Virtual Mobile System

[1]Sameer Chauhan, [2]Sankalp Narayan
[1,2]CSE-VIII Semester
[1,2]Gyan Ganga Institute of Technology and Sciences, Jabalpur.

Abstract: **In general paradigm today, it can be safe to say that the current mobile systems are huge consumers of an overwhelming amount of resources, both physical and virtual. The functioning happens such that, known to many, Mobile devices use RAM (random access memory) in Gigabytes, which consumes internet in large amounts. While downloading large files in multiple copies, a high possibility of threats to the already stored data can be created as a repercussion of the same may lead to wastage of storage space and wasting CPU timings through large processing power with low consumption. However the entire idea of a Virtual based system has evolved from this very fact that as more number of applications and mobile apps are evolving with the days, there is an increasing usage of electronic gadgets. To lessen the utilization of unnecessary contraptions and gadgets, we have attempted to build up a thought which will permit the client to customize the equipment and programming prerequisites as indicated by ones' own particular needs or utility. This paper explains the way how the virtual mobile system will mitigate the problem of undue amount of resource wastage and would save the production of increasing number of gadgets these days. It will also help to build future ready devices. This is a Cloud based planning which centralises, manages, operates and allocates all the resources on demand. In a nutshell, it can be understood that this paper helps to develop a smarter user friendly way of building a device which can replace numerous present day devices into a single universal component unit. It is aimed to create this device supporting all current day applications as well as those in the upcoming times. It will ensure saving excessive amount of electronics used in building RAM, GPU, CPU and help save tremendous amount of internet usage as no multiple copies are generated by using manageable storage. Additionally, cost reduction has been one of the major drivers into building such a virtual based system; as it ensures availability of all the resources to every individual at the minimal average costs which would otherwise have been relatively very expensive to use.**

Keywords- **Random Access Memory (RAM), Graphics Processing Unit (GPU), Operating System (O.S.), Virtual Mobile System (V.M.S.), Application Programming Interface (A.P.I.), Representation State Transfer (REST).**

INTRODUCTION

It is even hardly realistic to think of a life without the usage of mobile devices (namely, Smartphones, Tablets, Laptops, PCs and other electronic and gaming gadgets) in today's hum drum life of individuals. They have become the order of the day and are gaining much more importance with the usage of Internet on them.

The growth of the number of mobile applications available for these devices, in the last few years, has also shown tremendous increase in number and are still counting.

Basically, this is a system of virtualization of resources – networks, servers, applications, data storage and services – of which the end user has on-demand access to.
It permits every one of the clients to utilize every one of the applications offered by the cloud without the exertion of installation on their gadget.

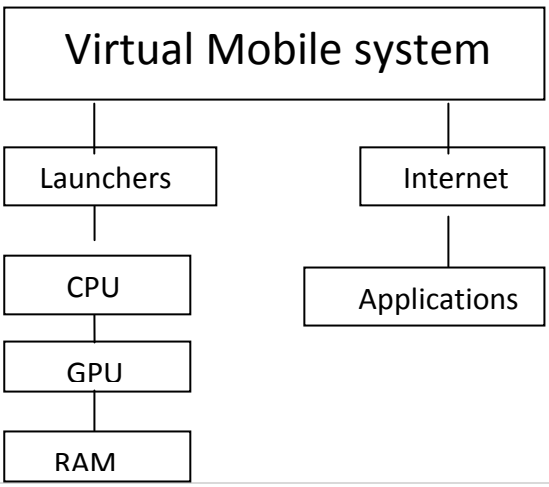
It is a model for enabling ubiquitous, convenient, on-interest service application through system access to a mutual pool of configurable registering resources that can be quickly provisioned and discharged.

The dynamics of a Virtual Mobile System is better illustrated as,

A. Virtual Infrastructure for mobile phones

Virtual and dynamic infrastructure provides easy to manage resources all at the same place, Mobile OS runs at the cloud and also gives interactive screen in real-time through the high bandwidth cloud connection. We can utilise on demand resources according to the need of computing such as GPU's for gaming, high bandwidth internet for browsing and downloading, centralised auto manageable storage will figure out files before downloading and saves downloading cost and inode based data structure can store a single copy of files throughout the storage unit, this results in less usage of storage as well. Each and everything one requires will be available in abundance, but he/she can use the same according to the requirement for the purpose.

