

The Survey of the Architecture and Several Techniques of Job Scheduling

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Abstract - The sequence of past numerous years, Cloud computing has arose as a buzzword in the commercial and academic world, for its great possible to fulfill the intended drawing that customers can enjoy computing infrastructure and services in a pay-as-you-go manner. New techniques and research results in Cloud computing has continuously emerged in recent years. Cloud computing's service-oriented characteristics advance a new way of service provisioning called utility founded computing. Though, toward the applied application of commercialized Cloud, we encounter two challenges: i) there is no distinct job scheduling procedure for the Cloud that considers the system. There are a number of reasons to characteristic Cloud technology with subordinate costs. The billing model is pay as per usage; the infrastructure is not purchased thus lowering maintenance. This is an extremely important characteristic. With enterprises having to adapt, even more rapidly, to altering business conditions, rapidity to deliver is critical. In many instances, the actual storage location is not revealed, adding onto the security anxieties of initiatives. In the existing models, firewalls across data centers (owned by creativities) protect this delicate information. In the cloud model, Service providers are responsible for maintaining data security and initiatives would have to trust on them.

Keywords: cloud computing, job scheduling, cloud technology and characteristics

I. INTRODUCTION

Cloud computing refers to the delivery of computing resources over the Internet. In its place of possession data on your own hard drive or updating applications for your needs, you use a service over the Internet, at additional position, to store your info or use its applications. Doing so may give rise to certain discretion implications. For that reason the Office of the Privacy Commissioner of Canada (OPC) has prepared some replies to Regularly Asked Questions (FAQs). We have also advanced a Fact Sheet that provides detailed information on cloud computing and the privacy contests it presents [1]. Cloud computing is the delivery of computing services over the Internet. Cloud services allow characters and businesses to use software and hardware that are managed by third parties at remote locations. Specimens of cloud services include online

file storage, social networking sites, webmail, and online business presentations.[2] The cloud computing classical allows access to information and computer resources from anywhere that a network linking is available. Cloud calculating provides a shared pool of resources, including data storage space, grids, computer processing power, and dedicated corporate and user applications.

Advantages of cloud computing

Cloud media technology offers number of key benefits to its service providers as well as the users through augmented employment time, efficient data storage capacity, less computation and cost. It created an arresting impact in the multimedia gratified processing like editing, storing, encrypting and decrypting, gaming, streaming, condensing etc.

A. Cost

Cloud media computing offers cost effective services to its service workers through efficient multiplexing of media insides like audio, video, image by providing a common organization, exploiting the headwaiter, optimization, virtualization, Mobility and unconscious processing. There is no need for actually acquiring an infrastructure or resource in our local system and thus diminishes the cost.

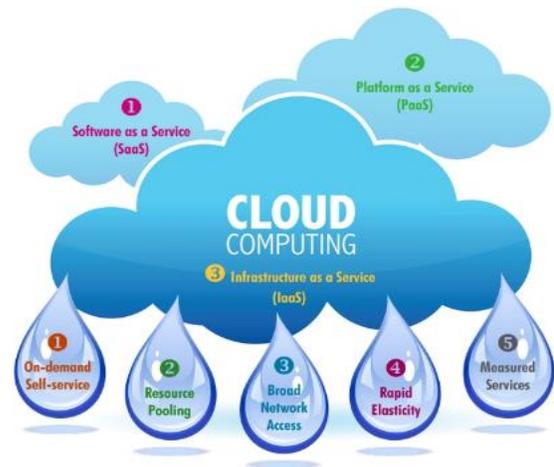


Fig.1: Cloud Computing

B. Upgradable

Cloud broadcasting is always connected to the cloud service worker and therefore it is advanced and maintained without any labor-intensive interfering. Software and sanctuary will be up to date constantly.

C. Compatibility

Cloud media permits the media content to be opened anywhere through any smart expedient and it is likeminded with all kinds of client service permitted computers, smartphones, cars tablets etc.[3]

D. Regular

Cloud media provides reliability in distributing the detailed media innards to the users of other cloud within a cloud communal using the flooding protocols like TCP/IP, UDP, RTP etc.

Disadvantage

A. More confusion

There are more confusion among the user in choosing the type of cloud since both pay per use and free clouds are threw by some mobile companies, service providers etc. So the users face trouble in taking a decision.

B. Private attacks

There is a possibility for phishing and stealing of media contented by the operative of the service provider itself.

