



## Centralized Scheduling for Interference Mitigation in Wireless Local Area Networks

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a centralized scheduling system and method for improving data throughput in wireless local area networks.**

### Overview

Wireless local area networks (WLANs) are utilized by organizations such as businesses, universities and airports to provide wireless connectivity to mobile users. As usage increases, maximizing data throughput becomes increasingly important. As users move around and drop in and out of the network, conflicts may occur when an access point attempts to transmit on a data channel that is already in use.

Currently, the distributed coordination function (DCF) is a common method for handling conflicts during transmission of wireless data packets. Generally, DCF is efficient at “listening” to channels to determine if they are busy before beginning data transmission, but the method is not optimal for a network with hidden or exposed terminals. A hidden terminal exists when an access point is in communication with a device but is out of range with the other access points transmitting to the device. An exposed terminal exists when an access point is blocked from sending packets to a device due to a neighboring access point. A system and method for improving wireless network throughput in a network with exposed and hidden terminals is needed.

### The Invention

UW-Madison researchers have developed a centralized scheduling framework to design efficient channel access for WLANs with exposed and hidden terminals. Based on known characteristics of the network, scheduling is performed using speculative scheduling tactics concentrated within the central controller, which has contact with a significant portion of the traffic on the network. The role of the scheduler is to decide, for each channel and packet, which in-range access point assigned to the channel should send the packet.

The method includes determining whether a computing device receiving a data packet through a wireless access point is in conflict with another computing device associated with a different access point. Furthermore, the method determines whether such conflicts in transmittal are scheduled to forward the packet to an access point at a rescheduled time. Through the use of the centralized speculative scheduling method, network throughput is maximized by coordinating transmittals based on groups of packets being sent within defined time periods. Interference due to conflicting transmittal of data packets is reduced and network traffic management is improved.

### Applications

- Enterprise WLAN architecture for a centralized data plane with increased throughput

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- Mitigates and manages interference in wireless local area networks
- Maximizes traffic throughput in wireless networks by reducing transmission conflicts



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- Concentrates scheduling process to central controller, maximizing impact on traffic volume
- Allows administrators to define policy-driven traffic management and prioritization

## Additional Information

### For More Information About the Inventors

- [Suman Banerjee](#)

### Related Technologies

- [For more information about channel management within wireless networks, see WARF reference number P06380US.](#)

### Related Intellectual Property

- [View Continuation Patent in PDF format.](#)

### Tech Fields

- [Information Technology : Networking & telecommunications](#)

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