Air conditioning system is an important part of data center room. In the data center, electronic equipment of IT system will continue to increase its temperature naturally. To keep the temperature remains stable, air conditioning system needed, so that IT equipment could normally function. ASHRAE Standard set for space data center, which must have a temperature between 18-27 °C, with relative humidity maintained between 55% - 60%. To achieve these conditions it is necessary to a suitable air conditioning system.

To obtain the appropriate air conditioning system we needed to calculate the cooling load for the determination of the capacity of air conditioning machines. Cooling load calculation method used is CLTD. After knowing the total cooling load, it can determine the CRAC (Computer Room Air Conditioner) by looking at the specifications of its capacity. Improvements carried out airflow by rearranging the layout of the data center. FLUENT software used to ensure that cold air well distributed.

After total cooling load calculation on data center space, obtained a yield of 701.5 kW. That value already includes 30% over sizing. While the capacity of each CRAC
(Computer Room Air Conditioning) required is 150 kW. The data center re-arranging layout has been carried out accordance to standard rules. Furthermore, the help of FLUENT software analyzed the situation in the room.

**Key Word:** data center air conditioning system, cooling load calculation, CRAC (Computer Room Air Conditioning)