International Journal of Multidisciplinary Trends

E-ISSN: 2709-9369
P-ISSN: 2709-9350
www.multisubjectjournal.com
IJMT 2023; 5(1): 25-28
Received: 01-10-2022
Accepted: 04-12-2022

Vandna Kumari
Department of Computer Science Engineering, Dr. Shakuntala Misra National Rehabilitation University, Mohaan Road, Lucknow, Uttar Pradesh, India

Corresponding Author:
Vandna Kumari
Department of Computer Science Engineering, Dr. Shakuntala Misra National Rehabilitation University, Mohaan Road, Lucknow, Uttar Pradesh, India

Mobile applications and features through cloud computing

Vandna Kumari

Abstract
Cloud computing enables users to elastically utilize resources in an on-demand fashion. Many mobile applications which are weak due to lack of computation resources, storage, and bandwidth and battery capacity. To overcome this, application is rebuilt using the cloud services. The proposed system explains a framework to execute the mobile application in cloud based virtualized environment with encryption, and isolation to protect against unauthenticated cloud providers. Results show the execution of mobile application by offloading the workload with efficient application level migration method via mobile networks. The migration of application form one device to another is easy and quick in the proposed system. Mobile cloud computing is one of mobile technology trends in the future since it combines the advantages of both mobile computing and cloud computing, thereby providing optimal services for mobile users. So, in future we will try to utilize data mining methods for mobile applications in cloud computing.

Keywords: Cloud computing, application, offloading, application and services

1. Introduction
Cloud computing refers to the use of networked infrastructure software and capacity to provide resources to users in an on-demand environment. With cloud computing, information is stored in centralized servers and cached temporarily on clients that can include desktop computers, notebooks, handhelds and other devices. Cloud computing exists when tasks and data are kept on the Internet rather than on individual devices, providing on-demand access. Applications are run on a remote server and then sent to the user. Mobile cloud computing is the form of cloud computing in combination with mobile devices. Mobile devices are increasingly becoming an essential part of human life as the most effective and convenient communication tools which is not restricted by time and place. However, the mobile devices are facing many challenges in their resources (e.g., battery life, storage, and bandwidth) and communications (e.g., mobility and security). Mobile cloud computing (MCC) as a development and extension of mobile computing (MC) and cloud computing (CC) which has inherited high mobility and scalability. The mobile communities which introduce new requirements compared to traditional online web communities. On the other hand, cloud computing is emerging as computing concept that gives the computational resources on demand and abstraction of technical details from the clients. Cloud computing provides applications and services that run on a distributed network using v common Internet protocols and networking standards. It has been recognized as the next generation computing infrastructure and overcome the limitation of mobile computing. It offers some advantages to the users in terms of computing, storage, services and applications at very affordable price on the internet.
Cloud computing enables users to elastically utilize resources in an on-demand fashion. Many mobile applications which are weak due to lack of computation resources, storage, and bandwidth and battery capacity. To overcome this, application is rebuilt using the cloud services. The proposed system explains a framework to execute the mobile application in cloud based virtualized environment with encryption, and isolation to protect against unauthenticated cloud providers. Results show the execution of mobile application by offloading the workload with efficient application level migration method via mobile networks. The migration of application form one device to another is easy and quick in the proposed system.
The Biometric applications such as fingerprint identification, face, or iris scanning. These applications actually work in a laboratory setting where the client computer has unlimited access to the throughput and computational resources of the network. The problem focused here is on the battery power of the device and the throughput of the communication channel of the client node to the cloud. Mobile devices which are used in Health information delivery

access and communication challenges like power, bandwidth, and security. The proposed system explains how cloud computing can be used in mobile devices to provide sensor signals processing and security. The system described in the proposed system uses an NGN/IMS system with cloud computing to reduce the burden of organizing and also for improving the functions of existing mobile health monitoring systems. The interaction between health service provider, IMS network operator and cloud computing service providers should be regulated so that identity management and security verification is performed. Authentication of mobile users is dependent on Home agent stored in db. After that requests gets delivered to cloud via internet. These services are developed with the concepts of utility computing, virtualization, and service-oriented architecture (e.g. web, application, and database servers). Mobile cloud computing allows mobile applications to use the large resources in the clouds. In order to utilize the resources, migration of the computation among mobile nodes and cloud nodes is necessary. Therefore, a highly portable and transparent migration approach is needed.

