

Review of Internet Service Providers and Peering

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1 Introduction

This paper discusses the issues that lead ISPs to consider peering or transit arrangements with one another. Norton considers the technical reasons for peering as well as the financial and political.

Norton explains that peering with another ISP results in lower transit costs and lower latency by avoiding use of an upstream transit provider. ISPs might avoid peering for a variety of reasons such as “traffic asymmetry” in which traffic flows disproportionately from one ISP to another. These issues and others are collectively classified as “phase I,” the first step an ISP embarks on when deciding whether or not to peer with another. The second phase simply involves initiating contact with the other ISP and determining whether they too are interested in a peering arrangement. The third, and final phase considers all the issues that need to be resolved to establish the new peering arrangement, such as whether the two ISPs already have a presence at a common exchange and whether doing so makes sense financially.

Norton’s discussion focuses on the thought process ISPs go through when considering a new peering relationship. He does not detail the technical issues, and opts instead to provide a higher level discussion of the kinds of problems ISPs face.

2 Clean Slate Perspective

Most of the issues that arise when determining whether to peer with another ISP do not align with the interests of the Internet as a whole. That is, even if a peering arrangement would significantly benefit many Internet users, two ISPs might elect not to es-

tablish one because of some other concern such as whether their interests align with the exchange operator’s. Thus, if we were going to rebuild the Internet, it might be useful to consider what kind of business models would allow ISPs to interact in such a way as to correlate their interests (more strongly) with the majority of Internet users’ interests.

If no other business models than the present one exist, then it might be worthwhile simply to consider a system which facilitates some of the largest problems facing ISPs today. One issue brought up in the paper is the difficulty in determining which ISPs to peer with. I would have expected that analyzing the traffic flowing through an ISP’s network would help establish which ISPs should be peered with. The paper confirms that this is a viable approach, but because of the volume of data involved, most peering coordinators simply use intuition. Intuition is not typically regarded as the best “algorithm” for maximizing overall network performance or overall user satisfaction—why can’t we come up with something better?

3 Conclusion

Clearly, establishing peering relationships is a complex and sub-optimal endeavor in the current Internet. Hopefully, ISPs will one day develop new techniques and business models which will improve peer selection and, consequently, network performance.