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CAPABLE TASK DEFERMENT TECHNIQUE FOR GRID NETWORKING

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ABSTRACT

Grid networking is an aggregation of geographically dispersed computing, storage, and network resources, coordinated to deliver improved performance, higher quality of service, better utilization, and easier access to data. It enables virtual, collaborative organizations, sharing applications and data in an open, heterogeneous environment. Scheduling is the process that selects which job in the queue should be considered next. Grid Scheduling is the process of making scheduling decisions involving allocating jobs to resources over multiple administrative domains. The goal of scheduling is to minimize the make-span by finding an optimal solution. In the present Grid Networking environment, the scheduling approaches. In a Grid Networking environment there are many more constraints that would make the job scheduling problem more complicated. The issues in the existing system are the dynamic environment of the Wireless Grid makes necessary the use of sophisticated mechanisms for resource discovery and selection. Task monitoring and check pointing is difficult in dynamic environments. In this paper we have proposed a Task Deferment Algorithm, using activates strategy system to effectively allocate the resources to the tasks by performing sort-out. If a task does not continue its execution due to disconnectivity of resources, the resources for that task will be provided immediately next from the task which has finished its execution.

Keywords: grid networking, task deferment technique, activate strategy system.

1. INTRODUCTION

Grid Networking solves high performance and high-throughput computing problems through sharing resources ranging from Personal computers to supercomputers distributed around the world. One of the major problems is task scheduling, i.e., allocating tasks to resources. The process of interconnecting these resources into a unified pool involves the coordination of the usage policies, Task scheduling, queuing issues, Grid security, as well as user authentication. Grid Networking is interconnects and utilizes available processor, storage, or memory subcomponents of distributed computing systems to solve larger problems more efficiently. The benefits of Grid Networking are (1) cost savings, (2) improved business agility by decreasing the time (delivering actual results), and (3) enhanced collaboration and sharing of resources among tasks. In recent years, the researchers have proposed several efficient scheduling algorithms that are used in Grid networking to allocate grid resources with a special emphasis on task scheduling.

SCHEDULING GOALS

Performance objective: We consider computational& memory resources and the objective is to achieve reasonable fairness among tasks for computational resources under memory constraints.

Adaptability: The resource allocation process must dynamically and efficiently adapt to changes in the demand from task

Scalability: The resource allocation process must be scalable both in the number of resources in the Grid and the number of tasks that the Grid hosts. This means that the resources consumed per machine in order to achieve a given. However, when a resource is under-utilized, it is often able to consume a higher share of that resource while it is available. This helps to solve problem of heterogeneity of resources and platform irrelevance.

The Grid Networking is often viewed as a distributed, high performance computing and information handling infrastructure, that comes with geographically and organizationally dispersed, heterogeneous resources and provides common interfaces of these resources, using standard, open, general-purpose protocols and interfaces. Grid Networking is already being successfully used in many scientific applications where huge amounts of data have to be processed and stored. Such demanding applications have created, justified and subtle the concept of Grid Networking among the scientific community. Grid Networking enables both the mobility of the users requesting access to a fixed Grid and the resources that are themselves part of the Grid. Both cases have their own limitations and constraints that should be handled. In the first case the devices of the Grid networking users act as interfaces to the Grid enabling job submission, monitoring and management of the activities in an 'anytime, anywhere mode, while the Grid provides them with a high reliability, performance and cost-efficiency. In the second case of having Grid resources, the performances of current Grid devices are significantly increased. In Grid Networking environment there are many constraints that would make the task scheduling to more complicated. The cost of resources is in that case a metric that is subject to context parameters. The issue in the existing system is task observing and patterned pointing is difficult in dynamic environments and the cost of resource is high.

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2. PROPOSED WORK

In this paper we have proposed a Task Deferment Algorithm using Activates Strategy System, the function of this algorithm is successfully allocate the resources to the tasks by performing Deferment. If a task does not continue its execution due to disconnectivity of resources, the resources for that task will be provided immediately next from the task which has completed its execution. Here the scheduler provides a structure and it stores the set of tasks. Two types of tasks are stored in the structure. The task that has been submitted but has not received any result from resources and the tasks that has not been submitted. Each task is provided with a sequence number n, $1 \le n \le m$. The tasks are arranged in the structure based on the sequence number. The structure has a header which points to the tasks. The task pointed by the header is called as current task. The header can be used to point next task. In case of task execution, if the resource for a task is disconnected the task executing on it will be cancelled and will be allocated the resource immediately from another task that finishes its execution.

