KARNATAK LAW SOCIETY’S

GOGTE INSTITUTE OF TECHNOLOGY

UDYAMBAG, BELAGAVI-590008

(An Autonomous Institution under Visvesvaraya Technological University, Belagavi)

**(APPROVED BY AICTE, NEW DELHI)**

Department of Computer Science Engineering

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*Course Activity Report*

**Storage Area Networks**

*Submitted in the partial fulfillment for the academic requirement of*

***7th Semester B.E.***

***TITLE:* Persisting Data in Cloud**

*Submitted by*

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| --- | --- | --- |
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**2021 - 2022**

**Marks allocation:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Batch No. : 4 | | | | | |
| 1. | Seminar Title: Persisting Data in Cloud | Marks Range | USN | | | |
| **2GI18CS125** | **2GI18CS139** | **2GI18CS140** |  |
| 2. | Abstract (PO2) | 0-2 |  |  |  |  |
| 3. | Application of the topic to the course (PO2) | 0-3 |  |  |  |  |
| 4. | Literature survey and its findings (PO2) | 0-4 |  |  |  |  |
| 5. | Methodology, Results and Conclusion (PO1,PO3,PO4) | 0-6 |  |  |  |  |
| 6. | Report and Oral presentation skill (PO9,PO10) | 0-5 |  |  |  |  |
|  | Total | 20 |  |  |  |  |

**\* 20 marks is converted to 10 marks for CGPA calculation**

**Persisting Data in Cloud**

**Abstract**

Cloud computing is one of the upcoming technologies that will upgrade generation of Internet. The data stored in the smart phones is increased as more applications are deployed and executed. If the phone is damaged or lost then the information stored in it gets lost. If the cloud storage can be integrated for regular data backup of a mobile user so that the risk of data lost can be minimized. The user can stored data in the server and retrieve them at anytime and from anywhere. The data might be uncovered by attack during the retrieval or transmission of data using wireless cloud storage without proper authentication and protection. So to avoid this in this paper we design a mechanism that provides a security requirement for data storage of mobile phones.Emerging storage cloud systems provide continuously available and highly scalable storage services to millions of geographically distributed clients. A secure access control mechanism is a crucial prerequisite for allowing clients to entrust their data to such cloud services. The seamlessly unlimited scale of the cloud and the new usage scenarios that accompany it pose new challenges in the design of such access control systems. In this paper we present a capability-based access control model and architecture appropriate for cloud storage systems that is secure, flexible, and scalable. We introduce new functionalities such as a flexible and dynamic description of resources; an advanced delegation mechanism and support for auditability, accountability and access confinement. The paper details the secure access model, shows how it fits in a scalable storage cloud architecture, and analyzes its security and performance.

**Introduction**

Cloud Storage is a model of data storage in which the digital data is stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running. People and organizations buy or lease storage capacity from the providers to store user, organization, or application data. Cloud storage services may be accessed through a co-located cloud computer service, a web service application programming interface (API) or by applications that utilize the API, such as cloud desktop storage, a cloud storage gateway or Web-based content management systems. It is technology that allows you to save files in storage, and then access those files via the Cloud. Let's break down this definition. First, storage is the computer's ability to save files and other resources for later use. When you restart a computer, the files that are still available after the computer turns back on are saved and read from storage. Such storage commonly consists of a hard drive, a USB Flash drive, or another type of drive. Because local data drives can be damaged or stolen, an idea was developed to use data drives over a network as storage. This allows the drives to be secured in a data center and backed up automatically. Initially, network storage required fast local networks (LAN), but today we have a ubiquitous network called the Internet. The second part of Cloud Storage, the Cloud, represents the Internet. Any service, including storage, available over the Internet, is called Cloud service. If you use GMAIL it is email in the Cloud, if you use an Amazon MP3 player, that's music in the Cloud.

**Cloud Services**

Cloud services are infrastructure, platforms, or software that are hosted by third-party providers and made available to users through the internet. Cloud services facilitate the flow of user data from front-end clients (e.g. users’ servers, tablets, desktops, laptops—anything on the users’ ends), through the internet, to the provider’s systems, and back. Users can access cloud services with nothing more than a computer, operating system, and internet connectivity or virtual private network (VPN).

There are a handful of well-known, major public cloud companies—such as [Alibaba Cloud](https://www.redhat.com/en/partners/alibaba-cloud), [Amazon Web Services (AWS)](https://www.redhat.com/en/partners/amazon-web-services), [Google Cloud Platform (GCP)](https://www.redhat.com/en/partners/google), [IBM Cloud](https://www.redhat.com/en/partners/ibm-alliance), Oracle Cloud, and [Microsoft Azure](https://www.redhat.com/en/partners/microsoft)—but there are also [hundreds of other cloud computing providers](https://redhat.secure.force.com/finder/) all over the world.

**Amazon Web Services(AWS)**

AWS (Amazon Web Services) is a comprehensive, evolving [cloud computing](https://searchcloudcomputing.techtarget.com/definition/cloud-computing) platform provided by Amazon that includes a mixture of infrastructure as a service ([IaaS](https://searchcloudcomputing.techtarget.com/definition/Infrastructure-as-a-Service-IaaS)), platform as a service ([PaaS](https://searchcloudcomputing.techtarget.com/definition/Platform-as-a-Service-PaaS)) and packaged software as a service ([SaaS](https://searchcloudcomputing.techtarget.com/definition/Software-as-a-Service)) offerings. AWS services [can offer an organization tools](https://searchcloudcomputing.techtarget.com/feature/A-closer-look-at-the-Amazon-Web-Services-cloud-platform) such as compute power, database storage and content delivery services. AWS launched in 2006 from the internal infrastructure that Amazon.com built to handle its online retail operations. AWS was one of the first companies to introduce a [pay-as-you-go](https://www.techtarget.com/searchstorage/definition/pay-as-you-go-cloud-computing-PAYG-cloud-computing) cloud computing model that [scales](https://searchdatacenter.techtarget.com/definition/scalability) to provide users with compute, storage or throughput as needed.

