BOONDOCKS VAULT: AN INNOVATIVE OFF THE GRID STORAGE DRIVE

Mrs. K. Karthika[1], Devibala G[2], Krishna Priya R[3], Maria Hazel R[4], Pooja S[5]

Assistant Professor, B.Tech Information Technology, Adhiyamaan College Of Engineering, Hosur, India[1]

UG Student, B.Tech Information Technology, Adhiyamaan College Of Engineering, , Hosur, India[2,3,4,5]

Abstract: Recent advancements in Internet-of-Things technology have opened up new biosensor application situations. To get these gadgets into people's homes or businesses, flexibility, mobility, and remote control and access are critical. As more external hard discs and pen drives become available, consumers are reporting more problems. has been harmed by infected files, viruses, or malware, and hence requires immediate protection against file loss, infection, and hardware failure. The Boondocks Vault a wireless flash disc is offered in this project as an unique wireless portable storage system. This model includes machine learning workloads, query-intensive data warehouses, and ingestion and processing of IoT sensor data. When connected with power supply, can be used as wireless storage. It can back up data to cloud storage providers with the Dashboard software. With this program, one can access their files on the hard drive via the web.

Keywords: Boondocks vault, Dashboard, Storage, Wi-Fi.

I.INTRODUCTION

External Storage:
An external storage device, also referred to as auxiliary storage and secondary storage, is a device that contains all the addressable data storage that is not inside a computer's main storage or memory. External storage enables users to store data separately from a computer's main or primary storage and memory at a relatively low cost. It increases storage capacity without having to open up a system. For enterprises, an external storage device can serve as primary storage connected to servers through Ethernet or Fibre Channel switches, or as secondary storage for backup and archiving purposes in the computer world, portable storage devices include flash drives, USB drives (thumb drives), external hard drives (sometimes called mini hard drives), and portable CD/DVD-ROM drives. There are also products that can be purchased to turn an internal hard drive into a portable hard drive: These are called enclosures and usually come with a hard case, a plug for the drive, and an external USB cable. Some are externally powered, but many draw power from USB. This is why you shouldn't throw away that hard drive from your old computer that crashed.

Types Of External Storage Devices:
A) Flash Storage-Flash drives (memory sticks, SD cards, etc.) are small cards about the size of a stick of gum. They're popular in computers, digital cameras, and MP3 players. The devices are incredibly small, have relatively high storage capacity, and don't draw much power. Memory chips are built into the small cards; the flash storage cards are then inserted into a computer (via an SD slot, which is standard on newer computers and laptops).
B) USB Storage-There are also USB sticks, or thumb drives. USB sticks use the same flash memory technology as the flash memory cards, but they have a USB connector built into them. They plug into a computer's USB port; once inserted, the system recognizes it as a valid drive and files can be accessed. Some thumb drives also come with security software installed, so that an end user must enter a password before accessing any data on the device. One thing to keep in mind: flash and thumb drives are sticks of storage space, while external and portable hard drives are real hard disks. As such, they have internal moving parts and don't serve well as MP3 players on a long-distance run.
C) External Hard Drives-An external hard drive is the hard disk of a computer that's mobile. If you unplugged the internal drive of your laptop, slapped it into a case, and attached a USB cable to it, you would have an external hard drive. Most external hard drives have USB ports, while some also have Firewire or Thunderbolt (but may only work on Apple products). Many hard drives come with an external power source, while some draw power from USB connection; sometimes there are two USB wires: one for power and one for data transfer.

1.1 OBJECTIVE OF THE PROJECT:
* To develop a spare machine named Boondocks Vault a wireless storage device.
* To create a cost-effective storage device.

II. LITERATURE SURVEY

- A safe and quick end-to-end data transfer method is suggested in this study. This system obtains data from a storage device and securely delivers it to another storage device through a wireless network. GSM/GPRS modem is used to interact with the microcontroller-based secure data transfer system. [1]

- The author's remote data acquisition is separated into four different function levels in this article. A simple and straightforward architecture based on a distributed storage area network is provided based on this idea. Flexible configuration, expansibility, and stability are all advantages of this design. [2].

