



An Effective Approach on Scheduling Algorithm in Cloud Computing

Suman Sangwan^{#1}, Sunita Sangwan^{*2}

¹ Shri Baba Mastnath Engineering College
Asthal Bohar, Rohtak, MDU
Haryana (India)
ersumansangwan@gmail.com

² Shri Baba Mastnath Engineering College
Asthal Bohar, Rohtak, MDU, Haryana
kashisuni5@gmail.com

Abstract:

Cloud is the most effective technology of recent times at attracts most users and organizations towards it. Because of the different opportunities and characteristics provided by cloud computing, it taken the attention to the all business market stakeholders. The main problem in cloud computing is task scheduling. Scheduling is the most effective and important task for a computer system that basically decides the order of the process execution when different processes are kept in a queue. An effective scheduling give better resource utilization and that give better result to users. The need for a scheduling algorithm arises from the requirement for most modern systems to perform multitasking and multiplexing. In this paper we describe different scheduling algorithm.

Keywords:

Cloud computing, scheduling, algorithm

1. Introduction:-

A cloud environment is the vast network environment in which thousands of users are connected to avail the cloud services. There are number of integrated service providers that satisfy the user need under different service models. The models offered by the cloud system include the Infrastructure-as-a service model, platform-as-a-service model and Software-as-a-service models.

Services:

The term "cloud computing" is mostly used to sell hosted services in the sense of application service provisioning that run client server software at a remote location. Such services are given popular acronyms like 'SaaS' (Software as a Service), 'PaaS' (Platform as a Service), 'IaaS' (Infrastructure as a Service), 'HaaS' (Hardware as a Service) and finally 'EaaS' (Everything as a

Service). End users access cloud-based applications through a web browser, thin client or mobile app while the business software and user's data are stored on servers at a remote location. Examples include Amazon Web Services and Google App engine, which allocate space for a user to deploy and manage software "in the cloud".

2. Deployment models:-

Private cloud

Private cloud is cloud infrastructure operated solely for a single organization, whether managed internally or by a third-party and hosted internally or externally. Undertaking a private cloud project requires a significant level and degree of engagement to virtual the business environment, and requires the organization to reevaluate decisions about existing resources. When done right, it can improve business, but every step in the project raises security issues that must be addressed to prevent serious vulnerabilities. Self-run data centers are generally capital intensive. They have a significant physical footprint, requiring allocations of space, hardware, and environmental controls. These assets have to be refreshed periodically, resulting in additional capital expenditures. They have attracted criticism because users "still have to buy, build, and manage them" and thus do not benefit from less hands-on management, essentially "[lacking] the economic model that makes cloud computing such an intriguing concept".

Public cloud

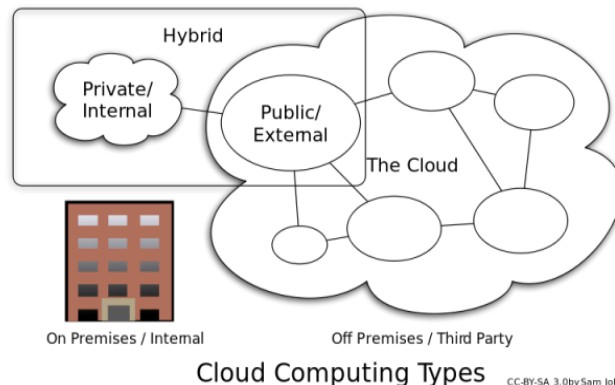
A cloud is called a "public cloud" when the services are rendered over a network that is open for public use. Technically there may be little or no difference between public and private cloud architecture, however, security consideration may be substantially different for services (applications, storage, and other resources) that are made available by a service provider for a public audience and when communication is effected over a non-trusted network. Generally, public cloud service providers like Amazon AWS, Microsoft and Google own and operate the infrastructure and offer access only via Internet (direct connectivity is not offered).

Community cloud

Community cloud shares infrastructure between several organizations from a specific community with common concerns (security, compliance, jurisdiction, etc.), whether managed internally or by a third-party and hosted internally or externally. The costs are spread over fewer users than a public cloud (but more than a private cloud), so only some of the cost savings potential of cloud computing are realized.

Hybrid cloud

Hybrid cloud is a composition of two or more clouds (private, community or public) that remain distinct entities but are bound together, offering the benefits of multiple deployment models. Hybrid cloud can also mean the ability to connect collocation, managed and/or dedicated services with cloud resources.



