TECHNOLOGY AUDIT

LISA Suite – v5.0
Interactive TKO (iTKO)

SUMMARY
 IMPACT

The iTKO LISA Suite, comprising LISA Test, LISA Validate, LISA Virtualize, and LISA Pathfinder, provides capabilities around testing, validation, defect discovery, and simulation of services in a distributed multi-tier component-based infrastructure. It addresses the need for comprehensive testing in SOA or other component-based development environments, including heterogeneous distributed environments. It enables regression, performance, and functional testing of individual services or complex composite applications, including testing of composites where some services are not yet available.

- Organizations with a large investment in SOA or other component-based architectures will benefit from the broad set of testing capabilities.
- Organizations using a heterogeneous environment (including cloud and hybrid environments) will be able to gain end-to-end visibility into the behavior of composite applications.
- Performance testing of individual services or complete composites can be implemented using limited resources, and tests can be reset and repeated more rapidly.
- Services that are expensive, scarce, or simply not yet created can be virtualized to permit testing of consuming applications.

KEY FINDINGS

Strengths:

✔ Provides testing capabilities across multiple technology layers.
✔ Root-cause defect analysis identifies the source of problems in hybrid environments.
✔ Codeless approach enhances the contribution of non-technical staff and QA teams.
✔ Continuous policy validation in conjunction with SOA governance solutions.
✔ Service virtualization capabilities for simulation and testing in a virtual environment.

Weaknesses:

✗ Slim penetration into the EMEA and APAC geographies.
✗ Less appropriate for smaller IT organizations.

Key Facts:

- Integrates with standard UDDI-compliant registry/repositories.
- Out-of-the-box support for about 60 technologies and platforms.
OVUM VIEW

LISA Suite provides a comprehensive set of testing capabilities that will allow customers to improve the effectiveness of their QA function for SOA or other component-based development environments. The functional modules can be enabled individually to satisfy point-solution testing requirements, but make most sense when deployed together as an integrated suite. LISA Suite is targeted at large organizations serious about the use of SOA, but limited deployments at the department level provide a common entry level. Organizations deploying applications into a public or private cloud will benefit from the end-to-end visibility and root-cause analysis provided. LISA Suite is less appropriate for smaller organizations or those using SOA technology for simple integration.

Recommendations

- **Large organizations committed to SOA**: For a large organization with a serious commitment to exploiting SOA, the need to build out the QA with a complete and ongoing testing regime will find the capabilities of LISA Suite closely matched to their requirements. The benefits of the integration between the different elements of the suite should be considered even if there is an existing investment in point-solution testing products.

- **Organizations with a low level of commitment to SOA**: The monitoring tools provided with most SOA infrastructure products (primarily ESBs) might prove adequate for the lower level of requirement and lower budget expectation. Individual products from the LISA Suite might be considered alongside other point solutions to extend the default capabilities of the SOA platform.

- **Existing customers**: There are several products that compete with individual functions provided by the LISA Suite, but Ovum is not aware of another product or suite that offers such a broad and integrated set of overall capabilities.

LOOK AHEAD

Ovum expects a further increase in the breadth of coverage of public cloud environments through the availability of LISA Suite agents embedded in cloud offerings. iTKO is also expected to broaden its partnerships with SOA technology vendors to provide out-of-the-box solutions.

FUNCTIONALITY

SOLUTION OVERVIEW

This Technology Audit refers to service-oriented architecture testing throughout, but iTKO LISA is equally suited to testing in any other component-based architecture, including business process management (BPM), integration using traditional enterprise application integration (EAI) suites, or non-SOA use of enterprise service bus (ESB) platforms.
The stated promise of SOA is increased agility so that IT can respond to changes in business requirements in a timely manner and without the costs and complexities associated with change management in traditional/non-service-oriented environments.

