A Three-Layer Privacy Preserving Cloud Storage Scheme Based on Computational Intelligence in Fog Computing

ABSTRACT

- The computer technology has developed rapidly. Cloud computing has gradually matured through so many people's efforts.
- Then there are some cloud-based technologies deriving from cloud computing.
- we propose a three-layer storage framework based on fog computing. The proposed framework can both take full advantage of cloud storage and protect the privacy of data.
- Besides, Hash-Solomon code algorithm is designed to divide data into different parts.

CONTINUE

- Then, we can put a small part of data in local machine and fog server in order to protect the privacy.
- Moreover, based on computational intelligence, this algorithm can compute the distribution proportion stored in cloud, fog, and local machine, respectively.

EXISTING SYSTEM

- Recent years witness the development of cloud computing technology. With the explosive growth of unstructured data, cloud storage technology gets more attention and better development.
- However, in current storage schema, user's data is totally stored in cloud servers. In other words, users lose their right of control on data and face privacy leakage risk.
- Traditional privacy protection schemes are usually based on encryption technology, but these kinds of methods cannot effectively resist attack from the inside of cloud server.

PROPOSED SYSTEM

- we propose a three-layer storage framework based on fog computing.
- The proposed framework can both take full advantage of cloud storage and protect the privacy of data.
- Besides, Hash-Solomon code algorithm is designed to divide data into different parts. Then, we can put a small part of data in local machine and fog server in order to protect the privacy.
- Moreover, based on computational intelligence, this algorithm can compute the distribution proportion stored in cloud, fog, and local machine, respectively.

CONTINUE

- The introduction of fog computing can relief the cloud computing layer, improving the work efficiency.

HARDWARE REQUIREMENTS

- Processor - Pentium –III
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Floppy Drive - 1.44 MB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

SOFTWARE REQUIREMENTS

- Operating System : Windows 8
- Front End : Java /DOTNET
- Database : Mysql/HEIDISQL

CONCLUSION

- The development of cloud computing brings us a lot of benefits.
- Cloud storage is a convenient technology which helps users to expand their storage capacity. However, cloud storage also causes a series of secure problems.
- When using cloud storage, users do not actually control the physical storage of their data and it results in the separation of ownership and management of data.
- In order to solve the problem of privacy protection in cloud storage, we propose a TLS framework based on fog computing model and design a Hash-Solomon algorithm. Through the theoretical safety analysis, the scheme is proved to be feasible.

CONTINUE

- By allocating the ratio of data blocks stored in different servers reasonably, we can ensure the privacy of data in each server. On another hand, cracking the encoding matrix is impossible theoretically.

REFERENCE

[1] J. Shen, D. Liu, J. Shen, Q. Liu, and X. Sun, “A secure cloud-assisted urban data sharing framework for ubiquitous-cities,” Pervasive Mobile Comput., vol. 41, pp. 219–230, 2017.

[2] Z. Fu, F. Huang, K. Ren, J. Weng, and C. Wang, “Privacy-preserving smart semantic search based on conceptual graphs over encrypted outsourced data,” IEEE Trans. Inf. Forensics Security, vol. 12, no. 8, pp. 1874–1884, Aug. 2017.

[3] G. Feng, “A data privacy protection scheme of cloud storage,” vol. 14, no. 12, pp. 174–176, 2015.

CONTINUE

[4] Z. Fu, K. Ren, J. Shu, X. Sun, and F. Huang, "Enabling personalized search over encrypted outsourced data with efficiency improvement," IEEE Tr ans. Parallel Distrib. Syst., vol. 27, no. 9, pp. 2546–2559, Sep. 2016.

[5] Z. Xia, X. Wang, X. Sun, and Q. Wang, "A secure and dynamic multikeyword ranked search scheme over encrypted cloud data," IEEE Trans. Parallel Distrib. Syst., vol. 27, no. 2, pp. 340–352, Feb. 2016.

[6] T. Wang et al., "Maximizing real-time streaming services based on a multi-servers networking framework," Comput. Netw., vol. 93, pp. 199– 212, 2015.