

# Latency-sensitive Flow management in a Software-Defined Network

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## 1 Measurement Model

In software defined networks, the network is managed by a central controller and switches can be programmed by the OpenFlow API by the controller. OpenFlow also supports queries to switches, which would retrieve statistics from the switches. For this project, we can assume a measurement model where each switch is probed every  $t_m$  seconds (the measurement interval) time.

Work on this to do presently :

- Figure out the different statistics supported by OpenFlow. Primarily, we would need switch queue sizes, and flow statistics on the switch.
- Build a preliminary monitoring system using POX and Mininet.

## 2 Estimating Flow Characteristics

Something similar to CSFQ, ideally we would want to predict the throughput of a flow with respect to time (denoted by  $\Theta$ ). Look at the next section for decisions based on this. This would use the measurement model and  $t_m$  and other factors to estimate the throughput function for the flow. An assumption we can make in this case is that a flow (identified by a set of headers) will occur regularly in the datacenter. This is not unreasonable, consider distributed applications. For example, short queries can occur between different modules (will possess the same flow headers), thus estimating a flow can reap benefits in the future as we can make better decisions for this particular flow. Another assumption we can consider is that the throughput function is periodic (?) or based on some distribution. This needs to be thought about.

## 3 Flow Decisions

### 3.1 Queue buildup model

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