WHITEPAPER

Apica LoadTest: Leading the Next Generation of Load Testing Solutions

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Foreword

As we see it, digital transformation means that software development needs to go faster than it does today. This means accelerating the whole process of developing new products, improving time to market, and also changing existing applications. This acceleration has driven a new set of expectations placed upon performance testing over the past 20 years, and to support this, IT is working towards more advanced and modern deployment workflows.

Companies are using the cloud, containers, micro-services and Agile development, as well as DevOps, continuous integration and new delivery practices to achieve a better and faster way of working. To work with these new modern technologies and processes, businesses are extending performance testing outside of centralized performance test teams to introduce independent API teams to do simpler performance tests at the API level. Organizations may have more than 100 delivery teams, and centralized performance teams are struggling to handle all the tests and maintain the scripts for those teams.

This has had a profound impact on the way most development teams work, and of course a significant effect on the requirements placed on performance testing.

With a growing number of API teams, businesses are set to see the number of test scenarios grow rapidly. For example, performance test experts may require ten different scenarios dedicated to focusing on the risk of a system, which can translate into a large number of scripts to cover all types of transactions and APIs, and could easily grow to 300 scenarios.

Agile development, and how new features are delivered are also driving the pace of change in the performance testing environment. Traditionally, a performance testing team might be contacted four to six weeks before a release in order to plan tests focused on a few features. With digital transformation and Agile development, new features can be introduced at any time and there's a growing need to respond with doing performance tests every day to inform to key stakeholders with how the application is performing.

Simply put, organizations need dedicated performance testing, and a way to put a load of millions of concurrent virtual users on systems without compacting the centralized performance testing team. Companies that are serious about digital transformation will need to look to new solutions and infrastructure to handle the volume of tests required to make digital service improvement a priority.

Introduction

Apica LoadTest is a pioneer in the next generation of SaaS based load testing solutions. It brings a unique and modern set of features that can complement legacy solutions like LoadRunner, or in some instances, replace these systems entirely.

This white paper is designed to assist you in determining if Apica LoadTest may act as an efficient supplement to your current LoadRunner solution, helping you to decide whether it can enhance your load testing ability, while saving you money and helping you avoid risk.

For 20+ years LoadRunner has been a traditional and mature load testing solution offering excellent load testing capabilities. It has been the de facto load testing tool used by thousands of companies around the world and offers a full set of rich functionality. As a mature and feature-rich performance testing platform that supports many legacy applications and Windows specific protocols along with other notable protocols such as Citrix, SAP GUI, and terminal emulation, LoadRunner has brought many strengths to testing teams.

Over its extensive lifetime LoadRunner has accumulated a huge installation base of customers who have worked with the Windows technology using the C++ programming language.

However during this time, development teams worldwide have moved towards DevOps, Automation and CI/CD deployment models, while LoadRunner has had slow, and limited adoption of DevOps integrations to tools like Jenkins, JIRA and other tools. Beyond this, expertise in C++ has become expensive and limited, and the new generation is looking to create scripts with advanced scripting engines without having to do any coding.

In the past 20 years, Agile development, and later DevOps, have introduced significant scaling capacity into development and testing teams. While conducting testing from one location may have been sufficient in the nineties, today most enterprise companies are working on a global scale: when businesses have teams on every major continent doing development, it's essential they are able to quickly view the status of load testing across all locations at one time.

Because of this, companies are looking to supplement LoadRunner, or in some cases, to replace it with a next generation load test product which can offer a full set of rich functionality including powerful scripting, server-side monitoring, powerful analysis and end-to-end reporting.