1.1 Advantages of Mobile Cloud Computing

- Mobile devices allow users access to cloud services anywhere and anytime.
- Mobile cloud services can give information about a user's location, context, and requested services to improve user experience.
- Eachmobile device has storage, computing, sensing, and power resources which are advantageous.
- Mobile computing can help to overcome some problem of Cloud Computing such as solving the Problem of WAN latencies by using cloudlet.

2. Review of Literature

Qureshi *et al*. (2011) [1] discusses about the mobile cloud computing technology and proposes the implementation methods for Mobile Cloud Computing solutions such as General Purpose Mobile Cloud Computing (GPMCC) and Application Specific Mobile Cloud Computing (ASMCC). Certain barriers such as network availability and bandwidth are focused. Two aspects of security issues such as mobile device security and cloud security are addressed.

Ashwin *et al*. (2010) [2] Focuses on the capabilities of the mobile and cloud landscape. New class of applications called Cloud Mobile Hybrid [CMH] applications and a Domain Specific Language [DSL] are defined. The proposed system define Cloud-mobile hybrid as a collection of application that has a Cloud based back-end and a mobile device front-end. Using a single DSL script, proposed system is capable of generating a variety of CMH applications. These applications are composed of multiple combinations of native Cloud and mobile applications. The proposed system also reduces the complexities of the platform.

Harshit *et al*. (2012) [3] presents a middleware for distributing computation over mobile ad-hoc networks. Mobile adhoc is used as an alternative for cloud in its absence. Synergy is mainly used for energy conservation when the cloud is not available, the battery life of mobile devices becomes dead hence mobile ad-hoc is used as an alternative. The proposed system has two applications such as prototype implementation of Synergy and integrates Open CV with it. Al though this is not stronger than clouds, this must co-exist to improve the mobile computing accessibility.

Vinod *et al*. (2012) [4] discuss about the cloud computing which enables the work anywhere anytime by allowing application execution and data storage on remote servers. This is useful for mobile computing and communication devices that are constrained in terms of computation power and storage. The goal of the paper is to characterize under what scenarios cloud-based applications would be relatively more energy-efficient for users of mobile devices.

Keerthi *et al*. (2011) [5] discusses the services provided on the mobile devices which are increasing day by day. One of the important services among them is the Location Based Service (LBS). LBS depend on the geographical position of the user to provide services to the end users. A mobile device lacks in providing resources. Mobile device should get resources from an external source, such as cloud computing platforms. The main goal of the proposed system is to provide dynamic location-based service.

Srinivasa *et al*. (2011) [6] makes a comparison on various existing web based operating systems. An overview about proposed system is given along with the architecture. Proposed platform is created by Megha OS cloud architecture and web browser which serves as both application server and end user. Megha OS offers services such as Account manager, File manager, Message exchange etc. Many optimization approaches are described.

3. Objective

The Main Objective of this Research is to enhance the capabilities of mobile applications and its features through mobile cloud computing.

- To fined out to increase mobile computing power and reduce its limitation we need a technology to overcome this.
- To Examine the provide mobile users a big platform to enhance its features without spending too much amount for it.

4. Methodology

The method used in this paper is descriptive-evaluative method. The study is mainly review based. It is purely supported by secondary source of data, i.e. books, journals, papers and articles and internet.

5. Result and Discussions

Computing services provide computational resources for customers. These services include CPU, random access memory (RAM), and I/O resources. Computing resource pricing options may vary between different providers, but generally pricing options are determined by the amount of computing resources and by overall payment models. Computing resources are offered as virtual machine instances, whose instance types and assigned prices depend on the combination of CPU, RAM, and I/O capacity. Providers offer a few types of instances, which cover most customer needs and make it easy for customer to choose (i.e., small, medium, large, etc…). The most popular pricing models are on-demand, prepaid (reserved), and auctioned.

