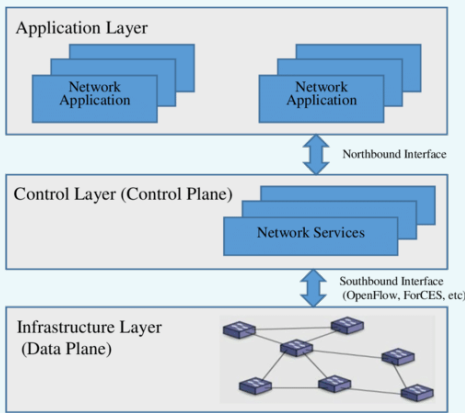# SDN Traffic Engineering using Segment Routing and DNS
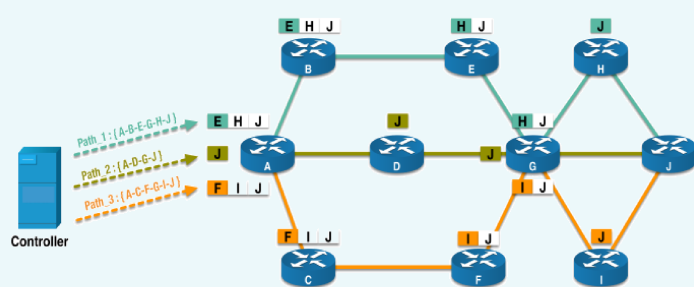
Improving Quality of Experience in SANREN

Software Defined Networks

Separates control and forwarding planes, and uses a controller to carry out forwarding. Routers are programmed from a single location, avoiding misconfigurations.

Segment Routing

Source-based tunneling allowing hosts to transport packets with a list of segments. Segments specify a route to traverse. Reduces forwarding rule overhead, improves network flexibility and scalability.

Software Resolved Networks
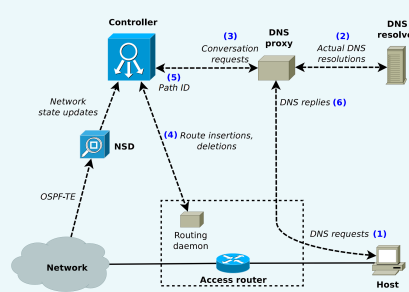
Network operators control traffic with specific policies. Applications interact with DNS resolver to specify path requirements (delay or bandwidth), controller and DNS resolver work together to forward packets along the optimal path.
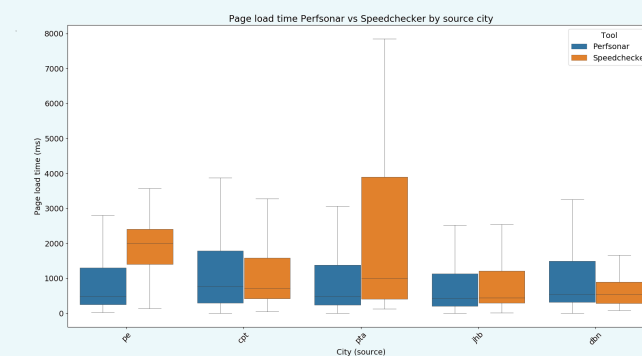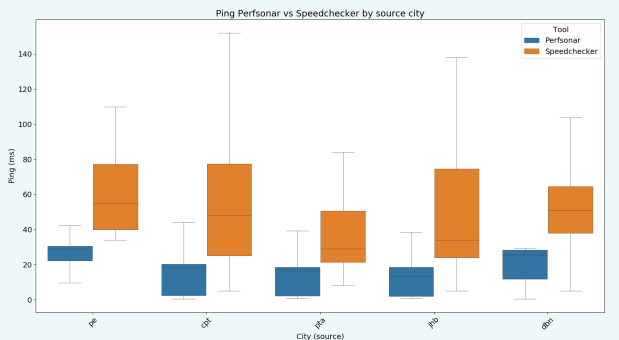
Luqmaan Salie

Dr Josiah Chavula

Research Questions

Using SDN, SR, and DNS: to what extent can we improve end-to-end performance in SANReN? Would application-level traffic segmentation result in better overall performance? Would it result in better resource utilisation?
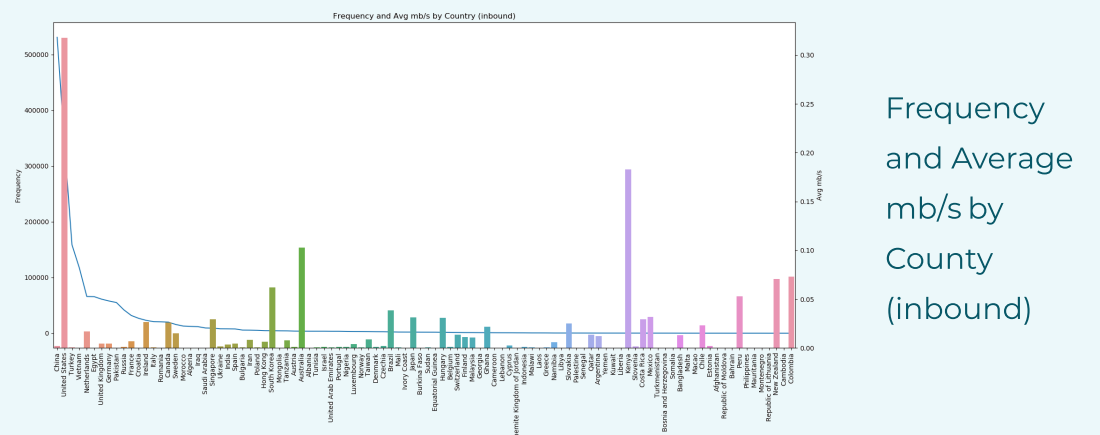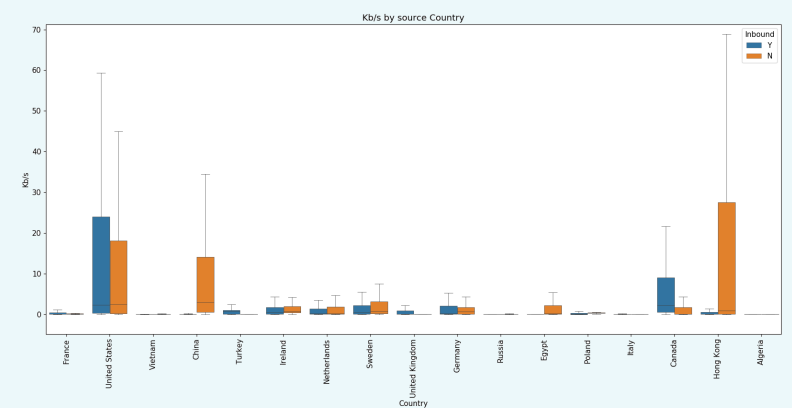
Network Benchmark Tests

Ping results - internal vs external

Page load time results - internal vs external

SANReN Data

Kb/s by Country - inbound vs outbound

Frequency and Average mb/s by County (inbound)

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