3. TASK DEFERMENT TECHNIQUE

[1] At moment p=0, j1->s1, j2->s2, j3->s4, the header points to j4

[2] At moment p=2, j4->s3, the header points to j5

[3] A moment p=2.5, j1 completes its execution, resource s1 becomes free, j5->s1

[4] At moment p=5, resource s2 gets disconnect, task j2 is killed, the header points to j2

[5] At moment p=7, resource s1 gets disconnect, task j5 is killed, the header point to j2

[6] At moment p=7.7, j3 completes its execution, resource s4 becomes free, the header points to j5

[7] At moment p=9.0, j4 completes its execution, resource s3 becomes free, s3->j5

[8] As a final point the task j5 gets completed its execution.

4. TASK ALLOCATION

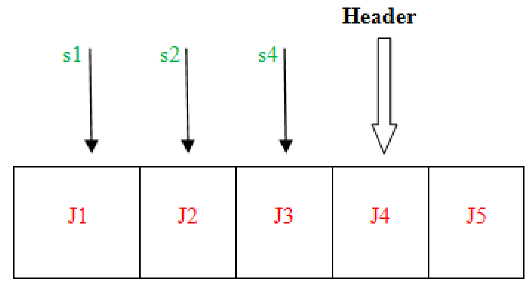

Figure-1. Deferment at moment p=0.

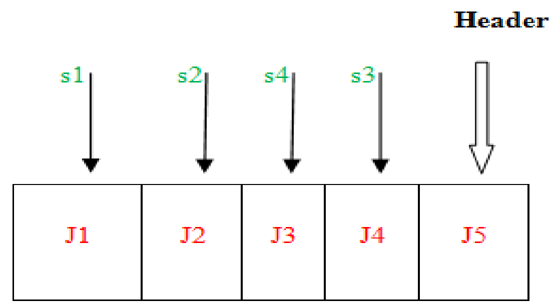

Figure-2. Deferment at moment p=2.

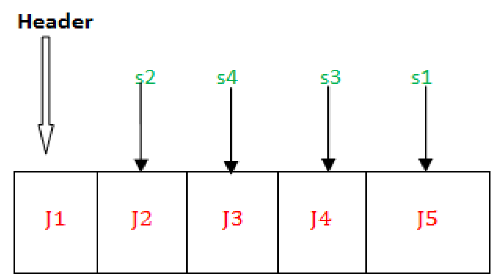

Figure-3. Deferment at moment p=2.5.

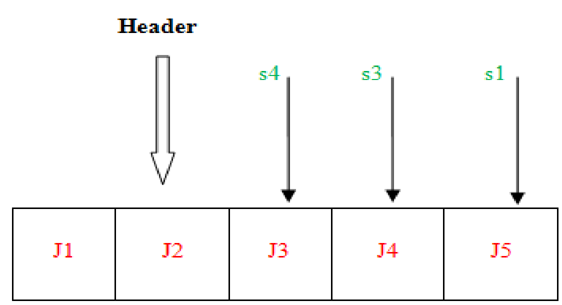

Figure-4. Deferment at moment p=5.

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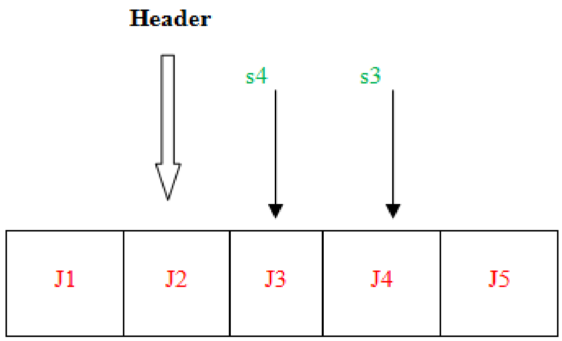


Figure-5. Deferment at moment p=7.

