Remote Analysis Display Solutions

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Abstract - *Mobile devices have become an essential part of our daily life. As mobile device popularity grows, end-user demands to run heavier applications are equally increasing. Cloud computing means using multiple server computers via a digital network, as though they were one computer. Often, the services available is considered part of cloud computing.Cloud computing broadens the range of applications offered to mobile end-users with demanding applications in terms of graphical hardware, such as 3D virtual environments, or storage capacity, such as 3D medical imaging applications.As the cloud infrastructure is shared among multiple users, these hardware resources can be provided in a cost-effective way.Mobile cloud computing can give mobile device users a number of advantages. Company users are able to share resources and applications without a high level of capital expenditure on hardware and software resources.Mobile cloud computing provides a solution to meet the increasing functionality demands of end-users, as all application logic is executed on distant servers and only user interface functionalities reside on the mobile device. The mobile device acts as a remote display, capturing user input and rendering the display updates received from the distant server.Essentially, the principle of mobile cloud computing physically separates the user interface from the application logic.Varying wireless channel conditions, short battery lifetime and interaction latency introduce major challenges for the remote display of cloud applications on mobile devices*

Keywords - *cloud computing;mobile computing;remote display solutions;mobile cloud computing;optimization techniques;mobile devices;*

I. INTRODUCTION

Mobile devices have become an essential part of our daily life, with smart phone sales now surpassing desktop system sales. As mobile device popularity grows, end-user demands to run heavier applications are also increasing. Although advances in miniaturization continue, the desire to preserve the advantages mobile devices have over desktop systems in weight, size, and device autonomy will always impose intrinsic limits on processing power, storage capacity, battery lifetime, and display size. Researchers must redesign conventional desktop applications to operate on mobile hardware platforms, thereby often reducing functionality, whereas more demanding applications typically require specific hardware resources that are unlikely to be available on mobile devices. Their portability is well appreciated by end-users and smart phones sales will soon surpass desktop sales. Conventional desktop applications need to be redesigned to operate on mobile hardware platforms, thereby often losing functionality; whereas more demanding applications typically require specific hardware resources that are very unlikely to be available on mobile devices. At the same time, the web hosts increasingly powerful computing resources and has evolved to a ubiquitous computer, offering applications ranging from simple word processors

II. LITERATURE SURVEY

In recent years, Cloud Computing [2] emerges as a new computing paradigm to provide computation, software applications, data access, data management and storage resources without requiring cloud users to know the location and other details of the computing infrastructure. Cloud allows customers running applications and accessing data anywhere in the world, anytime on demand. Integrating mobile network with Cloud Computing provides an efficient way to address the current issues in Mobile services, named Mobile Cloud Computing (MCC). As a result, MCC provides optimal services for mobile users. Mobile devices do not need a powerful configuration (e.g. CPU speed and memory capacity) since the data and complicated computing modules are processed in the cloud rather than on individual devices, providing on-demand access, named as remote display solution.By using remote display solution, MCC provides benefitsfor each agent within the mobile devices and applicationScenario of mobile user's resource demand in cloudsector. It expands the market, reduces the price of programs,reduces hardware requirements and provides unique chances for network operators. Due to MCC, the market can expand because of removing the barriers of mobile operating system. Since applications go through a browser, the end user's mobile operating system does not have any impact on the application and totally compatible with any version of applications. Along with a bigger market, cloud computing offers developers a chance to build programs at a lower cost, and keeps a larger share of revenue. Since programmers only need to create one version of the application and still have access to every device user, their building costs will be reduced when compared with the problem if they need to make a new build for each mobile platform individually. Using web browser instead of running application on end user mobile phone itself does not require more hardware. Accordingly, the heavier applications run on other machines in cloud and transmit result to user's browser. In [11], Pieter et. al. present and analysis the list of MCC challenges. However, the quality service of remote display solution depends on the quality of video on user's screen because users only realize the quality based on what they see on the device's screen without caring about the computing on cloud. Hence, assurance of good condition network bandwidth is very important, the higher bandwidth network, the higher quality of services. In this paper, we focus on reducing delayed to improve the network bandwidth for whole system.

