

EXISTING CHALLENGES IN CLOUD OPERATING SYSTEMS

¹Hadi Abbasi

¹Master of Information Technology Management, Science and Technology University of Mazandaran, Babol, Iran, h.abbasi.es@gmail.com

Article History: Received: 14 July 2020; Accepted: 2 January 2021; Published online: 5 February 2021

Abstract: With increasing daily usage of PC, computer networking, work stations and servers, software environments are changing continuously. Therefore it is necessary to use a operating system and incorporate environment, increasing efficiency, source division and clear management for solve relative problems. Of course, in these operating systems, distributing sources, software and other things should be hidden from user view. Cloud operating system consider a set of PC, sources and software (hereafter, which we named them nodes) in whole and produce a centralized system. In fact, this operating system is a controlling program which performs on a network including a set of computers. This program change network in a calculating and informational source. This paper is about structure, the way of performance and also properties of some kind of operating systems and finally it do some research about existing challenge about this kind of operating system.

Keywords: distributing systems, cloud operating system, distributing operating system, object, thread, the structure of cloud operating system

1.Introduction

in recent decades, we see increasing growth of technology in processors. This technology is developing with considerable speed because informational and calculating sources are increasing. So there is a need to build a technology especially multi kernel, management, efficient and clear on this high volume information and great calculations. This kind of information management in distribution system environment is very easier than others. A distributed system on a set of machines that haven't shared memory is performed and it performs on user in a way as if it is on computer. In distributed system , a software or a set of them

perform on any node. All machines perform a similar kernel and any kernel control their source.

One of distributing systems is clouds that could have important role in great calculation and saving high volume information. Most important advantages of clouds are as following:

- High speed for performing program, because one program could be performs concurrent in many computers.
- For distributing information , datasets could be place on

networked a Seri of computers and it is not necessary to send all information to central computer

For more information about cloud operating system, at first, we say a brief about distributing operating system.

2. DISTRIBUTING OPERATING SYSTEM

this system performs in networking environment. In this system, different part of user program could perform concurrent in other computers, and then final results will return to main computer. Users should not know where their program performs or where is their file in network and all these perform automatically in operating system. In other word, system should be clear in user view and it should not consider address (Fig.1).

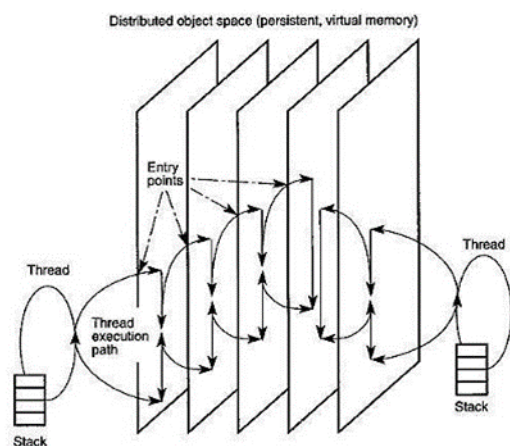


Fig.1. thread in cloud computing[4].

Distributing operating system use 2 pattern based on message and object. In pattern based on message, request performs based on sending message. But in pattern based on object, users come up their request by object[1,2].

3.CLOUD OPERATING SYSTEM

Cloud operating system is a kind of distributing operating system that could incorporate a set of nodes and produce a centralized system. This system is composing of calculating service providers, data service providers and user stations [3]. As before said, distributing operating system use two patterns based on message and object. Cloud operating system is based on object-thread model. In fact, it performs based on object-message model. As we know, a thing is composing of some data and method .method is operations that perform on data. The kind of thing will specify by its class. In fact, cloudy thing place in a virtual address space .for this reason, thing content even in system problem could last for a long time. Cloudy

thing have a unique name in system surface which save in data service provider and could be use in all calculating service providers. This efficiency will hide data distribution from user view what is another advantage of cloudy things. As before said, cloud operating system operate based on object-thread model. It means that in these operating systems we have a set of objects and methods and thread is a route that enters in this thing and methods are performed inside of it. It could access from inside of a thing to data of another thing, then update them and finally recall method of other things.

4. THE STRUCTURE OF CLOUD OPERATING SYSTEM

In this section, we briefly explain about cloud operating system. Based on fig-2, this structure is composed of different parts. Cloud process is a set of cloudy thing that compose an applied program. Cloud

kernel space is a number of cloud processes that perform controlling access, allocating memory and calculation of necessary source. Other process composes cloud user space. Cloud process performs cloud user space performs directly by user and named user program. Cloud library is cloud process that use by user program. These programs connect with library and kernel process by a set of standard medium named cloud system. All existing things in user space will use a operating system of a call handler for getting order from operating system. It means that for managing by a medium under accessible network, relation between name of thing and their address in network will perform by cloud process of project management and virtual machine management that is available in kernel space. Final information will be accessible by cloud process of naming library. Accessibility of all management operation investigates by Authentication. The operation of calculating the amount of necessary sources in any time will be by measurement. It should be note that assumptions here in fig 2 consider some limitations of cloud and it is not complete

Fig 2. STRUCTURE OF CLOUD OPERATING SYSTEM[5]

5. EXISTING CLOUD OPERATING SYSTEM BASED ON WEB

In this section, we notice to common cloud operating system including cloud operating system of VMware Co with name of VSphere which introduce in April of 2009. Proving calculating sources and data savings are its capacity and also it has properties like high accessibility, measuring and security. Of course, it is important that so far a unique operating system is not considered for cloud source management and cloud service providers use their produced operating system. Of famous cloud, Amazon cloud with name of EC2 could be considered that is based on Linux operating system. Also cloud of Microsoft co with name of Azure windows that is operating system based on window and it is produced by Microsoft Co.