The main enabling technology for cloud computing is virtualization. Virtualization generalizes the physical infrastructure, which is the most rigid component, and makes it available as a soft component that is easy to use and manage. By doing so, virtualization provides the agility required to speed up IT operations, and reduces cost by increasing infrastructure utilization. On the other hand, autonomic computing automates the process through which the user can provision resources on-demand. By minimizing user involvement, automation speeds up the process and reduces the possibility of human errors

Virtualization technology allows sharing of servers and storage devices and increased utilization. Applications can be easily migrated from one physical server to another.

The goal of scheduling algorithms in distributed systems is spreading the load on processors and maximizing their utilization while minimizing the total task execution time. Job scheduling, one of the most famous optimization problems, plays a key role to improve flexible and reliable systems. The main purpose is to schedule jobs to the adaptable resources in accordance with adaptable time, which involves finding out a proper sequence in which jobs can be executed under transaction logic constraints. There are main two categories of scheduling algorithm.

1) Static scheduling algorithm and

2) Dynamic scheduling algorithm.

Both have their own advantage and limitation.

There has been various types of scheduling algorithm exist in distributed computing system. Most of them can be applied in the cloud environment with suitable verifications. The main advantage of job scheduling algorithm is to achieve a high performance computing and the best system throughput. Traditional job scheduling algorithms are not able to provide scheduling in the cloud environments. According to a simple classification, job scheduling algorithms in cloud computing can be categorized into two main groups; Batch mode heuristic scheduling algorithms (BMHA) and online mode heuristic algorithms.

3. Existing scheduling algorithm:-

An Approach for Cloud Resource Scheduling Based on Parallel Genetic Algorithm

Resource scheduling is a key process for clouds such as Infrastructure as a Service cloud. To make the most efficient use of the resources, we propose an optimized scheduling algorithm to achieve the optimization or sub-optimization for cloud scheduling problems. Our scheduling policy achieved by Parallel Genetic Algorithm which is much faster than traditional Genetic Algorithm. Based on the research of using GA to deal with scheduling problem in the cloud, we propose PGA to achieve the optimization or sub-optimization for cloud scheduling problems.[16]

A Novel Approach for Scheduling Service Request in Cloud with Trust Monitor

Cloud computing serves as the service provider globally connected, which provides service to the cloud users. The processing of the users request plays an important role in the cloud service. The novel cloud scheduling scheme uses SLA(Service Level Agreement) along with trust monitor to provide a faster scheduling of the over flooding user request with secure processing of the request. The security of the cloud is maintain based on the SLA criteria and trust monitor acts as the third party and monitors whole processing of the services, any illegal action is consider as intrusion and reported to the scheduler and message is sent to the user and provider and further penalties is taken. The schedule gives improved fast schedule time and low rescheduling ratio than grid scheduling. The scheduling of large number of service request from the user to the cloud makes less response time from the cloud provider. The proposed scheduling scheme gives improved response time and throughput. The unwanted access and security of service are obtained the cloud provider. The cloud user gets the guaranteed response time and secured service and security for their data to be confidential.[17]

Xu Cheng (2011) has defined a novel scheduling system under the load balancing analysis based migration approach. Author defined the data collection process on YouTube. Author defined partitioning architecture under the network analysis on social relationship so that unbalanced partitioning over the system can be analyzed. Author defined the vital role in social relationship in the social media application. Author concludes that the user access pattern to the system can be taken into account so that social relationship over the system can be achieved effectively. Author defined a similarity and dissimilarity analysis under the preservation analysis approach[9].

J.Brandt (2010) presented the work on process replication and scheduling optimization with process migration in virtual cloud environment was presented in wide area networks. Author defined a replication approach to perform the cloud scheduling under the process replication and the virtual machine environment so that the system will propagate to the environment. Author defined an additional storage based system so that effective replication to the system will be done. Author explores the common task defined on cloud environment. Author also discussed the integration issues in the replication and the migration process.[5]

CONCLUSION

With the emerging of cloud computing, cloud workflow systems are designed to facilitate the cloud infrastructure to support large scale distributed collaborative e-business and e-science applications. The management and scheduling of resources in Cloud environment is complex, and therefore demands sophisticated tools for analysis the algorithm before applying them to the real system. In this paper, we have surveyed the various existing workflow scheduling algorithms in cloud computing and tabulated their various parameters along with tools and so on.

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