Journal of American Science

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Multidisciplinary Academic Journal Publisher

Compatibility of Hybrid Process Scheduler in Green IT Cloud Computing Environment

[1]Dr. Rajeev Yadav and [2]Shubham Gaur

[1]Professor, Department of Computer Science, SunRise University, Alwar, Rajasthan (India)
[2]Research Scholar, Department of Computer Science, SunRise University, Alwar, Rajasthan (India)
Email- shubhamgr90.2@gmail.com

Abstract: Green cloud computing also called Green Technology(GCloud), is the environmentally responsible use of computers and related resources which features on Green use, Green disposal, Green design, Green manufacturing. Green Cloud Computing is the next big step in the internet's Era, which can provides everything to people as a Service(EaaS), whenever and wherever they want, for many applications, apparently it is reshaping IT processes and marketplace. Usage of Hybrid Green Clouds enhance the functioning of IT sectors. Hybrid GClouds couple the scalability offered by public Clouds with the greater control supplied by private ones. A hybrid Green Cloud broker acts as an intermediary between users , increasing growth of large data storage and computational demand. Green Cloud Computing is known to be a broad area and hot field for research. To capitalize various IT resources, Green Cloud computing has produced an ultimate and impressing way to virtualize servers and data centers and to make energy efficient. The IT resources consume huge avolumes of power and energy, which in return produces shortage in energy and bring ab. Therefore, there is changes a need of Green cloud computing which can produce solutions that can not only make the IT resources energy efficient but also minimize the operational costs. To solve environment issues in the IT sector, Green IT is named to be an important step for Gogreen scenario. It includes a large number of focus areas to provide proper management of power, server virtualization, data center design, method for recycling, eco-labeling, sustainability environment design and energy efficient resources etc.
[Yadav, R. and Gaur, Shubham. **Compatibility of Hybrid Process Scheduler in Green IT Cloud Computing Environment.** *J Am Sci* 2023;19(1):10-13]. ISSN 1545-1003 (print); ISSN 2375-7264 (online). http://www.jofamericanscience.org. 03. doi:10.7537/marsjas190123.03.

Keywords: Hybrid processor schedule, cloud computing, Green IT, CHPS.

Introduction:

In this review firstly, a brief note on Hybrid Green cloud computing, Eaas or XaaS or aaS (Everything as a Service),Resource broker Management (Monitoring as a Service, Communication as a Service , consistency as a Service) and Scheduling in Resource broker management system are made. As proposed this work investigates all of them to achieve a complete picture about cloud service reliability for a Green Hybrid cloud. Automata Theory, Queuing Theory and Graph Theory are mainly used here to model ,evaluate the cloud service reliabilityWorkflow have been utilized to characterize a various form of applications concerning high processing and storage space demands. As a clarification to provide this stipulation, the cloud computing pattern has appeared as an on demand resources supplier. So, to make the cloud computing environment more eco-friendly, our research project was aiming in reducing E-waste accumulated by computers. As public clouds incriminate users in a per-use source, private clouds are possessed by users and can be employed with no charge. When public and private clouds are combined, we have what we term a hybrid cloud. In a hybrid cloud, the user has flexibility offered by public cloud resources that can be combined to the private resources pool as required. Our previous work described the process of combining the low range and mid range processors with the high end processor to make the IT environment without e-waste. Then we focused on the allocation of resources in an optimal manner with respect to bandwidth and processors' ability. One question featured by the users in such systems is: Which are the finest resources to demand from a public cloud supported on the present demand and on resources overheads? In this paper we deal with this problem, presenting CHPS: Compatibility of Hybrid processor scheduler in green IT cloud computing environment. CHPS decides which resources should be chartered from the public cloud and combined to the private cloud to offer adequate processing power to perform a workflow inside a specified execution time. We present widespread experimental and simulation results which illustrate that CHPS can decrease costs as attaining the recognized preferred execution time.

