

## The Border Gateway Protocol (BGP) and Harmonious Routings

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### **Abstract**

Interdomain routing information in the Internet is propagated via the Border Gateway Protocol (BGP). We give an overview of the operation of BGP and some of its pitfalls. A domain or subnetwork under single administrative control is called an Autonomous System (AS). An AS configures its BGP to attempt to meet certain economic obligations but this can cause it to have to transit more traffic than it would like. This raises the question about the structure of routings where no AS is overburdened with other's traffic. To address this question we developed a game theoretic model and studied the core of such games as well as a relaxation of the core that we call harmonious routings, routings where no node is asked to transit more than an amount of traffic proportional to its demand.

*This is joint work with Bruce Shepherd.*