ABSTRACT

Cloud computing is a general term related to transmission using hosted

service over the internet. Cloud Computing uses a network of remote servers far

from users, rather than using a local server. However, the cloud computing still has

several shortcomings, namely the latency and bandwidth used are quite high. Then,

fog computing is developed in order to solve those previous aforementioned. Fog

assists the cloud by processing and computing data locally and then sends them to

the cloud. As a consequence, resources and time spent are less than all processes

charged to the cloud.

This final project focuses on authentication between fog nodes for

supporting microservices migration when user move to another location. The

authentication scheme in this final project is that the fog that has been connected

with the user will send a challenge to the new fog to make sure the new fog is

reliable. For the authentication process, we use two challenge-response types

operations, which are bitwise and arithmetic. After the two fogs are connected, the

new fog will send a message asking for confirmation to the user if there is an

configuration adjustment to the service. After that, the user is able to connect with

the new fog.

In this this final project the average delay during verification process

between bitwise and arithmetic is 3.94 ms and 3.53 ms. The average delay of

validation process between bitwise and arithmetic is 0.393 ms and 0.34 ms. The

difference of total delay between the two operations schemes is 0.46 ms that make

the process of operations arithmetic faster than the bitwise. In the aggregation

process, the delay is 2.86 ms when the user starts to connect with the new fog.

Keywords: Cloud Computing, Fog Computing, Authentication, Agregation.

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