While Ovum does not doubt that SOA can live up to its stated promise of increased agility of IT systems, it recognizes that SOA introduces additional complexity if pre-implementation and post-implementation SOA governance is not adequately addressed. Organizations must realize that replacing a traditional application environment dominated by single monolithic applications with one that involves multiple loosely coupled reusable services that are required to talk to one another across multiple application tiers in a distributed infrastructure environment is not a one-time build-and-deploy approach, but a continuous iterative process that involves formulation of an effective test strategy controllable at all stages of a service lifecycle. Once implemented, effective validation techniques need to be put in place to gauge if the services that have been built, tested, and deployed behave as expected. Ovum believes that the effectiveness with which organizations address these challenges is important to the success of the overall implementation strategy and governance plan.

SOLUTION ANALYSIS

Figure 1: LISA Suite v5.0 functional components

Source: iTKO
iTKO’s LISA Suite provides a codeless testing, validation, virtualization, and root-cause defect analysis framework for QA teams, policy validation teams, and developers supporting large IT organizations (either in-house, outsourced, or in combination) with a component-based IT infrastructure. Increasingly, the most common paradigms associated with the component-based approach to providing IT services are SOA, BPM, and rich Internet application (RIA) mashups in a Web 2.0 environment; and LISA offers adequate support for each of these. Although Ovum does not dispute that testing of components in an SOA environment is one of the most important stages of the software-development lifecycle, it believes that merely testing them from the user-experience level or at the source-code level does not make the service “good-to-go” in a production environment. The overarching concept of SOA demands that individual services talk to one another and can be called upon when necessary. The fact that integration and information exchange across multiple services and infrastructure stacks is inevitable opens up these layers of integration as potential points of failure. LISA’s framework offers testing across the entire technology stack that makes up the composite application (for example, what transactions occur at the ESB layer, or whether Ajax-based web applications talk to one another as they are designed to) to ensure that these service components behave as expected in a production environment.

The LISA Suite comprises four modules: LISA Test, LISA Validate, LISA Virtualize, and LISA Pathfinder. The modules sit on top of the LISA Framework and offer capabilities aimed at accelerating software delivery and integration by providing automated unit, functional, regression, load, and performance testing, and continuous validation capabilities along with the ability to create virtual services for simulating the behavior of distributed multi-tier applications. The LISA environment is managed through a proprietary workstation, and the latest version also has a browser-based interface for appropriate functions.

Ovum believes that the iTKO LISA solution stands out with its ability to offer testing, validation, and virtualization capabilities in a multi-tier heterogeneous IT infrastructure. The solution offers out-of-the-box support for about 60 different technologies including:

- Web services (WSDL/SOAP testing)
- SOA platform testing
- Java objects and RMI (remote method invocation)
- Java EE Servers and EJB (Enterprise JavaBean)
- Databases
- Web applications (HTTP)
- Microsoft .NET
- RIA UI testing (Ajax, AWT, Flash, Javascript, Java Swing)
iTKO LISA also extends the functionality of commercially available solutions such as Oracle AIA and WebLogic; BPM solutions from Cordys Appian, SOA Software, and Savvion (among others); HP Mercury SOA, Progress (including Sonic ESB), SAP NetWeaver, SoftwareAG (webMethods), and Tibco by offering unit, functional, regression integration, load testing, validation, and service virtualization capabilities.

Ovum believes the iTKO LISA Suite would be directly relevant to three distinct user segments in an organization: developers, QA staff, and IT operations teams. LISA’s test and virtualization capabilities can be used by developers to test the primary operations of services and to create virtual services for testing them in a simulated production environment. Ovum believes the ability of LISA Virtualize to create virtual services can eliminate QA staff’s efforts in having to reset data after each test run, which in some cases can be more resource-intensive than the test itself. LISA Virtualize also provides capabilities to reduce or eliminate infrastructure costs for physical test environments, including the hardware, configuration, and maintenance for stubs, responders, and mock-ups that can be replaced with LISA’s software-based virtualization. LISA enables QA staff to take on service tests from developers and extend the test scope for more rigorous testing. The policy-validation capabilities offered by LISA Validate could help IT operations staff, SOA governance personnel, or other members responsible for enforcing design-time and runtime policies defined around security, routing, reliability, and mediation and routing of services. During execution, users can test for runtime policy validation by leveraging the solution’s native interfacing capabilities to Software AG CentraSite, SOA Software, and HP Systinet repositories as well as other registry/repositories supported through UDDI.