C. Authorized and piracy difficulties

Since the cloud media computation is very new, the legal values are not very good. There are more legal complications in the case of storing media satisfied in the cloud outside the borderline i.e. servers which are separate the country. Also there are restrictions in getting the media happy rights for different platforms and sharing the media content outside the range or limit.[3]

II. JOB SCHEDULING

The order in which jobs are scheduled can have significant effect on system performance. For contiguous allocation in 2D mesh multicomputers, the results in show that the window-based scheduling strategy is substantially superior to FCFS in terms of system operation and average job turnaround times for medium to heavy system loads. Also, it is superior to OO scheduling in terms of maximum job waiting delays. In this paper we show that window-based could be used also with non-contiguous processor allocation strategies to yield enhancement in performance in terms of average turnaround time, mean system utilization, and maximum job waiting delays. The scheduling strategies used in this paper include FCFS and Window-Based job scheduling [2]

Advantages of Job Scheduling: It's very useful to use Job Scheduler to generate timetables for a lot of work, especially if they are banquet across multiple machines. It's a tool to make that task a lot cooler. Job Schedule is also widely used in virtually Xo products such as: WCM, DMS, KS, CS, Social thanks to its benefits and advantages.

- (1) The Job Scheduler provides automatically log files for running programs.
- (2) The performance status of programs is automatically checked and an commissioner will receive protocols by eMail
- (3) The sequence of job starts can be prepared depending on their execution status
- (4) Job Schedulers are controlled by a graphical user interface
- (5) Job Schedulers can be used to create compound job chains and job needs

Disadvantages of Job Scheduling

- (1) Convoy effect befalls. Even very small process should interval for its turn to come to utilize the CPU. Short process behind long process results in lower CPU utilization.
- (2) Throughput is not emphasized.
- (3) Elapsed time (i.e., execution-completed-time) must be recorded, it outcomes an additional overhead on the mainframe.
- (4) Starvation may be possible for the longer processes.

III. PREVIOUS TECHNIQUES

- 1) **FCFS Technique:** First-come, first-served (FCFS) – now and then first-in, first-served & first-come, first choice – is a overhaul rule whereby the requirements of clientele or clients are be present at to in the direct that they here, with no other biases or partiality. The strategy can be working when dispensation sales instructions, in formative eating place seats, on a taxi stand, and that. In Western civilization, it is the benchmark plan for the dispensation of for the for the most part queues in which persons wait for a check that was not encoded or trepanned.[3]

First Come, First Served

Process	Burst Time
P1	24
P2	3
P3	3

Suppose that the processes arrive in the order: P1, P2, P3

The Gantt Chart for the schedule is:



Waiting time for P1 = 0; P2 = 24; P3 = 27
Average waiting time: (0 + 24 + 27)/3 = 17

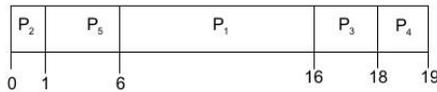
Fig.2 FCFS Technique

2) **Priority Scheduling Technique:** In Priority Scheduling, every course is agreed a precedence & main concern process perform first. Priorities can be definite also within or outwardly. Inside describe precedence use a quantity of measurable amount to calculate the priority of a procedure. Outwardly priority is set by criterion outer surface the OS, such as the significance of the procedure [4].

Priority

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

▪ Gantt Chart



▪ Average waiting time = $(6 + 0 + 16 + 18 + 1)/5 = 8.2$

Fig.3 Priority Scheduling Technique

3) **Multilevel Feedback Queue Technique:** Multilevel feedback queue-scheduling algorithm permits a procedure to budge among queues. It uses several complete queues & connections a dissimilar main concern with every queue. The Algorithm decides to procedure with uppermost priority from the unavailable queue & run that procedure either pre-emptively or un-pre-emptively.

Multilevel Feedback Queue Scheduling

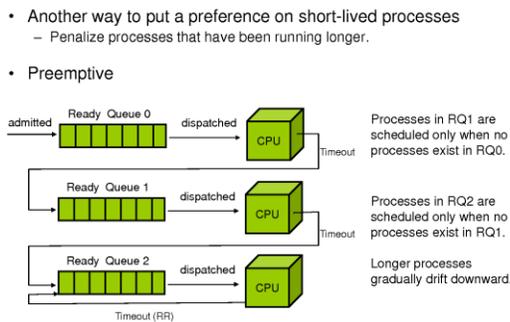


Fig.4: Multilevel Feedback Queue Technique

If the procedure uses too a great deal CPU time it will enthused to a lower-priority queue. In the similar way, a development that hang around too long in the lower-priority

queue may be enthused to a higher-priority file may be enthused to a highest-priority line.[5]

4) **Greedy-Based Technique:** For a set of jobs and the virtual machines, Greedy Based Algorithm depends on the limited optimal way to allocate assets. That is the reason why we called it Greedy-Based Algorithm based on the Greedy algorithm [6]. A greedy algorithm is an algorithmic paradigm that follows the problem solving heuristic of making the locally optimal choice at each stage with the hope of finding a global optimum. In many problems, a greedy strategy does not in general produce an optimal solution, but nonetheless a greedy heuristic may yield locally optimal solutions that approximate a global optimal solution in a reasonable time.

