INFORMATION OF THE DOCTORAL THESIS

Thesis title: *" Improve performance of load balancing on cloud computing"*
Speciality: Information Systems
Code: 9.48.01.04
PhD. Candidate: Nguyen Xuan Phi
Scientific supervisors: Assoc. Prof. Tran Cong Hung, PhD
Training institution: Posts and Telecommunications Institute of Technology

NEW FINDINGS OF THE THESIS

1. Propose 02 algorithms to improve response time in cloud computing: (1) LBIRT algorithm with the main contribution of allocating input requests to virtual machines based on the smallest response time and by considering the expected completion time of each resource's work requests. (2) RRTA algorithm by applying the ARIMA algorithm to predict the general response time threshold of the system and predict the response time of virtual machines based on the previous similar request set to provide a way to distinguish between them rational resource allocation.

2. Propose 02 algorithms to improve processing time on cloud computing: (1) TMA algorithm with the new point is to divide the table containing common virtual machine information into two virtual machine tables in ready state and state unavailable in order to reduce the time it takes to look for a ready VM for each input request. (2) The MMSIA algorithm improves the Min – Max scheduling algorithm by sorting requests and VM resource usage ratio by the largest size and allocating the largest request size to the virtual machine that has the maximum size minimum resource utilization rate.

The main results of the thesis are reflected in 07 articles published in specialized scientific journals and conference proceedings, including 02 articles in prestigious journals on the Scopus Index list. The initial test results show that the solutions proposed in the thesis to improve load balancing performance on cloud computing have good prospects..

APPLICATIONS, PRACTICAL APPLICABILITY AND MATTES NEED FURTHER STUDIES

In terms of practice: the results of the thesis have been tested on simulated data sets in different scenarios, the experimental results of the proposed method are evaluated to be more effective than the published methods. published in most cases, and is also the scientific basis for creating load balancers applied to real data centers. This is the basis to show that the research results of the topic can be applied in the deployment of load balancing systems to deal with the current explosion of cloud data exchange in various fields. The proposed algorithms are simulated to evaluate the effectiveness compared to the original algorithms that have been published previously.

The proposed algorithms are oriented for load balancers in data centers of cloud service providers, since its effectiveness has been proven through the rationale. as well as the experimental model in the thesis. Apply algorithms to improve response time, processing time for requests from users accessing the cloud computing center. The reality is that cloud computing always requires improved performance, ensuring QoS in today's digital era. At the same time, improving load balancing performance for cloud data centers is also an urgent and topical requirement. Therefore, regarding the new proposals of the thesis, it is possible to list the issues that need to be studied in the next works as follows:

1. The thesis can be developed in the direction of building a basic model based on artificial intelligence (AI) technology to identify according to the individual characteristics of the input requirements to evaluate the performance of the system. cloud computing. From there, a full theoretical model is obtained to support research and deployment of cloud computing systems in practice.

2. In addition, the thesis can be developed in the direction of improving two parameters simultaneously: response time and processing time in the cloud computing environment. This is also a very practical approach in the context of the current explosion of data exchange in the cloud computing environment.

3. Research on load balancing on the Internet of Things (IoT) can also be a development direction of the thesis when the 4.0 technology revolution is changing all areas of daily and hourly.

Confirmation of representative	**PhD. Candidate**
Scientific supervisor	

Assoc. Prof. Tran Cong Hung, PhD   **Nguyen Xuan Phi**