In addition to these cloud operating systems, cloud operating system based on web is important today. The server of these operating systems placed on internet and user could connect with the environment of operating system by browser. We could note tp operating system based on web of IXOS with name of Icloud. it is interesting that this system have accessibility capacit by mobile browser. eyeOS and Glideos are other samples of cloud operating system based on web.

6. Common Challenges in cloud operating system

At first we consider 3 whole challenges for cloud operating system and explain any briefly.

1.6. MEASURING

concurrent with considerable growth of processor technology, clouds have increasing spreading. Accordingly, the number of computer added to cloud infrastructure also increase .it should be mention that this increase is accordance with increasing request for hosting this sources[3]. Cloud sources for users are unlimited and users have only financial limitation for buying them. So we could conclude that one of the most important challenges in this ground is measurability of cloud operating system.

2.6. REQUEST TENSION

in clouds, parameters like request, work volume and existing sources are changing. For example, when a user request a heavy calculation, his sources will increase and finally source will get from user. It could be mention that this increase and decrease in sources may be hidden. It should be mentioned that request is not fixed and the amount of necessary sources are changing. For example, in systems with 1000 kernel, request could be 1-1000. But, request in systems with 1000 kernel could be more than available kernel. So, for reaching optimal power of using, system designers should match existing sources with user's request. Also, increasing sources will increase the consumption of energy and heat production. So we should search for a system that both increase the number of sources according user request, decrease consuming energy and lower heat.

3.6. ERRORS

Applied program based on cloud usually share sources between users and other applied program. Although applied program of any user place in virtual coverage, but affect on service quality that program provide. As software industry is decreasing the size of transistors and increasing the number of them on one chip, the probability of error is increasing. In addition, programming in operating system is difficult and it is with errors. Regarding the difficulties of multi-thread programming and multi processes, the probability of error in operating systems are increasing. Also for the lack of solving problem tools and analyzing huge systems, the possibility of understanding hard errors and solving them is challengeable. Also, there isn't a unique programming unit for connecting inside and intra of multi kernel system. Today programming models need a cloud programmer for writing a thread applied program for using inside source of system. Regarding all cases, the problem of programming of this large systems (management and load balancer) is approved as a difficult work. before, temporary solution used for solving this problem.

4.6. KNOTTING USERS TO SPECIAL SERVICE PROVIDERS

Today the cost of infrastructure and operating system are decreased & the cost of software or even the allowance of software are deleted, but we should accept that all attempting and cost for building system is spend for developing a system based on a special cloud platform. Therefore movement to a other cloud means a redeveloping of that software. For example the program that is on Amazon EC2 could not response to other platform because it is depend on a special saving framework[6].

5.6. SEVERE DEPENDENT BETWEEN COMPONENTS

Suppose that you want to buy a PC. You have two selections. One, buying a prepare PC dependent to a special mark or buying necessary pieces separately and finally assemble the system. The advantage of assembly than prepare buying is as following: different items of pieces, more flexibility in ordering product and lower cost. If calculation sources will be replaced by computer pieces, we have other situations. Here we have least flexibility[7]. Therefore, if client want to use a S3 service, for example, from Amazon Co, he have to use other technologies and services of that Company like EC2 or Elastic Map Reduce.

6.6. THE LACK OF MULTI-TENANCY The implication of multi tenancy is backing up multi client concurrently by a version of system with purpose if increasing efficiency. For using his implication, there are 3 methods: using mediator and sharing. Now, existing cloud don't support completely from multi tenancy[8]. Therefore for using all potential of multi tenancy, it is necessary to response following problems:

- Source sharing: for decreasing cost of hardware,

software and source management for any tenancy.

- Separating for security: for preventing not allowed access , differences and inference between different tenancy
- Customization: for supporting user connector, processor and data that is allocated for any tenancy.
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7.6. THE LACK OF BACKING UP SLA

ow, SLA is a great barrier for spreading cloud calculation. Infrastructures services like Amazon EC2 could not sign necessary SLA for using cloud calculations in their job. In addition, generally this job is dynamic .therefore Static Sla could not response to job changes.

8.6. THE LACK OF FLEXIBILITY IN USER MEDIATOR

User connector is one of the important parts of system and user experiences from work with it are one of the important factors for evaluating it in commercial system. In this situation, users will face with many limitations in selecting user connector in cloud calculation or SaaS.

7.Future works

In relation to cloud operating system, a set of challenges are exit including measurability, elasticity of demand and errors. Scalability (measurability) is one of the most important challenges .because the cloud sources are limited and financial limitations for buying this sources exit. The request is never fixed. The amount of necessary sources is changing. Also programming in this operating system is difficult with errors. All these factors could make challenges in these operating systems. As we know, these challenges will provide future work. Of research routes is using fixed objects that its main axis is efficient back up and optimal using of fixed memory. Another is increasing security and assurance in cloud operating system that is composing of protecting data in system problem and guarantees the performing calculation in a place that the calculation is stopped. Finally increasing fault tolerance in facing possible fault is important.

8.Conclusion

in this paper we try to note the relation between cloud operating system with the way of performance and some samples of it. But it is important to say that although there is many operating system , but many samples are made from these operating systems that more manufacturer developed these operating systems just for themselves. The result is that cloud operating systems are ways for accessing information and doing great and difficult calculations in certain bet. This is in away that there may need different operating system for different works.

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