

Turning a network into a streaming database for better monitoring

Srinivas Narayana

Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT

3/20/2018 at 10:30 am

CoRE 301

Abstract

As our reliance on the Internet and networking applications grows, effective monitoring of network infrastructure becomes crucial for reliable operation. Current systems for monitoring large networks suffer from significant lack of visibility into problems, or do not scale well to processing large amounts of network data.

This talk is about the design of network infrastructure to provide high-accuracy diagnostics while reducing the overhead of data processing. First, I will discuss Marple, a performance query system, which allows network operators to query fine-grained flow-level statistics over network traffic. Marple leverages a novel one-way cache to generate accurate query results from a hardware key-value store running on switches. Then, I will discuss a path query system that enables network operators to monitor exactly those packets that follow paths of interest through the network. These two systems, supported by declarative query languages, turn a network into a database that provides insights into its own operation.

Bio

Srinivas Narayana is a postdoctoral researcher at the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT with Dr. Hari Balakrishnan and Dr. Mohammad Alizadeh. He received his Ph.D. at Princeton University where he was advised by Dr. Jennifer Rexford and Dr. David Walker. Srinivas is broadly interested in computer networking and systems. His research on performance monitoring won the best paper award at the 2017 ACM SIGCOMM conference.

Faculty Host: Badri Nath