

ABSTRACT

The emergence of cryptocurrency in 2009 has created substantial changes that affect the process of the transaction in the internet. The changes also attracting the interest of cryptography expert, socio economic and researchers in the area of hardware or software system design. This is due to the nature of cryptocurrency which has no central bank and must contain cryptographic process in any transaction. Until now, many of software and hardware implementation has been built. But the most efficient implementation is continue to being developed.

In this final project, an implementation of scrypt processor for litecoin will be designed. Litecoin is also one of many cryptocurrencies exist right now. The implementation will be designed as hardware implementation using FPGA as it's implementation device. It is because FPGA has the ability of easily being programmed and has high speed processing. FPGA also has low power consumption so the power consumption cost wont become higher than the result of mining itself.

The designed mining system use scrypt algorithm resulting 1Kbit memory is required for each core. So that only 1 core can be implemented in ATLYS FPGA board due to lack of resource. The implementation of pipeline architecture in the system reduces it's latency clock by 7,92%. Hash rate of FPGA implementation is 610 H/s with maximum usable frequency is 26,968MHz.

Keywords: Cryptography, Cryptocurrency, Scrypt, Litecoin, HDL, FPGA