# Distributed Testing on Cloud

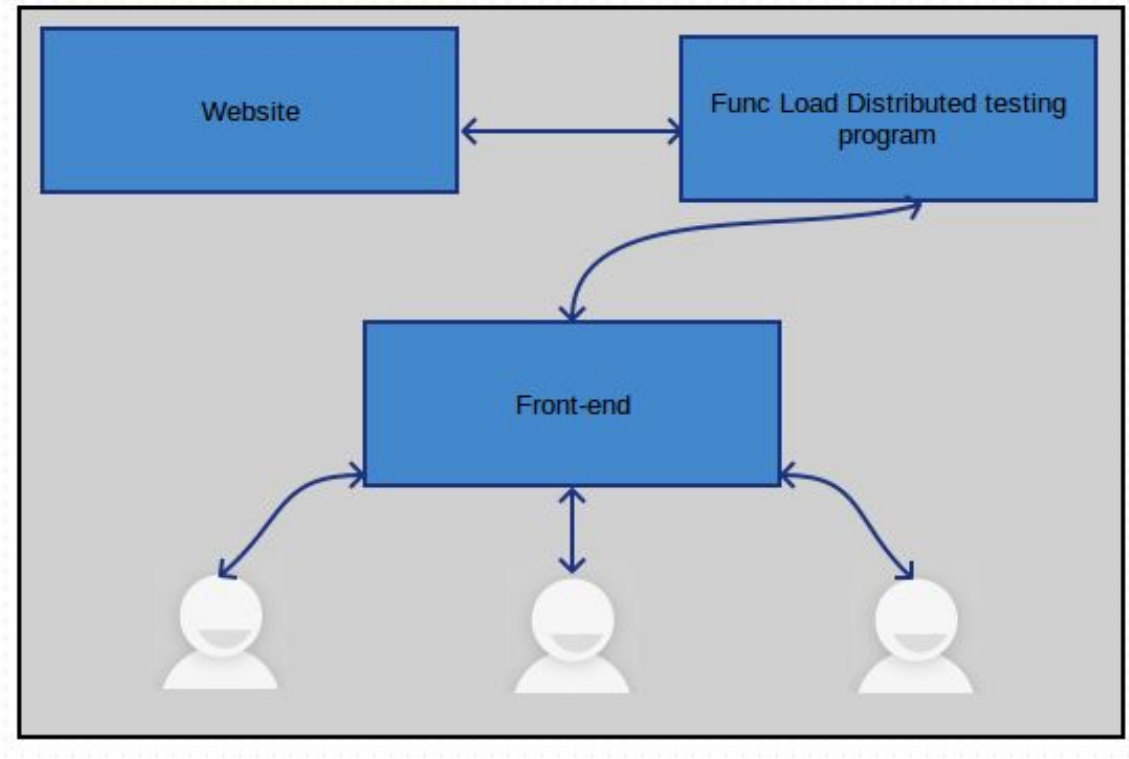
*Abstract (**Team 9**)*

**Problem:** To use Funkload - a web-testing tool - to provide a generic and usable web interface for basic functional and performance testing on the web.

Funkload is a Python based tool that provides features for both functional testing as well as load testing. What sets Funkload apart from other available tools is its support for distributed testing, i.e. the ability to use a large number of machines to stress-test a website. Funkload can generate detailed reports in PDF/Latex/HTML and it also uses GNUPlot to generate a variety of graphs using the data generated in the tests.

**Tools**

1. FunkLoad
2. Python/Flask
3. HTML/CSS/Javascript




The final code will include the following features:

**1. Functional Testing**

This feature will check for working of all the links in the URL provided by the user. If some URLs are not functioning (i.e. a 404 error is generated) then the user will be alerted about it.

**2. Distributed Load Testing**

Load testing helps to identify the maximum operating capacity of an application as well as any bottlenecks that might interfere with its operating at capacity.

Load testing allows web developers to know how their applications respond to heavy traffic and uncover glitches that might not be otherwise apparent.

The testing will be conducted in a distributed manner, i.e. Funkload will be configured to use multiple boxes to adequately stress-test the server.

