

**Special issue of JSAC**  
**on**  
***Measurement of Internet Topologies***

Call For Papers

The Internet is a complex but highly engineered system which has been built for years in a mostly distributed fashion, with little or no central authority. Even though a number of architectural principles underlying its design and evolution are known, our understanding of its global structure and dynamics at the different layers and of the nature of exchanges or communication over this structure has remained very limited.

Many important features of this global structure can be studied by examining the various graphs (sets of nodes and links between them) that arise in the Internet at the different layers, each representing different aspects of Internet connectivity. This is true for instance for the physical connectivity, the IP-level connectivity, or the relationships between Autonomous Systems (ASes). The same holds true for the exchange or communication graphs (which nodes send information to which other nodes) at the various layers (e.g., packets, flows, files, email), and for overlay graphs induced by, for example, P2P systems, web services, or online social networks.

Unfortunately, in practice these Internet-specific graph structures are not readily available and obtaining them from empirical observations typically requires costly special-purpose measurement infrastructures and experiments. The resulting data often reflect more what can be measured than what ought to be measured. As a result, the obtained information is typically incomplete, inaccurate, and biased. While some progress has been made to this regard in the last 10 years, much remains to be done.

The goal of this special issue is to publish a collection of high-quality papers in the area of measurement of Internet topologies. We expect these papers to become key references in the field by (i) clearly articulating the limitations of the proposed measurement techniques or tools, (ii) detailing the resulting data quality issues, (iii) addressing ways to overcome some of the limitations, and (iv) highlighting for which purposes the obtained data can and cannot be used. The scope is broad and aims to cover all relevant aspects of the problem, but topics of special interest include:

- new measurement strategies and tools, including novel and original approaches;
- measurements at various layers, physical to applications;
- measurements of related objects, e.g., routing trees, spreadings of files, or load-balancers;
- inference of properties from measurements, and inference-oriented measurements;
- modeling and analysis for measurements, including assesment of observed properties;
- analysis of maps at any level, with special attention to measurement issues;
- applications, including modeling of internet topologies and identification of key needs.

**Important dates:**

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**Guest editors:**

Krishna Gummadi, MPI-SWS, Germany  
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