

Proficient Technique for Backup and Restore Data in Android

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Abstract— In recent years Smartphone user are increasing rapidly. As Smartphone are always connected with internet is playing a vital role in day-to-day life. All personal valuable data includes in Smartphone than PC or Laptop. All this valuable data we need to protect from loss, failure and theft so backup and restore data is important. While many solutions for making backups and restoring data are known for servers and desktops, mobile devices pose several challenges, mainly due to the plethora of devices, vendors, operating systems and versions available in the mobile market. In this paper, we have done a survey on different backup and restore techniques. We started our survey by studying various backup techniques used in different mobile system, also problems faced by users while using them.

Keywords— *Smartphone; Mobile devices; Backup techniques; Backup and Restore*

I. INTRODUCTION

Backup is a crucial task, since hardware faults and software or human errors can lead to the loss of important information. In addition to faults, backups are even more important for devices such as laptops and smart phones, since they are more prone to loss or to theft. Currently, smart phones are used more as handheld computers than as mobile phones, and consequently a lot of data is stored in those devices. This makes more critical the need to keep data stored on those devices safe from losses. In addition, the rapid technological evolution in mobile devices makes it more difficult to restore data saved from old devices to new ones. Thus, mobile devices pose new challenges for the backup and restore problem.

Making backups on external memory devices, such as on Secure Digital (SD) cards or on laptop disks, suffers from the same risks of failure or loss. As smart phones tend to be always connected to the Internet, it seems natural to move the information online and to provide backup and restore services based on the cloud computing paradigm, which is considered to be more reliable and less expensive by end users. In our approach we are aiming for scheduled backup technique also providing the security of data at transmission level.

Despite the tremendous benefits, outsourcing data to cloud servers deprives On the other hand, encryption is a well-established technology to boost data privacy. Using different algorithmic technique we can provide the high level security to the data of android users customers direct control over their data, which inevitably brings in new concerns on data privacy. For implementing this we have done a survey on various backup techniques used in different mobile operating systems. After doing study of various techniques we will use the

techniques which is best suited for our approach. The following section will give the detail information of different backup techniques. Hence development of a new clipboard manager is needed for many users to support different operations.

II. LITERATURE SURVEY

According to [1], Backups can be classified in several types.

A) Full Backup vs. Incremental Backup

It is possible to distinguish the data repository model in full backups vs. incremental backups, data can be stored in a file based or a device-based style, and the data repository management can be classified as on-line vs. off-line. These approaches are based on according to accessibility, security and cost needs. Backup can be of i) Full backup ii) Incremental backup.

a) Full Backup :

a full backup is able to restore the entire content of a device: this process is slow in the backup phase, introduces a huge overhead in the data stored, but allows for faster restores.

b) Incremental Backup :

On the contrary, incremental backups reduce backup times and sizes but imply higher restore times.

Backups can operate on files in two ways:

File-based approach or on data physically saved on the disk device-based approach. A file-based approach is slower than device based approach.

B) On-line Backup vs. Off-Line Backup

The two broad categories of backup are a) On-line backup and b) Off-line backup

On-line backup permit to save and restore data while the system running while off-line backups require the system in the idle mode. Hence On-line backups are more convenient than offline backup.

They do not interfere user's work, but are more complex to handle as system needs to deal with updates carried out during backup. While taking backup it stores data either locally i.e. on SD card or remotely i.e. on remote server.

The main problem in the existing mobile backup Solutions is that they are usually bound to specific platforms and vendors.

.In new technique, [2] S.Agarwal tried to overcome the above limitation in saving and restoring the data from mobile devices.

By using the online backup as a uniform interface for sharing data among different users and multiple platforms.

In particular they have presented online backup system based on the Service oriented architecture (SOA): the services offered by architectural solution to backup and restore not only files but also to more structured data such as contacts, calendar events, an SMS. In order to be able to access those service a mobile device must be equipped with a client capable of retrieving internal data from the device and sending them to the server via a common interface. This interface is designed so as to exploit the common features of mobile data models. i.e. independently of the platform used, a contact book is always identified by fields such as first name, last name, address, phone numbers, etc. communication exchanged between the client and server is based on an extensible standard language i.e. XML.



Fig.1- Backup and Restore system architecture

In above architecture the server provides his services using representational state transfer (REST) architecture [3], [4].

Android could sync users' contacts, emails, system settings, etc. to Google's server, so users will be never worry about losing contacts or emails. [3] If you want to sync other non-google developed application settings to the Internet, you can only expect the developers to add the synchronizing feature to each application. This is why we say synchronization is "partially" supported by Android Android's build-in synchronization system consist of the backup service and official apps' (like gmail, google calendar and etc.) synchronization feature. Android's data backup (ADB) has become build-in application data and settings backup solution from the release of Android. It Copy's user's persistent

application data to remote "cloud" storage, in order to provide a restore point for the application data and settings. During a backup operation, Android's Backup Manager queries the application for backup data, and then hands it to a backup transport, which then delivers the data to the cloud storage. During a restore operation, the Backup Manager retrieves the backup data from the backup transport and returns it to the application so the application can restore the data to the device.

