

ABSTRACT

The development of digital storage methods are now more diverse, one of which is a cloud-based storage methods that provide access to the consumer to store the data in the Internet with a storage capacity that can be adapted to the wishes of its users. However, this method has the disadvantage that Cloud pertaining to data security issues.

In this final assignment created Secure Cloud, is a cloud service that has the security level higher power to the problem of data theft. Secure Cloud uses the encryption algorithm and the key exchange algorithm Algorithm Triple DES (3DES) and Diffie-Hellman Key Exchange Algorithm. Data belonging to users who are already registered on the system in use Triple DES encryption algorithm (3DES) before being uploaded in the Cloud Server. When the data will be downloaded by the user, the data will be decrypted using Triple DES algorithm (3DES). When uploading and downloading data to the encryption and decryption keys are sent using the key exchange system using the Diffie-Hellman Key Exchange Algorithm.

Secure Cloud test results show the average time required to encrypt the data that is 6414.600 ms, and the average for data decryption requires 6390.882 ms. The test results Avalanche Effect to get the 50.09% of the scale 100%. In testing the use of resources for the results obtained 109.190 MB heap size 88.082 MB for encryption and decryption head size, the results are also obtained for used MB 53.028 and 38.846 MB heap encryption for decryption of used heap. The time required to create and send a *Diffie-Hellman* key takes 3175.567 ms for key length of 2048 bits.

Keywords : Cloud, *Diffie-Hellman* Key Exchange Algorithm., Triple *DES* Algorithm (*3DES*), Secure Cloud, Avalanche Effect, Resources