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Contemporary Energy Optimization for Mobile and Cloud Environment

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ABSTRACT
Cloud and mobile computing applications are increasing heavily in terms of usage. These two areas extending usability of systems. This review paper gives information about cloud and mobile applications in terms of resources they consume and the need of choosing variety of features for users from several locations and the evolutionary provisions for service provider and end users. Both the fields are combined to provide good functionality, efficiency and effectiveness with mobile phones. The enhancement by considering power consumption by means of resource constrained nature of devices, communication media and cost effectiveness. This paper discuss about the concepts related to power consumption, underlying protocols and the other performance issues.

Keywords: Power Consumption, Usability, Resource Utilization

I INTRODUCTION

Smart phones and tablets are very popular and raising amount of people today not only for entertainment and communication purpose but also do lot of activities. Hardware and wireless communication technologies are increasing every day. Cloud is delivering as a service platform forming usability computing. Whereas resources for computing are on demand, pay as you use to resource provider from end user increased. Cloud becoming data centers coming from various places providing ultimate resources, storage and processing capabilities.

The basic problem with the mobile phones and mobile computing are processing capabilities and memory coming from a small power (Battery) source. This gives lot of limitations on the devices. Today mobile applications are combined with cloud paradigms. As the functionality of the user with mobile applications increases the power consumptions is also increased. Many people are doing research in this area to increase the utilization factor and to reduce power consumptions. In order to defeat the source constraints of mobile devices several solutions projected.

One of the most significant is represent by off load computation. With this loom the mobile device runs only part of an application that is the components which are less resource concentrated. The rest of the application is deployed in the cloud and is accessed through a wireless system. But the challenging task is off load the application. The alternate is to remote access the devices uses small software and connect to a server remotely and the server has all the processing capabilities means the server is virtualized with the device. The device will provide only input and output operations correspond to the application.

This paper distinguish the power utilization of mobile and the cloud computing realize from end to end remote technology. Exclusively to study the routine of extensively used remote protocols like VNC (Virtual Network Connection), RDP (Remote Desktop Protocol). This paper carries out several experiments connecting sensible practice scenarios in different wireless communication technologies, Wi Fi and Long Term Evolution. In addition this paper distinguishes the power consumption and bandwidth utilization of the different solutions measured and relates them to the protocol features. In conclusion it offer a few considerations on aspect linked to user experience.

II REMOTE PROTOCOLS

The routine of diverse remote protocols be evaluated particularly on real tests under unreliable workload equivalent to browsing and multimedia oriented behavior. This evaluation broken as low movement counter mark, means that customized request counter mark in which the activities touching display updates are divided by adding up mock delay. Deliberate movement counter mark allow to exactly compute the crash between a user generated incident at the client and it's contradict part at the server. Still such a loom alter the actual communications maybe ensuing in surprising elevation effect. Additionally it is based on mock application counter mark slightly than on the real input from genuine users. VNC protocol uses interactive programs for

images and for the creation of the documents. Others are used to simulate the large network ranges defined based on delay and the bandwidth. Based on the satisfaction of the user for the response time characteristics. SVNC (Smart VNC) is implemented above VNC for getting more benefits in remote protocols.

III MOBILE CLOUD

Calculation in the direction of accessing resources of cloud mobile devices may also be engaged as the resource providing systems which create the structural design. This is proficient in order to give the mass of the cloud skin tone such as disseminated and scalable processing and storage inside a restricted location. This has the main benefit of without usage of wide area network links which are expensive and not mainly reliable. Even with the unnatural environment of the devices it is argued that the boost in processing power of these devices day to day as well as the reserves power by using local less power consuming protocols would collect some payback above offloading to a traditional cloud. However, a number of issues are still common with this type of cloud with natural networking uniqueness and challenges related to work allotment.

IV POWER CONSUMPTION

Limited amount of power is available in mobile devices, resources like applications which are running continuously consumes power. The models which optimize the power consumption of the application will be adapted in the device. The cloud depends upon the standard power source in the resource centers with networking. There is a need to various strategies to improve the battery performance and life by offload the work with cloud, but we can save the power consumption for only few tasks like data transfer through WIFI and offload the computing part with device and assigning computation related elements to cloud based on dividing the application code like some code is executed by the device and remaining will be done at the cloud. Researchers are telling that power consumption can be reduced maximum 30 to 70 percent if we do processing on multimedia applications in cloud instead of doing on the device. In this context power consumption is more if it streams or buffers the multimedia application through cellular network. By improving the Quality of Service (QoS) for real time models thereby reducing failure and retransmissions rates. Analysis on cloud and mobile based power consumptions depends on the data transfer rates of the system. Several times it is important to look for power consumption by the cloud hardware related devices because they are energy hungry. In order to overcome this it is necessary to combine the externally hosted distribution systems. The primary goal of the mobile cloud environment is to reduce the power consumptions and to improve the computation capabilities.

