



Application for E-Commerce Resource Scheduler

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ABSTRACT:

The e-commerce platforms serve in a great to expand the business and improve their standards according to the trend. Generally, it defines only these services but when the services came into mind whatever the cloud provides it is treated as a service such as a network as a service, storage as a service, data as a service, security as a service, Privacy as a service, etc., whatever the services offered by the cloud are undefined. There are various clouds such as Public clouds, Private clouds, Hybrid clouds, and Community clouds. The concept of E-commerce technology is merged with the various services offered by the cloud such as SaaS, PaaS, and IaaS. However, the cloud services definitions were based upon a person to person or organization to organization in terms of flexibility, application usage, portability, reliability, scalability, etc., The Project proposes a cloud-based resource scheduler to improve buyer-seller communication in the e-commerce industry. The resource scheduler facilitates the efficient allocation of resources such as agents, communication channels, and infrastructure to support communication between buyers and sellers. The proposed system aims to optimize the use of resources to enhance the quality of communication, minimize response time, and reduce operational costs. Cloud computing focuses on delivery of reliable, fault-tolerant and scalable infrastructure for hosting Internet based application services. This system presents the implementation of an efficient Quality of Service (QoS) based Meta-Scheduler and it also present our thoughts on scheduling heuristics that can be incorporated at data center level for selecting ideal host for VM creation.

Keywords: E-commerce, Segmentations, ERP, SaaS, PaaSApplication for E-Commerce Resource Scheduler, IaaS.

I. Introduction

The continuous development of the Internet promotes the emergence of cloud computing technology, the combination of big data and cloud computing has changed the traditional way of human life and also bring new opportunities to the development of E commerce industry. As the key area in the strategic emerging industries, the government has paid much attention to it and issued a number of supporting policies continuously. E-commerce enterprises also bring brand new development to themselves with could computing technology. Some Ecommerce giants are speeding up to build E-commerce platform and database on the basis of big data and apply them into their own E commerce platforms so as to enhance their core competitiveness. While as to many Ecommerce enterprises, it is worth thinking and exploring how to use cloud computing to build E commerce cloud platform and make it bring certain significance for its healthy development e-commerce services are enormously increasing with the new developments in software and hardware such as web services, semantic web, high speed networking and sophisticated computing devices. These services provide customers with facilities such as online shopping, online-banking, and even window shopping. Service providers desire to maintain successful and competitive presence on the web and to provide customers with better quality of services. Due to the massive use of web by a large population of users, E-commerce services typically encounter performance problems. In some cases, service providers may face severe financial problems if they do not provide services in a timely manner. . This project investigates into the performance of Ecommerce services by proposing a network-centric approach to the scheduling of customers' requests. Customers interact with such services through a series of requests such as searching a web site for airfares or buying flight tickets. These services are generally implemented in a multi-tiered architecture that involves data servers, application servers, and web servers. Web servers typically serve static contents such as HTML pages or still images. Application servers (e.g., BEA WebLogic, IBM WebSphere) are commonly used to generate dynamic web contents by running scripts written in a number of languages such as ASP, JSP, and Perl. Scripts execute the necessary logic to process customers' requests by contacting various resources in order to retrieve, process, and format the requested content into customer deliverable web pages. Current solutions implement various strategies to improve the performance of E-commerce services. These include for example, web server clustering, caching strategies, and scheduling mechanisms. Our approach aims to a devise a differentiated scheduling mechanism that improves the efficiency of E-commerce requests.

The approach is based on the premise that some requests can be given higher priority than others. For example, vital requests such as payment or add-to-cart requests can be prioritized than browsing requests. Generally, the processing of payment request is more important to the service provider than a browsing request. However, the processing of such requests is severely affected by the large number of search and browse requests. Current research shows that the percentage of customers who buy (also called heavy buyers) items is significantly lower than occasional buyers who usually use E-commerce service to find information such as air fares or book prices, without buying anything.