The LISA Framework is the foundation of the LISA offering on top of which the functional modules execute to deliver the different dimensions of the suite’s capabilities:

**iTKO LISA Test**

iTKO LISA Test is a collaborative SOA and business software testing solution that offers a no-code testing environment for users to design and execute functional, unit, regression, and load tests. Functional testing, a basic requirement for any testing solution of LISA’s nature, deals with testing the UI as well as the multiple layers of technology that reside below the UI in order to ensure that design requirements are met. These tests are run against components in an SOA architecture as well as dynamic websites (RIAs). LISA Test can also be used for testing and verifying the business logic in most middle-tier technologies for custom and legacy applications in an enterprise. The solution’s load-testing capabilities enable load tests to be conducted on individual components and workflows during design and development of applications as well as during the integration phase. Ovum believes that in doing so organizations can conduct load tests on applications at an earlier stage without having to wait for the completed application to stress-test it at the UI level. The solution also offers capabilities such as recording and playback of the entire test process, and scheduling load and functional tests as well as event-based triggering as a part of the application lifecycle-management workflow.
In an operational use-case scenario, LISA Test connects to an object on the application server and gathers information about the component. Users are then shown multiple methods by which the object or the application itself can be invoked. Once invoked, LISA Test analyzes the behavior of the component being invoked and allows users to make test assertions against that behavior. These tests can span multiple technology layers including rich web pages (HTML, Ajax, Flash, Swing, AWT), web services, EJB and Java servers, ESB messaging, JMS, databases, and file systems.

**iTKO LISA Validate**

Because the information flow within and through services that make up composite applications are capable of changing, continuous validation of data is necessary to ensure that the underlying business logic of the composite application is not compromised. LISA Validate orchestrates the continuous validation aspects of SOA governance by conducting live discovery testing, policy validation, and functional and performance monitoring of critical business workflows to ensure that service levels are met on a continuous basis.

The solution automates the process of segmenting the technology layers of an application, driving functional transactions across each of the individual components, and analyzing the behavior of the application by capturing and reporting system-wide and component-level metrics such as JMX, SNMP, and Perfmon from a dashboard or alerting mechanism of the organization’s choice. The solution is widely used in conjunction with SOA governance tools for validation of SOA governance efforts. By offering out-of-the-box support for some of the leading UDDI-based registry/repositories LISA Validate can be used to verify SOA design-time and run-time policies to ensure that policies are enforced across all published and consumed services as well as workflows.

**iTKO LISA Virtualize**

The LISA Virtualize tool creates a virtual services environment (VSE) within LISA that is in effect a simulation environment capable of simulating the behavior of a service and its underlying implementation layers. The solution offers virtualization capabilities on two levels:

- In cases where testing cannot be performed on production systems because of operational constraints, the LISA VSE captures and simulates the real-world environment for users to carry out tasks relating to testing and validation of components/services that have been published.

- In cases where the application has not been built yet, the LISA VSE provides a virtual modeling environment where models of components can be created and tested.
In Ovum’s opinion, the iTKO approach of simulating the behavior of deployed software assets across a distributed environment where an actual production environment doesn’t really exist (or is inaccessible for all practical purposes) and the construction and behavioral analysis of services not yet in existence could bring large cost savings to organizations and significantly increase the pace of development. When used in conjunction with LISA Test and LISA Validate, LISA Virtualize allows users to perform tasks such as unit, functional, regression, and load-testing, as well as to check for policy validation of virtual services in a virtual environment.