5.1 On-Demand

These types of instances allow customers to pay hourly service fees without long-term commitments. This pay-as-you-go pricing model is ideal for situations when a company

cannot estimate computing resources demand up-front.

5.2 Prepaid: With prepaid services, customers pay a fixed amount up-front for a specific commitment period. Normally, you pay lower costs for longer commitment periods because this helps cloud providers to estimate their infrastructure expenses.

5.3 Auctioned

The auctioned pricing model enables customers to bid for the computing capacity offered by a cloud provider, with bid price regulated by supply and demand. If your bid meets or exceeds the current bid price, you can access the resources. If your bid is overridden, you give resources back. The costs for auctioned computing resources are significantly lower compared to prepaid and on-demand services; however these resources cannot be used for critical production environments because they can be taken away if a customer loses a bid. There are two major network services offered by public cloud providers: load balancing and DNS (domain name systems). Detailed technical descriptions are given below:

5.4 Load balancing

Load balancing provides a single point of access to multiple servers that run behind it. A load balancer is a network device that distributes network traffic among servers using specific load-balancing algorithms. Many different load-balancing algorithms exist, although the most popular include the following:

- **Round-robin:** even connection distribution across all servers
- **Weighted round-robin:** connection distribution proportionate to the weight assigned for each server
- **Dynamic round-robin:** similar to weighted round-robin, but server weight is dynamically determined based on continuous server monitoring
- **Least connections:** connection is sent to the server with the lowest number of current connections
- **Fastest:** distributes new connections to a server based on the fastest server-response time.

There are several benefits from load balancing: failover – in case of specific server failure, the load balancer will automatically forward network traffic to other servers; performance – because traffic load is distributed between multiple servers, network response time is typically faster; scalability – customers can quickly add servers under the load balancer to increase computational capacity without affecting other network/system components.

5.5 PaaS Service

Platform as a Service (PaaS) is another service model of cloud computing. In the PaaS models, cloud providers deliver a computing platform, typically including operating system, virtualization stack. The consumer does not manage or control the underlying cloud infrastructure, including network, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment configurations. The PaaS model brings significant value to companies because it reduces complexity of infrastructure and application maintenance and allows concentrating on core software development competencies. Application developers can develop and run their software solutions on a cloud platform without the cost and Programming language execution environment, database and web server. PaaS can be viewed as another abstraction layer above the hardware, operating system and complexity of buying and managing the underlying hardware and software layers. Most PaaS development services are oriented towards an agile development process; this is not to say that these PaaS services are not applicable to the waterfall method, but companies won't likely realize the same level benefits as with agile methodology. In the PaaS taxonomy, the list of the leading companies in the PaaS space which is shown in below figure. Five major branches of cloud platform services have been identified, and are selectively reviewed: integration, development and QA, data analytics, database, and ―general‖ (providers that offer multiple PaaS services) [11]. Examples of PaaSservice models are Google App Engine9, which supports the Java and Python the Google App Engine (GAE) service supports Java and Python and it virtualizes applications across multiple servers and data centers. GAE only supports Google specific data storage and database engines. GAE continuously monitors application performance and auto-scales the environment by adding new nodes to the application cluster. All application related configurations is done using configuration descriptor files, which are packages within the application and can be written in XML or YAML formats. A GAE application descriptor can configure a variety of features and tasks, such as security, job scheduling, task queuing, URL handling, database indexing, and backend server instances. Like previously stated, programs can be written in Java, or other JVM languages such as Groovy, J Ruby, Scala, Clojure, Jython, a special version of Quercus, and in Python with Python web frameworks that run on the Google App Engine such as Django, Cherry Py, Pylons, web2py and Google's own web app framework.

The complexity of IaaS in comparison to PaaS is a factor also. Users of IaaS services need to know how to work with and configure the underlying operating systems and middleware, and be sure their software is scalable enough. With PaaS this is not a factor and therefore PaaS can be simplertouse in the long run. In addition to routine infrastructure operations, PaaS also auto-scales infrastructure based on certain application performance conditions. It takes substantial effort and expertise to design such automated scalability internally, while a PaaS platform provides it as part of the service offering.

