Abstract

FPGA implementation of Advanced Encryption Algorithm for 128 bits is presented in this paper for high speed applications. It explores pipelining and sub-pipelining to gain speed optimization without increasing area considerably. It concentrates on placement of the pipelining registers rather than just increasing its number to gain speed. An encryptor with 8 stages of sub-pipelining for each round unit using the proposed architecture gives a throughput of 24.33 Gbps on Xilinx XCV1000 e-8 bg560 device and that of 29.99 Gbps on XC3S4000-5fg676 device.


- Edwin NC Mui, "Practical Implementation of Rijndael S-Box Using Combinational Logic.", &quot;
- Marian Cretu1and Cristian-Gabriel Apostol &quot;
- A Modified Version of Rijndael Algorithm Implemented to Analyze the Cyphertexts Correlation for Switched S-Boxes &quot; IEEE conference on Communication (COMM), Bucharest, 2012


**Index Terms**

Computer Science

Information Sciences

**Keywords**

Rijndael Aes Pipelining Sub-pipelining S-box.