Best example for GPU based applications such as mobile games are OpenGL and Direct X. In this execution part GPU's are allocated at best performance according to requirement for the applications. Similarly, RAM's are also allocated according to the need of the user's configuration and computing needs.



© 2015 IJAIR. All Rights Reserved

B. Mobile Platforms and Launchers

VMS supports all major mobile OS platforms such as Apple's iOS, Google's Android, and Microsoft's Windows for phone. All the devices will get the respective launchers and platform dependant applications for each and every device. There will be no performance issue as comparison to the current systems. A separate API is used for display, Audio and user controls to give uninterrupted better performance. Every device will have a separate launcher, which will have a separate list of application set (domain includes all from scientific to entertainment or gaming) for that particular device. Only device specific sensors like camera, microphone, speaker, and GPS are installed in the mobile device to get device specific data inputs. Also, a very less amount of RAM and processor is required for processing of that small amount of data input to generate output.

All the applications are installed onto the cloud at device's separate account. Each account can be device specific or individual specific. REST full API is used for controls and state transfer to make it real-time.

C. Hardware Requirements

This requires

a). a basic mobile phone device, with a

1. Minimum amount of RAM (ex.256 MB to a maximum of 512 MB).
2. Touch screen
3. Camera
4. Very small gigahertz processor.

b). SIM card (single or double).

D. RAM and Storage

VMS has distributed RAM for each and every device. According to the configuration and requirement of the program it will dynamically manage memory for each and every device respectively. RAM can be made available ranging from Megabytes to Terabytes.

Similarly, in terms of storage each device gets its permanent storage at the cloud (which will be far more than what could have been available with the independent device) and also can be expanded with required subscription. Storage may include some Megabyte, Gigabyte, Terabyte, Petabyte or Exabyte.

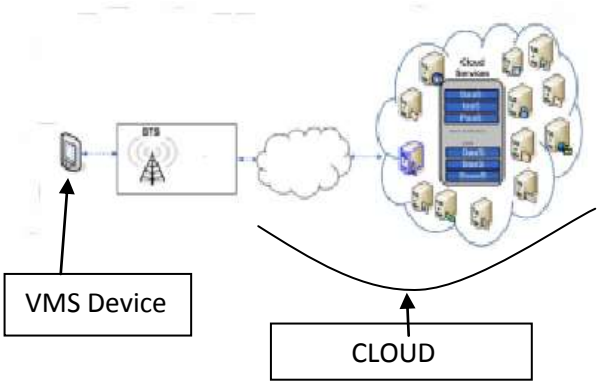
E. CPU and GPU

VMS has CPUs with its respective computing requirements for every device: this in-turn ensures dynamic or real-time increment in the computing power to a very large extent.

In case for games, GPU's are automatically allocated for better graphics performance than normal mobile devices. People can play high end graphics on their phones for less cost which they have paid, rather than buying faster GPU modules. In case of high computations, fast parallel processing CPU's can be made to use and avoiding the use of GPU's at that time.

Here complete customization can also be done like including only processor and memory for high end computation and not using any graphics processing which could unknowingly hamper the processing speed and also the ultimate result.

BASIC BLOCK DIAGRAM



F. Internet

VMS is connected through high bandwidth internet connection which offers its users ultimate browsing speed. It requires complete and consistent connection availability of internet for efficient use of VMS. This can be done by maintaining a proper

1). Network Connectivity
2). Quality of communication
3). Network Monitoring.
4). VMS Cloud convergence.
5). Availability of data in personal cloud.

VMS can also offer a Special Usability feature for the next generation of mobile applications. Just as web server shares their server data to the other users or clients, similarly, each device can also host his own resources through VMS server, which creates new era of application development as Web Applications.

For example, the device which is acting as a client for one application can behave as a server for another application.

G. Deployment of Applications in a Launcher

VMS applications are interfaced to the end devices through the real-time REST API's with a small size of rendering engine. The engines only have to control input/output of these devices as lightly as possible.

VMS works on absolute three tier architecture.