V EXISTING MECHANISMS

Much analysis and research work going on the power consumption of the device, Data centers and in Distributed computing. Different models are also proposed on power consumption and reducing the economic costs in combining cloud and mobile offloading. Some parts of the mobile device will typically cause more power consumption like display, RF receivers etc.. Research is going on the end user profiling also many suggested variety of models to optimize this power consumption problem in the device. Few mechanisms are useful they are Data classification, Profiler, Augmenter verdict, conciliation modules under system components. They are providing lot of benefits with the device as well as the cloud system. By analyzing the system components mentioned we can clarify that the utilization of the power by the device components. Cloud providers also realized that offloading advantages based on the components of system and with the existing models. This paper will give an insight about the issues and the mechanisms to reduce the power consumptions in the device by using log management, accurate profile on massive amount of devices.

VI LOG MANAGEMENT

Logs are used to monitor, test and diagnosis the system and it is a source of information monitoring. The log records helps to maintain information for the sessions and the system state. NIST define log Management as "record of entry occurring in system and network". Log entries consist of time stamps, source of events, common users of log in etc. The quantity of logging data increases, an able storage and processing comes as a question. More over cloud logging, which has been gaining notice from the past years, its own place of issues that, are to be adequately answered. These are connected, among other entities, to the delegation and instability of logs, their acquisition over multiple layers, retention policies, availability and accessibility, an appropriate level of details.

6.1 Log File Format

The given table 6.1.1 describes the log file fields [LOU95] based on the log file we can identify the number of connections with the server and access time between the remote application along with the data which is accessed by the client. By finding the total load it is possible to estimate the power consumption of the device as well as the server to optimize.

Term	Description
Date	Date and time of request.
Auth. User	Server authenticated client name.
Remote host	Remote host name or IP address.
Method	Method of request (Get, Post)
Offset	local time offset
Protocol	HTTP, VNC used by the client.
URI	Full page address or request as it came from the client.
Bytes	Bytes transferred.
Status	Http server status sent to the client.
Agent	Client mobile browser software.
Referrer	URI that request originated from.

6.1.1 Mobile application Log Field Description

Each filed given in the table provides some useful information consider the filed Status which provides the active connection among the severs, Bytes filed gives number of bytes transferred to each Mobile device, if we take Agent filed it identifies the type of operating system as well as the browser which is connected with the cloud server.

6.2 Mobile User Identification

Based on the logs we can identify the interacting devices with the cloud and it is not sufficient to determine to find the load on the cloud to provide better access and to reduce the power consumption one we of finding the type of users and how frequently they are accessing the data from the cloud is mobile user identification here we can find the type of connection with the cloud system.

6.2.1 User Identification Based on IP

Time	IP	URL	Ref	Agent
0:01	1.2.3.4	A	-	IE5;Win2k
0:09	1.2.3.4	B	A	IE5;Win2k
0:10	2.3.4.5	C	-	IE6;WinXP;SP1
0:12	2.3.4.5	B	C	IE6;WinXP;SP1
0:15	2.3.4.5	E	C	IE6;WinXP;SP1
0:19	1.2.3.4	C	A	IE5;Win2k
0:22	2.3.4.5	D	B	IE6;WinXP;SP1
0:22	1.2.3.4	A	-	IE6;WinXP;SP2
0:25	1.2.3.4	E	C	IE5;Win2k
0:25	1.2.3.4	C	A	IE6;WinXP;SP2
0:33	1.2.3.4	B	C	IE6;WinXP;SP2
0:58	1.2.3.4	D	B	IE6;WinXP;SP2
1:10	1.2.3.4	E	D	IE6;WinXP;SP2
1:15	1.2.3.4	A	-	IE5;Win2k
1:16	1.2.3.4	C	A	IE5;Win2k
1:17	1.2.3.4	F	C	IE6;WinXP;SP2
1:26	1.2.3.4	F	C	IE5;Win2k
1:30	1.2.3.4	B	A	IE5;Win2k
1:36	1.2.3.4	D	B	IE5;Win2k

6.2.2 User Identification Based on Classification

User 1

0:01	1.2.3.4	A	-
0:09	1.2.3.4	B	A
0:19	1.2.3.4	C	A
0:25	1.2.3.4	E	C
1:15	1.2.3.4	A	-
1:26	1.2.3.4	F	C
1:30	1.2.3.4	B	A
1:36	1.2.3.4	D	B

User 2

0:10	2.3.4.5	C	-
0:12	2.3.4.5	B	C
0:15	2.3.4.5	E	C
0:22	2.3.4.5	D	B

User 3

0:22	1.2.3.4	A	-
0:25	1.2.3.4	C	A
0:33	1.2.3.4	B	C
0:58	1.2.3.4	D	B
1:10	1.2.3.4	E	D
1:17	1.2.3.4	F	C

The above table 6.2.1 and 6.2.2(Source Internet) gives an idea how we can collect the data about the users based on the class of IP they generally use this helps us to find several types of connections established from the cloud with the mobile device.

VII CONCLUSION

The topics discussed in this paper are reviewed from various sources and generalized. We are happy to acknowledge the authors. Here is a scope to optimize the power consumption and other network related issues with the cloud and the mobile devices. We express our sincere acknowledgements for one and all for giving support.

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