

## A SURVEY ON NEW SECURITY MODELS IN CLUSTERED SYSTEMS

<sup>1</sup>A.APARNA, <sup>2</sup> SUNKARA PALLAVI, <sup>3</sup>B.VEERA PRATHAP

1. M.Tech-(SE) Pursuing,

2. M.Tech-(SE) Pursuing ,

3. HOD, Dept of CSE, MOTHER THERESSA COLLEGE OF ENGINEERING & TECHNOLOGY

### ABSTRACT:

Web servers are playing vital role in web environment, lot of services are provided through various protocols. So, providing security to the services , components of the web server is tedious task, these security aspects generally dealt by SSL means secure socket layer. Security is achieved through digital signatures and digital certificates previously. But these digital signature received by a client from clustered environment is not unique so lot of chances to violate the security rules. To avoid this problems we propose and suppose backend forwarding model. This mechanism will reduce the work over head of cluster and improve the communication and performance.

**Key terms:** SSL, backend forwarding scheme, security, clusters,

### Introduction

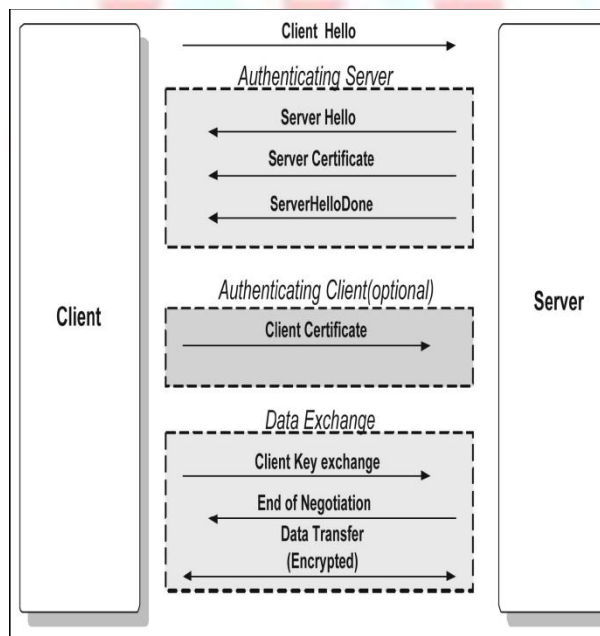
We investigate the impact of SSL offering in cluster-based network servers, focusing on application servers, which mainly provide dynamic content. We show the possible performance improvement when the SSL-session reuse scheme is utilized in cluster-based servers. The SSL-session reuse scheme has been tested on a single Web server node and extended to a cluster system that consisted of three Web servers. We explore the SSL-session reuse scheme using 16-node and 32-node cluster

systems with various levels of workload. We propose a back-end forwarding mechanism by exploiting the low-overhead user-level communication to enhance the SSL-enabled network server performance.

We compare three distribution models in clusters: Round Robin, SSL\_with\_Session, and SSL\_with\_bf. The RR model, widely used in Web clusters, distributes requests from clients to servers using the RR scheme. SSL\_with\_Session uses a more

sophisticated distribution algorithm in which subsequent requests of the same client are forwarded to the same server, avoiding expensive SSL setup costs. The proposed SSL\_with\_bf uses the same distribution policy as the SSL\_with\_Session, but includes an intelligent load balancing scheme that forwards client requests from a heavily loaded back-end node to a lightly loaded node to improve the utilization across all nodes. This policy uses the underlying user-level communication for fast communication.

back-end database server. A web server layer in a data center is a web system architecture that consists of multiple server nodes interconnected through a System Area Network (SAN).The web server presents the clients a single system view through a front-end web switch, which distributes the requests among the nodes. A request from a client goes through a web switch to initiate a connection between the client and the web server. When a request arrives at the web switch, the web switch distributes the request to one of the servers using either a content-aware or a content-oblivious distribution.