A. Backfilling Scheduling Policies

General concept of backfilling allows smaller jobs to move forward in the schedule as long as such movement does not cause any other scheduled jobs to be further delayed. This section discusses some of the variants of the Backfilling scheduling strategies that can be used at the cluster level. In EASY backfilling, only the first queued job is given Earliest Start Time. Now it is possible to schedule and dispatch the smaller jobs if they would not delay the start of the job in the head of the waiting queue. In the second approach namely, Conservative Backfilling every queued job is given guaranteed start time, so that it has a bounded delay. The third approach namely, Slack based backfilling differs from conservative method by supporting priorities. It assigns each waiting job some slack, which measures the maximal amount of time that the job may be delayed beyond its initially assigned start time. When a job is delayed or speed up its slack changes accordingly. This way the scheduler enjoys more flexibility than conservative scheduling, but still retains the execution guarantee. The conservative backfilling achieves the same result as the slack based method, but it is comparatively light weight. Hence our proposed work implements conservative backfilling at the cluster level for better throughput. Cloud computing is the fusion of distributed computing, parallel computing, grid computing and virtualization technologies, and it is the result of technology and application development. The concept of cloud computing is appeared not long ago, while a number of IT companies and related researchers get into this field of research and exploration, and obtain preliminary results. Because of their respective backgrounds, different base and starting point for understanding and definition of cloud computing has not formed a unified, so the business community and academia have different understandings.

Our work concentrates on the design of a system that analyses scheduling techniques for planning various types of jobs in cloud environment. The activities involved in job scheduling for cloud environment includes the selection of processing resource like data centre, host and virtual machine and the processing order of jobs for every resource. Some of the constraints to be considered for scheduling include the QoS specifications like deadline, budget, and software licenses of jobs, job dependencies and resource limitations..

B. VM Provisionary

The proposed two- level scheduler focuses on optimizing the system throughput by maximizing the overall resource utilization and guaranteeing increased performance of the applications. The proposed approach extends the cloud sim toolkit, by implementing a novel high-level meta-scheduler. As meta-scheduler cannot have a control over the resources at a data center and the full set of jobs submitted to the resources, it implemented a low-level local scheduler to perform efficient job scheduling in cloud environment. . In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization and reduces the power consumption. Scheduler should also efficiently manage the load between resources and achieve minimum execution time. This analyzed virtual machine scheduler space shared, virtual machine scheduler time shared and virtual machine scheduler time shared over subscription and tested them using Cloud Sim toolkit to examine their behavior

. VM Scheduler Time Shared Over Subscription Approach

Cloud Sim tool consists of Virtual Machine schedulers namely VM scheduler space shared, VM scheduler time shared and VM scheduler time shared over subscription for scheduling of VMs on Physical Machines (PM) in a data centre. This is a VM allocation policy. It allocates one or more PEs (Processing Elements) of PM to its VM based VM requirement. Once PM PEs are allocated to a VM, this allocation policy does not allow to share allocated PEs MIPS to other VMs of that PM.

If there are no free PEs to a VM, allocation fails. VM scheduler time shared approach: This VM allocation policy allocates one or more PEs of PM to its VM based on VM requirement. Once PM PEs are allocated to a VM, this approach allows to share the allocated PEs MIPS to other VMs of that PM. Hence, the VMs are placed on less number of PMs compared to space shared approach.

This VM allocation policy allocates one or more PEs of PM to its VM based on VM requirement but allows over subscription. This scheduler allows the allocation of VMs to PM even though VMs required MIPS capacity is greater than PM MIPS capacity. But, this approach results in performance degradation. B. Problem Formulation In a data centre, each PM has a set of PEs with different or same MIPS for each PE and a set of VMs, provided that total MIPS capacity of all VMs of a PM should be less than or equal to PM total MIPS capacity. With respect to above point, VM scheduler time shared approach allows to share the allocated PEs MIPS to other VMs of that PM. Hence, the VMs are placed on less number of PMs compared to space shared approach and power consumption can also be reduced in data centre by turning off unnecessary PMs. This approach efficiently places VMs on less number of PMs in a data centre compared to other two approaches.