**Testing parameters**

a. Number of users/Cycles *(5:15:30)*

   It means there will be three cycles for 5, 15 and 30 concurrent users. A cycle is a load of *n* concurrent users during a '*duration*' period.

b. Duration of one cycle *(100)*

   It is the duration of one cycle in seconds. Only pages and requests that finish during the '*duration*' are taken into account for the request and pages statistic.

c. Startup delay *(2)*

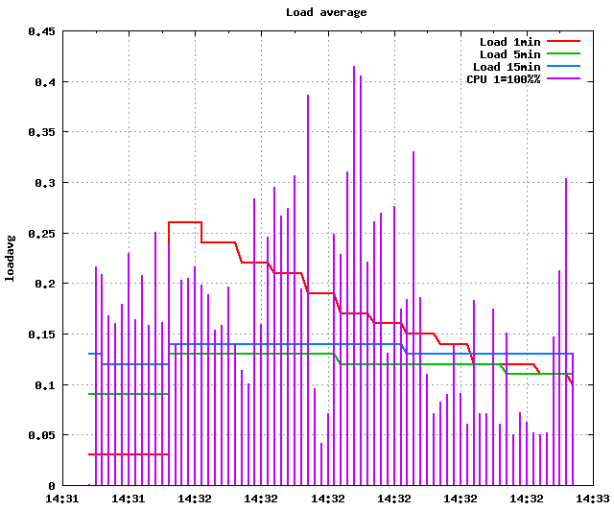
   It is the gap in seconds after which a new thread is launched. New threads are not created until we have *n* threads which are the number of concurrent users in that cycle. Threads are launched every '*startupdelay*' seconds, each thread executes test in a loop. Once all threads have been started we start recording statistics.

