Improvement of Dynamic Partitioning Technique in Mobile Cloud Computing

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***Abstract*- Mobile Cloud Computing (MCC) is a rich mobile computing technology unified elastic resources of different clouds and network technologies toward unrestricted functionality, storage, and mobility. This paper highlights the concept of how dynamic partitioning technique can improve the performance of Mobile in Cloud Computing Environment. In this paper we have studied different kind of technique like multi-site offloading, opportunistic communication, mobile cloud computing in Ad Hoc and Opportunistic Job Sharing and many others that are mainly explains about how we can improve the performance of mobile cloud computing environment with the uses of Dynamic Partitioning techniques.**

Key words- Cloud Computing, Mobile Data Offloading

I. INTRODUCTION

As one with an explosive growth of the mobile applications and rising of cloud computing concept, mobile cloud computing (MCC) has been introduced to be a budding technology for mobile services. MCC integrates the cloud computing into the mobile environment and overcomes obstacles related to the performance (e.g., battery life, storage, and bandwidth), environment (e.g., heterogeneity, scalability, and availability), and security (e.g., reliability and privacy) discussed in mobile computing.

MCC builds up on this three fundamentals, namely cloud computing, mobile computing, and networking. It serves a mobile devices anywhere, anytime through the channel of Ethernet or Internet regardless of heterogeneous environments and platforms based on the" pay-as-you-use principle" [1].

In Mobile Data Offloading in a dynamic network environment many factors are affecting like continuously changing connection status and network bandwidth. If an environment changes then causes many additional problems. For example, the transmitted data may not arrive at the destination, or the data executed on the server might be lost when it has to be returned to the sender.

First section of this report describes the Overview of the different techniques of the Dynamic Partitioning. Second section of this report explains about comparatively analysis of all the techniques. Third section Proposed Algorithm of Granularity Interaction Graph. And in last section we conclude the different dynamic partitioning techniques.

II. TECHNIQUES OF MOBILE DATA OFFLOADING

In this section we explains all the techniques. Like

A. FINE GRAINED MULTISITE OFFLOADING

This paper describes algorithmic approaches for performing fine-grained, multi-site offloading. And mainly focuses on the problem of multisite offloading portions of the program to multiple remote sites. This paper describes novel approaches: It introduce a multi-way partitioning algorithm, based on energy minimization. Accomplishing this type of data-centric offloading faced many key challenges to be addressed like :

1. Algorithms must be developed to partition a program between multiple possible execution sites.
2. In a multi-site offloading scenario, the partitioning algorithm must account for differences in capabilities between remote sites.

The granularity of offloading must be chosen appropriately. That allows a program to be partitioned between multiple sites and considers differences in capabilities of various sites that might affect execution efficiency. Multi site offloading a partitioning of this graph assigns each node to a particular computation site. Edges that span two partitions represent communication that must occur in

the offloaded application. Fine-grained offloading in this work has considered offloading at the granularity of class or functions.

It has been found that granularity of offloading that allows the same code operating on different data to be offloaded to different sites.

B. PARAMETRIC ANALYSIS FOR ADAPTIVE COMPUTATION OFFLOADING

This paper explains about how parametric analysis to deal with issues for the optimization problem of computing offloading. That mainly depends on the computation workload and communication cost.In that mainly focus on program partitioning model in that how to divide the task control flow graph(TCFG). Task branch is a statement (including conditional and unconditional jumps, functions calls and returns) between different tasks.

Others ways that are used Data Validity States, Memory Abstraction and program partitioning constraints.Parametric cost analysis in that different cost factors like computation cost, data communication cost, data registration cost given also in that they derived some cost formula and program flow constraints.

C. MOBILE DATA OFFLOADING THROUGH OPPORTUNISTIC COMMUNICATIONS AND SOCIAL PARTICIPATION

This paper proposes to exploit opportunistic communications to facilitate information dissemination in the emerging Mobile Social Networks (MoSoNets) and thus reduce the amount of mobile data traffic with target set selection problem. They propose three algorithms, called Greedy, Heuristic, and Random, for this problem and evaluate their performance through an extensive trace-driven simulation study. Moreover, to investigate the feasibility of opportunistic communications for mobile phones, they implement a proof-of-concept prototype, called Opp-Off, on Nokia N900 smart phones.