Fig.1 Sample E-Commerce website

I. RESPIRATORY SOUNDS

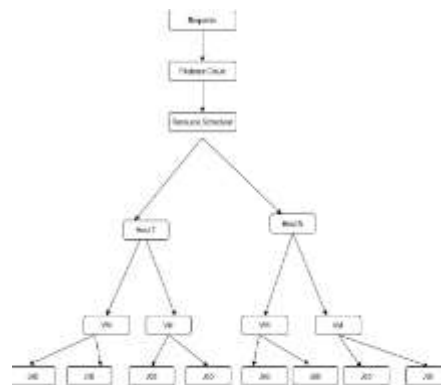
The proposed model is aimed at providing useful information for decision-making to a customer concerning the website's trustworthiness. In order to transact from a website, the proposed model requires the creation of strong online login credentials. Thereafter, a customer provides input through a short survey, to determine if the customer has read the policies displayed and secondly if the customer has experienced a bad or good shopping encounter through the website in the past or not. The model aggregates the user's input together with the following attributes: policies, legislation, ISO standard and website availability. The model checks the presence of the policies and the last policy review date to determine currency and provide a rating. Furthermore, a check for compliance to Electronic Communications and Transactions (ECT) legislation will be conducted to produce overall website rating. Adoption of the ISO standard, specifically the ISO 27001, will be confirmed by the model on the security of online transactions, specifically encryption. An online check to determine if the website is consistently available and has the latest anti-virus software and latest patch is conducted to ensure that it is not vulnerable to online attacks. The model combines all the attribute information using the cooperative rating based on AHP and page ranking to strengthen the assurance level. A trustworthy site flashes green and an untrustworthy one flashes red. The proposed model's benefits are as follows:

It is comprehensive and interactive in that it assesses compliance to legislation and also does online checking of technological compliance in terms of checking for the latest anti-virus software and website availability.

It is interactive and visible through the color display on the website.

A dashboard (green, yellow, red) is provided as a result of a cooperative rating, which strengthens the assurance.

The proposed model consists of the following assurance measures: adaptive legislation, adaptive ISO standards, policies and advanced security login and website availability. The term "adaptive" is used show that the attribute is not fixed but rather flexible in such a way that it accommodates revised legislation or different legislation, provided it is specific to the e-commerce environment. E-commerce assurance is an area that has not been thoroughly researched, more especially cloud-based e-commerce assurance.



II. DESCRIPTIVE ANALYSIS AND RESULTS:

This report contains statistical data, which were arrived at by conducting a survey of journals from the IEEE, Science Direct databases based on the criteria of whether they were an Ecommerce transacting site or not. The survey was conducted to determine if the following attributes had been identified as assurance measures in any of the sampled journals and ecommerce websites: adaptive legislation, adaptive ISO standards, policy, availability and advanced security logon. The sampling frame is October 2012 to March 2013 and the journals were sampled based on their relevance to the subject of this article where specific keywords were used. The main aim was to determine the number of articles in support of or against the proposed attributes as assurance measures.

C. DYNAMIC RESOURCE SCHEDULING

Cloud computing plays a most significant role in Infrastructure as a service providers. There are various services which are being offered for various kinds of requirements for the customers. Cloud broker would be very much engaged in providing profitable outcomes for both the Cloud service provider and the end user. The major problem dealt in cloud computing environment is the lack in utilization of resources due to delay in processing of user request. Our goal is to maximize resource utilization with efficient scheduling strategy. There are various scheduling algorithms for performing scheduling of resources based on the needs of the service provider. It implements Delay time algorithm which is having its efficient significance in scheduling and allocating the resources effectively. It is deployed in our cloud environment with Cloud Simulator tool and we use Net beans IDE and X-amp server for processing with our scheduling process and can be able to prove that Delay time algorithm (DTA) would be superior to the various scheduling algorithms in terms of efficient resource utilization. Calculation processing technology based on distributed environment is a focus in the field of computer research. Based on the distributed environment, resource allocation and scheduling of distributed computing is very important and hard to resolve. E-commerce website different from the earliest C/S architecture has a quickly developing with distributed architecture. This analyzed the model of E-commerce website, show the basic service elements of e-commerce sites. Then a distribute system architecture is proposed, and some research points are listed, such as its distributed system architecture, resource scheduling, virtual cloud resources scheduling and configuration issues Cloud computing has the most

significant role which would provide resources and data to various computer system over the network. It helps computing environment run faster, enhanced manageability and less maintenance. Cloud computing technology has made way for several benefits for businesses as well as end users. The most significant benefit is the self service provisioning, Elasticity and Pay per use. Cloud computing have got much demanded because of its service which is provided, such as advantages in high computational power, efficient performance, less cost of the services, accessibility, availability as well as scalable.

