Local Cache

Ajay Kumar Singh[1], Sahil Parmar[2], Prof. Ajaykumar T. Shah[3]
[1, 2] Dept of Computer Engineering
HOD, Dept of Computer Engineering
[1, 2, 3] Alpha College of Engineering and Technology

Abstract- *"Local Cache" is a Server which is made to work on Local Area Network (LAN). The purpose of the server is to minimise use of internet for repetitively downloaded content, hence saving Bandwidth, internet data and time. This server can be configured to work with various kind of services. This is achieved by the server working on the same Local Area Network as the client computers, when a client computer requests for the data from the particular service the server is configured for, the requests goes to the server, if the data is cached already on the server then server sends the data to client computer via LAN and if not present then the data is downloaded live on the server for caching and simaltaniously gets forwarded to the requesting client computer.*

Keywords- Local Area Network, Internet, Server, Caching, Linux, Internet Services, Bandwidth saver, Client PC, NGINX Web server, DNS Redirection.

I. INTRODUCTION

The main purpose if this system is to save on time, bandwidth and internet data (depends on the internet connection). This is to basically accelerate downloads on specific services which server is configured to work with. This server can be configured to be used with various different kinds of services like Windows Updates, Steam, Uplay, Origin and any other internet service which needs downloading huge amount of data ranging from 1GB to several hundreds of Gigabytes. To achieve this, the server needs to be on the same local network as client and no changes are required on client computer, everything runs in the background without client noticing anything.

This server can be used in environments where there are a lot of clients computers which needs to download the same data from the internet, or sometimes same data again and again. Mostly environments like offices, school, collages, cyber cafe, Gaming centre, LAN parties, etc, can take advantage of such system.

II. LITERATURE REVIEW

A. A local area network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building. By contrast, a wide area network (WAN) not only covers a larger geographic distance, but also generally involves leased telecommunication circuits.

B. A server is a computer program or a device that provides functionality for other programs or devices, called "clients". This architecture is called the client–server model, and a single overall computation is distributed across multiple processes.

C. Ubuntu is a free and open-source Linux distribution based on Debian. Ubuntu is officially released in three editions: Desktop, Server, and Core for the internet of things devices and robots. All the editions can run on the computer alone, or in a virtual machine. .

D. Nginx is a web server which can also be used as a reverse proxy, load balancer, mail proxy and HTTP cache. Nginx is free and open-source software, released under the terms of the 2-clause BSD license.

III. STUDY FINDINGS

A. This system is assists in accelerating downloads of specific service data which are frequently accessed over the internet. It cache the data in the server storage and sends it via LAN to the requesting Client PC. The data throughput depends on the LAN speed.

B. The System is extremely friendly for end user. There is no extra configuration required on the client computer. The client wouldn't even know that a server like this is running on the local network. The server completely runs in the background, silently accelerating service downloads.

C. The main purpose of this system is to save on Bandwidth, time and internet data. These days where Internet Service Providers are capping data on internet connections, it is necessary to save data and internet bandwidth. Not just that, the caching happens in real time, so if data isn't present on the server then it is caches and sent to client simultaneously.

D. This server uses NGINX's web server's caching capabilities. It is moderately easy to configure. Once the server is configured, the only maintenance needs to be done is clearing the cache out when server storage is full. So basically it is a very low maintenance and low cost server to maintain.

E. Network/System Admin can monitor server's activity on the server console or on the network via network usage. They need to make sure the server is on a NAT network and isnt directly exposed to the internet as it be a security threat.
F. The minimum hardware requirement is 4GB of system memory, Intel core i3 6th gen or higher, AMD Ryzen 3 1st gen or higher, 500GB of storage space, 1Gbps Network card.

IV. FUTURE ENHANCEMENT

A. In future, the application described would be a prototype that would help a lot of businesses to speed up their work & there still remains much to do in terms of development and improvement of the existing models.
B. Currently the server only contains a few services but in future we can expand it to support various kinds on services and can also implement a malware scanning tool which can live scan cached files before it reaches client computer.
C. Currently the server only works on Unencrypted connection but more research needs to be done to see the possibilities of it working with encrypted connection.
D. Can be expanded to be used in various locations then what is traditionally used in.

V. CONCLUSION

In this report I am concluding that by developing our project "Local Cache" it will make it extremely easy to share same internet service data among Computers on the same local network. By using this system, it will save time, Bandwidth, Internet data and in long term money. This system is very flexible among ranges of hardware and can easily be deployed in a LAN environment and can be configured to work with different services.

VI. ACKNOWEDGMENT

We express our sincere thanks to Prof. Ajaykumar T. Shah Head of Department of Computer Engineering, Alpha College of Engineering and Technology for their Support and guidance for this project and care taken by them in helping us to complete the project work successfully.

REFERENCES

[1] https://linustechtips.com/
[2] https://www.reddit.com/
[3] https://hub.docker.com/
[4] https://www.nginx.com/resources/