Personal Data Storage as a Service Using Cloud Computing

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Abstract- Cloud storage is a model of networked online storage where data is stored in virtualized pools of storage which are generally hosted by third parties. Hosting companies operate large data centers, and people who require their data to be hosted buy or lease storage capacity from them. The data center operators, in the background, virtualizes the resources according to the requirements of the customer and expose them as storage pools, which the customers can themselves use to store files or data objects. Physically, the resource may span across multiple servers. The safety of the files depends upon the hosting websites.

INTRODAUCTION

Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation.

We see Cloud Computing as a computing model, not a technology. In this model "customers" plug into the "cloud" to access IT resources which are priced and provided "on-demand". Essentially, IT resources are rented and shared among multiple tenants much as office space, apartments, or storage spaces are used by tenants. Delivered over an Internet connection, the "cloud" replaces the company data center or server providing the same service. Thus, Cloud Computing is simply IT services sold and delivered over the Internet.[1]

Cloud storage services may be accessed through a web service application programming interface (API), a cloud storage gateway or through a Web-based user interface.

Unlike the cloud storage services which they complement, cloud storage gateways use standard network protocols which provide a seamless integration with existing applications. Cloud storage gateways can also serve as intermediaries to multiple cloud storage providers. Some cloud storage gateways also include additional storage Feature such as backup and recovery, encryption, DE duplication and provisioning.

The enormous growth in the use of handheld and Smartphone devices, storage requirement on the go is also increasing rapidly due to which use of cloud storage is gaining popularity in consumer market.[2]

With a view to provide consumers a place to store their personal data and work data which they can access/download from anywhere around the globe securely and economically on their devices, we propose the project entitled "Data Storage as a Service" (under which have developed an application named "Personal Data ;Store").

LITERATURE REVIEW/SURVEY

When it comes to storing your data, you have some important decisions to make. The first of those decisions has to do with where you're going to store your data. While the traditional answer has always been some in-house solution, such as an external hard drive and USB pen drive, ultimately offline storage. Off-line storage is that which transfers the information to external media devices that are separate from the server.

Off-line data storage is generally cheaper than online storage but is not as easily accessible or expandable. Data stored off-line is also protected from computer crashes. The most important need with such traditional storage devices is that one has to carry lots of hardware for retrieving of that data. [5]

The advent of cloud computing marked the beginning of this global transformation in how data is created, shared, stored and archived no matter the user. Data is being created almost automatically, uncontrollably. From global financial institutions to small businesses, to everyday consumers, data via the cloud will touch each and every one of us on a daily, hourly and even real-time basis. To accommodate such data growth and capacity demand, cloud platforms are emerging everywhere. From traditional corporate private clouds and new public clouds, to Telco and content delivery networks (CDNs), to personal clouds we have in our homes and mobile clouds we take with us wherever we go, the demand for storage capacity continues to grow.

In 2011, it is estimated that enterprise HDD capacity demand alone for both the public and private cloud services accounts for 13.7 exabytes of 58.6 exabytes of total enterprise compute (EC) capacity shipped.That is the 23% today, and it is expected to nearly triple in the next 10 years .[3]

The cloud is not purely an enterprise play. Another major factor is the rise of personal clouds. Gartner stated in a recent webinar, "This is not the post-PC era. The PC will be alive and well, but the personal cloud will replace the PC as

the location where users access their content. Users are synchronizing across multiple connected devices and we're already seeing people interact with cloud services." The growth of networkable home storage and the introduction of wireless storage enable consumers to, in essence, create their own personal clouds. Mobile applications for Apple iOS and Android devices provide the capability for consumers to access their content libraries storage from virtually anywhere. This shows no sign of slowing, and consumer demand for storage capacity continues to rise.

As more people access their content via the cloud and more businesses run applications and store data in the cloud, not only does the demand for capacity increase, but so does the expectation on performance.[4]
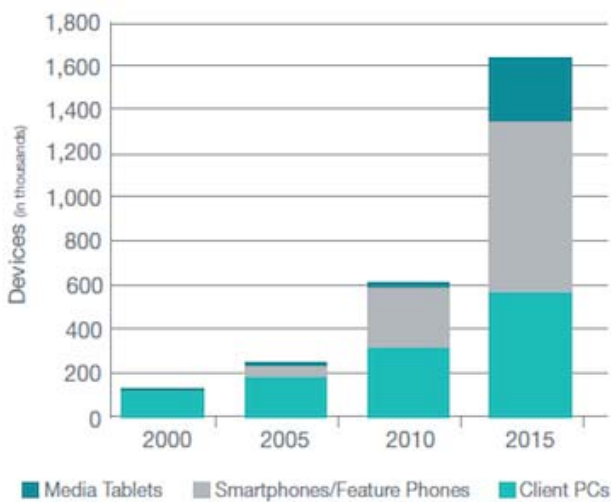