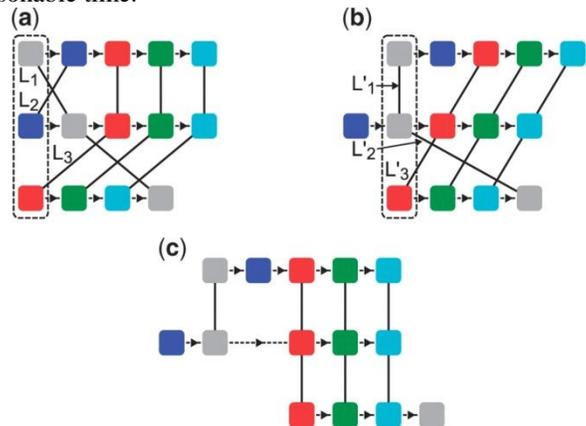


Fig.5 Greedy-Based Technique

5) **Workflow Scheduling Technique:** The WfMC (Workflow Management union) describe workflow as [4], identifying the boundary within this structure which enable products to interoperate at a mixture of levels. This copy defines a workflow organization system and the most important system interfaces [7].

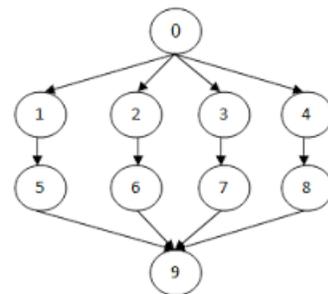


Fig.6 Workflow Scheduling Technique

IV. SCHEDULING ARCHITECTURE

In the planned system, the user acquiesces the job to the Grid Scheduler and based on the Job Score (JS) which is computed

jobs are owed to the cluster of reserve. The Grid Scheduler identifies whether it is a data intensive job or computational exhaustive job by using job information quantified by the user. The computational intensive job needs more figuring power, the CPU Obtainable value will be large equaled to other jobs and data intensive job needs more bandwidth for transmitting the job to the cluster. Based on these conditions the jobs are identified and they are allocated. By identifying the job whether it is computational intensive or data intensive the job failure rate is minimized and the make span time of the job is also decreased. The proposed architecture which is illustrated how jobs are allocated to the cluster of resources. Job 1, Job 2... Job n are the 'n' number of jobs which can be a computational intensive or data concentrated jobs. The grid scheduler assigns the job to the cluster of resources by identifying the appropriate resource by calculating ATP, APP, ASC and JS. The cluster of resources includes CPU Speed, Load, CPU Accessible, Computation power (CP) and Memory Obtainable. The Job Score (JS) is computed based on the resources and the jobs are allocated to the cluster which has highest score and highest Computation Power (CP). Each time the status of the resources changes the new Job Score is calculated and the job is allocated to the cluster which has highest Computation power (CP) [8].

B. Enhanced Adaptive Scoring Job Scheduling Algorithm

In Enhanced Adaptive Scoring Job Scheduling algorithm along with ATP (Average Transmission Power) and APP (Average Processing Power) the ASC (Average Storage Capacity) of each resource is calculated and based on that the Job Score (JS) is computed.

Dss

Step 1: User submits the job information and number of jobs

Step 2: Assign CPU Speed, Load, CPU Available, Memory available to the cluster.

Step 3: Get the number of cluster C_1, C_2, \dots, C_n

Step 4: For all cluster of resources

Find the average processing power (APP) Find the average transmission power (ATP) Find the average storage capacity (ASC)

Step 5: Compute the Job Score (JS) for each cluster C_1, C_2, \dots, C_n

Step 6: Select the Cluster based on Job Score (JS)

Step 7: Compare the CP of the Selected Cluster and assign the job to the cluster which has the highest CP **Step 8:** After Assigning job status of the resource changes

Step 9: Compute ATP, APP, ASC and JS

Step 10: Choose new cluster

Step 11: Calculate the make span time of the jobs submitted to grid [9].

V. CONCLUSION

The job scheduling scenario in the Cloud computing and its existing solutions. One of the solutions to approach the

scheduling problem is based on the utility computing framework, which characterizes each job with a economic attribute called utility and configures its utility following a Time Utility Function (TUF). We reshape the modeling of a job scheduling process in the Cloud by incorporating failure rate and recovery rate in the computing entity, to fit into practicality. Job Scheduling Algorithm method schedule jobs in grid environment. algorithm selects the fittest resource to execute a job according to the status of resources. Jobs that are considered in this methodology are independent and the jobs are allocated to the cluster by computing job score

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