# Continuous Service Monitoring and Testing in the Virtualized DevOps World

Modern services rich in multimedia content are based on high speed modern data networks and distributed libraries. These services are designed, implemented and maintained on a continuous basis. It is often difficult to clearly identify the ongoing phase of development in the case of a particular service. Services are constantly being improved in terms of operational reliability. They are enriched with new features, optimized in terms of costs, customized to fulfil requirements of end-users and even integrated with external third-party services.
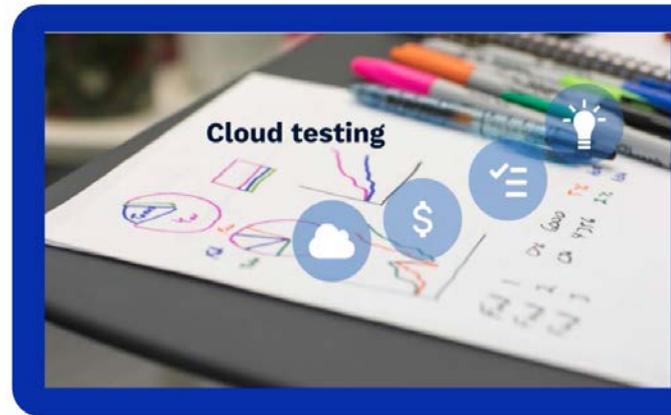
Their dynamic and distributed nature requires a new holistic approach to testing all of the vital components, including throughput and latency of network connections, performance and availability of computing resources, reliability of service control modules, integration efficiency of distributed functional modules and many other components.

The dynamic expansion of network-based services is an apparent trend. These services are offered globally and lead to the rapid growth of competition in terms of quality, dependability and functionality. Instant and reliable access to user-friendly testing and monitoring tools at an optimized cost has become a common requirement. In addition, dependable testing and monitoring systems have to be deployed in a distributed environment to provide a reliable insight into service performance. Test agents must be located in the vicinity of the service components, in a public or private cloud infrastructure, integrated with fog computing infrastructure, and connected to key network nodes, regardless of whether these nodes are physical devices or virtual network functions.

As a response to the aforementioned needs, Net Research provides the virtual Universal Testing Platform (vUTP) enabling web-based services to test and monitor various assets and services and remove all burdens related to configuration and management. The solution designed by NetResearch implements the 'testing as a service' paradigm to assure its versatility and applicability in the highly dynamic, distributed and competitive environment of modern services.
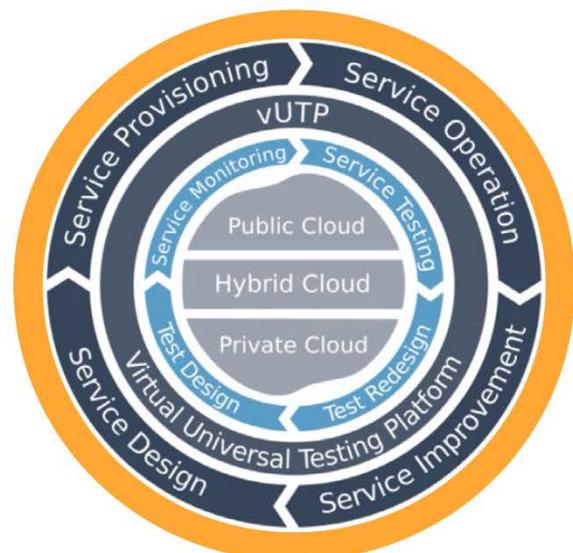
The Testing as A Service paradigm adapted for NetResearch vUTP gives access to a variety of tests, heterogeneous test agents, time-based test schedules, instant monitoring and supported graphic-based results analysis. All of this is available from anywhere and from any device with a web browser installed. A user- friendly web-based interface gives easy access to the powerful tool able to satisfy a variety of needs in countless cases appearing in the world of Internet-based services. We can further fulfil any special demands due to the easily extensible modular architecture of the vUTP platform.

Cloud computing is a model for enabling ubiquitous, convenient, on- demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

NIST, September 2011

Fog computing is a layered model for enabling ubiquitous access to a shared continuum of scalable computing resources. The model facilitates the deployment of distributed, latency-aware applications and services, and consists of fog nodes (physical or virtual), residing between smart end-devices and centralized (cloud) services. The fog nodes are context aware and support a common data management and communication system.

NIST, March 2018

Thanks to the adoption of the Testing as A Service paradigm in the NetResearch vUTP platform, users are given access to a variety of test procedures, heterogeneous test agents, time-based test schedules, visual results analysis, continuous monitoring and instant test execution scenarios. All of the features are available from anywhere in the world via any device with a web browser installed. The user-friendly web interface gives easy access to the powerful tool able to satisfy a variety of needs defined by countless cases appearing in the world of internet-based services. The vUTP platform can be customized to fulfil any individual requests due to the extensible modular architecture.

NetResearch virtual Universal Testing Platform

TEST AGENTS

The NetResearch vUTP Testing as A Service platform supports cloud-based software and on- premise test agents which can be transparently used to perform either single on-demand or periodical tests scheduled with user-defined timespans and intensities. You can easily manage not only numerous test agents but also plan hundreds of tests in a cost-efficient manner and analyze results supported by the system's suggestions. The dashboard ensures an intuitive and extensible interface.
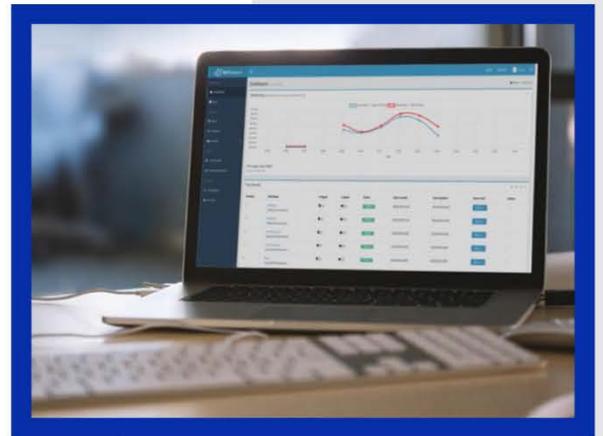
By 2021, fewer than 15% of organizations will implement holistic monitoring, putting $255 billion of investments in cloud-based solutions at risk.

