

Title: Redesigning how networks work to make the net"work"

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Abstract: Solving network-management problems in real-time becomes increasingly difficult with a human in the middle and ever-growing demands of modern applications for high performance, high availability, and high security. An alternative for making network management easier while meeting the demands is to work on an ambitious goal of self-managing networks that are able to manage themselves with minimal human involvement.

Practically deployable self-managing networks heavily rely on fine-grained telemetry data to understand what is going on in the network (visibility) and then make appropriate network management decisions. However, it is extremely challenging and technically expensive to build a telemetry system that provides necessary visibility; mainly because of the large resource overhead in monitoring and collecting the telemetry data from massive networks that can have up to millions of links and thousands of high-speed switches.

In this talk, I will highlight a scalable network telemetry system, SwitchPointer, which obtains high visibility by making architectural changes across the network entities (e.g., switches, servers) in a large-scale data center network. The main challenge is how to effectively use limited resources at switches and obtain high visibility. I will discuss in detail how SwitchPointer addresses this challenge and enables taking fast and accurate management decisions.

Bio: Praveen Tammana is currently a Postdoctoral researcher at Princeton University. His research interests are in Systems and Networking. He develops scalable, fast, and easy-to-use real-world networked systems. His recent work focuses on two aspects of network management: network telemetry and traffic engineering. Prior to Princeton, he received his Ph.D. from The University of Edinburgh, UK, and his Master's degree from IIT-Madras, India. He has over three years of industrial experience working with Intel technology and Juniper Networks, at Bangalore, and Cisco Systems, San Jose, USA.