5.6 PaaS Service Characteristics

Characteristics and components of PaaS include:

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service
- Scalability and auto-provisioning of the underlying infrastructure
- Security and redundancy
- Build and deployment tools for rapid application management and deployment
- Integration with other infrastructure components such as web services, databases, and LDAP
- Logging, reporting, and code instrumentation

5.7 SaaS Service

In the business model using software as a service (SaaS), users are provided access to application software and databases. Cloud providers manage the infrastructure and platforms that run the applications. SaaS is sometimes referred to as "on-demand software" and is usually priced on a pay-per-use basis. SaaS providers generally price applications using a subscription fee. The applications are accessible from various client devices through a thin client interface such as a Web browser (e.g., Web-•based e-•mail). The consumer does not manage or control the underlying cloud infrastructure, including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

In the SaaS model, is a cloud services delivery model that offers an on-demand online software subscription in which cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. Cloud users do not manage the cloud infrastructure and platform where the application runs. This eliminates the need to install and run the application on the cloud user's own computers, which simplifies maintenance and support. Cloud applications are different from other applications in their scalability—which can be achieved by cloning tasks onto multiple virtual machines at run-time to meet changing work demand. Load balancers distribute the work over the set of virtual machines. This process is transparent to the cloud user, who sees only a single access point. To accommodate a large number of cloud users, cloud applications can be multitenant, that is, any machine serves more than one cloud user organization. The pricing model for SaaS applications is typically a monthly or yearly flat fee per user, so price is scalable and adjustable if users are added or removed at any point. Therefore, in SaaS taxonomy, we list only selected groups of vendors in a few categories.

6. Conclusion

In the evaluation certain tasks like Data mining, Job scheduling are performed on both mobile and cloud computing. Then the CPU computation time and Memory occupied (RAM) are calculated on various severs and mobile devices on various internet speed. We expect that there is a drastic difference in computation time and space when the tasks compute on mobile and cloud servers. Mobile cloud computing is one of mobile technology trends in the future since it combines the advantages of both mobile computing and cloud computing, thereby providing optimal services for mobile users. So, in future we will try to utilize data mining methods for mobile applications in cloud computing. The main outcome can show the results if bandwidth is not our concern the high end application of mobile can easily be computed on cloud computing and we can observe a change in the performance of mobile applications and its features.

7. References

1. Shahryar Shafique Qureshi, Toufeeq Ahmad, Khalid Rafique, Shuja-ul-islam. Mobile cloud Computing as future for Mobile Applications: implementation methods and challenging issues, IEEE International Conference on Cloud Computing and Intelligence Systems (CCIS), Beijing; c2011. p. 467-471.
2. Ashwin Manjunatha, Ajith Ranabahu, Amit Sheth, Krishnaprasad Thirunarayan. Power of Clouds In Your Pocket: An Efficient Approach for Cloud Mobile Hybrid Application Development, IEEE Second International Conference on Cloud Computing Technology and Science[CloudCom], Indianapolis; c2010. p. 496-503.
3. Harshit Kharbanda. Manoj Krishnan, Roy H. Campbell. Synergy: A Middleware for Energy Conservation in Mobile devices, IEEE International Conference on Cluster Computing (CLUSTER), Beijing; c2012. p. 54-66.
4. Vinod Namboodiri, Toolika Ghose. To Cloud or Not to Cloud: A Mobile Device Perspective on Energy Consumption of Applications, IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks [WoWMoM], San Francisco, 2012, 1-9.
5. Keerthi S. Shetty, Sanjay Singh, Cloud Based Application Development for Accessing Restaurant Information on Mobile Device using LBS, International Journal of UbiComp. 2011;2(2):37-49.
6. Srinivasa KG, Harish Raddi CS, Mohan Krishna SH, Nidhi Venkatesh, Megha OS. Cloud based Operating System and a Framework for Mobile Application Development, World Congress on Information and Communication Technologies [WICT], Mumbai; c2011. p. 858-863.