AWS offers many different tools and solutions for enterprises and software developers that can be used in data centers in up to 190 countries. Groups such as government agencies, education institutions, nonprofits and private organizations can use AWS services.

**How AWS works**

AWS is separated into different services; each can be [configured](https://whatis.techtarget.com/definition/configuration) in different ways based on the user's needs. Users should be able to see configuration options and individual server maps for an AWS service. More than 100 services comprise the Amazon Web Services portfolio, including those for compute, databases, infrastructure management, application development and security.

**Top 3 Most Used Services Offered By AWS**

* AWS Elastic Compute Cloud (EC2)
* Amazon Simple Storage Service (S3)
* Amazon DynamoDB

**Amazon Simple Storage Service (S3)**

Amazon Simple Storage Service (Amazon S3) is a scalable, high-speed, web-based cloud storage service. The service is designed for online [backup](https://www.techtarget.com/searchdatabackup/definition/backup) and [archiving](https://www.techtarget.com/searchstorage/definition/archive) of data and [applications](https://searchsoftwarequality.techtarget.com/definition/application) on Amazon Web Services (AWS). Amazon S3 was designed with a minimal feature set and created to make web-scale computing easier for developers.

Amazon S3 can be used by organizations ranging in size from small businesses to large enterprises. S3's scalability, availability, security and performance capabilities make it suitable for a variety of data storage use cases. Common use cases for S3 include the following: data storage; data archiving; application [hosting](https://www.techtarget.com/searchstorage/definition/cloud-hosting) for deployment, installation and management of web apps; software delivery; data backup; disaster recovery ([DR](https://searchdisasterrecovery.techtarget.com/definition/disaster-recovery)); internet of things ([IoT](https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT)) devices; media hosting for images, videos and music files; and website hosting -- particularly well suited to work with [Amazon CloudFront](https://searchaws.techtarget.com/definition/Amazon-CloudFront) for content delivery.

### How Amazon S3 works

Amazon S3 is an [object storage](https://www.techtarget.com/searchstorage/definition/object-storage) service, which differs from other types of cloud computing storage types, such as [block](https://www.techtarget.com/searchstorage/definition/block-storage) and [file](https://www.techtarget.com/searchstorage/definition/cloud-file-storage) storage. Each object is stored as a file with its metadata included. The object is also given an ID number. Applications use this ID number to access objects. This is unlike file and block cloud storage, where a developer can access an object via a [representational state transfer (REST) API](https://searchapparchitecture.techtarget.com/definition/RESTful-API).

The S3 object storage cloud service gives a subscriber access to the same systems that Amazon uses to run its own websites. S3 enables customers to upload, store and download practically any file or object that is up to 5 terabytes (TB) in size -- with the largest single upload capped at 5 gigabytes ([GB](https://www.techtarget.com/searchstorage/definition/gigabyte)).

**Amazon DynamoDB**

Amazon DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability. DynamoDB lets you offload the administrative burdens of operating and scaling a distributed database so that you don't have to worry about hardware provisioning, setup and configuration, replication, software patching, or cluster scaling. DynamoDB also offers encryption at rest, which eliminates the operational burden and complexity involved in protecting sensitive data. For more information, see [DynamoDB Encryption at Rest](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/EncryptionAtRest.html).

With DynamoDB, you can create database tables that can store and retrieve any amount of data and serve any level of request traffic. You can scale up or scale down your tables' throughput capacity without downtime or performance degradation. You can use the AWS Management Console to monitor resource utilization and performance metrics.

DynamoDB provides on-demand backup capability. It allows you to create full backups of your tables for long-term retention and archival for regulatory compliance needs. For more information, see [Using On-Demand Backup and Restore for DynamoDB](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/BackupRestore.html).

You can create on-demand backups and enable point-in-time recovery for your Amazon DynamoDB tables. Point-in-time recovery helps protect your tables from accidental write or delete operations. With point-in-time recovery, you can restore a table to any point in time during the last 35 days. For more information, see [Point-in-Time Recovery: How It Works](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/PointInTimeRecovery_Howitworks.html).

DynamoDB allows you to delete expired items from tables automatically to help you reduce storage usage and the cost of storing data that is no longer relevant.

**Implementation**

**Results**

**Conclusion**

In conclusion, cloud computing is recently new technological development that has the potential to have a great impact on the world. It has many benefits that it provides to it users and businesses. For example, some of the benefits that it provides to businesses, is that it reduces operating cost by spending less on maintenance and software upgrades and focus more on the businesses it self. But there are other challenges the cloud computing must overcome. People are very skeptical about whether their data is secure and private. There are no standards or regulations worldwide provided data through cloud computing. Europe has data protection laws but the US, being one of the most technological advance nation, does not have any data protection laws. Users also worry about who can disclose their data and have ownership of their data. But once, there are standards and regulation worldwide, cloud computing will revolutionize the future.

**References**

* <https://en.wikipedia.org/wiki/Cloud_storage>
* https://searchaws.techtarget.com