Cloud computing is currently being utilized to distribute on demand storage and dealing out power. This situation permits the letting of resources to progress the nearby offered computational capability, providing novel computing resources when needed. In a cloud, the user admits working out resources as common utilities that can be chartered and unrestricted. The major benefits to the cloud users is the prevention of straight speculation, the lesser of their working cost, the preservation cost diminution, and the scalability offered on demand. These cloud features present flexibility to the user's computing situation, being capable to adjust the computer system to the user desires. In the cloud computing standard, particulars are distracted from the users. They do not want information of, knowledge in, or organize over the knowledge communications about the cloud they are employing. It classically engages the stipulation of vigorously scalable and regularly virtualized resources as an examination over the Internet. The cloud computing uniqueness is on demand self-service, omnipresent network admittance, self-governing resource location (consistency), rapid flexibility (scalability), and disburses per use. The cloud computing permits the exercise of Service Oriented Computing (SOC) standards, consenting users to institute links among services, organizing them as workflows as a substitute of constructing only conventional applications using programming languages. Cloud contributors present storage resources, and platforms for software expansion and implementation, in addition to software interfaces available all through the network. Three representations of cloud services are normally accessible: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), or Software as a Service (SaaS). In SaaS, the clients exercise applications but cannot organize the host situation. Google Apps and Salesforce.com are instances of this model. In PaaS, the proposal is naturally an appliance structure and clients exercise a hosting atmosphere for their applications. Examples of PaaS are the Google App Engine and Amazon Web Services. In IaaS, the clients exploit computing resources for instance processing power and storage space and they can also manage the situation and the consumption of applications. In terms of resources accessibility, we can categorize IaaS clouds in three various types: a.)Public clouds: Resource providers' present computing resources as services in a pay-per-use basis, letting the exercise of machines to the user through the demanded time. b.)Private clouds or domestic clouds: Clouds with resources that can be admitted and used by persons within an organization, containing likeness with data farms or private grids. c.)Hybrid clouds: Bring collectively public and private clouds, ensuing in a permutation of control over performance and safety with flexibility.

The on-demand calculation, enclosed by the cloud, permits the exercise of private systems (computers, clusters, and grids), combine the cloud resources as users have to. Nevertheless, this hybrid approach consequences in a system with novel demands, particularly in resource organization. In [1], the author presents HCOC: The Hybrid Cloud Optimized Cost scheduling algorithm for cloud computing environment. HCOC is an algorithm to expedite the implementation of workflows following a preferred execution time, but also dipping costs when contrast to the greedy approach. But HCOC failed to contract with numerous workflows is a significant issue. In addition that, allowing for the possible incidence of exterior load in private resources could progress the scheduling decisions. In this paper we deal with the problem of identifying the users' desired resources and the time and task which they want to perform by adapting CHPS: Compatibility of Hybrid processor scheduler in green IT cloud computing environment. CHPS decides which resources should be chartered from the public cloud and combined to the private cloud to offer adequate processing power to perform a workflow inside a specified execution time.

LITERATURE REVIEW

The cloud computing service representation engages the stipulation, by a service supplier, of huge pools of elevated performance calculating resources and high-capacity storage space devices that are common amongst end users as vital. There are several cloud repair models, but normally, end users promising to the service contain their data hosted by the service, and have calculating resources owed on demand from the group. Workflows have been utilized to signify a diversity of applications connecting elevated processing and storage space demands. As a resolution to deliver this obligation, the cloud computing standard [1] has appeared as an on-demand resources supplier. In [2], proposed that the cluster encloses collection of trusted nodes. A general node among two clusters is chosen as Process Migration Server which we will currently refer as Process Management Server (PMS). A forecasting approach is divided into two parts. The first part contracts with active run queue organization by properly weighting methods to main memory from process pool [3]. The processors' immigration is admitted with Lightweight Process Migration and Memory Prefetching in Open MOSIX [4] and the task preparation is also being completed with repetition bounded processors [5]. Workflow arrangement in combination with service composition in grids is discussed in [6]. In [7],

Bossche et. al contract with the development of self-determining tasks on hybrid clouds. They presented a binary integer course to choose which cloud supplier to decide when outsourcing a task that cannot be presently performed in the private cloud. In [8], it discussed a problem of identifying the cloud processors' tasks by presenting HCOC: The Hybrid Cloud Optimized Cost scheduling algorithm. To improve an efficient cloud computing authentication scheme, Cloud Computing Background Key Exchange [9] is used. The cloud computing services are examined and progressed with the decision of processing tasks [10]. Since cloud computing services are uncomplicated to use, and can reduce both skill costs and environmental loads [11]. Fairness should be pursued while captivating abundant types of resource into reflection. There are numerous papers that discuss algorithms for achieving fairness for cases where a shared resource distribution is not measured [12]. To give cloud computing services practically, it is important to optimize resource allocation under the declaration that the necessary fair resource [13] can be taken from a widespread resource group.

