Robust Scheduling And Quality Of Service In Attack Resilient Cloud Assisted Cyber Physical Systems

Abstract

Cyber Physical Systems (CPSs) are soon becoming the corner stone for an integrated platform of devices that report periodic information of critical applications like transportation systems, smart grids etc. Accurate analysis of the data from such applications requires information acquisition from multiple sources. Depending on the criticality of the application, the information obtained requires fast processing, heavy computational power and additional resources such as memory. Traditional on-site processing units or sensors cannot process such heavy information load in many such applications. An efficient solution to this problem would be to use the processing capabilities as provisioned by a Cloud Computing platform. However, there are major security consideration to be addressed while integrating cloud and CPS. Hence, in order to achieve this goal, we propose a novel game theory solution, which is aided by a dynamic Bayesian network. The output of the game consists of heuristic that help in designing a scheduler, which is robust and QoS driven even under the presence of an attack.