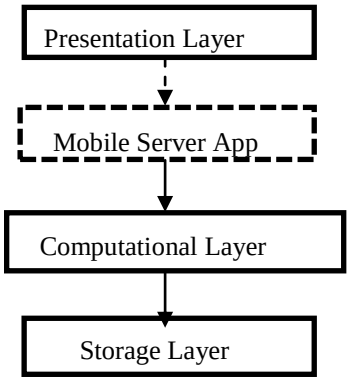
They are:

1. Presentation Layer (Mobile Client Side)
2. Computational and Business layer (Server End).
3. Storage and database Layer.

The usual application runs through this three tier architecture which executes seamlessly through the mobile devices.

Although, VMS also offers a new four layer architecture of applications called as Mobile Server Applications (MSA)

© 2015 IJAIR. All Rights Reserved



In the figure above Mobile Server Application as if it is the fourth layer of communication, which is seemingly true because the whole storage and CPU of the system is at the VMS server hence each clients hosted MSA is behaving as a visual API between two end devices; but it will work much faster than the web server as all the resources and computations are stored at a same place.

H. Technological Challenges

However, some usual challenges to this system cannot go unnoticed, which can be summarized into following types:

1. Maintaining a consistent supply of internet connection is of prime importance

This happens to be one of the challenging obstacles in the developing countries to maintain a constant and estimable amount of internet speed for its users for making use of this fallow device.

2. Latency and bandwidth possess severe problems to VMS.

Latency is the time interval between the request made and the time taken by the intermediate network to bring the desired response. Loose and inappropriate data rate can also be termed under the category of these challenges.

3. Scalability

Markedly, this is one of the biggest benefit as well as a potential challenge at the same time for VMS. Any number of applications can be managed in the cloud, any amount of virtual CPU, RAM, etc. can be made to use in this gadget giving it an edge over the present day devices. On this note, it will not be wrong to say that VMS can be expanded to any level for its complete usage.

I. CONCLUSION

Evidently it can be foreseen that the consumption of the internet is surely seeing a tremendous rise in the times to come, if not in gigabytes in terabytes for certainty. However, to ensure efficient and effective utilisation of the technology and tech-friendly devices in a way that benefits all individuals, VMS can be forecasted to be one of fruitful systems to be used.

This paper has provided an overview of the dynamic and virtual infrastructure of mobile phones and enlisted the various launchers and platforms it supports. Moreover, the hardware and software requirements for the same have also been discussed.

There is an illustrative outline of also how the entire VMS three tier architecture framework governs its functioning.

There is plethora of challenges enlisted that every new idea falls a quarry to. Notwithstanding, the model is tried to be designed with minimal shortcomings and those that can be overcome with time shortly. Notably, the future usability of the model is anticipated manifold times as not only this is cost effective but environment friendly as well as less and less production and consumption of electronic gadgets is guaranteed. This also leads to data redundancies, thus proving to be beneficial in the long run.

References

[1] Pragati Chavan. (2013). Mobile Cloud Computing for Cloud based application and services-Security Considerations. International Journal of Engineering Research & Technology (IJERT).2(10),3.

[2] Point by point learning accessible at Cloudacademy for cloud based platform-as-a-service and also infrastructure-as-a-service.

[3] Stefano Bellasio. (2015). Cloud Computing. Available: https://cloudacademy.com/what-is-cloud-computing/. Last accessed 25th Sept 2015.

[4] Stefano Bellasio. (2015). Cloud Computing. Available: https://cloudacademy.com/prerequisites-cloud-computing/.. Last accessed 30th Sept 2015.

[5] CCNA cloud gadgets, instruments and conventions. http://www.cisco.com/web/learning/certifications/associate/ccna/index.html

[6] Pramod Kumar Rai. (2014). Architectural issues in Cloud Computing.Integrated Journal of Engineering Research & Technology (IJERT). 1 (5), 9.

[7] Er. Anurag Jain. (April-2014). Security Issues and Challenges in Cloud Computing. International Journal of Engineering Research & Technology (IJERT). 3 (4), 6.

[8] Prof. Swarnalata Bollavarapu. (November-2013). Review on Data Storage Security in Cloud Computing. International Journal of Engineering Research & Technology (IJERT). 2 (11), 8.

© 2015 IJAIR. All Rights Reserved