The Gambia Bureau of Statistics

Use of Mobile Technologies For Data Collection Pilot Project

Report on the Server Upgrade Component.

Date Compiled : 26th February 2015

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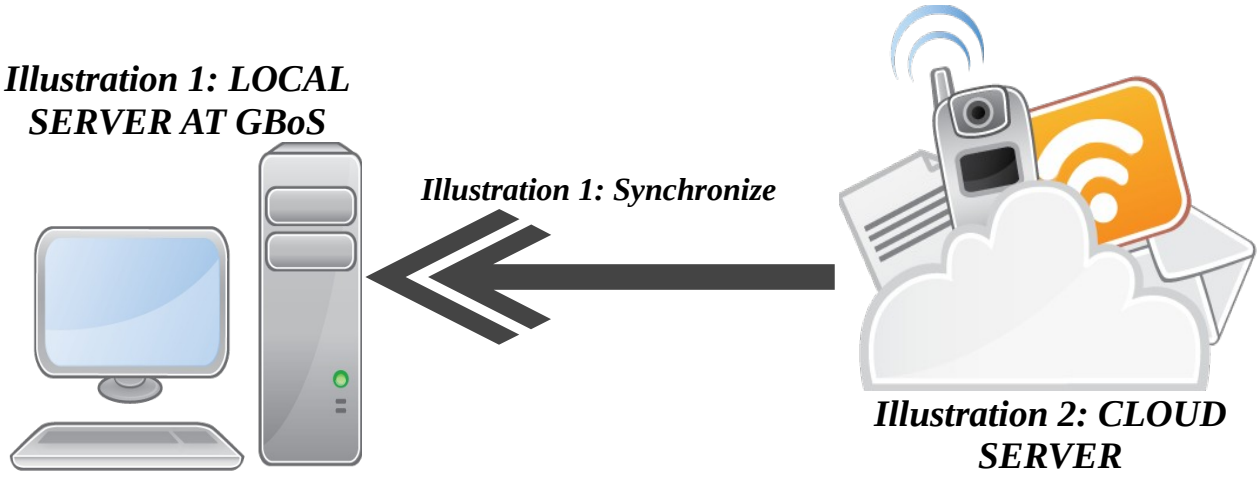
Introduction

The server upgrade component of the pilot has successfully been completed and we are currently receiving data from the field as planned. The server upgrade is divided in to two major component. The cloud platform and the in house platform. Both these platforms are needed for concrete reasons. Data collectors in the field sends data directly the cloud server through 3G or 2G Internet connection. The data in the cloud server is then periodically synced to the local server at the Bureau. Internet connection and electricity supply in The Gambia is not very good, so depending on our local server as our primary data repository is not the best solution. With the cloud we are very confident that the Internet connection and electricity supply is always guaranteed and therefore sending data to it will work as expected.

Server Upgrade Architecture

As stated in the introductory part and depicted in the diagram below. There are two server platforms. Illustration 1 shows the local server at Gambia Bureau of Statistics and Illustration 2 shows the cloud server. On a regular interval of 30 minutes the data from the cloud server is synced to the local server. The advantage of this is data can be accessed with Internet if you are outside the office and you may not need Internet if you using the network of the Bureau.



The ultimate aim of the architecture is to provide flawless flow of data from the field to the analysis stage. Security is also a factor that we considered. The base system has the Ubuntu operating system installed in it. For accessing reports and other resources on the network we installed Windows Server 2012 in a virtualbox.

Storage and Backup

The Dell PowerEdge local in the Bureau server is equipped with a 2TB of four 500GB disk for internal storage and temporary backup. Additionally a 6TB Network Attached Storage device is also mounted to the network. This device is our central repository for all backups daily backups of the database system and the entire operating system and its resources.

Server Upgrade Hardware and Software Specifications.

After careful analysis and study of our current network we hereby propose the following hardware and software for the upgrade of our internal network as per the specification in the pilot project letter of agreement.

1. Dell PowerEdge R420 : Local server that stored the data locally. The server is also used as a domain controller which helps us enforce security and maintain IT standards at the Bureau. Hardware specification are below

Memory : 32GB
Storage : 2TB
Processor : Intel® Xeon® E5-2440 v2 1.90GHz, 8C, 95W, Max Mem 1600MHz

2. Network Attached Storage (NAS) : Used as a backup device to backup the local server and also some important files.

WD My Cloud EX2 WDBVKW0060JCH- NAS server
Storage Capacity : 6 TB

3. Operating System : Installed in a virtuabox as our domain controller.

Windows Server 2012 R2 Standard Edition

4. Power Backup System : This is crucial since, we have random power outage a good battery power backup system is our ultimate solution. A 3KVA power system has been installed and it's uptime is 8 hours.

Battery Backup system.

5. Server Rack : For security reasons a 24 U server has been purchased to host the local server and the other hardware components.

Rack for mounting the rack server

Conclusion

We combined a robust server hardware and software system to enable a lasting solution. Linux systems are immune to virus and other types of malware and hence a good choice compared to other systems. The cloud server servers as the repository for our data which saves us the cost of getting constant electricity and Internet connection. We believe we have a robust system and our server upgrade component of the pilot project is well calculated.