- According to the author of this research, EWSNs have two key characteristics that distinguish them from monitoring systems in other application fields. They are frequently placed in isolated locations, eliminating the usage of mains power and preventing routine battery replacement trips. Simultaneously, their surroundings frequently offer chances to capture ambient energy and utilise it to (partially) power the sensor nodes. This review focuses on studies published within the previous 10 years and gives a complete description of energy harvesting sources, energy storage technologies, and matching topologies of energy harvesting systems. [3].

- The author of this study discusses synthetic techniques to controlling MOF features for achieving material qualities as charge conductivity, stability, surface area, and flexibility. New avenues for MOF research in emerging technologies such as solid-state electrolytes and battery operation in harsh conditions are discussed, along with an updated description of MOFs used in batteries and supercapacitors. [4].

- The author outlines the design of our "wake-on-wireless" energy-saving method as well as the prototype gadget we used in this study. We compare our method to other ways in order to assess it. Our findings suggest that our technology outperforms competing technologies in terms of lifetime performance. [5].

- In this paper, the author discusses application scenarios such as power output fluctuation reduction, output plan agreement at renewable energy generation, power grid frequency adjustment, power flow optimization at power transmission, and a distributed and mobile energy storage system at power distribution. A review of current BESS research and application status was conducted. The study looked at energy management, operation control approaches, and application situations for large-scale BESSs. [6].

- The author investigates a breakthrough energy supply technology, the fuel cell (FC), and uses its benefits of long-term energy storage to develop a hybrid FC-battery power system in this work. As a result, the battery life of mobile devices is significantly prolonged, and consumers are no longer disturbed by battery recharging. We look at real-world smartphone usage statistics and discover that a naïve hybrid power system can't handle the diverse power demands of multiple users. [7].

- The author focuses on using Battery Energy Storage Systems (BESS) to achieve this objective in this research. The results reveal that the suggested technique is a simple, fast, and effective solution to reduce peak load without the high computational overhead that other methods need. [8].

- The author discusses using distributed storage (DS) to lower content delivery transmission costs in wireless networks. Using an erasure correcting code, content is saved (cached) in a number of mobile devices. Users can get material from other devices or the base station (BS) utilizing device-to-device communication for a greater transmission cost. [9].

- To test the suggested controller, an audio recording sensor is constructed and simulated using SPICE. The storage device size is lowered by a factor of 24 with this system.[10].

-

III. SYSTEM ANALYSIS

3.1 Existing System-

a) compact disc (CD), a moulded plastic disc containing for the reproduction of recorded sound, digital data is scanned by a laser beam. and other information. A Compact Disc, also called a CD is a storage device that are small plastic discs which store and retrieve computer data. A compact disc is a form of portable storage.

b) USB thumb drive or pen drive: The Universal Serial Bus (USB) is a type of flash memory that stores data for display on personal computers. A thumb drive, also known as a USB drive or flash drive, is a small solid-state drive that plugs into a USB port. Users may simply transfer files to and from most personal computers using these compact, portable devices because USB technology has become such a standard protocol.

c) Micro SD: The microSD card is the world's smallest consumer-oriented flash memory card. It employs a similar set of electrical connections to the regular SD card (short for Secure Digital. That makes it possible to use microSD cards in standard SD card slots with the use of an adapter. MicroSD was introduced as a smaller alternative for portable electronics.

d) External Hard Disk: A external hard drive is a storage device located outside of a computer that is connected through a Wireless connection or USB cable. An external hard drive is usually used to store media that a user needs to be

portable, for backups, and when the internal drive of the computer is already at its full memory capacity. These devices have a high storage capacity compared to flash drives and are mostly used for backing up numerous computer files or serving as a network drive to store shared content. External hard drives are also known as removable hard drives.

