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**IEEE Journal on Selected Areas in Communications**  
**Network Infrastructure Configuration**

Component configuration is the fundamental operation for setting up network infrastructure satisfying end-to-end requirements. Each component has a finite number of configuration parameters that are set to definite values. Components include not just networking components but also servers and hosts. Requirements can be on security, connectivity, performance and reliability. Today, the transformation of end-to-end requirements into configurations is manual. This leads to large numbers of configuration errors whose adverse effects on availability, security, performance and deployment costs are well documented. Thus, it is critical to develop techniques for automatically solving two fundamental problems. *First, is an infrastructure, as configured, compliant with end-to-end requirements? Second, if not, how should configurations change so that compliance is restored?* These problems are inherently hard. There is a large conceptual gap between requirements and configurations. Requirements span multiple components at and across multiple protocol layers. A real infrastructure contains thousands of components, each with hundreds of configuration parameters. Compounding the challenge is the fact that security interacts with connectivity, performance and reliability. Security is about preventing undesirable behavior while others are about enabling good behavior. Incorrect resolution of this tension can disable mission-critical services and potentially cause as much harm as allowing adversary access to those services. Even if the final configuration is known, incrementally changing current configuration to final without violating security and other invariants is an open problem. Security and connectivity are often handled by different parts of an organization, and it is not straightforward to share configuration information for end-to-end analysis.

In recent years, systematic techniques have emerged to solve parts of above problems. A special issue is planned to consolidate and present finished results. Topics of interest include:

- Semantic abstractions for modeling infrastructure and end-to-end requirements on connectivity, security, performance and reliability
- Formal languages for specifying abstractions and requirements
- Evaluating requirements against configurations
- Transforming requirements into configurations
- Discovering configuration in large infrastructure
- Visualizing logical relationships set up via configuration
- Anonymizing configuration for sharing information between organizations
- Safely migrating current into final configuration
- Combining analysis of configuration with real-time monitoring to improve fault-management
- Case studies of real-world infrastructure deployment

Prospective authors should prepare their manuscript in accordance with the IEEE J-SAC format described at <http://www.jsac.ucsd.edu/Guidelines/info.html>. Authors should submit a PDF version of their complete manuscript to <http://www.edas.info>. The timetable is as follows:

- Manuscript submission: **April 4, 2008**
- Acceptance notification: September 1, 2008
- Final manuscript due: November 1, 2008
- Publication: 2nd Quarter 2009

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