**iTKO LISA Pathfinder**

LISA Pathfinder is the most recent addition to the main functionality of the LISA Suite. The primary function of LISA Pathfinder is to pinpoint the cause of defects (functional or performance-related) in complex multi-tier heterogeneous environments including cloud and hybrid environments. It could be used to trace from a web page through to all of the environments, technologies, and components involved in servicing it. It can monitor and record the state of each of these pieces of the application architecture, showing the message payload delivered to and received from each component, together with the time of each event along the path. This allows developers to home in on services that are only relevant to an individual transaction, and to quickly identify the root cause of problems.

LISA Pathfinder requires agents to be implemented, typically within the JVM on each platform. It can generate large volumes of diagnostic information, which means it would be inappropriate to deploy it in a live environment. It can automatically generate regression test suites to reduce the amount of future manual testing required.

**Solution Architecture and Scalability**

Because the LISA Suite is not usually deployed in a production environment (apart from LISA Validate in some cases), the scalability and fault-tolerance aspects are not really relevant from a live production environment point of view. However, in a test environment, the solution is capable of emulating extremely high volumes of workload from a moderately configured server. iTKO provides examples of having successfully load-tested thousands of concurrent transactions from a typical business laptop and running about 10,000 transactions per second on an enterprise-class server. The reason for this, according to iTKO, lies in LISA’s lean instruction set, and because it is all XML the solution is able to eliminate many of the server overhead requirements (for example, needing several test servers to support an instance of an OS per test).
Product Emphasis

In Ovum’s opinion, the emphasis is on LISA’s ability to provide a single integrated solution set for all aspects of testing, validation, service virtualization, and error diagnostics in a component-based IT infrastructure environment. The solution helps any organization undertaking migration from a traditional monolithic application model to a composite application-based model by offering its capabilities across all technology layers that make up the composite application, as well as multiple platforms. Most testing vendors in this space (providers of non-code-level testing tools) offer either capabilities that are tied to a specific scenario type such as SOA platform testing, RIA testing, and web application testing, or they offer capabilities that are constrained in terms of breadth of functionality such as user experience testing or UI-level testing.

PRODUCT STRATEGY

The iTKO LISA Suite has both a horizontal and a vertical focus with respect to its target market. The solution is suited to large enterprises seeking to offset IT risk by streamlining their development activities across a heterogeneous infrastructure. The company has successfully deployed the LISA Suite in companies in several sectors including banking, financial services, insurance, energy, telecommunications, travel, and the federal/defense industries. With respect to company size, iTKO states that companies with more than $1 billion in revenues or Global 2000 organizations stand to gain most from LISA, although the product is also suitable for smaller organizations with demanding software-development needs, and is often introduced into organizations through relatively small-scale departmental deployments.

The route to market for iTKO LISA is a combination of iTKO’s direct sales force, its SI and technology partner network, and its independent software vendor (ISV) channel partners. iTKO has established SI and ISV partnerships to push LISA into the market and this channel continues to be a major source of revenue. The company has a direct sales force in the USA but relies on reseller and consulting partners for the EMEA and APAC regions. Some of iTKO’s partner companies are:

- Software/ISV partners: Tibco, Software AG, SAP, HP, Oracle, IBM (Rational), and SOA Software.
- Technology partners: Tibco, Software AG, SAP, HP, Oracle, IBM, and Eclipse.

An edition of the LISA Suite that supports full testing functionality starts at approximately $16,000 per user. Additional functionality is sold according to the need for server-side automation, including load/performance-testing capacity (virtual users), virtual service environment, continuous validation service, and LISA extension kit as needed.
The typical cost of a LISA deployment varies from $200,000 to $1.5 million, of which approximately 85% is the license cost. The company has a stated goal of expanding its services arm as the customer base increases, while at the same time expanding its global SI and consulting partnerships to provide project consulting and advisory services, training, and custom product extensions to address the specific technology needs of customers. Annual maintenance and support is about 20% of the annual license cost, and includes issue tracking and resolution, user support via email or phone, user forums, and LISA version updates and patches.