A. Components Description

Since the architecture described in [3], we modify and add some modules to compatible with MCC. Fig. 3 shows an architecture (or operating environment) of system, consists of 6 main modules Broker: receives requests from users and commits to the cloud administrator as well as enables billing functions.Resource Demand Monitoring: constructs the resources demand between pair of RSI-SI or pair of SI-SI for each request. The resource demand matrix reports the pair-wise traffic between VMs (RSI-SI or SI-SI) for a given period of user request. For instance, the matrix can report the number of packets (or number if bytes) exchanged between VMs in each minute. Network Monitoring: constructs a network cost matrix of the data center network, manifests the composite cost between pairs of available slots (known as resources container that can host an Image/VM) on the hypervisors. The composite cost can calculated by number of network hop (hop count) and time response between two endpoints. In this paper, we use Tree topology [1] as network architecture and perform a tradeoff number of hopcount and time response by parameter α. We will discuss more detail in later part.User Location Monitoring: receives location information of user and sends trigger signal to Performance Monitoring module whenever users change their locations. This module can use some location-APIs provided by Mobile System.Performance Monitoring: monitors the changes in the SIs demands or users's location as well as changes in cost matrix and request reshuffling of RSIs and SIs. RSI/SI Allocating: run algorithm to re-allocation VMs (RSIs and SIs) whenever receiving the trigger from Performance Monitoring module. With the inputs such as server information (CPU, memory, I/O, etc.), the VM's requirements, the resource demands, and composite cost matrix, this module produces output as a placement of each VMs so that the total cost is minimized.

B. System Architecture

The mobile cloud middleware based on the concept of CPA is divided up into three tiers, with the original intent of deploying the application for each tier onto a cloud based instance – the user tier, the task tier, and the service tier.The main benefit to this approach is that the system is modular, in that changes to one should not affect the other. This approach also promotes loose coupling, which is very important in large software systems. Database storage is used, to keep data persistent. *The user tier* is responsible for user registration, login/logout, and presenting the cloud assistant and related tasks to the user. When a user registers, an entry is made for them in a User table in the database, storing all their details. Upon registration, a cloud assistant instance is created for the user. This is stored in the cloud assistant table in the database. The cloud assistant maintains a reference to its owning user, and lists of current tasks in process, and previous tasks, known as history. The Tasks table contains the tasks and pointers to their parent cloud assistant. Users can create new tasks to be added to the cloud assistant's current task list for execution. A user can log in at any time to check has a task finished execution. The user can also view all previous executed tasks. Any new task the user creates is passed to the task tier. Tasks are passed into *the task tier* from the front end user tier over a queue. A new task is stored in the Tasks table in the database for history. When a task is passed in, the task handler class will look up the registry for the appropriate service. When one is found, it will create a service access client. This client will then be responsible for contacting the required service, passing it the information, and waiting for completion and results to be handed back from the service. When the client has the result, it will pass this result back to the task handler, which will update the task as complete in the database. The result may also have to be stored, or it could be passed back over a queue to the cloud assistant. *The services tier* is just an abstraction of a container containing the cloud services. Services here will need to register themselves with the registry, and receive tasks from task tier. To handle load and for scaling purposes, they may need to create separate threads of execution for each task a service receives. A thread pool could be utilized here if required. Finally, the system uses a *discovery service* that allows clients to discover appropriate cloud services.

C. Network Topology

Basically, we follow tree topology [1] of data center network architecture (known as the three-tier architecture) to calculate the network cost matrix. In [5], the authors only focus on the number of hop count as a main cost between two nodes in the network topology. However, in the practical network, especially in mobile services, network bandwidth or time response is also very important. In this paper, time response is indicated in inverse proportion to network bandwidth.

III. EXISTING SYSTEM

Demanding applications typically require specific hardware resources that are not available on mobildevices.Conventional desktop applications are redesigned to operate on mobile hardware platforms, thereby often losing functionality.The Base system and the Sub system are connected via wireless LAN, thereby the monitoring of devices are done through modem which has considerably varying network frequency/speed leading to inaccurate results.The remote display solution using cloud computing monitors and analyse the workspace that results in preventing faults.To obtain the better accuracy and precision, remote display framework is designed with enhanced monitoring techniques.

IV. PROPOSED SYSTEM

The principle of mobile cloud computing physically separates the user interface from the application logic.Here, a Viewer component is executed on the mobile device, which is operating as a remote display for the applications running on distant servers in the cloud. Remote display framework is composed of three components: a server side component that intercepts encodes and transmits the application graphics to the client, a viewer component on the client and a remote display protocol that transfers display updates and user events between both endpoints.In a mobile cloud computing environment, the remote display protocol deliver complex multimedia graphics over wireless links and render these graphics on a resource constrained mobile device. Efficient compression techniques to reduce the amount of exchanged data are done using compression techniques and versatile graphics encoding, downstream data peak reduction and Optimization of upstream packetzation overhead.

V. CONCLUSION

By physically separating the user interface from the application logic, mobile cloud computing allows access to even the most demanding applications from intrinsically resource-constrained mobile devices. Developers tailor contemporary remote display optimization techniques to mobile devices' short battery lifetime, the varying and limited bandwidth availability on wireless links, and interaction lateny.

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