Towards Software-Defined Networking in Heterogeneous Networked Environments

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Software-Defined Networking (SDN) has been proposed as a way to facilitate network evolution by allowing networks and their infrastructure to be "programmable". In our talk, we will give a brief overview of SDN, demonstrate how it can be utilized to create and deploy new services, such as network privacy, and explore the challenges and applications of deploying SDN in "heterogeneous" networked environments.

SDN can be utilized to create and deploy new services, such as network privacy. With the proliferation and sophistication of information services, data mining, and search engines, a simple network address may be used to reveal a great deal of information about a user, including location, identity, and behavior. Existing approaches to privacy, however, make unacceptable tradeoffs between performance and anonymity. We believe an acceptable level of privacy can be provided to most users, with noticeably lower latency and throughput impact, by working with the network provider. In the second part of our talk, we introduce AnonyFlow, an in-network anonymization service built over OpenFlow to efficiently and seamlessly provide privacy to users as they communicate with other endpoints and services.

Finally, motivated by the vision that future internets will comprise infrastructure-based and infrastructure-less networks, we explore the use of the SDN paradigm in these so-called "heterogeneous" networked environments. To make the case for SDN in heterogeneous networks, or Heterogeneous SDN (H-SDN), we examine application scenarios in which H-SDN is a key enabling technology.