

# Data Usage Management Technique for Smart Phones: A Demand of the Next Generation

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**Abstract**— This paper reviews about a technique of minimizing of our data usage by restricting those applications to use internet which we does not want to consume our data package for their updates. Here, the main topic of concern is to create a module within the android operating system outside a sand box. The issue is that the data is consumed by many applications for their updates which ultimately consumes large amount of kbps and hence force us to operate on much lower surfing speed and consume our internet. It features about the enable/ disable module created inside of Operating system.

**Keywords**— email, web surfing, skype, facebook, online gaming

## I. INTRODUCTION

Smart Phones had become essential part of our life. We can't imagine a single day of our life without them. These modern cell phones helps us to connect to our mates through using internet connections. But one thing about which our younger generation is much more concerned is the internet pack. They consider even some kbs of their internet and want to spend their single kb on what they are searching for. Also they are looking for fast internet surfing. But the situation is that when anyone open the mobile data, the total internet received get distributed into all the application that we have installed and required internet usage. Normal data usage of different data plan activated is provided below in the figure.

	2GB per month	5-10GB per month	20GB per month
Email	✓	✓	✓
Web Surfing	!	✓	✓
Facebook	!	✓	✓
Online Gaming	!	!	✓
Skype	!	!	✓
YouTube	!	!	!
IPTV	✗	✗	✗
Downloading Movies	✗	✗	✗

Fig. 1: Normal Application usage of people with different Data Card plan activated

If anybody have ever noticed on the importance of this major issue of not getting the appropriate speed on the data, one is surfing because of some application which the user doesn't want them to consume your internet data card,

are actually making you to surf on the internet on the much slower speed and this situation becomes even worst, when somebody is using 2G data plan. So it is urgent need of the hour to start caring about the internet data card.

## II. PRESENT TECHNOLOGIES PREVAILING

As the Data gets enabled by the user, the internet is distributed among all applications which makes some of the applications to get less of internet to full fill its demand which in turn makes the slower retrieval of information from internet. For example, suppose a user have three running applications in his phones which require internet as WhatsApp, Facebook and Google Crome. When he enables data card, the internet packets is supplied to all the applications as per their demand. Further, as we try to access internet through Google Crome, the data received is very low because some part of data is consumed by the running applications like WhatsApp and Facebook for their updates. For this reason, we are unable to get appropriate speed on the Google Crome because of data usage and surfing time rises up.

For the Effect of this, Many mobile companies like SONY, SAMSUNG having operating system as android (all version) have the facility of stopping any application and by that mean one can completely stop the application and its services (including internet). This is a way by which a person can save its data card by stopping its application. But it is clearly indicated in the phones that by stopping that application will lead to stopping the services of that application but may lead to breakdown and whole application might crash as shown in fig 1.



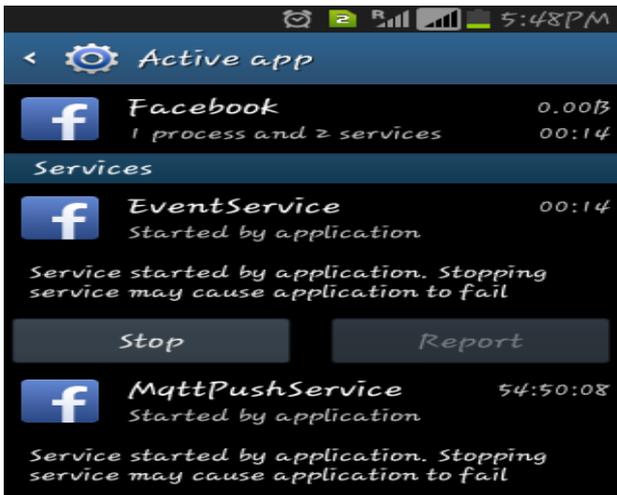


Fig. 2: App Fail message shown in mobile phones in Android version Ice Cream Sandwich and Jelly Bean

### III. METHODS TO TACKLE THE PROBLEM

The Application that we are running are placed in the 'Sand Box'. The Sand Box is described as an Isolated System of codes placed just above the operating system where all the running applications are placed which is totally isolated to other application which are present outside of a Sand Box. The application inside of Sandbox will neither access to the resources of outside application nor it will gives its resources to outside applications. Now, we have separated the required running Application from the applications. Firstly, we thought of developing an application to handle this problem but as we researched deeply into this field of android we have found that all the applications run independently in the sand box which do not grant access to outside application to make changes in the application which is running inside of a sand box or vice versa. Now, we have approached on the conclusion that we cannot develop an application which will change the properties of applications outside of a sand box by making any application running inside of a sand box. So, There is no option left out to solve this problem without making changes in the operating system of the device.