Gartner, August 2018

Gaps in monitoring and visibility ultimately lead to an inability to monitor service quality.

Gartner, August 2018

SIMPLE MANAGEMENT

The platform handles communication, resource management and billings in multi-cloud infrastructure providing a transparent unified interface to the Testing as A Service features. Simple fee plans help our customers to focus solely on planning tests that are important for their businesses.
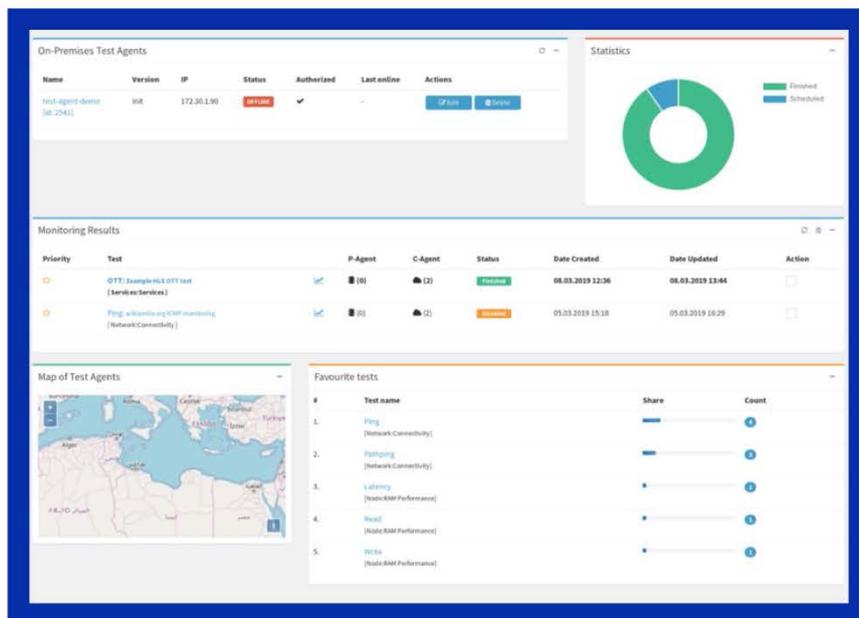
VERSATILE DASHBOARD

All of the features are provided through the simple but highly informative graphic interface available anytime, anywhere, and from any device just using the web browser.

INTERFACE

The web-based dashboard is designed to provide the best experience when scheduling and running tests. Tests are intuitively categorized to ensure immediate access. Charts, diagrams and tables give a fast and clear insight into collected results without disruptive add-ons. The administration panel enables 24/7 account management; in this way, all the needs are met in an extremely simple manner and without any need for client-side installations.

INSTANT TEST EXECUTION

The vUTP platform seamlessly provisions resources and assigns tasks to ensure on-click and cost-effective test execution in globally-scaled infrastructure. Tests can be also scheduled and executed via the API interface.

CONTINUOUS MONITORING

The test-scheduling feature combined with public clouds provides a powerful, globally-scaled and easy to use tool for the continuous monitoring of service QoE. Notifications enable remaining aware of the current status of assets.

RESULTS PRESENTATION

High-level analyses are enabled by informative diagrams summarizing recent and historical results. Any issue can be thoroughly investigated with a test-specific detailed view while vUTP supports the analysis with initial suggestions concerning alarming results and possible causes.

TESTS

A broad range of tests is provided to enable a plethora of cases in which the vUTP platform is applicable. It provides an opportunity to verify the performance of the machine hosting the vUTP test agent, the network connectivity between test agents and endpoints-under-tests, and the quality of services like OTT video, HTTP (including waterfall analysis) or traditional FTP. Modular architecture makes it easily possible to respond to our customer's demands and extend the offer of tests. vUTP can work as a powerful yet simple orchestrator of multiple global-wide tests running at various network layers. Below, a more detailed list of tests is provided in distinct Node, Network and Service categories.

NODE

Verify performance of machines hosting the vUTP test agent and make sure that expected and sufficient resources are available in terms of computing (AES Encryption, RSA Encryption, DEFLATE Compression, FFT Math, Hashing), memory (Latency, Read, Write), and storage (Latency, Read, Write Random Read, Re-Write).

NETWORK

Verify network performance between VIJTP test agent and asset under test. Conduct tests for different network protocols starting from simple but meaningful health checks and ending with measurements of advanced quality indicators. Network tests include Ping, path-ping, Traceroute, UDP/TCP Scan, TCP Connectivity Scan, FTP Download Rate, HITP/S Latency, HTTP/S Throughput, classical iperf Test and others.

SERVICES

Verify the quality of high level services to be sure that SLA are met and clients are satisfied. Match the obtained results with expected quality of experience for applications like OTT Video and many others.

Net Research Corporation

832 Oregon Ave, Suite M,
Linthicum Heights,
MD 21090, USA

+ 703 270 0004

info@netrsr.com
www.netrsr.com