D.DYNAMIC MOBILE CLOUD COMPUTING: AD HOC AND OPPORTUNISTIC JOB SHARING

In this paper, explore the feasibility of a mobile cloud computing framework to use local resources to solve the problems. The framework aims to determine a priori the usefulness of sharing workload at runtime. Basic steps for performing this operation are: Resource Discovery, Calculate costs, Distribute jobs, Run the jobs, Collect the results, Cleanup and Handle micropayments.

E. MOBILE SEARCH AND THE CLOUD: THE BENEFITS OF OFFLOADING

This paper is the synergy between mobile platforms and cloud computing. Mainly its focusing in to the search and synchronization in mobile cloud environment.

In this paper its analyze the energy require between local computation and offloading the task to remote services and present measurement. One more approach is Global Cloud-Assisted Search in that it maintains virtual replica of the mobile device's document at the cloud this helps in cloud based indexing and search. This above concept search and synchronization implemented for the mobile devices in the Dessy Project.

F. CONVERGED NETWORK AND DEVICE MANAGEMENT FOR DATA OFFLOADING

This paper was mainly works on contributes to the convergence of NDM (network Data Mgmt). In that work they mentioned about personal mobile multi-interface devices, which can establish one-to-many relationships with operators and providers. This paper mainly works on contributes to the convergence of NDM(network Data Mgmt), with an early prototype of a resource-oriented cloud-based management service, using YANG data modeling language and JSON notation to model and encode policies.

The first aspect they proposed for a "REST (Representation State Transfer) service interface" is the provision of configuration policies as publicly available URLs, i.e. over the Internet. In that verification was done on YANG policy module and augmentation. YANG language defines the policy mgmt modules. That verified using pyang and a python YANG validator and converter. Second, Policy implementation for Linux devices using JSON.

This work introduced an alternative framework for converged NDM, using cloud resources and the REST API
to implement a highly scalable online NDM service on AWS S3.

G. AN ADAPTIVE MULTI-CONSTRAINT PARTITIONING ALGORITHM FOR OFFLOADING IN PERVASIVE SYSTEMS

This paper proposes an adaptive (k+1) partitioning

algorithm that partitions a given application into 1 unoffloadable partition and k offloadable partitions. This algorithm is dynamic multi-cost graph that models the costs of an application in terms of its component classes (including CPU cost, memory cost and communication cost). It uses Heavy-Edge and Light-Vertex Matching (HELVM) algorithm.

III. PROPOSED ALGORITHM

Granularity Interaction Graph Algorithm

The set of partitions, {p0, p1….pk}
The Set of Allocation Site {s1,s2,….sn}
Input : u is the given vertex
v is the set of vertex
Output : Graph with the Optimum Computation Cost

Step 1: Fetch the all vertex exsiting in to the site.
Step 2: Fetch the Edge weigts and Node weight of the site.
Step 3: Select u as partitioning vertex.
Adj[n] = Get vertices AdjTo(u)
Step 4: Make a group of vertex Array of allocation site of
Partition P1.
Step 5: Repeat step 1 to 5 for to make all allocation site.
Step 6 : Visit all the vertex in to allocation site and find out
appropriate Granularity level.
Step 7: When one method of S1 site invoke the allocation
site S2 then
Make Edge between them.
Step 8: If alias of S exsist then
Make is as source vertex.
Step 9: Perform site based policy allocation.
Step 10: Check all the methods accessed from that allocation site S1.
Step 11: Edge is formed between that two vertex of allocation site.
Step 12: Repeat step 1 to 11.
Step 13: Evaluate the Graph find Optimum total vertex
weight and total edge Weight for each Partition.
Step 14: End

IV. CONCLUSION

After referring all the techniques of Static and Dynamic mobile data offloading. We conclude that Granularity Interaction Graph algorithm extremely helpful in improving the performance of Mobile Cloud Environment. As well using this technique briefly explain about how we can solve performance and battery related issues in Mobile Cloud Environment.

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