Apica LoadTest in detail

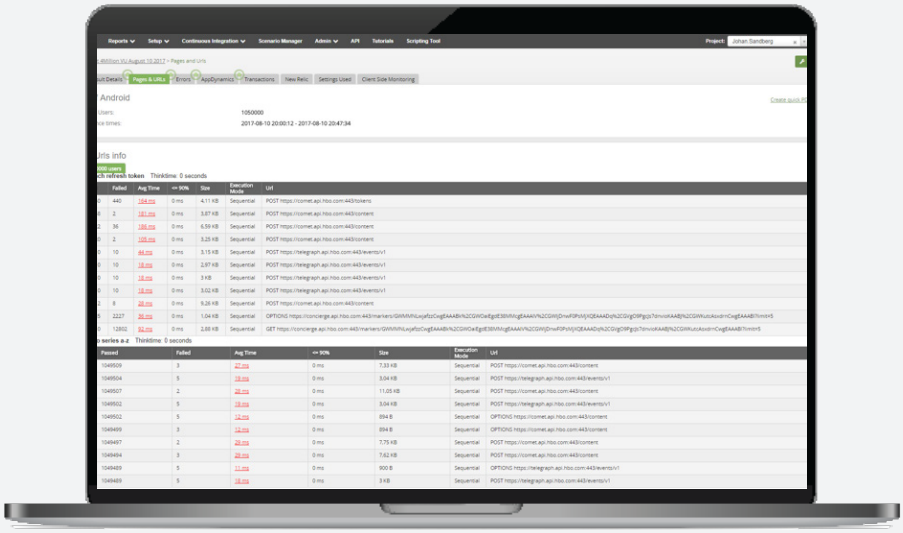
The Apica LoadTest portal is an enterprise class applications testing service to help businesses ensure the scalability of their websites, apps, APIs and IoT. Customers are using Apica LoadTest to test the application performance of varying loads, giving IT and DevOps teams the ability to identify and isolate performance bottlenecks that may only become visible during traffic spikes. This is giving Apica LoadTest users the means to resolved critical issues before they do real-world damage.

Apica LoadTest can be deployed in the cloud as a SaaS service or installed on premises in the customer data center. It can also be deployed as a Hybrid Model on-premises for some projects and SaaS for others, and is available 24 hours a day, seven days a week, 365 days a year. It supports load testing demand across your entire whole organization, from where ever it is deployed globally with one common platform.

Results are available both in real-time as well as after test and Apica LoadTest is available for unlimited users, with new user addition a quick and uncomplicated process.

The Apica LoadTest Advanced Scripting Engine

Apica LoadTest has an advanced scripting engine, which empowers users to create scripts without having to know C++ or any programing language so they can easily set up short tests, multiple sequential tests and multiple tests in parallel. This is a revolutionary change to traditional legacy load testing solutions, which often require extensive C++ programming knowledge. With Apica LoadTest, performance testers can create and load tests quickly (in minutes, actually) rather than through time consuming programming.



There are many ways to create load testing scripts with the advanced scripting engine:

1. Simply record and replay http(s) traffic and enrich with logic, reading and parsing HAR files, and using command line utilities. The advanced scripting engine transforms the way APIs are load tested. APIs can be recorded directly from the web page or mobile app, making scripting unnecessary. If you are using Postman or SOAP UI as your API flow mechanism, the advanced scripting engine will easily capture the APIs, again without the need for manually programing. Complex API calls can be chained together automatically saving you time and effort.

2. The advanced scripting engine (unique to Apica LoadTest) also makes it possible to support the most popular platforms used by current generation of technical testers, including Mac OS, Linux and Windows. The advanced scripting engine makes it possible to support advanced standard and customized security solutions such as IOT technologies, Mega Load tests with +million simultaneous virtual users distributed over several locations and support for adaptive streaming protocols like HLS, MPEG-DASH, etc.

3. Lastly, Apica LoadTest's advanced scripting engine will convert LoadRunner, JMeter and Selenium scripts so they can be re-purposed for performance load tests.

Here are a few of the other top business benefits Apica LoadTest customers are reporting:

- ✓ Unparalleled Scalability: Quickly test with up to two million concurrent virtual users to measure the high traffic impact on websites and applications.
- ✓ Cost savings: A lower cost alternative to traditional load testing systems, and a reliable, fully supported alternative to open source systems.
- ✓ Integration with value-add APM products like AppDynamics, Dynatrace and NewRelic.
- ✓ Enterprise level management capabilities such as automation with REST API and CI/CD: Plugins come ready for use across all your projects and teams, and features built-in project management with access control. It also comes with test assets such as load testing scripts and test data.
- ✓ A full set of rich functionality: Including server-side monitoring and excellent reporting.
- ✓ Architectural Flexibility: Implement a SaaS, hybrid, or on-premise solution that meets the unique needs of your architecture and advanced security requirements.
- ✓ Proactive Intelligence: Test your applications in development, measure the quality of the user experience and identify patterns and anomalies in your infrastructure.
- ✓ Actionable Analysis: Interactive dashboards with waterfall graphs, trend reports, and summaries provide visual reports and help pinpoint bottlenecks for continuous improvement.
- ✓ High capacity storage: A repository for storing and sharing test results over time.

