

ABSTRACT

The advance development of internet technology give birth to new technology based on internet connection one of them is cloud computing. Cloud computing have many services that can be used for consumer. One of the service that often used by personal user or corporate user are cloud storage.

In this final assignment we create storage sytem based on cloud with the name of Secure Cloud. Secure Cloud use Serpent Cryptography Algorithm to secured user's data and Diffie-Hellman Key Exchange algorithm to securing the transfer of key used for encrypting the data. Data belong to users who are already registered on the system encrypt using Serpent Cryptography Algorithm before being uploaded to the cloud server and decrypt when user download the data using Serpent Cryptography Algorithm. When uploading and downloading data to the encryption and decryption keys are sent using the key exchange system using the Diffie-Hellman Key Exchange.

Secure Cloud test results show the entire feature can work well. In a test using 20 *file* with different types. The average time required to encrypt the data is 4648,458 ms and the average for data decryption is 4561,813 ms. The test results Avalanche Effect to get the 50,0506% using 256 bits key from scale 0% to 100%. In testing the use of resources for the results obtained 288,248 MB heap size 143,198 MB for encryption and decryption head size, the results are also obtained for used 127,644 MB and 71,024 MB heap encryption for decryption of used heap. The time required to create and send a Diffie-Hellman key takes 12343.767 ms for key length of 3072 bits. Serpent have Big-O Notation of $O(N)$. Diffie-Hellman have Big-O Notation of $O((\log N)^4)$.

Keywords : Cloud, Diffie-Hellman Key Exchange Algorithm, Serpent Cryptography Algorithm, Secure Cloud, Avalanche Effect, Resources