Secure Server Management

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ABSTRACT

"Secure Server Management" is a Web Application that assists the work from home situation of a system administrator by keeping all the data related to the server he/she is managing in one place while keeping all the servers with their data secure. Our application makes the process more secure by making the servers accessible using the application only, so as to reduce the possibility of the servers being available to brute force attacks. This will reduce their hassle of keeping track of which password and key are for which server. This helps overall in preparing the admin in managing servers thus providing better network control and along with that server's hostname,user_id and password keys are encrypted with AES(256) and stored in KeePass database.

Being a web application built with Django, the software has the advantage of being portable and usable anywhere. Users can log in anywhere at any time and monitor their network control. Our dashboard provides 3 essential domain options to work with, firstly to provide their IP address of the system, which is safely stored in our database so that we can locate and provide output regarding that server, next their is the monitoring tab with the help of which one can monitor their CPU usage and memory used by their server system and based on that the amount of data being transferred can be maintained, as not to overload the server. Our website provides an additional SSH terminal that can be used to remotely execute code on the server.

INTRODUCTION

Companies depend on their server infrastructure for most IT functions, including data storage, hosting websites, emails, and applications. While many businesses have shifted

to cloud services using servers located in enormous, distant data centres, a significant number of organizations still have in-house servers or use a hybrid environment of in-house and cloud services to host server data requiring management. Managing a server, whether in-house or in the clouds, means staying on top of hardware, software, security, and backups. Server management is the process of monitoring and maintaining servers to operate at peak performance. Server management also encompasses the management of hardware, software, security, and backups. The primary goals of an effective server management strategy are to: ● Minimize—and hopefully eliminate— server slowdowns and downtime

● Build secure server environments

● Ensure servers continue to meet the needs of an organization as it evolves.

LITERATURE SURVEY

Sr No.	Referred Paper/Journal	Year of Publication	Summary of paper referred
1	Design and Implementation of Cloud Server Remote Management System	2016	This paper helped us to understand how and what data should be taken from a server for monitoring
2	Management Server	2014	This journal helped us to understand what all should be present in a server management software
3	Client Server	2019	In this survey,we present a detailed report for the client-server based system,highlighting its key concepts, architectural principles, and state-of-the-art implementation as well as research challenges. This paper aims to provide a better awareness of the design challenges of a client-server based system and identify essential research guidelines.
4	Django	2020	Django provides a wide range of features and functionalities. The administration interface provided by Django is one of the coolest things. It's truly simple to create and it's really one of the key advantages when using the framework.
5	Security credentials and their distribution	2019	The text with give introduction about credentials and its security. And it will present some methods for securing credentials information and existing security credentials system. Finally, it will show the detailed analysis of the network application, it is including the developer and customer point of view, specification and the implementation of its along with the technologies use to create the application

6	AN EFFECTIVE MECHANISM FOR SECURING AND MANAGING PASSWORD USING AES-256 ENCRYPTION & PBKDF2	2021	The data is encrypted using AES-256 encryption algorithm and PBKDF2 which is the current industry standard, additionally, the username and password are encrypted with a key generated from the user's master password, ensuring data security, and the password manager can be integrated into the browser as an extension, ensuring high compatibility and ease of use for end users.
7	Enabling SSH Protocol Visibility in Flow Monitoring	2019	Enabling SSH Protocol Visibility in Flow Monitoring The network flow monitoring has evolved to collect information beyond the network and transport layers, most importantly the application layer information. This information is used to improve network security and performance by enabling more precise performance analysis and intrusion detection. In this paper, we contribute to this effort by extending flow monitoring with information from the SSH protocol.
8	Distributed SSH key management	2018	Distributed SSH key management with proactive RSA threshold signatures In this paper we present ESKM - a distributed enterprise SSH key manager. ESKM is a secure and fault-tolerant logically-centralized SSH key manager. ESKM leverages k-out-of-n threshold security to provide a high level of security. SSH private keys are never stored at any single node, not even when they are used for signing. On a technical level, the system uses k-out-of-n threshold RSA signatures, which are enforced with new methods that refresh the shares in order to achieve proactive security and prevent many side-channel attacks.
9	Secure shell	2020	In this paper we will get idea about Secure Shell i.e Secure Shell gives Associate in open convention. Secure Shell clients/server arrangements provide shell for command, transfer of file for TCP/IP applications. Software purchasers and servers area unit develop local Windows usage that provide a selection of SSH.
10	HTTPS Interception	2016	In this paper, they present a comprehensive study on the prevalence and impact of HTTPS interception. First, they showed that web servers can detect interception by identifying a mismatch between the HTTP User-Agent header and TLS client behavior. Here they characterize the TLS handshakes of major browsers and popular interception products, which they use to build a set of heuristics to detect intereception and identify the responsible product.

PROBLEM STATEMENT

In this pandemic everyone had to work from home and the work of a system administrator get extremely difficult as he might have to manage many servers and also manage there passwords and keys. We can ease this process of server management by making all the servers accessible using one application with One Click Login process. The aim of this project is to improve the work from home situation of a system administrator by keeping all the data related to the server he/she is managing in one place. This will reduce their hassle of keeping track of which password and key is for which server. Server management is the process of monitoring and maintaining servers to operate at peak performance. Server management also encompasses the management of hardware, software, security, and backups. The primary goals of an effective server management strategy are to: Primary goals: ● Minimize—and hopefully

eliminate— server slowdowns and downtime ● Build secure server environments ● Ensure servers continue to meet the needs of an organization as it evolves. In this Pandemic everyone had to work from home and the work of a system administrator get extremely difficult as he might have to manage many servers and also manage there passwords and keys, all the server's hostname, user_id and password keys are encrypted with AES(256) and stored in a KeePass database. We can ease this process of server management by making all the servers accessible using one application with One Click Login process.

OBJECTIVE OF PROJECT

During the pandemic we observed a number of data leaks due to lack of security in server management systems. So to tackle this problem we have created a web application where all the servers are accessed through our application only and not by any other third party. For security server information and passwords are stored in AES-256 bit encrypted format. The server id's are checked via mac addresses. Hence all these additions make our web application a secure server manager.

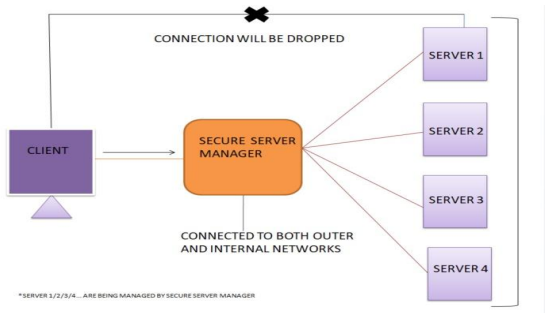

Fig: Secure server Connection Block Diagram

CONCLUSION

To conclude we are making an application where a system administrator can store their server login details securely and access them easily without the hassle of remembering them. This will improve their way of life a bit. Will improve work from home to smoothen up the server access process. Will be a single platform for all kinds of server management needs. This application can further be

expanded to assess its admins the overall behavior, data transfer patterns, their strengths and weaknesses, loopholes, etc in order to provide them a detailed analysis.