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# FOG DRIVE DISASTER BACKUP AS A SERVICE FOR CLOUD SERVER USING IOT AND FOG COMPUTING

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**Abstract**

Cloud data loss or disruption can occur because of a natural disaster, human error, malicious activity, or other causes. It can damage your reputation, cause client attrition, and lead to unnecessary delays and expenses. Still, most backup systems have been designed and optimized for outdated environments and use cases. That fact, generates frustration over currently backup challenges and leads to a greater willingness to modernize and to consider new technologies. This proposed system set up a flexible data backup operation, using Disaster Backup as a Service (BaaS) solutions, mixing them up with FogDrive local storage system.

## Introduction

Data is one of the most valuable assets that any company can hold. One of the best ways to store these assets is within the cloud.Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).

Disaster recovery can be used to manage entire network backup, including applications, email, data and network configuration. If an IT failure strikes, data and applications can be restored at any time from The Cloud.Business' IT workloads can be disrupted at any time, so it is always important to have a recovery plan prepared. One advantage of cloud disaster recovery is that it can be used to back up and restore data that run on-premise, in addition to those hosted in The Cloud (offsite server).

Our proposed system is to design and developFogDrive an online backup service, also known as cloud backup or Disaster backup as a service (DBaaS). Our proposed system is to protect the information whether it's business data or personal from the risk of loss associated with user error, hacking, or any other kind of technological disaster.

It also protects the outsourced data and ensuring it is available when you need it. For example, if we want to save 10TB file in cloud, cloud will receive the data, encrypt it and stores the data and then also sends the backup to Fogdrive and it will compress the data to 1TB from 10TB file without any loss of data and keeps updating the Fogdrive in order to not lose any data. This is the biggest advantage in using the Fogdrive because it encrypts the data and then compresses it and saves so that we can save more data with low cost and also more protective. It is also time and cost efficient compared to all the backup service.

**System design**

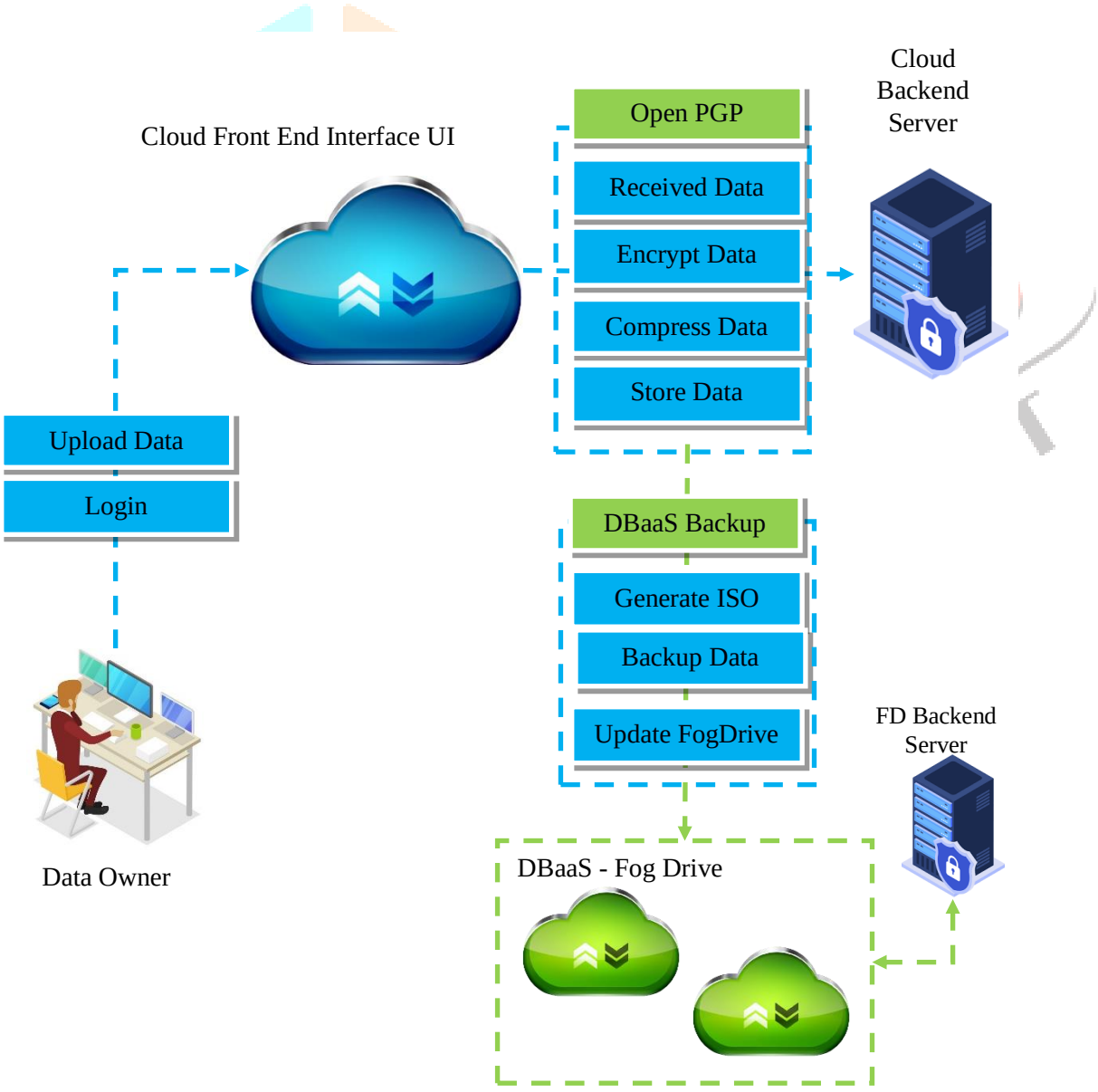


Fig 1: system design

**System Architecture – DBaaS Data Recovery**

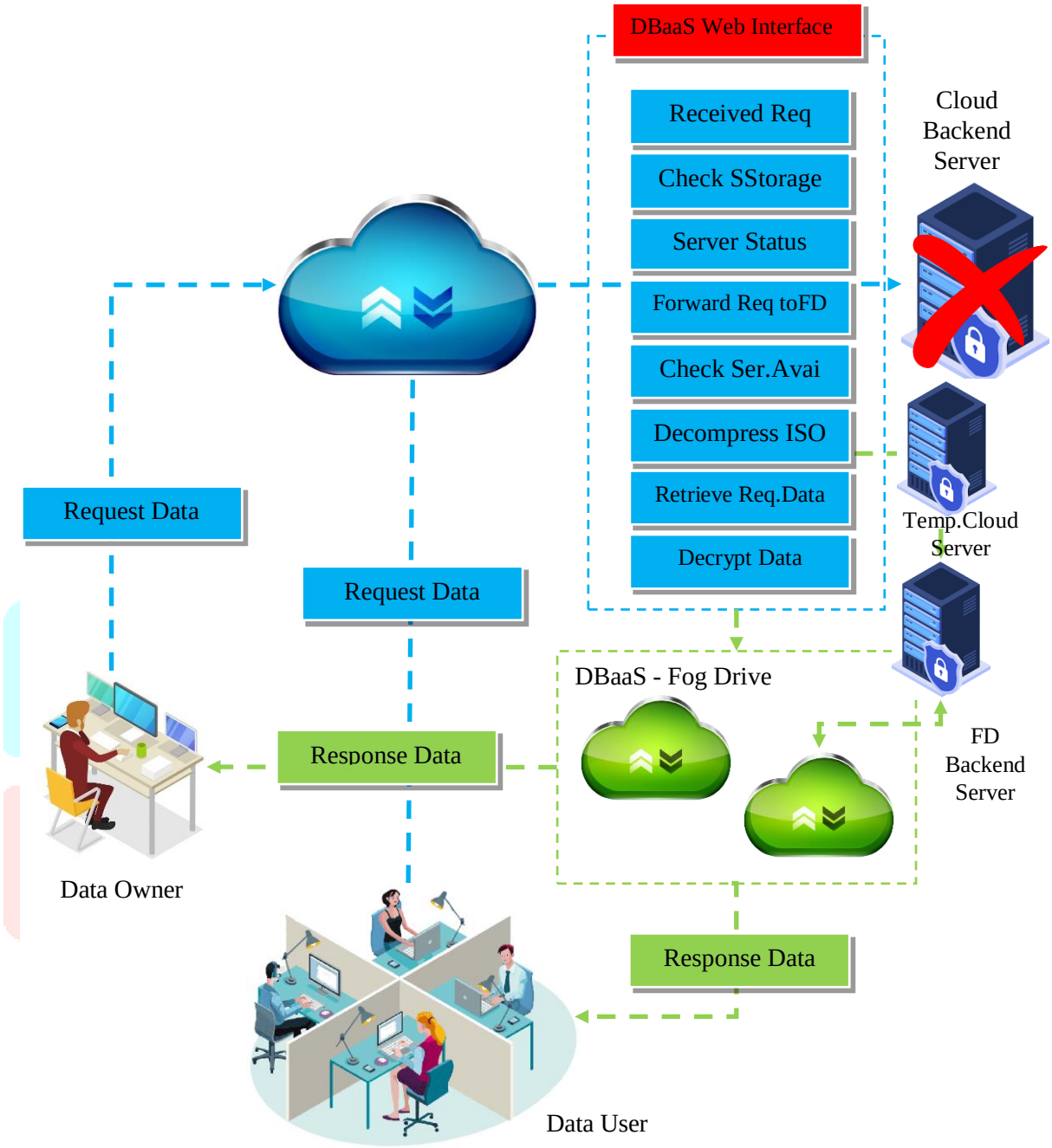


Fig 2: dbaas data recovery

## Implementation

### Python 3.7.4

Fog computing refers to extending cloud computing to the edge of an enterprise's network. Also known as Edge Computing or fogging, fog computing facilitates the operation of compute, storage and networking services between end devices and cloud computing data centers.

**PHP 8.1**

The PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web-based software applications. This tutorial helps you to build your base with PHP.

**Data & Database**

Suppose a company needs to store the names of hundreds of employees working in the company in such a way that all the employees can be individually identified. Then, the company collects the **data** of all those employees.

**MySQL**

Fog Computing desperately needs databases. Products that can handle data at rest and in motion, on constrained devices, with a small footprint, databases that can maximise the use of hardware resources, are reliable and can be installed in many flavours to be almost 100% available when needed.

**Performance analysis**

To evaluate the system performance,

- Time taken to retrieve and restore the user data to FogDrive at the time of cloud disaster.
- Time taken to compress and decompress the data.

**Conclusion**

As important network infrastructures to support data storage and service delivery for worldwide users, cloud data centers are facing great threaten by frequent disasters around the world and thus the survivability of cloud data centers becomes a critical issue.This proposed system introduces FogStore - Disaster Backup as a Service and FogDrive, a new data backup system based on Cloud and Fog Computing. This system utilizes the advantages of Temporary-Cloud storage to ensure users' data protection and reliability and, at the same time, overcomes the problems of multi-Cloud using the Fog Computing paradigm.

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