The front- end web server provides static or simple dynamic services. The web resources provided by the first tier are usually open to the public and, thus, don't require authentication or data encryption. Hence, the average latency of client requests in this layer is usually shorter than in the application servers. The mid-tier, called the application server, is located between the web servers and the back-end database. The application server has a separate load balancer and a security infrastructure such as a firewall and should be equipped with a support for databases, transaction management, communication, legacy data, and other functionalities. After receiving a client's request, an

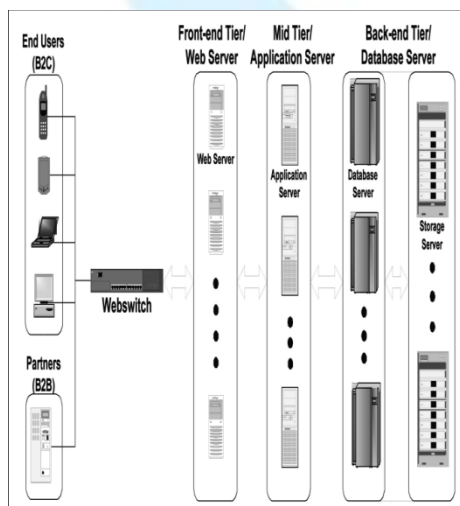
### 1 Cluster-Based Data Centers

the typical architecture of a cluster-based data center or network server consisting of three layers: front end Web server, mid-level application server, and

application server parses and converts it to a query. Then, it sends the generated query to a database and gets back the response from the database. Finally, it converts the response into an html based document and sends it back to the client.

The application server provides important functionalities for online business such as online billing, banking, and inventory management. Therefore, the majority of the content here is generated dynamically and requires an adequate security mechanism. The back-end database layer houses the most confidential and secures data. The main communication overhead of a database layer is the frequent disk access through the Storage Area Network.

MULTI TIER DATA CENTER ARCHITECTURE



Input text file is given by admin and the encrypted format is stored in all

servers. Network load balancing facilitates the process of creating a server farm. A server farm is a redundant cluster of several servers serving a single IP address. The most common scenario is that each of the servers is identically configured running the server and whatever local applications running on the server. Each machine has its own copy of everything it needs to run the application which includes the html files, any script pages, any binary files and any support files such as configuration and local data files. In short the application should be fully self-contained on a single machine, except for the data which is shared in a central location. Data typically resides in a sql backend of some sort somewhere on the network, but could also be files shared in a directory for files from a file based database engine such as visual FoxPro or Access.

**Modules to handle backend forwarding model**

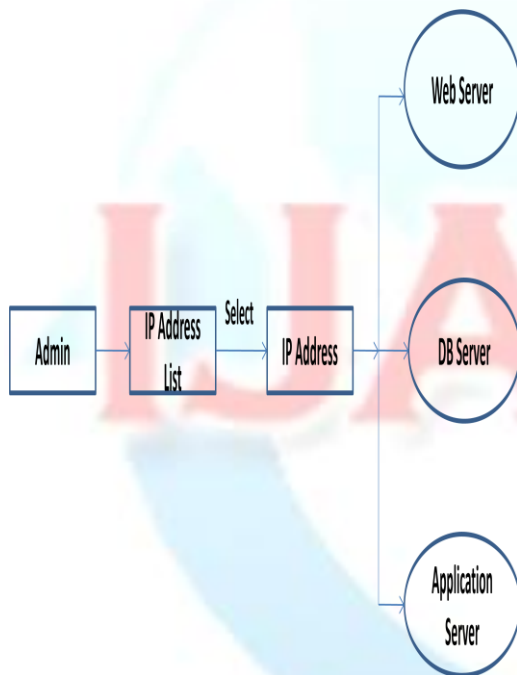
1. Authentication Module.
2. IP Address Representation Module.
3. Load Servers (With Encryption) Module.
4. Load Balancing (With Decryption) Module.

**Authentication Module:**

This module is to register the new users and previously registered users can enter into our project. The admin only can enter and do the uploading files into the servers.

**IP Address Representation Module:**

This module is to give the IP addresses which we are going to assign those as servers. We can enter and view IP addresses from this module.



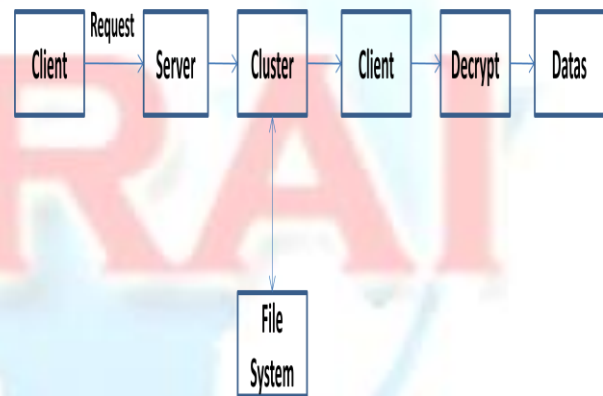
**Load Servers Module:**

This module is, the administrator only can enter into this module. The administrator will do the encryption of the text file and store into the servers which we are assigned in IP representation module. This module will make the both

public and private key for the cryptography.