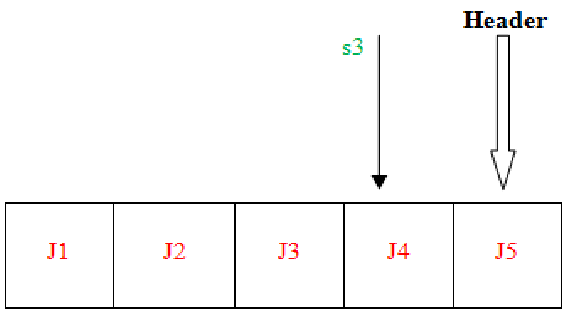


Figure-6. Deferment at moment p=7.7.

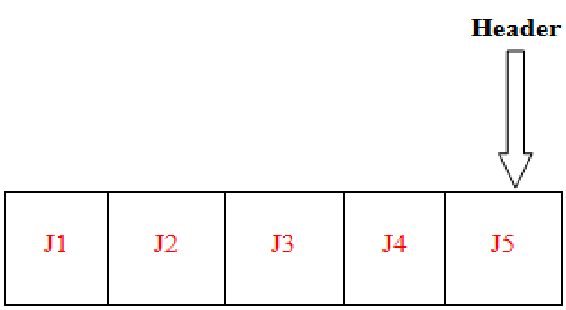
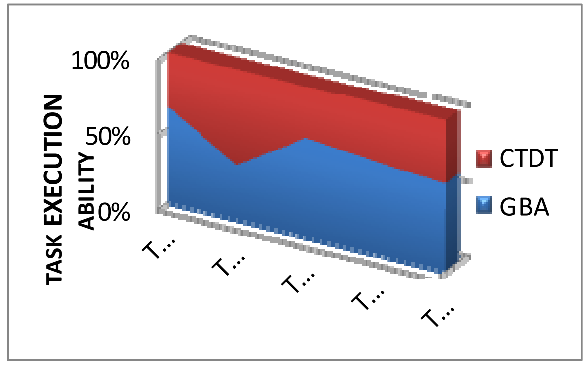


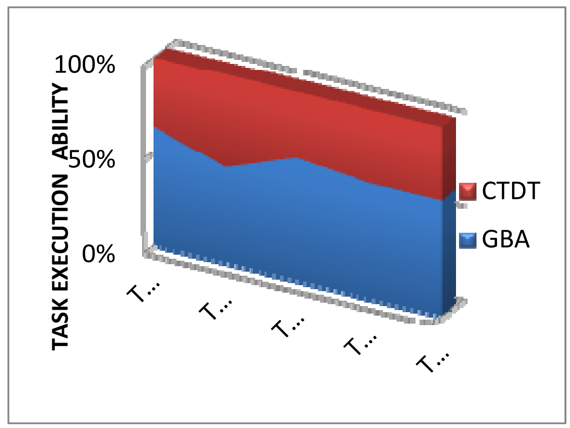
Figure-7. Deferment at moment p=9.0.

5. EVALUATION OUTCOME

The factors built-in are the amount of resources and their handing out ability, the task and their execution time, along with contact ability. Figure shows the relationship between total processor cycle utilization and the tasks under four resources. It has been observed that total processor cycle utilization of CTDT (Capable Task Deferment Technique) proposed in this paper is higher than that of GBA (Grid Booster Algorithm). This is because some of the tasks executing get abandoned and are deferred, resulting in the utilization of additional total processor cycle. The graph indicates that huge value, improved the communication. When the communication ability improves, the computing power required for the tasks decrease.



Evaluation Chart 1. (Task execution ability)



Evaluation Chart 2 (Task execution ability)

6. CONCLUSION

Most of the firms are moving to Grid Networking environment now days. Moving to Grid Networking is clearly a better alternative as they can add resources based on the traffic according to the cost model. But for Grid Networking to be efficient, the individual servers that make up the datacenter grid will need to be used optimally. Even an idle server consumes about half its maximum power. With the emergence of Grid Networking in the past few years, map reduce has seen tremendous growth especially for large-scale data intensive computing. The lack of a separate power controller in map reduces frameworks post an interesting area of research to work on. In this paper proposed a Task Deferment Algorithm, using Activates Strategy System to effectively allocate the resources to the tasks by performing sort-out. If a task does not continue its execution due to disconnectivity of resources, the resources for that task will be provided immediately next from the task which has finished its execution.