Apica LoadTest for DevOps

DevOps Integrations with load testing is another priority for organizations who want to successfully manage digital transformation, and it's an area where older load testing platforms fall short. Today, companies expect out of the box integration with build tools including Jenkins, TeamCity, Atlassian Bamboo, AWS CodePipeline and Microsoft Team City, all of which easily integrate with Apica LoadTest.

These tools allow companies to easily take advantage of load testing as an automated piece of their more advanced and modern deployment workflows. With these integrations it is easy to either simply automatically run and collect load test performance data during deployment, or to actively gate deployments based on the results of those load tests to prevent non-performing builds from being pushed into production.

> **One of the success factors with CI/CD is the degree of automation of running a large number of performance tests, and the ability to analyze the results and generate status. This is a weakness in LoadRunner since each test depends on a reports-installed LoadRunner Controller bound to a license. The number of controllers therefore limits the number of concurrent tests. In Apica LoadTest performance tests are scheduled in the portal and are only limited by the number of load generators and the license.**
>
> **- Apica LoadTest Customer, Tier 1 bank**

Apica LoadTest Strengths vs LoadRunner

FEATURES	APICA LOADTEST	HPE LOADRUNNER
NO PROGRAMMING REQUIRED	Easily create scripts for complex test scenarios without writing any code	C++, Java, C# and Java Script programming
SCALABILITY	Up to 12M concurrent virtual users	Thousands of concurrent virtual users
ENTERPRISE COLLABORATION	Run load tests and reports from multiple locations while sharing real-time results and post-test analysis	Post-test analysis only
DEVOPS SUPPORT	Native integrations for Jenkins, Bamboo, Team City, AWS Code Pipeline and other enterprise-level tools	Non-native, limited support through cumbersome third-party tool
RUN THIRD PARTY SCRIPTS	LoadRunner, Selenium and JMeter	JMeter
SAAS-BASED, SELF-SERVICE	YES At no additional cost	Self-administered On-Prem Expensive short-term cloud rentals available
PREMIUM GLOBAL LOAD TEST NETWORK	Global infrastructure with load generation clusters across the world including cloud - AWS, Azure, Rackspace etc.	NO
SERVER-SIDE MONITORING	YES	YES
API SUPPORT	APIs can be recorded directly from the web page or mobile app, so programming is unnecessary	APIs created manually, so programming is time-consuming
APM NATIVE INTEGRATIONS	New Relic, AppDynamics, DynaTrace	NEW RELIC
FULL-SERVICE, PROFESSIONAL SERVICES SUPPORT	YES	OUTSOURCED
24/7/365 GLOBAL SUPPORT	IN-HOUSE	OUTSOURCED
LICENSING MODEL	All protocols included with unlimited usage – NO HIDDEN COSTS	A la carte protocol pricing – EXPENSIVE
DEPLOYMENT	ON-PREM, SAAS AND HYBRID	ON-PREM AND HYBRID
PRICING	$	$$$$
STABILITY	One owner since 2005	Three different owners since 2008

How Can Apica LoadTest supplement LoadRunner exactly?

In certain scenarios you can use Apica LoadTest alone, and in certain scenarios you can use it and LoadRunner together. These are the points you should consider when you're making that decision:

1. Do you have really old protocols? You may, for instance, have terminal emulation from the 1980s that still needs to take place in some cases. Companies may have invested in SAP or Citrix, which has its own particular GUI it needs to use. LoadRunner took the time ten years ago to make its software work with that. If those types of protocols need to be supported, then it may make sense to keep some aspects of LoadRunner in place. However, Apica LoadTest may be able to bridge the gaps in these instances in a way that saves time and money.

2. Do you have scripts running that have taken a long time to build? Companies may not want to throw these scripts out, Apica LoadTest can take those scripts and translate them to work on its code, and new scripts can easily be created using its scripting engine without the use of programming knowledge.

3. Are you relying on free open source technology to 'fill in the gaps'? Many companies using LoadRunner are filling in the gaps with open source technology. These may address some of the issues LoadRunner cannot, but as with LoadRunner, many of these solutions require users to code everything to use the scripts. Open source solutions may be a temporary stopgap solution, but in many instances they raise real security concerns with Chief Security Officers who understand the dangers of not knowing what's in a solution's code and having no real support resource. Apica LoadTest is a real alternative to open source solutions and exists as a fully supported, cost effective solution for enterprise load testing.