e) Cloud storage: Cloud storage allows you to store data and files in a remote place that you can access via the internet or a dedicated private network connection. Data that you transfer off-site for storage becomes the responsibility of a third-party cloud provider. The provider hosts, secures, manages, and maintains the servers and associated infrastructure and ensures you have access to the data whenever you need it. Cloud storage delivers a cost-effective, scalable alternative to storing files on on-premise hard drives or storage networks.
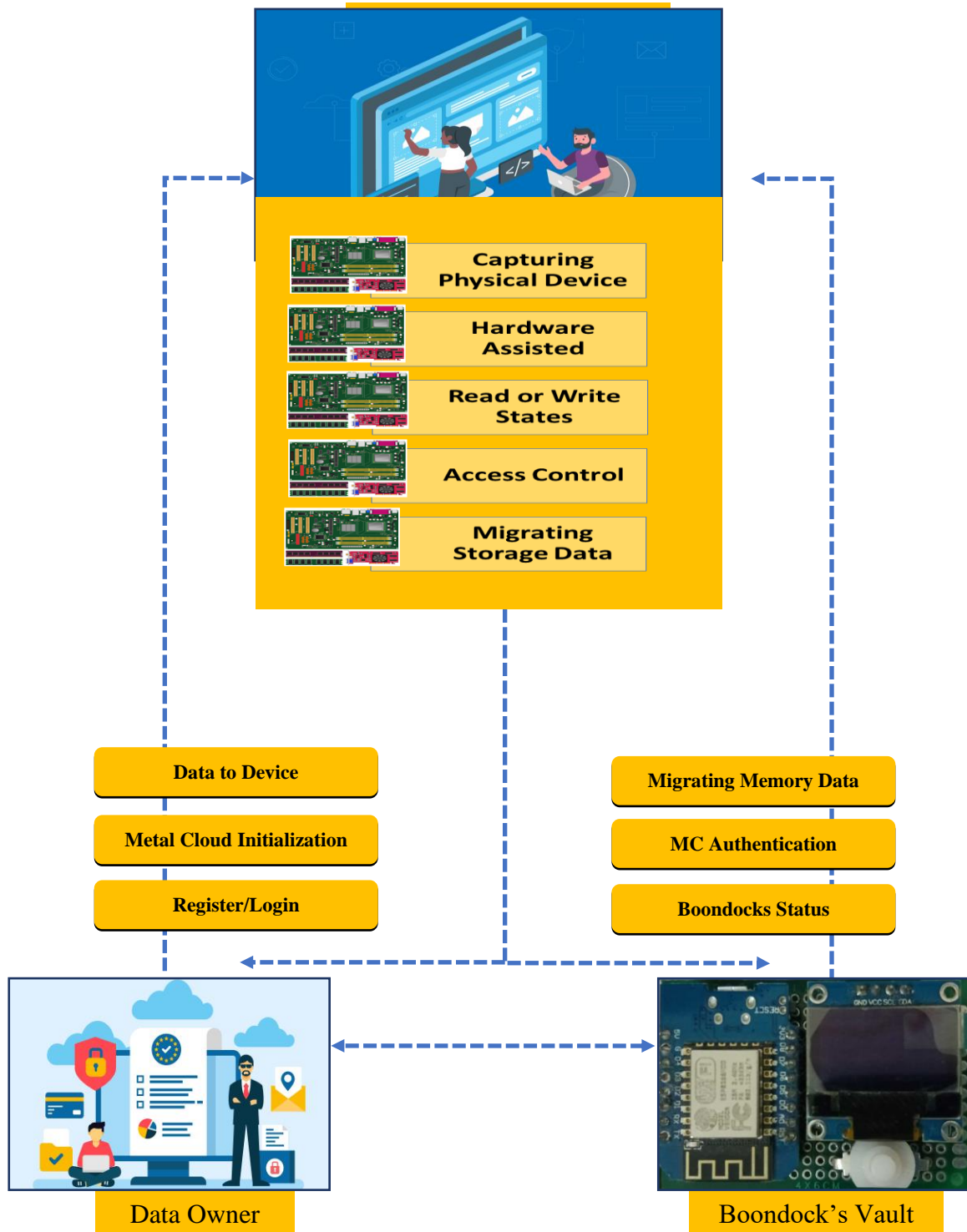
3.2   Drawbacks- Flash Drive or External hard drives can get attacked by viruses, worms, and malware software. Storage device that can be attached to a computer through a USB.

If your hard drive or flash drive is lost or stolen, your information is available to anyone who plugs the device into a computer. Sometimes hard drives crash, so having a backup is essential if you depend on your computer for work or personal needs. If you're storing your files in the cloud, you have to pay a monthly fee. No support in case of a disaster Security is limited. Most hard drives aren't encrypted or even password-protected. Vulnerability to attacks: Security vulnerability is another downside of dealing with cloud computing providers.