AREA OF SPECIALIZATION

Some of the area of specialization my reaearch is proposed to proceed with are drafted below:

GREEN CLOUD COMPUTING also called Green Technology, is the environmentally responsible use of computers and related resources which features on Green use, Green disposal, Green design, Green manufacturing. Eaas or XaaS or aaS the acronym refers to an increasing number of services that are delivered over the Internet rather than provided locally or on-site.

QUEUING THEORY is the mathematical study of waiting lines, or queue models which is constructed so that queue lengths and waiting time can be predicted.
GRAPH THEORY is the study of graphs, which are mathematical structures used to model pair wise relations between objects.
AUTOMATA THEORY is the study of abstract machines as well as the computational problems that can be solved.

PROPOSED COMPATIBILITY OF HYBRID PROCESS SCHEDULER IN GREEN IT CLOUD COMPUTING ENVIRONMENT

The proposal work presents compatibility of hybrid processor scheduler to make the cloud computing environment more eco-friendly. The green IT environment is achieved by adapting the users' time, task and resource optimization with respect to energy level consumption.

The proposed Compatibility of Hybrid processor scheduler in green IT cloud computing environment is worked under three different phases. The first phase describes the process of identifying the pool of processors and assignment of those processor based on time and task schedules. The second phase described the process of allocating the resources to a set of processors in an optimal manner. The third phase describes the Compatibility of Hybrid Process Scheduler in Cloud Computing with old, mid range and modern processors suiting to various operating system environments and application needs. The architecture diagram of the proposed Compatibility of Hybrid processor scheduler in green IT cloud computing environment is shown in fig 1. The first phase describes the process of combining the low range and mid range processors with the high end processor to make the Information technology environment as Green IT without evaluating any e-wastes. This is done based on cloud interface. The cloud interface process consists of task schedule and process allocation. It will assign the appropriate tasks to the processor which is free and continued the task to be performed. The second phase describes the process of optimal resource allocation method in terms of bandwidth and processing ability. The third phase described the process of identifying the compatibility of the process scheduler based on the users' task, time and processors' ability.

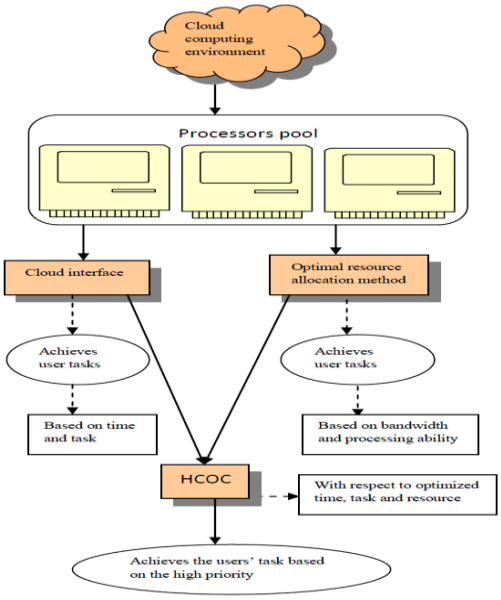

Fig 1: Architecture diagram of the proposed CHPS

CONCLUSION

In this paper we present CHPS: Compatibility of Hybrid processor scheduler to make IT as green IT in cloud computing environment. CHPS is an algorithm to accelerate the execution of users' tasks obeying a preferred execution time, but also dropping costs when compared to the previous works ORAT and ITTPS. The proposed CHPS for cloud computing assigned the processors to the tasks based on its Resource Usage (bandwidth, CPU cycles, I/O operation, Energy, and data transfer rate). Based on the resource capability, the task has been assigned to the resource, so it consumes less execution time and improves high communication efficiency. Compatibility of Hybrid Process Scheduler in Cloud Computing is efficiently designed with old, mid range and modern processors suiting to various operating system environments and application needs. An extensive evaluation carried out in this work presents adequate data to sustain the conclusion that the CHPS algorithm can present proficient resource scheduling in a hybrid cloud circumstances.

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12/25/2022