REFERENCES

[1] Dr. K. Somasundaram R. Natchadalingam, "Competent Scheduling for Achieving Desirable Quality on Resource Allocation in Grid Networking"

International Journal of Applied Engineering Research ISSN 0973-4562 Volume 9, Number 22 (2014) pp. 12921-12935.

[2] Dr. K. Somasundaram., R. Natchadalingam, "Combinational Adaptive Advanced Scheduling Algorithm for Grid Networking", European Journal of Scientific Research, ISSN 1450-216X Vol. 87 No 4, pp.573-584, 2012.

[3] Davide Adami., Christian Callegari., Stefano Giordano. and Michele Pagano. "A Three-Dimensional Resource Scheduling Algorithm for a Network-aware Grid",IEEE Globecom 2010 proceedings. pp. 978-1-4244-5638-3, 2010.

[4] Mustafizur Rahman., Rajiv Ranjan., and Rajkumar Buyya. "Dependable Workflow Scheduling in Global Grids"10th IEEE/ACM International Conference on Grid Computing. pp.978-1-4244-5149-4, 2009.

[5] Saeed Farzi "Efficient Job Scheduling in Grid Computing with Modified Artificial Fish Swarm Algorithm" IACSIT- International Journal of Computer Theory and Engineering. Vol. 1, No. 1, pp. 1793-8201, 2009.

[6] Xuelin Shi, Ying Zhao, "Evolutionary Grid Scheduling Algorithm with Predictive Resource Optimization", IEEE Computer Society- The Fifth Annual China Grid Conference. pp .978-0-7695-4106-8, 2010.

[7] Wael Abdulal., S. Ramachandram., "Reliability-Aware Genetic Scheduling Algorithm in Grid Environment",IEEE Computer Society- International Conference on Communication Systems and Network Technologies. pp. 978-0-7695-4437-3, 2011.

[8] Tarek Helmy Zeehasham Rasheed, "Independent Job Scheduling by Fuzzy C-Mean Clustering and an Ant Optimization Algorithm in a Computation Grid" IAENG International Journal of Computer Science pp. 37:2, IJCS_37_2_03, 2010.

[9] Miguel Camelo, Yezid Donoso, Harold Castro "MAGS – An Approach Using Multi-Objective Evolutionary Algorithms for Grid Task Scheduling" International Journal Of Applied Mathematics And Informatics. Issue 2, Volume 5, 2011.

[10] Amel Hamdi., Lynda Zitoune., V´eronique V`eque "MS-DFGA: Malleable Scheduling with Dynamic Max Flow and Greedy Algorithms in Grid Networks". IEEE Computer Society- Sixth Advanced International Conference on Telecommunications. pp. 978-0-7695-4021-4,2010.

[11] Srdan Vukmirovi, Aleksandar Erdeljan, Lendak Imre, Nemanja Nedi "Neural Network workflow scheduling for large scale Utility Management Systems". IEEE-pp. 978-1-4244-6588-0, 2010.

[12] Jayant Umale, Dr. Sunita Mahajan "Optimized Grid Scheduling Using Two Level Decision Algorithm (TLDA)". Proceedings of the 1st International Conference on Parallel, Distributed and Grid Computing (PDGC-2010). pp. 978-1-4244-7674-9, 2010.

[13] Mr. P. Mathiyalagan., U. R. Dhepthie., Dr. S. N. Sivanandam. "Grid Scheduling Using Enhanced PSO Algorithm". (Ijcse) International Journal on Computer Science and Engineering. Vol. 02, No. 02, 140-145, ISSN : 0975-3397, 2010.

[14] D. Maruthanayagam., Dr. R. Uma Rani. "Enhanced Ant Colony System Based On Rasa Algorithm In Grid Scheduling". (IJCSIT) International Journal of Computer Science and Information Technologies. Vol. 2 (4), 1659-1674, ISSN: 0975-9646, 2011.

[15] Xuelin Shi., Ying Zhao "Stochastic Model and Evolutionary Optimization Algorithm for Grid Scheduling". IEEE- CAS, Seventh International Conference on Fuzzy Systems and Knowledge Discovery. (FSKD 2010), pp. 978-1-4244-5934-6, 2010.