There are various service models in cloud environment. They are Software as a Service, Platform as a Service and Infrastructure as a service. They play a most significant role in providing value added services to the customers. There are considerable growths among public cloud service providers like Windows Azure and AmazonEC2 who have widely emerged. Scheduling is the one of the most prominent activities that executes in the cloud computing environment. To increase overall efficiency of the work load, scheduling is one of the tasks performed to get maximum profit. The ultimate goal of the scheduling algorithms is to utilize the resources properly managing the workload among resources so that to obtain the minimal execution time. In our proposed system, the schedule the entire task request such that the customer is allocated with the resource within the deadline.

There are various scheduling algorithms in cloud environment. Some are the significant algorithms are genetic algorithm, bee algorithm, ant colony algorithm, work flow algorithm, load balance algorithm. In the proposed idea using Delay Time Algorithm which would help in providing customers as well as cloud service providers with gain in profit. The users are charged based on a pay-as you-go model, and their payment is determined by considering both incentives and the incentives of the cloud providers. Auction markets capture such incentives, where users name their own prices for their requested VMs. Here author design an auction based online mechanism for VM provisioning, allocation, and pricing in clouds that considers several types of resources. This proposed mechanism makes no assumptions about future demand of VMs, which is the case in real cloud environment. The proposed online mechanism is invoked as soon as a user places a request or some of the allocated resources are being released and then become available. The mechanism allocates VM instances to selected users for the period they requests, and then ensures that the users will continue using their VM instances for the entire requested period. Here mechanism determines the payment the users have to pay for using the allocated resources.

The objective of this work is to reduce network queuing delay involved in the message communication of E-commerce requests. Such reduction of queuing delay significantly improves the performance of vital E-commerce requests. In order to reduce queuing delays it is taken into account the priority scheduling mechanism of active networks. Fundamental principle of these mechanisms is the provision of preferential treatment to some requests as compared to others. One of the useful priority scheduling mechanisms is the preemptive resume (PR) scheduling.

In the proposed approach, PR mechanism is employed at each network node involved in the processing of Ecommerce requests. According to PR, the arriving high priority message pre-empts the low priority message being processed. The pre-empted message resumes its processing soon after the high priority message is processed. In PR mechanism, each node in the network is equipped with a finite capacity buffer that stores the incoming messages. The total time that a message spends in the node is the sum of the waiting time and the processing time. Waiting time for each message is the sum of processing times for all the messages in front of it. Employment of PR reduces the queuing delays at the network nodes involved in the processing of Ecommerce requests. In order to calculate the queuing delay each network node is modelled as a queuing system with finite capacity. The arriving external traffic at each node is bursts as requests from various Ecommerce applications can arrive simultaneously.

D. Distributed Computing

The concept of distributed computing Distributed computing is a computer science major study of distributed systems. A distributed system consists of a number of interconnected through the network computer. These computers complement each other to complete a common goal. The specific process is: compute-intensive project data need to be split into small pieces, were calculated by multiple computers, then upload the result of the operation after the unification of data obtained conclusions. Programs running on a distributed system are called a distributed computing program; distributed programming is to write the program.

Distributed computing works a large computing tasks can be divided into several small pieces (work units), calculated via the network to a number of distributed systems, the completion of the calculation through the network to the respective calculation result is returned to the originator of the task.

Proposed a resource allocation method based on game theory, to achieve a balanced distribution of computing resources, to achieve load balancing. Game Theory applied to solve the existing problems in theoretical computer studies has a long history. Such as the use of incentives for protocol design, analysis of user selfishness in the existing design of resource allocation mechanisms influence on the results, in order to meet user selfishness and mechanism-based design method. The market mechanism-based computing in the field of artificial intelligence and game theory also has important applications. Game theory, the case of a branch of applied mathematics, has become one of the standard analytical tools of economics, which has a wide range of applications in biology, economics, international relations, computer science, political science, military strategy, and many other disciplines. Interaction between game theory formulated and incentive structure is the study of mathematical theories and methods of struggle or the competitive nature of the phenomenon, which is also an important operational research discipline.