Fig 1. Growth of Mobile C0mputing Devices

Some offline storage devices and their drawbacks:
1. USB Pen Drive
- USB Flash Drive is so small that it is often lost or forgotten.
- USB Flash Drive often does not have any write-protection mechanism/software to keep viruses from infecting it.
- Although it is completely portable and can store a lot of data, that data can also be lost. More people lose flash drives than car keys because of its size and the necessity for it to go everywhere with you. Now it can even be infected by viruses.[6]

2. DVD
- It will take years for movies and software to become widely available.
- It can't record (yet). .
- It uses digital compression. Poorly compressed audio or video may be blocky, fuzzy, harsh, or vague.
- The audio down mix process for stereo/Dolby Surround can reduce dynamic range.

3. Hard disc drive
- Hard disks eventually fail which stops the computer from working.
- Regular 'head' crashes can damage the surface of the disk, leading to loss of data in that sector.
- The disk is fixed inside the computer and cannot easily be transferred to another computer.

SYSTEM PLANNING AND DESIGN
Cloud storage provides users with immediate access to a broad range of resources and applications hosted in the infrastructure of another organization via a web interface.

Fig 2. Application Flowchart
Personal Data Store contains the following modules and sub-modules
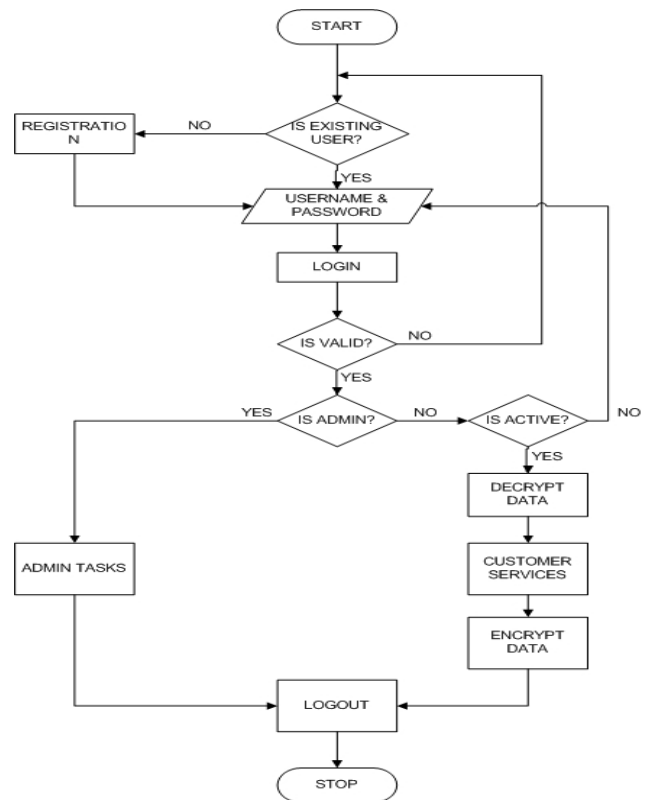
A. Administration Module
- Log maintenance
- Reporting
- Taking security measures
- Password resets
- Account locking / unlocking
- Policy decisions
- Rent calculations
- Payment reporting & tracking

B. *User Management Module*
- Registration
- Login/Logout
- Change password
- Password recovery
- Session tracking
- Payment tracking
- Usage reports

C. *Data storage & Security module*
- Design generalized data storage schema
- Store data
- Retrieve data
- Store uploaded files
- All files to be downloaded
- Data Security means protecting a database from destructive forces and the unwanted actions of unauthorized users.
- Data can be secured using following techniques-
  - Authentication
  - Access Control
  - Backups
  - Encryption and Decryption

D. *Multimedia Module*
- View Images
- Listen to audio files
- View video files

E. *Payment module*
- Collect payment specification
- Call banks payment service
- Connecting to banks database
- Finalize payment
- Update databases
- Renew user account

CONCLUSION

No matter what your storage needs may be, cloud storage through an online backup service provides a myriad of advantages for storing both your home and professional files. Cloud computing is developing rapidly and gaining popularity day by day. We thus have developed Personal Data Store a platform independent and device independent application that provides user storage on demand facility and overcame the problem of offline storage such as security, data integrity, scalability.

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