CS4331/5331: Wireless Networks and Mobile Computing

Fall 2021

Write a ONE-PAGE (10 font size and single space) summary using your own words:

• Homework number: 2

• Paper title: A Novel Hidden Station Detection Mechanism in IEEE 802.11 WLAN

• Your name: Chen Zhang

Summary

The IEEE 802.11 is a widely used standard for wireless communications. Because the IEEE 802.11 is based on CSMA/CA, if there are hidden stations within the coverage of an AP (access point), the potential collision probability would increase. The RTS/CTS mechanism offers a way to allow hidden stations can communicate with each other, but this RTS/CTS also consumes the bandwidth. To reduce the unnecessary resource wasting due to the existing RTS/CTS mechanism, the author of the paper states that detect hidden stations before adapting RTS/CTS would be a better way to utilize the limited resources.

Major Contribution

The author states that we should detect if there are any hidden stations within the coverage of an AP before applying RTS/CTS mechanism, and they offered an effective detecting method. In this paper, Fig.5 shows that the proposed scheme basically achieves the best of basic and RTS/CTS access performances for a given distance between the AP and stations. Also, the data shows that a pre-detect of the hidden station can be used in order to decide whether to use the RTS/CTS in order to achieve better system performance.

Weak Aspects

The testing environments are ideal because it not discuss signal interference and noise. This is critical for this topic because if the station only receives ACK due to the temporary bad signal, in other words, if the station is not hidden but treated as hidden due to unstable wireless network condition, it’s a misjudgment and will result in an RTS/CTS abuse again.