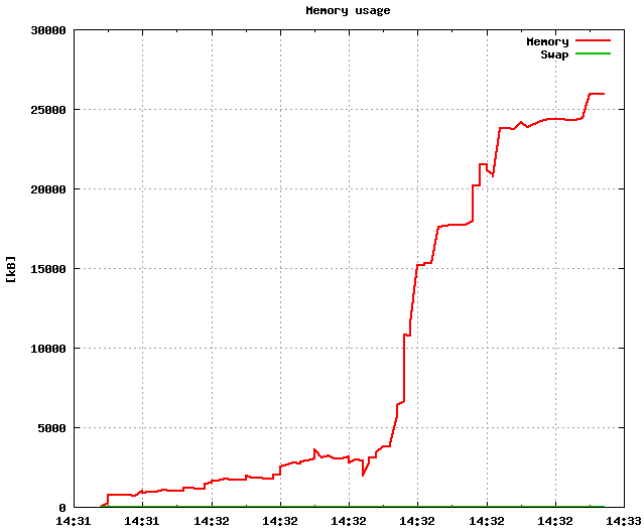
d. Sleep time

   time to wait between test in seconds

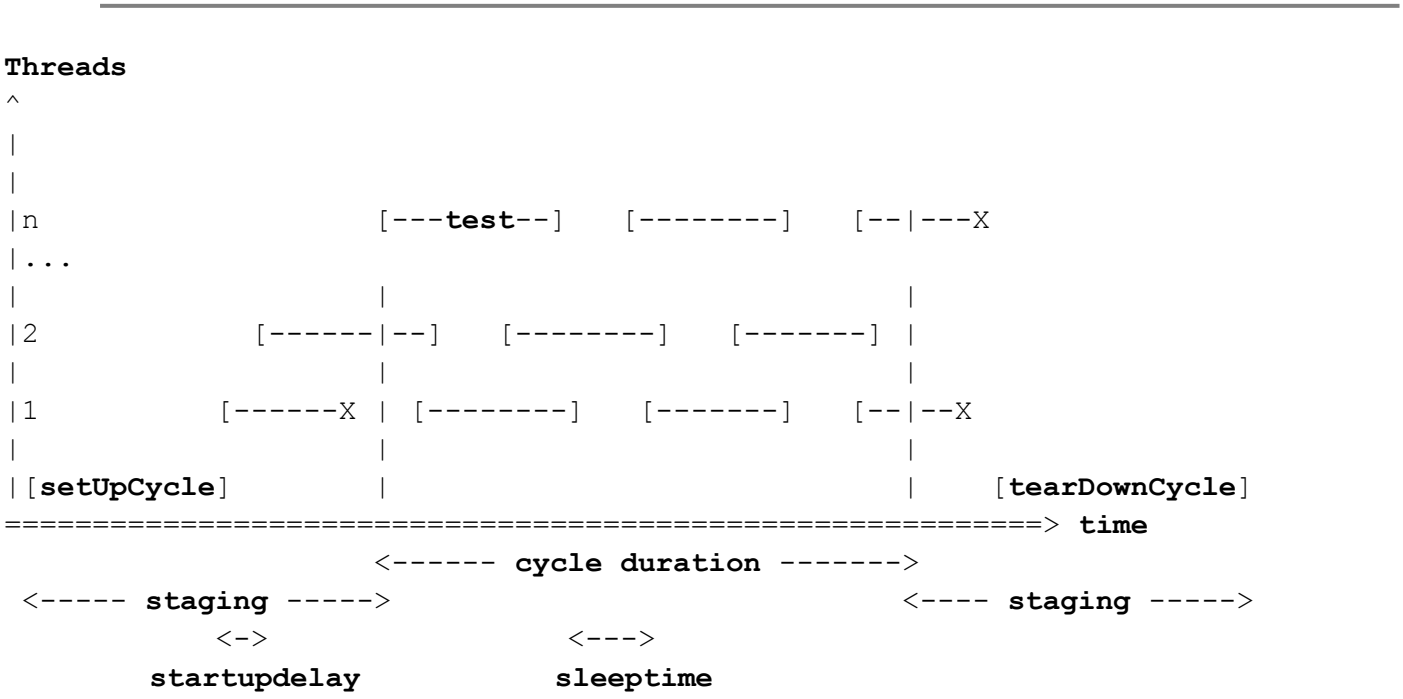
e. Cycle time

   time to wait between cycle in seconds



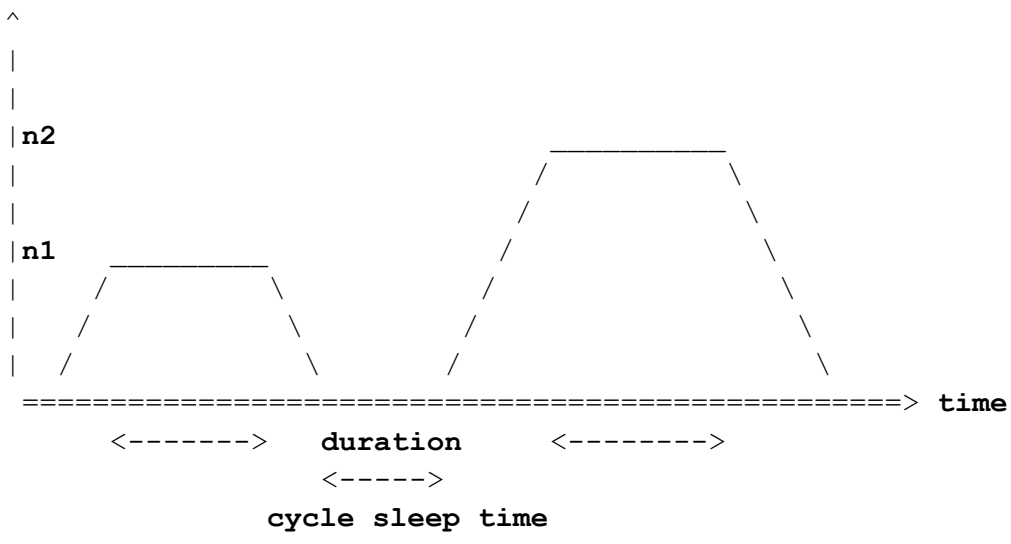




Graphs generated by Funkload using GNULib




*Relation between different parameters*

**cvus(concurrent virtual users) = [n1, n2, ...]**




*Relation between different parameters*

**3. Front-end**

The front-end will be coded in HTML/CSS/JS and will be accessible as a web-based service. The primary use case will be:

1. A user enters the URL of the website to be tested.
2. URL fills relevant options:
    a. Checkboxes for Functional and Performance testing (A user can choose either or both)
    b. Parameters for performance testing (described above).
    c. Checkbox if graph is desired or not
3. A report is generated detailing the results of various tests.

Other features of the web service would be:

1. Ability to save and view previous tests' results
2. Ability to export the report as PDF
3. A user authentication/management system *(Optional)*