Game theory considers the predicted behaviour and actual behaviour of individuals in the competitive game, and studies their optimization strategy. This topic intends to establish a mathematical model of the problem to achieve an efficient allocation of resources distributed task.

E. Classification

The cloud has numerous challenges, such as failure to disclose how the data collected via the cloud will be used and continuous availability of the cloud resources. A cloud assurance model should be designed in such a way that these challenges are addressed in order to encourage online consumer trust. The objective of this project is to present a comprehensive survey of a cloud-based e-commerce assurance model and to propose a compliant cloud based assurance model for e-commerce. E-commerce web sites typically have large fluctuations in their IT resource usage. For example, e-commerce web sites may need to double the number of web and application servers during times of peak usage. However, e-commerce web sites want to release some resources outside of periods of peak usage, because they do not want to pay the expense of having idle servers on the floor. It is difficult to provision IT resources for an e-commerce web site because web traffic is difficult to predict. Conservative forecasts lead to under provisioning and overly optimistic forecasts lead to overprovisioning. AS rapid elasticity is an essential characteristic of cloud computing, cloud systems are a good fit for hosting e-commerce web sites. Running e-commerce applications and storing their data in the cloud has clear benefits. Rather than buying, installing, and operating its own systems, for example, an e-commerce organization can rely on a cloud provider to do this for them. Also, the e-commerce organization only pays for computing and storage resources they use, rather than maintaining a large set of IT resources used only for peak loads. The e-commerce web site in the cloud can take advantage of the powerful IT resources that the cloud provider offers. Cloud providers deploy and run their cloud in a finite set of data centers located around the world. Therefore, e-commerce web sites in the cloud may be far away from their clients. For example, a cloud provider hosts an e-commerce web site in its data center, which is located in the US, while the majority of customers of this e-commerce web site are in Asia. No matter how large the amount of IT resources in this data center are, the long physical distance between US and Asia would cause long customer-perceived latency.

F. Methodology

The proposed model is aimed at providing useful information for decision-making to a customer concerning the website's trustworthiness. In order to transact from a website, the proposed model requires the creation of strong online login credentials. Thereafter, a customer provides input through a short survey, to determine if the customer has read the policies displayed and secondly if the customer has experienced a bad or good shopping encounter through the website in the past or not. The model aggregates the user's input together with the following attributes: policies, legislation, ISO standard and website availability. The model checks the presence of the policies and the last policy review date to determine currency and provide a rating. Furthermore, a check for compliance to Electronic Communications and Transactions (ECT) legislation will be conducted to produce overall website rating. Adoption of the ISO standard, specifically the ISO 27001, will be confirmed by the model on the security of online transactions, specifically encryption. An online check to determine if the website is consistently available and has the latest anti-virus software and latest patch is conducted to ensure that it is not vulnerable to online attacks. The model combines all the attribute information using the cooperative rating based on AHP and page ranking to strengthen the assurance level. A trustworthy site flashes green and an untrustworthy one flashes red. The proposed model's benefits are as follows:

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As a result, very few journals discuss cloud-based e-commerce assurance models and propose robust models. In this research work, the focus was on examining the existing e-commerce assurance models and placing particular focus on cloud-based assurance with the aim of identifying gaps and addressing them by proposing a cloud-based e-commerce assurance model. The proposed cloud-based assurance model consists of the following assurance attributes: policy, adaptive legislation, adaptive ISO standards and advanced user security login. The AHP and page ranking techniques are used to achieve cooperative ranking of the attributes, which is displayed on the website for customer guidance regarding the website's trustworthiness, as shown in figure. The major improvement in the proposed model is to have an intelligent cloud-based assurance rating, which the existing e-commerce assurance models do not have. The proposed cloud-based e-commerce assurance model can be used by online customers, vendors, cloud service providers and also law enforcers. Adaptive ISO security standard as an assurance measure According to, the ISO 27002 standard is regarded as the e-commerce international benchmarking standard for information security, which is thus suitable for inclusion in the cloud-based environment. The model checks for the security of transactions in an online environment by checking for the encryption of transactions on the website. This check, together with the other attributes, will be assessed and aggregated in order to show the final website assurance rating..