**Load Balancing Module:**

This module is, the users can enter into this module and can view the file name which the administrator stored into the servers. The user can select the file from the list and can download from the server which is in idle state. We will get the response time and from which server we are getting the file. Finally we can get the decrypted file from the key pair.



**EXISTING MODEL**

In existing system, they have used to develop the project using Round Robin [RR] model and SSL\_with\_Session model. Those models are not effective. Those models are not able to give the output in time and the thorough put also lesser than that their expected output.

These models had made the Latency problem and minimal through put.

For this problem they introduced the SSL\_with\_bf (Backend forwarding) model is to overcome the existing problems. We going to implement SSL\_with\_Backend Forwarding model in our proposed system.

### PROPOSED MODEL

In our Proposed System, We are going to implement the SSL\_with\_Backend Forwarding model (Algorithm) is to overcome the problem of existing system.

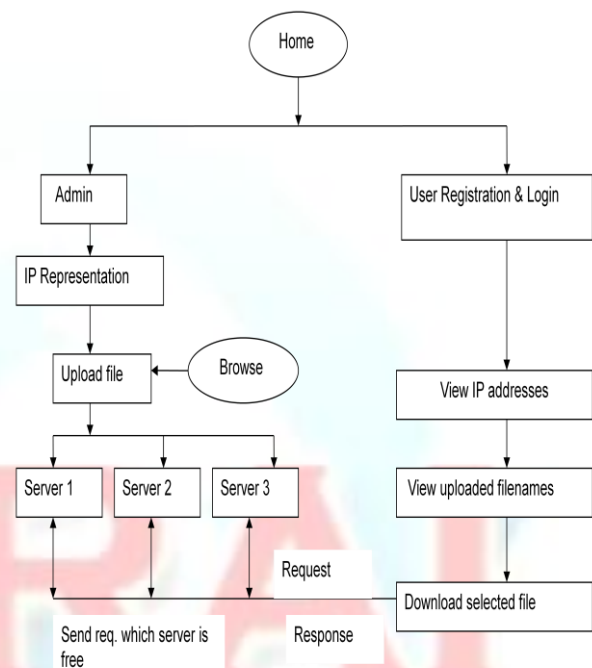
This model will reduce the latency and increase the throughput than the existing system (Round Robin model and SSL\_with\_Session).

The Secure Socket Layer\_with\_BF model is very helpful for load balancing of the server. This will reduce the load of the server while the server is being busy. These are the advantages of our proposed system.

The ssl\_with\_bf scheme can minimize the average latency by about 40 percent and improve throughput across a variety of workloads.

State-of-the-art cluster-based data centers consisting of three tiers (Web server, application server, and database server) are being used to host complex Web services

such as e-commerce applications. The application server handles dynamic and sensitive Web contents that need protection from eavesdropping, tampering, and forgery.



Although the Secure Sockets Layer is the most popular protocol to provide a secure channel between a client and a cluster-based network server, its high overhead degrades the server performance considerably and, thus, affects the server scalability.

It improving the performance of SSL-enabled network servers is critical for designing scalable and high-performance data centers. We examine the impact of

SSL offering and SSL-session-aware distribution in cluster-based network servers.

We propose a back-end forwarding scheme, called `ssl_with_bf`, that employs a low-overhead user-level communication mechanism like Virtual Interface Architecture to achieve a good load balance among server nodes.

We compare three distribution models for network servers, Round Robin, `ssl_with_session`, and `ssl_with_bf`, through simulation. The experimental results with 16-node and 32-node cluster configurations show that, although the session reuse of `ssl_with_session` is critical to improve the performance of application servers, the proposed back-end forwarding scheme can further enhance the performance due to better load balancing.

The `ssl_with_bf` scheme can minimize the average latency by about 40 percent and improve throughput across a variety of workloads.

## CONCLUSION :

We conclude that the backend forwarding model implementation stage involves careful planning, investigation of the existing system and its constraints on

implementation, designing of methods to achieve changeover and evaluation of changeover methods. The model basically designed for cluster based web server where digital signatures are not able to fully implemented due to different servers responding to a single client. For this we are implementing a backend forwarding method for cluster based web server. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective.

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