Ovum believes that SOA has over the years gained traction across a varied user base and this includes several mid-tier organizations considering the migration to a SOA-based architecture. The perception that SOA is applicable to only large organizations seeking IT service-delivery agility is no longer true and the market has responded to this shift. SOA governance solution providers and other SOA enablers are increasingly providing “lite” versions of their solution sets geared toward meeting the needs of mid-market organizations. The company is beginning to offer LISA “in the cloud” both through IBM’s cloud initiatives, Amazon EC2, and other providers, which could ease cost-of-entry for some and make the technology more attractive to smaller enterprises via a “pay-as-you-go” model. In Ovum’s opinion, the LISA Suite also offers great potential to mid-market companies, but in order to effectively cater to this segment iTKO might have to consider strengthening its partner network, particularly in the EMEA and APAC regions.

IMPLEMENTATION

iTKO claims that the resources and technical skills required during the initial phases of deployment are minimal because most of its customers self-install and start using LISA immediately for building and executing test cases. The company also provides a services engineer who works with the team for the first week to help formulate a test strategy. iTKO ensures that each of its top system integrator (SI) partners has at least one trained LISA expert to aid initial implementation. Post-installation, the level of resources required to use the tool depends upon the sophistication of the objects and the scope of the architecture the customer wishes to test. Because the solution is codeless and offers a script-free environment, non-developers and QA teams can start testing web UIs, services, and other objects with LISA. iTKO offers professional services to support customers in achieving self-sufficiency in LISA, and making any process and methodology changes that might be required.

With respect to implementation time frames, the solution’s out-of-the-box support for technologies such as ESB, web UIs, databases, and Corba means that users with an understanding of the architecture/technology that they work with can use LISA after about three days of iTKO-provided training. The training (LISA Jumpstart) covers most of the services-based technologies that the customers need to test. For building test extensions to support custom SOAP headers, security protocols, and other messaging frameworks to legacy objects, the time required to customize LISA is about one to two weeks. The company offers two three-to-five-day workshops for advanced testing/test extension and virtualization techniques, delivered either at the customer’s site or in the training classroom at iTKO headquarters in Dallas.
LISA Suite is a pure Java application (except for some specific elements for native IE/.NET and Microsoft framework testing) and runs on any Java-compliant platform. Installers are available for Windows (Win 2003, XP, Windows 7 32-bit and 64-bit), Mac OS, Linux, AIX, Solaris, and Unix platforms. LISA Suite can be delivered with open-source software to support the application server and data platform requirements, but in most instances customers will prefer to implement the solution on their chosen products. The platforms supported by LISA include:

- Application/web server: JBoss, WebLogic, WebSphere, iPlanet, Apache, .NET/IIS, any Java EE Container, any web server.
- Databases: Oracle, DB2, SQL Server, mySQL, Informix, other JDBC-supporting databases.
- Middleware: Tibco, SoftwareAG/webMethods, MQ Series, SAP PI/XI, Oracle AIA and Fusion (BEA), Progress Sonic, Sun JMS/JCAPS, and others.

iTKO claims that approximately 160 organizations use LISA Suite, representing more than 10,000 user seats. Typical examples include:

**Major US bank:** The bank has unlimited enterprise use of the LISA Suite. It is replacing a number of performance and test environments with virtual services delivered through LISA Virtualize. It provides a common test and validation platform for external partners as well as its own developers. Validation of the integration of multiple new and legacy systems is of particular importance.

**Large online trading platform:** Supporting concurrent integration efforts with multiple partners is a major activity and is critical to the growth of the business. The organization uses LISA Virtualize to provide a more stable and cost-effective test environment as a SaaS offering to its partners.

**Large military department:** Performance and security of live systems is protected by using LISA Virtualize to deliver a virtual service for low-impact testing, and LISA Validate for continuous, event-based or change-based certification of shared services from multiple service providers.
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