3.3   Proposed System- In this project, an innovative wireless handheld storage device named Boondocks Vault is proposed. Boondocks Vault, a wireless, portable storage solution, allows users to expand the number of documents, images, music and video files they can access from any device remotely. It's the ideal companion device because of its capacity expansion, file sharing, and tough portable form factor. Machine learning workloads, query-intensive data warehouses, and data input and processing with IoT are all examples of Boondocks Vault device. With the Dashboard software, it can store, transport, and back up data to cloud storage providers and the Boondocks Vault. One can view their files on their hard disc via the web using that dashboard. Boondocks Vault, a pocket-sized device with a unique design, stores data from PCs or mobile devices using Flash-based technology. These data can then be retrieved without the use of cords thanks to Boondocks Vault's built-in wireless signal. More number of users can work simultaneously with different file types from a single Boondocks Vault without any performance disruption. Boondocks Vault allows device owners to wirelessly manage document and media files, and choose to share them with others, while on the go for work or pleasure. This unique functionality, combined with the durability of a Flash-based device, will satisfy both casual users and the most discerning technophiles.

3.4   Advantages - Access, but preventing local storage of data on personal devices. High speed wireless transmission. Without geographical restrictions. Remote access and manage the storage freely at anywhere by PC/Mobile phone, Point to Point(P2P) confidential transmission to ensure data security. Wirelessly back up your devices. Protection from file loss, malware, hardware failure. Data centralization: There are also projects that are housed in a specific location that can be viewed anywhere and at any time. Ease of accessibility: An Internet infrastructure maximizes enterprise productivity and efficiency by ensuring your application is always accessible. Mobility: Both facilities can be easily obtained by staff operating on the premises or at distant locations. What they need is a link to the Internet. Unlimited storage capacity: The Boondocks Vault has computing space that is nearly infinite. The high degree of collaboration: The computing infrastructure facilitates extremely convenient and safe communication between employees situated in various geographies.

IV. SYSTEM ARCHITECTURE

V. MODULES DESCRIPTION

I) Boondocks Vault Service Provider- The boondocks vault provides clients with professional data storage and sharing services. A cloud service provider known as a boondocks vault, is a corporation that provides cloud computing services to other organisations or people, often infrastructure as a service (IaaS), software as a service (SaaS), or platform as a service (PaaS). The cloud service provider supplies infrastructure components that would otherwise be housed in an on-premises data centre in the IaaS model. Servers, storage, and networking, as well as the virtualization

layer, may be included in these components, which the IaaS provider hosts in its own data centre. Monitoring, security, load balancing, and storage resilience are all capabilities that cloud service providers may add to their IaaS offerings.

SaaS providers- SaaS vendors currently offer a wide array of business technologies, such as productivity suites, customer relationship management (CRM) software and human resources management (HRM) software, all of which the SaaS vendor hosts and provides over the internet. Many traditional software vendors now sell cloud-based options of their on-premises software products.

PaaS providers- PaaS vendors, the third type of cloud service provider, provide cloud infrastructure and services that consumers may employ to complete a variety of tasks. Software developers frequently utilise PaaS offerings. PaaS providers, in comparison to IaaS providers, will add more of the application stack to the underlying infrastructure, such as operating systems and middleware.

II) Data Owner-The data owner who has lots of data to store in Boondocks Vault device and shares with other users. The MCP is the owner of data who encrypts and then shares content to the authorized users under Shamir's $(t + 1, n)$-threshold Secret Sharing algorithm, which allows $t + 1$ users to reconstruct the original secret by combining their shares. The details are listed below:

(1) MCP initially calculates the router's and users' shares using a polynomial. The polynomial is made up of the users' shares and the secret share (points) constant a0. After a successful registration, each user's share is handed to an authorised user as the secret key.

(2) MCP then creates the enabling block by combining the encrypted message with the authorised user's share, with MCP generating the encrypted message using Shamir's Secret polynomial secret constant a0. At the same time, the MCP signs the enabling block to ensure provenance.

(3) Finally, the router receives the enabling block.

III) Hardware Assisted Virtualization-

(1) Data Migration in Real Time Technique for Migrating Virtual Machines: Memory migration in CC is accomplished in three stages: push, stop, and copy, and pull.