#### A. Enable/ Disable Module

Now, the requirement is, we have to study about the operating system of android and have to create a module which basically control the mobile data or internet on each applications that we have installed. It will allow the app to use the internet if we grant the access of the mobile data to flow through that particular application.

Basic working of this module is based on the connectivity manager and data button. Here, first we are required to initialize the connectivity manager which activates the mobile data connection. Further, Data button present on the module will again check the flow of internet on each application. If data button in false, then the data will flow through the application and when it is true, then the internet will not flow through the application and thus, the rest of data service is supplied to those running applications in Sand Box.

```

void enableInternet(boolean yes)
{
    ConnectivityManager iMgr = (ConnectivityManager) getSystemService(Context.CONNECTIVITY_SERVICE);
    Method imthd = null;
    try {
        imthd = ConnectivityManager.class.getDeclaredMethod("setMobileDataEnabled", boolean.class);
    } catch (Exception e) {
    }
    imthd.setAccessible(false);

    if(yes)
    {
        try {
            imthd.invoke(iMgr, true);
            Toast.makeText(getApplicationContext(), "Data connection Enabled", Toast.LENGTH_SHORT).show();
        } catch (IllegalArgumentException e) {
            // TODO Auto-generated catch block
            dataButton.setChecked(false);
            Toast.makeText(getApplicationContext(), "IllegalArgumentException", Toast.LENGTH_SHORT).show();
        } catch (IllegalAccessException e) {
            // TODO Auto-generated catch block
            Toast.makeText(getApplicationContext(), "IllegalAccessException", Toast.LENGTH_SHORT).show();
        }
        e.printStackTrace();
    } catch (InvocationTargetException e) {
        // TODO Auto-generated catch block
        dataButton.setChecked(false);
        Toast.makeText(getApplicationContext(), "InvocationTargetException", Toast.LENGTH_SHORT).show();
    }
    }
    else
    {
        try {
            imthd.invoke(iMgr, true);
            Toast.makeText(getApplicationContext(), "Data connection Disabled", Toast.LENGTH_SHORT).show();
        } catch (Exception e) {
            dataButton.setChecked(true);
            Toast.makeText(getApplicationContext(), "Error Disabling Data connection", Toast.LENGTH_SHORT).show();
        }
    }
}
    
```

Fig. 3: Codes of module for Enabling/ Disabling the mobile data

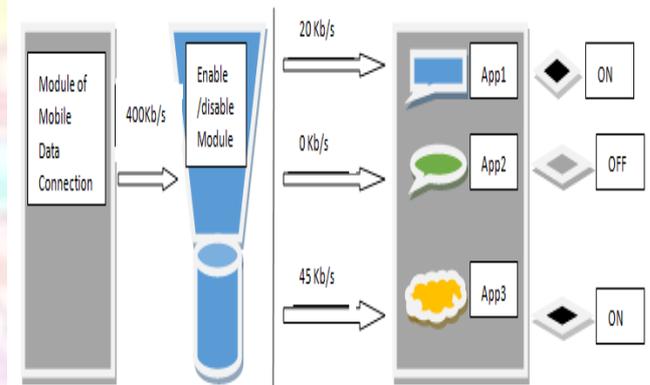


Fig. 4: Block Diagram Describing the Enable/ Disable Module

### IV. CONCLUSION

Hence, now we can conclude that Internet connectivity has been extremely crucial and an important element in today's smartphone. Data usage is the amount of data that your device uploads or downloads in a given period. You can check your data usage in the Settings app on your device. You can see how you use data and change the settings to make sure you're not using data unnecessarily. Therefore, we are in a extreme need of something which can help us to reduce the amount of data we are consuming in unrequired advertisement. So, any novel method which can reduce the data usage is highly required and will be preferred

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