

# A measurement study of Internet Exchange Points (IXPs): history and future prediction

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Internet exchange points (IXPs) emerged to remedy the deficiency of peering connections among autonomous systems (ASes). IXPs play an important role in reducing the cost of transit connections over the Internet. This work attempts to study the popularity of IXPs over the Internet. This work consists of two main parts. The first part is a measurement study of multi-historical snapshots of IXPs. These historical data have been harvested for different European IXPs with emphasis on Amsterdam (AMS-IX) IXP. In the second part; two nonlinear autoregressive exogenous (NARX) back-propagation neural network models (BPNN) have been implemented to predict the following; the future traffic volume that the AMS-IX IXP will transit; the number of participant networks that will use the AMX-IX IXP services. We utilized AMX-IX IXP collected data to implement these models. Our results show that ASes have understood the important roles that IXPs is playing on the Internet. Moreover, the traffic size that is carried by the IXPs is rapidly growing. Finally, our implemented NARX BPNN models show a considerable degree of fidelity, in which we obtained more than 99% in regression value with negligible error.