Cloud Computing Applications and Services

Benchmarking

December 5, 2021

The main goal of this guide is to better understand performance evaluation while resorting to benchmarking tools. The following components will be installed:

- `https://github.com/jopereira/bmstub`
- `https://jmeter.apache.org`

Steps

1. Download/Clone and run the BMStub project in your computer (mvn package; mvn exec:java)
   If the error *Source option 5 is no longer supported. Use 7 or later* is reported, add the following configuration to the pom.xml file.

```
<plugin>
    <groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-compiler-plugin</artifactId>
    <configuration>
        <source>1.7</source>
        <target>1.7</target>
    </configuration>
</plugin>
```

2. Download (Binaries - version 5.4) and run Apache JMeter (./bin/jmeter)
   `https://jmeter.apache.org/usermanual/get-started.html`
3. Use JMeter GUI to create a new test workload:
   (a) Create a Thread Group
   (b) Add a new HTTP Request Sampler to the Group
   (c) Add a (Listener) Summary Report, a Graph Results and a Response Time Graph to the Sampler
   (Note that there is an option to export results to file)
   (d) Change the number of threads, loop count, HTTP request's type (e.g., GET request) and observe results. The BMStub service should be running at localhost:8000. Explore the service in your browser to understand the type of requests you can test.
   (e) Export the template to file and run the experiment with the Non GUI mode
   (e.g., jmeter -n -t [jmx file] -l [results file])
   Important: always run experiments for collecting measurements with the Non GUI mode!!

Extra

1. Use Jmeter to benchmark the deployment of the Swap application and combine with it monitoring to enrich the analysis of results.
2. Explore JMeter browser recording capabilities
   `https://jmeter.apache.org/usermanual/jmeter_proxy_step_by_step.html`

Learning Outcomes Recognize the goals and considerations that must be taken when doing a performance evaluation of real systems. Apply the JMeter benchmark to evaluate a web-based service.