In market, Smartphone with different platforms having number of various applications for the backup and restore the data are available.

1) iPhone :

iTunes update iPhone's backups at every sync. iPhone is it performed backups regularly on a schedule automatically, and restoring to one is a simple just by plugging in your iPhone, ALT-clicking on its icon in iTunes, and selecting "Restore from Backup."It is different from the "Restore" function.[9] I phone will help to backup app settings, contacts, text messages, and photos.

2) Palm Pre/Pixi :

The Pre's: Backup is performed automatically, regularly, and linked to your user account.

Backup processes are as follows:

1. Plug in the Pre and select USB Drive.
2. Download Sync Toy and install.
3. For the First time run Click on SyncToy
4. Click Create New Folder Pair.
5. For the right folder browse to your documents folder and Create a new Subdirectory such as Pre Backup and select it.
6. Choose to Synchronize and name your folder pair Something easy to remember like a break up.
7. Click Run.[8]

In this process of backup may be chances of losing some Data. This doesn't back up settings and some application Data.[15]

3) Windows Mobile:

Microsoft always launches various versions of backup application as new one the release of version 6.5, there are multiple options. The core backup utility, of course, is Windows Mobile Device Center, or as it's known in XP, ActiveSync. Pairing your device with these apps is quite simple. In Windows 7, you should be prompted to install Windows Mobile Device Center and then plug-in a Win Mo handset. [8]

In XP, download and install ActiveSync, and when you plug-in your phone, start the ActiveSync app, which you should be prompted to open anyway. In Vista, you'll need to download Windows Mobile Device Center and repeat.

If you want to back up your phone's data without a PC or a cloud-based service, there's PIM Backup Download the PIM

CAB file to your device, install it, open it, check the data you want to back up, and make backups. Same for restoring.

4) BlackBerry:

RIM plays very vital role in blackberry user. It can back up their entire devices using BlackBerry Desktop.

First, install the app. Under "Backup," select "Options," where you can specify encryption and data type limits Click "Back Up," and select the destination directory for data storage.

5) Symbian:

The Ovi Suite will do the trick. It's a full, automated backup suit just install the suite and plug the Nokia phone through USB, and follow the wizard prompts and then it stores contacts, calendar items and media backed up.[8]

6) Android:

It's fairly easy to back up your contacts to your Google Account with an Android phone. In Android marketplace, many free applications are available for backup one of them is Titanium Backup for Android which is more popular [9].

Using this app user can backup and

Restore all android data.[9] for backup To do this:

1. Open your Contacts list
2. Press the Menu button
3. Select Import
4. Tick the "Google Contacts" box. [8]

Compression Techniques:

For Backup and restore techniques, compression is one of the useful method for saving time and space.

There are various algorithms available for data compression. RLE, LZW, Huffman, Fixed-length code (FLC), and Huffman after using Fixed-length code (HFLC). The performance of the data compression depends on: the characteristics of the files, the different symbols contained in it, and symbol frequencies. LZW is the best technique in all the compression scales that we tested especially with the files of big sizes, then Huffman, HFLC, and FLC, resp. RLE is best for the repetitive letters of text file.

The problem occurs during backup using compression:

- 1) **LZW:** it's simple but use dictionary. It replaces strings of characters with single characters.
- 2) **FLC:** it deals with 4 bits instead of 8 bits in ASCII for each character. This method will not give good results on a large file.
- 3) **RLE:** RLE performs better when repeatable sequences of patterns are found in data. RLE performs opposite and increases the file size to around double its original size when it does not meet a repeatable pattern.
- 4) **Huffman:** It is good for compression but it based on full binary tree.

III. PROPOSED WORK

As discussion above Smartphone user faced problem while backup and restore the data. And we try to propose hear a solution to save our data by keeping backup online and minimized the time and storage space. While backup the data by applying encryption techniques and then back up the data. It helps to reduce bandwidth and increase the performance of the data. In this backup module, we are taking the backup of bookmark, contacts, call log, phonebook, SMS, images, videos etc. and application is developed using Java eclipse. Here we are going for scheduled backup that is new concept from above discussed. In which we are uses incremental backup technique. By using this we will take automatic backup on scheduled basis like Daily, weekly or monthly. For security purpose we encrypt the backup data with AES 128 algorithm. Which is best suited at the transmission level and almost unbreakable. The encrypted file is generated after backup i.e. database file.

The file generated can be shown using Sqlite browser. Here we minimizing the time of backup along with providing the security to the data on scheduled basis. so the users can restore their data at any time they wanted with having confidence of data privacy.

IV. CONCLUSION

In this survey paper, we discussed different backup techniques and the problems associated with it. In our work an efficient and secure technique of backup and restores data in Smartphone is presented which employs the use of AES encryption technique and enhance the performance with scheduled backup. AES is simple to implement, fast to execute, and almost impossible to break. Thus scheduled backup of data and AES encryption helps to save time, space to store and further improves performance of the device and ensures data privacy.

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