I. K- Nearest Neighbours Algorithm

KNN is a supervised and nonparametric classification method that classifies data based on the proximity of training samples in the data set. This classification method finds the k nearest neighbors of unknown data between the dataset according to a distance equation. Then, it uses the majority vote approach to estimate the data label. Distance equations such as Manhattan, Hamming, Euclidean, and Minkowski are used for distance calculation. In this study, the Euclidean distance equation was used to locate the nearest neighbor. The basic steps to be applied for classification with the k-NN algorithm are as follows:

- 1) The number k is determined.

- 2) The new data is evaluated individually with all the data in the training data set, and the distances between them are calculated by distance functions.
- 3) The k data closest to the new data is selected.
- 4) The class to which most of the selected data belongs is determined, and the new data is assigned to this class. In this study, the results were obtained for k=1 and k=3.

2. SYSTEM MODEL AND PROBLEM FORMULATION

Many virtual clusters, virtual machines run in each data center hosting number of heterogeneous tasks submitted by different cloud customers. In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization. Scheduler should also efficiently manage the load between resources and achieve minimum execution time. In this paper, we analyzed virtual machine scheduler space shared, virtual machine scheduler time shared and virtual machine scheduler time shared over subscription and tested them using CloudSim toolkit to examine their behavior. The results show virtual machine scheduler time shared effectively utilizes resources by sharing MIPS among virtual machines of a server and thus reduces number of powered on servers in a data center, which also reduces the power consumption than virtual machine scheduler space shared and virtual machine scheduler time shared over subscription approaches

Some of the enhancements proposed by our two-level scheduler are discussed in the following paragraphs. A. Datacenter Broker: Existing Features: In Cloudsim, this component randomly selects the datacenter irrespective of their heterogeneity in hardware, software configuration and pricing schemes for usage. Then the broker maps the cloudlets to all the created virtual machines in a circular fashion without considering the Processing Elements (PEs) required by the cloudlets. Enhancements: We have proposed a meta-scheduler that selects the data center, based on user defined QoS specifications such as deadline and budget. B. VMProvisioner: Existing Features: The simple VM Provisioner of the CloudSim chooses the host with less PEs in use, as the host for VM. This heuristics ensures load balancing. Nevertheless, many VM Create Requests fail, even though the required numbers of free PEs are available across various hosts. Enhancements: The optimal VM Provisioner in the proposed system rectifies the said problem by optimally creating VMs in the hosts by ordering the request appropriately. The VM creation requests with more resources are allocated followed by the requests with fewer resources, thus minimizing the number of failures in VM creation. C. Inter VM Scheduler: Existing Features: The host in a data center generally manages the life cycle of VM. It creates the VMs with required configuration before the cloudlets are dispatched and destroys all VMs only when all VMs finish processing the cloudlets. The VM Scheduler in CloudSim does not guarantee load balancing and optimal resource utilization of PEs. In this case a situation may arise wherein a specific VM can be Idle, and other VMs may be heavily loaded with cloudlet execution. Enhancements: In our proposed system, the idle VM can be destroyed and a new VM with required configuration can be created in order to balance the load thereby utilizing all the PEs of a host. This proposed inter VM scheduler takes the role of VM load equalizer in an adaptive manner.

III, CONCLUSION

Cloud is an emerging environment in which cloud providers, brokers, and users share, mediate, and consume computing resource. Resource Scheduling plays a significant role in the cloud environment. In this project it has been studied about the various resource scheduling algorithms and performance metrics. In the proposed work, deployment of Delay time algorithm is done, which would help increasing efficiency in utilization of resources without much delay in processing the request. Proposed scheduling approach would be much efficient than the other traditional scheduling algorithms. In future, it would work on implementing our proposed technique in a real time application which would help end users with efficient utilization of resources. In future work, it would work on implementing our proposed technique in a real time application which would help end users with efficient utilization of resources. Through the research it is believed that, it can create an e-commerce application model based on cloud computing by means of cloud computing's mass data storage, high-speed computing capabilities, as well as its ideal allocation and the sharing mode of resources. Thus, this creation will open up a new space for the smooth development of e-commerce. However, these e-commerce models are still in the early stages of exploration and applications. Some problems such as platform security, technical standards, regulatory and other services are not well resolved yet in practice, pending further research and exploration. Either way, e-commerce application model based on cloud computing will not stop its pace to proceed.

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