

WiOpt 2015- Invited Talk

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Title

Controller Placement for Maximum Throughput Under Delayed CSI

Abstract

The performance of wireless scheduling algorithms directly depends on the availability and accuracy of network state information at the scheduler. As channel state updates must propagate across the network, they are delayed as they arrive at the controller. The location of the controller directly affects the attainable throughput, as it dictates the delays with which information is obtained to make scheduling decisions. In this paper, we analyze the optimal controller placement over a network in which CSI delays are proportional to distance. We propose a dynamic controller placement framework, in which the controller is relocated using delayed queue length information at each node, and scheduling is done using delayed QLI and CSI. We characterize the throughput region under such policies, and find a policy which stabilizes the system for all arrival rates within the throughput region.