Abstract

Aircraft Data Network (ADN) is a concept of communication data that developed specifically to be implemented in the aircraft environtment. Because ADN is run in aircraft environtment, it makes this concept need a system that work in real-time and also has a high level of reliability. Avionics Full-Duplex Switched Ethernet (AFDX) is a standard of data communication that implemented for ADN based on ARINC 664's specifications. AFDX were built based on IEEE 802.3 (Ethernet)'s technology using the components of Commercial-Off-The-Self (COTS). Problems that usually faced for aircraft's technology development are the length of developing time also the amount of costs that needed for researching and making new industrial's equipments to produce a technology that made specifically for a certain vendors, but by using Ethernet's technology that have a global's standard, those problems surely can be pressed. The most important part for AFDX development is that it's needed to do planning, designing, and implementing system that have deterministic behaviour, a system that can handle traffic policing and frame filtering function with performance that fulfilled the specification's standard.

In this final project, the implementation of ADN to fulfill ARINC 664/AFDX's standards using COTS's components in a form of embedded device based on PC/i386 Processor using Linux as the operating system has been done. The system that has been built can receive and forward the package using rule traffic and frame filtering and has been defined. Besides, the performance test is also has been done and showing the maximum score of latency is 73.61 miliseconds which is meet the ARINC 664's standard which is less that 150 miliseconds, but the maximum of jitter's score is 3380 microseconds that considered can not meet the standard which is less than 500 microseconds, so the built-on system can not be called as a fully deterministic system.

***Key Words**: Aircraft Data Network (ADN), Avionics Full-Duplex Switched Ethernet (AFDX), commercial-cff-the-shelf (COTS), ARINC 664*