Paper Review Report

Title: On Characterizing BGP Routing Table Growth

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Internet contains thousands of autonomous systems(ASes), that are collection of connected Internet Protocol (IP) routing prefixes under the control of one or more network operators on behalf of a single administrative entity or domain that presents a common, clearly defined routing policy to the Internet. Each AS contains a set of networks of hosts or/and network devices such as routers, switches, etc. The host and network devices are uniquely identified with a 32-bit IP address that are aggregated into continuous block called prefixes to ensure the Internet routing infrastructure.

Autonomous systems use routers, that use routing protocols (Border Gateway Protocol (BGP)) and routing table, to exchange reachability information for each prefix. BGP is an exterior gateway protocol (EGP) that interconnects all autonomous systems(ASes) in the world to ensure global connectivity. These days, the size of BGP routing table is expanding enormously due to fractionalization and finer segmentation of the IP address space. The dramatic growth of the size of the routing table has an impact on the processing capability, packet forwarding speed, memory capacity of routers.

The paper first discusses about the factors that contribute to BGP routing table growth, such as multihoming, load balancing, address fragmentation, failure to aggregate, the contribution extent of the factors and characterize the growth of each contribution. In order to determine the contributions of multi-homing, load balancing, address fragmentation, and failure to aggregate to routing table size the authors begun their experimental work by measuring the routing table of Oregon route views server and then analysed it. Later they use additional fifteen routing tables collected from ASs residing at other locations in the Internet to perform further evaluation; and they find out that their results are reasonably accurate.

The presentation of the paper is well-organized; however, issues like performance of the router vs. the increase of the routing records should be addressed well.

Title: BGP Routing Table: Trends and Challenges

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The Border Gateway Protocol (BGP) is an exterior gateway protocol (EGP) that interconnects all autonomous systems(ASes), satisfying a wide variety of ISP-specific routing policies, in the world to ensure global connectivity. The routing policies are governed by operating costs, a number of agreement-based and politically-based issues, network locality, multi-homing preferences, and, in some select cases, traffic connection capacity. The primary function of BGP is to let BGP enabled devices exchange network reachability information, information on the list of Autonomous Systems, among themselves. The importance of BGP protocol for ensuring global connectivity over the Internet has created a number of challenges for it. i.e. Fractionalization and finer segmentation of the IP address space has expanded the size of BGP routing table. (Scalability of global routing table).

The authors start discussing about how the number of the global routing table entries and IP address allocation are expanding enormously, based on the analysis of the BGP announcement snapshot provided by the University of Oregon Route View and RIPE NCC Routing Information Service Project,during the period of the study (2003-2009).

The paper discusses about a number of aspects about allocated block sizes and pointed out that : prefix spliting, prefix extension and deallocation are events that affect the IP address allocation count. The authors, then identified had identified the primary causes that accelerated the BGP routing table growth, such as fragmentation of allocated IP blocks and duplicate announcement of IP blocks. They finalize their work by identifying the regions from where the routing announcements originate during the period of the study.

The presentation of the paper is well-organized and it shows where routing announcements are originating around the world. However, it would have been better had it had had a measure of *where most new Internet traffic is occurring, number of appearing and disappearing announcements in the BGP routing table, the latency between allocation and prefix appearance in BGP announcements, and the level of unallocated address announcements.*