framework allocates 1.65 Mb/s and 1.73 Mb/s to Region-1 (DN STS) and Region-2 (DN STS), respectively, which is more fair bandwidth allocation between two regions, compared to the case without TaLE (see Figure 2); (ii) When Region-1 comes to have UP STS during the period of [40s, 120s], TaLE distributes 0.89 and 1.09 Mb/s to DN STS and UP STS at Region-1 respectively, which are in total 1.98 Mb/s, but it allocates 1.68 Mb/s to DN STS at Region-2, which is decreased from the previous period of [0s, 40s]; (iii) In the last period of [120s, 160s], the throughput of DN STS at Region-1 is 1.70 Mb/s while that in Region-2 is 1.72 Mb/s. As already noticed, the TaLE framework enforces bandwidth allocation to be compliant with given weights, and the allocation is conducted for each identified location, not for each station. Note that in the period of [40s, 120s], the aggregate throughput at Region-1 (i.e. 1.98 Mb/s) is almost equal to that at Region-2 (i.e. 1.68 Mb/s), and also that the throughput of Region-2 is not much affected by the time-varying number of stations at Region-1. Figure 4 (b) presents the congestion window dynamics observed in all the stations in the network. We can easily observe the similar trend to the per-station throughput observed in Figure 4 (a).

5.2 Location-Based Service Differentiation

In order to verify that the TaLE framework achieves more elaborate service differentiation, we carry out an additional simulation study. In this study, we use a simplified network configuration in that each region has one station in the network of Figure 1, but employs the following complex simulation scenario: