

# **NAS BACKUP AUTOMATION**

## **A PROJECT REPORT**

*Submitted by*

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## **CERTIFICATE**

This is to certify that the Project Work entitled **“NAS BACKUP AUTOMATION”** has been carried out by **Nisarg Khacharia(18BECE30541), Shrit Shah(18BECE30556), and Harshil Shah(18BECE30524)** under my guidance in fulfilment of the degree of Bachelor of Engineering in Computer Engineering Semester-7 of Kadi Sarva VishwaVidyalaya University during the academic year **2021-22**.

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## **ABSTRACT**

*In the last couple of years, networking and cloud computing has taken an immense boost in the IT industry. Nobody likes to carry their laptops when working from more than one place. The best way to tackle this problem is to make a storage server which contains all the important work and can be accessed from different places. So, we've created a solution for the same.*

*We've made a project entitled as 'NAS BACKUP AUTOMATION', which works on the principle of Network Attached Storage(NAS). This server can read/write the file operations over the internet and automatically backups the files that are saved on to the local machine.*

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# **1. INTRODUCTION**

## **1.1 Introduction**

As our project title says it all, we have made a backup storage server which automatically reads and write to the local system using Network Attached Storage(NAS). This will lead to solutions of many real-life problems such as less amount of storage, data failure, etc.

## **1.2 Aims and Objectives**

The main aims of this project are to achieve a solution of the following problems:

1. Significant Increase in Big Data
2. Less storage space
3. Data Failures (software, hardware or human caused)

We aim to include the following features in the project:

1. Move the entire project over AWS Cloud, where server is present on cloud, having public IP so that any **authorized** client can connect.
2. We plan to make our code more modular with the use of configuration management tool- Ansible, which will make the code more optimized and clean.

## **1.3 Brief Literature Review**

### **Data is a critical asset for companies**

Without access to their data, companies may not provide their customers with the expected level of service. Poor customer service, loss of sales or team collaboration problems are all examples of what can happen when information is not available.

Each of these issues contribute to lack of efficiency and potential loss of income if customers cannot wait for a data outage to be corrected.

Additionally, when it comes to data storage, small businesses find themselves faced with other storage-related needs such as:

- Lower Cost Options
- Ease of Operations
- Ease of Data Backup

NAS devices are rapidly becoming popular with enterprise and small businesses in many industries as an effective, scalable, low-cost storage solution.

## **1.4 Problem Definition**

How can we make Network Attached Storage (NAS) easily manageable and self service to our customers?

An NAS device is a storage device connected to a network that allows storage and retrieval of data from a central location for authorized network users and varied clients. NAS devices are flexible and scale out, meaning that as you need additional storage, you can add to what you have. NAS is like having a private cloud in the office. It's faster, less expensive and provides all the benefits of a public cloud on site, giving you complete control.

NAS systems are perfect because of the following reasons:

- Simple to operate
- Lower Cost
- Easy Data Backup
- Good at centralising data storage in a safe, reliable way

## **1.5 Plan of Work**

All implementation will be done from client system itself.

For NAS server we need to configure mainly 2 things, client node and server node. So instead of going through same process flow again and again, we created smart automation scripts using scripting language – bash.

When client executes main NAS.sh script, internally this script will perform various configuration steps, establishes connection between client and server, and verifies if required utilities are installed on both server and client machine or not.

## **2. Technology and Literature Review**

- NAS refers to **Network Attached Storage**
- NAS is a storage server connected via and accessed through network (local or public), instead of directly connecting to a computer, providing functionalities over data like access, modification and creation of data among heterogeneous group of clients.
- Most frequently used examples of this are Google Drive and Dropbox.
- NAS servers also have their own dedicated storage, CPU and operating system.
- We cannot share storage directly to someone, instead we create a folder and give other clients access to this shared folder via network.
- NAS uses NFS (Network File System) as a file transfer protocol.
- Now this shared folder acts like an external hard disk. Client will now create a folder in his system and mount it to shared folder via NFS protocol.
- Once the service is started on server, multiple heterogeneous clients that are connected to same server, can view, access, modify and create files based on permissions they are given.
- Benefits of using NAS over DAS:

### **1. More Storage Space**

A NAS device will add sufficient storage space to a local computer, thereby boosting the available storage space for total efficiency. It is worth noting that most laptops and computers have limited storage space, which could hinder smooth operations for their business.

### **2. Flawless Collaboration**

It is stressful when one has to keep emailing a certain document in order to collaborate a certain report, especially because this ends up creating a lot of clone copies of the said document. However, when using a NAS device, documents are available from one central location to be easily accessed by anyone.

### **3. Private Cloud Storage**

The convenience of cloud storage can never be underestimated. However, for anyone storing sensitive information in a cloud based system, there is fear about who has the access to their information. Luckily for anyone with such fear, a NAS device will allow efficient cloud based storage without the possibility of snooping.



#### 4. Automated Data Backup

Consistent data backup is integral to the continuity of a business or institution, especially in the instance their hard disks sustain a crash. When one is using a NAS device, it is possible to configure automatic backups which will reflect any changes to documents or folders made locally on a PC.

#### 5. Data protection

There are those accidents that will damage our computers, thereby compromising the data stored therein. A laptop could just drop and get damaged, or a drink could accidentally spill on a laptop and ruin every peace of data stored in it. Fortunately, when one uses a NAS device which is not affected by the failures of local hardware, their data is safe.

#### 6. Remote Access

NAS is revolutionary as it will allow one to access their files anywhere and at any time. Any modern business or institution should ensure that they have a network attached storage for optimal success.