HOW NETROPYVE AND NEOLOAD WILL HELP YOU TO DELIVER A REALISTIC PERFORMANCE TEST OF YOUR IOT PLATFORM

Introduction

Walk through any department store, home improvement center, or electronics store—or browse Amazon.com—and you will see an unending variety of connected smart devices.

IoT gateway devices serve as a bridge between endpoint devices, mobile apps, and the cloud that makes it all work. Building and maintaining those apps has led to the DevOps and microservices architecture world we now live in, with organizations using continuous delivery (CD) and continuous integration (CI) to deliver and update applications to demanding consumers.

For many IoT applications, performance is one of the main risks in the development project, especially in areas such as healthcare, where personal safety could be affected. But for traditional performance engineers used to testing pure web and mobile applications, the IoT presents some new challenges:

Several layers of the architecture network can heavily impact the stability of the IOT platform :

- Sensor connectivity to the IoT platform
- Users on the IoT platform

In this complex environment, applications must be developed and tested in the same "real-world" environments in which they will be deployed. This means closely approximating the network experience the user is likely to encounter when using the application.

IOT utilizes several protocol and network types:

- Sensors connect to a local gateway with:
  - Bluetooth Low Energy (BLE)
  - Radio frequency (RF) protocols (Zigbee, LoRaWAN)
  - Traditional mobile networks (4G, 3G, etc.)

- Gateways send the sensors messages from the IoT platform through:
  - User Datagram Protocol (UDP)
  - Transaction Control Protocol (TCP)

End users interact with the sensors through their browsers or mobile devices connected to the network with : Wi-Fi, Mobile networks, DSLx, Satellite, Etc.

Depending on the application, the sensors or gateway could suddenly lose their connectivity with the IoT platform (e.g. shipping transport containers). This type of situation should be considered a normal usage of the application and must be evaluated during testing.

To have a clear view of how your application will react, you cannot avoid the reality of network constraints.. Your network presents one of the biggest challenges because the experience of 4G, for instance, could be completely different depending on the location, carrier, environment (i.e. crowded train station or airport).
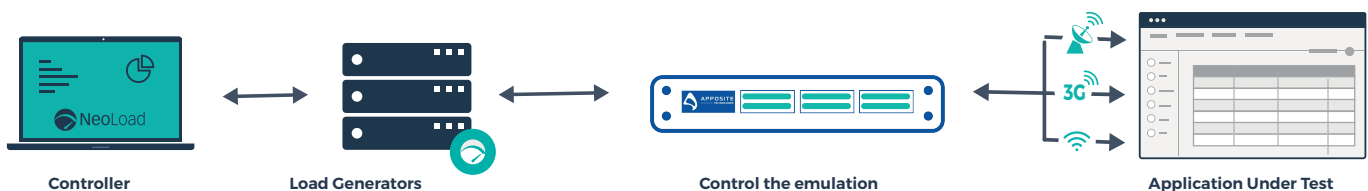
As an example, an iPhone displaying a 3G connection could achieve any speed from 384 Kbps to 14.4 Mbps depending on location, service provider, and other network traffic. Other network characteristics such as latency and packet loss will also greatly influence the performance of applications accessed using a mobile device.

That is why you have to consider the network constraints the primary risk factor and measure the impact of your application under various network conditions.

NetropyVE will help you predict how the IoT platform will handle a bad 3G network versus a good one. You will also be able to know what happens if there is a connectivity issue during a strategic action: user interacting with the mobile application, sensors sending sensitive data to the IoT platform.
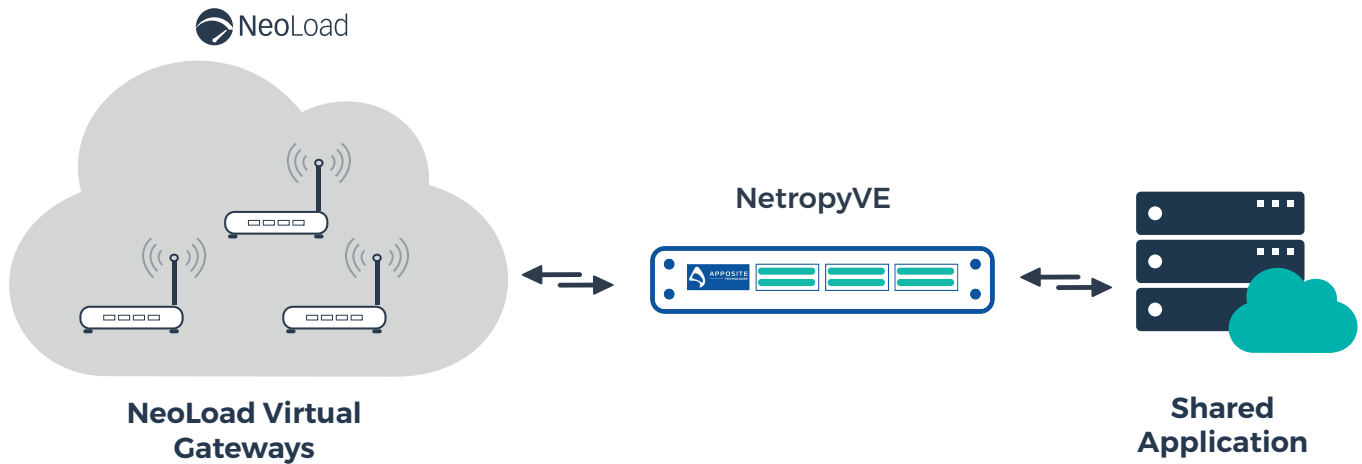
It's not just mobile networks - WANs, Satellite, Wi-Fi and other network types can all vary in performance and therefore affect the application's user experience.

How Apposite and Neotys work together?

Controller   Load Generators   Control the emulation   Application Under Test

The direct connection between Neotys NeoLoad and Apposite NetropyVE software allows projects to mimic any network topology and scenario (good, bad or intermittent) - in a controlled and repeatable manner - from Development through Quality Assurance to Deployment. The combined solution enables:

- Neoload performance testing using real-world network conditions
- Testers to understand application performance across mobile, Wi-Fi, WAN, LAN, satellite, DSL, cloud and other types of networks
- Configuration of normal and extreme network conditions to understand the impact on user experience
- Repeatable tests in a controllable network environment, which is even better than testing in the actual network

NeoLoad

NeoLoad Virtual Gateways

NetropyVE

Shared Application

About Apposite

Apposite Technologies' award-winning WAN emulation products provide IT professionals with high precision tools for benchmarking the performance of applications across wide area networks. Distinguished by industry-best ease-of-use and unmatched value, Apposite's Linktropy and Netropy appliances inform critical decisions impacting bandwidth investment, application deployment, and end-user satisfaction. Apposite's network emulation products are used by leading enterprises, network application developers, government and military organizations, and telecoms carriers around the world.

About Neotys

Neotys has nearly 15 years of development investment into NeoLoad – the performance testing platform designed to accelerate Agile and DevOps processes. It's built by engineers who recognized that to achieve their Agile adoption objective, they needed to create a product that could facilitate superior load and performance testing continuously. The result – up to 10x faster test creation and maintenance with NeoLoad.

We genuinely believe that the Performance Engineer can become the critical application performance partner providing the best testing coverage while respecting the cadence of the Continuous Delivery process. As performance becomes the responsibility of the wider team, continued delivery of an optimized performance testing platform is what drives our work every day.