Project Checkpoint #2

Group #20

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Updates on the Completed Tasks

1. We ran experiments using latest Dash-JS adaptive video streaming and realized that it maintains a sufficient look ahead buffer to prevent frequent bitrate change. Therefore, we did not observe any significant bitrate variation and it usually sets in to a low bitrate right from the start.
2. Instead, of bitrate variation we rather measured moving average, minimum and maximum latencies for 4 continuous video segments when video and background TCP traffic compete and are isolated. The results seem to be promising and showed that isolation indeed gives lower latencies.
3. We understood the working of the Linux Traffic Control particularly classful and classless qdiscs. We experimented by creating multiple traffic classes under Hierarchical Token Bucket (HTB) and marked traffic to pass through various rate limited traffic classes. The initial experiments seem to work as expected.
4. We were able to setup RTP video streaming using VLC and got initial results for the experiment. The results did not show a significant difference in bitrate.
5. Our experiments with VoIP softphones did not work as expected as our VMs do not have virtual handles to the audio and video input devices and hence the network data was low rate random noise.
6. We found issues in the FlowQoS classifier and controller code. The classifier did not classify packets with high accuracy and in most cases did not work for the applications we use. Therefore, we rather used static, port-based classification of flows as our ultimate goal is not classify the flows but to use classification to prove that traffic isolation and rate limiting does improve QoS.

Pending Tasks

1. Re-run certain set of experiments with VLC streaming that did not give expected results and try adjusting the parameters to see if the isolation of traffic indeed improves performance.
2. Repeat the set of experiments with Dash-JS and VLC with Linux Traffic Control to see whether it can result in improvements in latencies or provides the priority based rate adjustment.
3. Try fixing the issues with FlowQoS controller to install flows based on dynamic classification.

Updates to graphs

1. We are replacing the VoIP graph RTT and jitter graphs with the Dash-JS throughput graphs.
2. Dash-JS bitrate variation graphs would be replaced by the Dash-JS latency graphs.