Apica LoadTest at a Major Bank: A Case Study

The Challenges

The bank had used LoadRunner for 10 years, using a traditional central performance test team to handle all performance tests at the company.

The bank was undergoing extensive digital transformation, and was also experiencing a demand to spread performance testing across the organization. For this reason, a CI/CD project was created. One of the major goals assigned to the CI/CD project was to investigate the limitations of LoadRunner and to suggest a new platform that matched the growing new digital demands.

The new project team identified the following LoadRunner limitations:

- Dedicated installation only used by a central performance test team and not suitable for spreading the ability to run performance tests by others in the organization
- Every performance tests scenario involved 4-7 manual steps and this limited the number of tests that could be done per day
- Lack of integration with the companies already invested APM Product
- Tests was limited to ~1000 Virtual Users due to high license cost
- Lack of a central repository for storing and sharing test results

Implementing Apica LoadTest

After an initial proof of concept stage, Apica LoadTest was installed in three days as an on premise installation at the bank.

As the bank was able to re-use the LoadRunner servers, the installation was done without requiring any new load generator hardware. As part of the integration, the team was also able to integrate with an existing APM product the bank had already invested in.

After the installation was complete, the performance test team began to migrate LoadRunner scripts to Apica scripts. The Apica scripts were then used in a new integration with a Jenkins build server as part of the CI/CD project deliveries.

How to Implement Apica LoadTest

When implementing Apica LoadTest, Apica considers your current testing processes, and how far down the line you are with automation. Our solution is very easy to set up, and get teams up and running and proactively using Apica LoadTest in two to three weeks.

There are on premise and SaaS implementations of Apica LoadTest. We can also provide hybrid implementations, which is not something you can get with legacy solutions such as LoadRunner.

Here are a few of the helpful product features that make the implementation of Apica LoadTest straightforward:

- Script Converter Tool included in product– effortlessly convert LoadRunner scripts
- Enablement program for new customers
- Specialized training sessions for LoadRunner veterans to transition to Apica Load Test
- Load test methodology (Best practices)
- Professional Services department to assist in upgrading to Apica LoadTest
- Load test project delivery
- Advanced scripting
- Analysis and Recommendations
- APM Tool integrations
- Continuous delivery integrations
- Instant set up of ALT and start the first load test
- World wide load test generators with instant access
- A fraction of the cost of LoadRunner

Summary

The pressure to test code quickly in order to be able to develop software and deal with today's more advanced and modern deployment workflows is not being met by legacy load testing applications, preventing many companies from being able to digitally transform in order to compete.

While many organizations are reluctant to consider replacing legacy systems due to the extensive resources, budget and time committed, the fact is that these systems simply aren't working in modern situations driving software development today. They can't react and meet the needs of modern API and Agile development because they are too slow, and though companies may have invested millions in these solutions, the time has come to look to replacements and 'bridge the gap' technology.

Apica LoadTest offers many advantages for the current generation of developers and testers who want to utilize the DevOps model of testing, while giving teams the ability to quickly test with up to 2 million concurrent virtual users to measure the high traffic impact on websites and apps, from any location globally.

The Apica LoadTest advanced scripting engine marks a real change from traditional load testing solutions, which usually require extensive C++ programming knowledge. Using it, users can create and load tests without coding knowledge, creating and loading tests in minutes. This is saving teams hours of valuable time, plugging into the technology gaps around DevOps.

The realities of load testing in the age of automation, DevOps and CIPD are that companies need to think about new, cost effective technologies that can help them meet the demands of digital transformation, as well as technologies that match the skill sets of the next generation of performance testers.

Discover Apica

Leading enterprises rely on the Apica Web Excellence Suite to test and monitor their mission critical business systems, APIs, web and mobile applications. Apica enables businesses to get detailed real-time performance, uptime and capacity insights, ensuring outstanding end user experience and optimized IT operations. Apica's suite – available as SaaS, on-premise and hybrid solutions – is trusted by 400+ leading brands globally. Apica has offices in Stockholm, New York, London and Santa Monica.

To learn more about Apica, visit apicasystems.com

Contact Us:
North America: +1 (310) 776-7540
Nordics: +46 (0) 8-400 273 27
EMEA: +44 20 8396 4909
info@apicasystems.com

Stockholm | New York | London | Santa Monica

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