(2) Physical Device Capture:
The source hypervisor must record the physical device states during live migration. The device registers are divided into three categories: readable, write-only, and internal.

(3) Storage Data Migration The pre-copy strategy is used to migrate memory data, in which the hypervisor copies all memory pages from the source to the destination system in the background.

(4) States that can read or write: The destination hypervisor must recreate the device states during live migration. Writable and unwritable device registers are distinguished.

(IV) Boondocks Vault Status MC state: -

(1) CPU, motherboard, network, and storage state are preserved. External Connection: It has a USB device attached as well as detachable drives. MC physical Memory: Physical memory associated with MC.

(2) Boondocks Vault Authentication: -For Boondocks Vault storage device authentication, we present a general system architecture. A user must first authenticate with the server before accessing the data stored in the Boondocks Vault device in such a setup.

(3) Memory Data Migration: Data migration works by transferring a specific VM from one physical server to another.

(V) Evaluation Metrics: - Network speed, latency, the number of VM exits, memory usage, system benchmarks, and a database benchmark were all assessed during normal execution.

VI.CONCLUSION

To transform the fat system into the Boondocks Vault thin system. The key contribution of this research is the use of static and dynamic analysis techniques for collecting application data and developing hardware profiles. Load balancing, proactive fault tolerance, power management, resource sharing, and online system maintenance are all reasons for live Boondocks Vault data transfer. During migration, we determine the categories of items that must be moved, including CPU state, memory content, and storage content. The suggested approach inspires research on lightweight virtualization environments, and Boondocks Vault may be integrated into the existing cloud environment's pre-deployment procedure. This storage development is the result of thorough testing of Boondocks Vault on a variety of popular devices in terms of reaction time, network bandwidth usage, application performance, and overall system overhead in various virtualization and network contexts.

REFERENCES

[1] Mamatha, K.R., Singh, S., Thejaswini, S. and Vidya Devi, M., A Wireless Secured Direct Data Transmission Between Authenticated Portable Storage Devices Through GSM Network.

[2] Cao, P., Song, K.Z., Yang, J.F. and Ruan, F.M., 2010. Design of a large remote seismic exploration data acquisition system, with the architecture of a distributed storage area network. Journal of Geophysics and Engineering, 8(1), p.27.

[3] Prauzek, M., Konecny, J., Borova, M., Janosova, K., Hlavica, J. and Musilek, P., 2018. Energy harvesting sources, storage devices and system topologies for environmental wireless sensor networks: A review. Sensors, 18(8), p.2446.

[4] Baumann, A.E., Burns, D.A., Liu, B. and Thoi, V.S., 2019. Metal-organic framework functionalization and design strategies for advanced electrochemical energy storage devices. Communications Chemistry, 2(1), pp.1-14.

[5] Shih, E., Bahl, P. and Sinclair, M.J., 2002, September. Wake on wireless: An event driven energy saving strategy for battery operated devices. In *Proceedings of the 8th annual international conference on Mobile computing and networking*.

[6] Li, X. and Wang, S., 2019. Energy management and operational control methods for grid battery energy storage systems. *CSEE Journal of Power and Energy Systems*.

[7] Yan, K., Tan, J., Liu, L., Zhang, X., Brankovic, S.R., Chen, J. and Fu, X., 2019. Toward Customized Hybrid Fuel-Cell and Battery-powered Mobile Device for Individual Users. ACM Transactions on Embedded Computing Systems (TECS), 18(6), pp.1-20.

[8] Rahimi, A., Zarghami, M., Vaziri, M. and Vadhva, S., 2013, September. A simple and effective approach for peak load shaving using Battery Storage Systems. In 2013 North American Power Symposium (NAPS) (pp. 1-5). IEEE.

[9] Pedersen, J., I Amat, A.G., Andriyanova, I. and Brännström, F., 2016. Distributed storage in mobile wireless networks with device-to-device communication. *IEEE Transactions on Communications*.

[10] Levron, Y., Shmilovitz, D. and Martínez-Salamero, L., 2010. A power management strategy for minimization of energy storage reservoirs in wireless systems with energy harvesting. *IEEE Transactions on Circuits and Systems.*