

## ABSTRACT

Access to information is now growing in line with the increasing demand for data traffic. One part of the telecommunications network planning is how to predict the traffic needs in the future with reference to the pattern of previous data out of external factors such as geographical and socio-economic conditions of the community. The need for data traffic is closely related to the capacity or bandwidth required for telecommunication networks. By knowing the amount of traffic of a data communication network in the future it can be expected that the capacity should be provided on the network in the future and detect anomalies in network. Indonesia University network, one of PT Telkom Indonesia's customer was selected network to analyze and predict the traffic needs in the future

Traffic data is random, difficult to determine how the traffic changes in the future. With reference to the pattern of data every day, Artificial Neural Network is expected to solve the problem of prediction with the desired results. This research will process data traffic and then analyze the needs of Internet traffic on a network using Radial Basis Function Neural Network method particularly well in completing a system that has a high degree of nonlinearity.

Data used for this study is data of internet traffic taken from January,1, 2014 – December, 31 2013 from 00.00-23.30 every an half hour recorded by PT Telkom Indonesia, Tbk software application namely MRTG. All data were grouped based on the day then divided into training data, target data, test data and validation/ actual data. The RBFFNN was trained until it showed the smallest MSE (Mean Square Error ).

The training results showed that the RMSE of network performance were smaller then 0,1. The prediction result showed 0,94 of regression analysis for inbound traffic and 0,803 for outbond traffic.