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IEEE Journal on Selected Areas in Communications (JSAC)
INTERNET ROUTING SCALABILITY

The Internet routing infrastructure provides connectivity among millions of computers around the globe. As the Internet went through a phenomenal growth over the last three decades, its routing system has encountered a multitude of challenges brought forth by the unprecedented scale of the system. In addition to the rapid growth in the number of customer networks, there have been increasing trends of customer network multihoming to facilitate load balancing and fail-over between multiple providers, desiring provider-independent IP address assignments over provider-allocated addresses to avoid internal renumbering when changing providers, and Virtual Private Networks (VPNs) deployment to support business and enterprise users. Unfortunately, the rapid user growth compounded with multihoming, provider-independent addressing, and VPN provisioning has led to a fast growth of the global routing systems. At the same time, Internet service providers (ISPs) face economical constraints that may prevent them from promptly upgrading to the latest technologies to meet the demands.

More recently, the Internet routing architecture also confronted two new challenges: the imminent exhaustion of IPv4 address space and hence foreseeable wide deployment of IPv6, and the emerging mobile access to the Internet from billions of hand-held devices. The latter further drives the demands for IPv6 roll out, yet the sheer size of the IPv6 address space presents a great scaling concern to the routing system, and the impact of various global-scale mobility solutions on the routing system remains to be fully understood. The ever-increasing size of the global routing system also directly impacts its security and management. It is imperative to solve the routing scalability problems in order to enable continued growth of the Internet while allowing ISPs to operate with feasible upgrade intervals. This need has sparked a plethora of recent research efforts, with proposed solutions ranging from backwards-compatible, evolutionary techniques, to revolutionary clean-slate approaches.

This special issue aims to focus on the latest research results on Internet routing scalability. Prospective authors are expected to submit original unpublished contributions to further analyze the problem space, to compare and evaluate existing solution proposals, or to present new solutions. Topics of interest include, but not limited to, the following:

- addressing schemes that facilitate scalable routing designs,
- scalable solutions to network multihoming, traffic engineering, and VPN support
- impact of mobility on routing scalability
- routing threat analyses and security methods
- economical considerations
- analytical or comparative studies

All submissions should be in FDP format and conform to the IEEE-JSAC format guidelines as described in <http://www.jsac.ucsd.edu/Guidelines/info.html>; one may choose to submit the double-column format only within 12 pages. Please submit via email to jsac-routing@lists.cs.ucla.edu according to the following timetable:

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