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Comparative analysis of options for organizing internet traffic exchange in territorially distributed communication networks - Review 1

ROUND 1

Anonymous
Reviewer

Recommendation: Reject-with-resubmit

Date: March 20, 2024

Comments:

The authors propose a model for determining the traffic parameters of two Internet eXchange points (IXs) assuming that the Internet traffic follows a Poisson model with exponentially distributed data volume. The advantage of this modeling is that it is easy to analytically model the traffic.

However, the hypothesis that the Poisson model is good for modeling the Internet traffic is not correct. The Poisson model was born in the context of telephony, but data traffic follows a self-similar pattern. Moreover, the paper does not demonstrate, use experimental data, or cite works that support this claim.

There are other important issues with the paper:

- There is no clear definition between IP peering and transit, and no mention of IP and BGP interworking ("The transfer of data between different AS is made possible by their support for common routing protocols and addressing schemes");
- The description of how upstream providers allow for transit and the importance of "free" peering through IX by small ISPs is not well explained;
- There is confusion between Autonomous Systems (AS) and Content Delivery Networks (AS). Indeed, the vast majority of AS are not concerned about cache servers. So, the IX design and caching are two problems that are not related;
- The availability factor K_g should be in the order of 99.9 (at least) and not 0.95 as stated in the paper; and
- The finding that the "importance of choosing the location of the exchange node: these nodes should be located in regions of maximum concentration of Internet traffic." is the premise of creating an IX.

Another point: as the main reference is in the Russian language and not in well-known international repositories, the authors should add a direct link to it.