/adapters for non-SOAP compliant SAP interfaces and includes the following features:

- Supports live recording of requests and virtual service generation
- Enables playback of virtual services that simulate the SAP system
- Allows integration developers to decouple from front-end and back-end developers
- Enables L&P Labs to test without full SAP environment
- Supports JCO and NCO clients to SAP R3 and ECC
- Allows for ABAP calls using RFC and iDoc calls

Learn more about CA LISA Service Virtualization.

Many CA Technologies customers report seeing up to 25% to 50% reductions in cycle times, dramatically reduced lab infrastructure costs and better applications where as many as 60% to 90% more defects are identified at least one cycle earlier in the software deployment life cycle.

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Agility Made Possible: The CA Technologies Advantage
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