

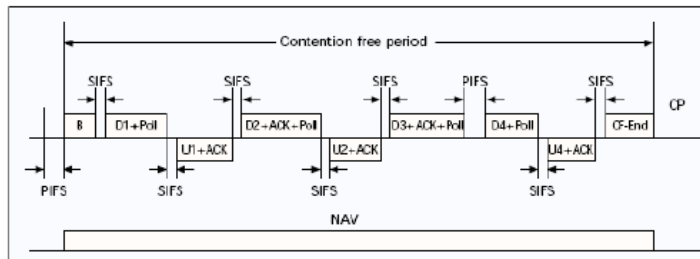
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Question: Consider the WLAN scenario given below: [5] a. Explain the c...

Consider the WLAN scenario given below:

[5]

- Explain the coexistence of Point Coordination Function (PCF) and Distributed Coordination Function (DCF). How is it ensured that PCF is always a contention-free period?
- In the PCF period, how an Access Point (AP) responds if it does not receive an ACK for a transmitted data frame?



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Expert Answer 1



Anonymous answered this
609 answers

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With DCF, there is no mechanism to guarantee maximum delay for stations to support time-bounded services.

The PCF is an optional function providing contention free (CF) frame transfer.

WLAN DCF-Distributed Coordination Function

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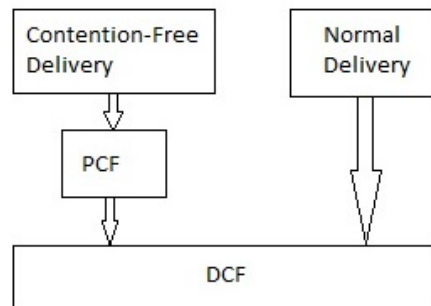


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clearing technique to further reduce the possibility of collisions.



802.11 MAC Coordination Functions

Almost most of the wlan traffic uses DCF mac access type, this is because this access type is same as standard ethernet which provides contention based service. DCF makes it possible for multiple STAs to communicate without the need of central control. Hence it can be used in IBSS as well as infrastructure network type. As mentioned earlier, each station first checks for medium and transmits only when medium is idle. If the medium is not idle they will defer the transmission and employ simple exponential back-off algorithm in order avoid collisions.

There are two main rules which can be applied for all the transmissions based on DCF concept. These rules are as mentioned below.

- Transmission can be initiated immediately if the medium is idle for greater than DIF period. Carrier sensing is performed with both PHY layer as well as with NAV.
- The medium is said to be free for at least the period equivalent to DIFS if the previous frame was received without errors.
- If there was errors then the medium must be free for the duration equal to EIFS.
- In the case when medium is occupied and not free then STA must wait till the channel become free or idle. Wait in 802.11 is considered as access deferral. In the case when access is deferred; the STA waits for the medium to become free for the duration equivalent to DIFS and will prepare for the exponential backoff.

WLAN PCF-Point Coordination Function

coordinators are used to ensure that the medium is provided without contention. Point coordinators reside in access points, so the **PCF** is restricted to infrastructure networks. To gain priority over standard contention based services, the PCF allows stations to transmit frames after a shorter interval. The PCF is not widely implemented.



Contention-free service is not provided full-time. Periods of contention-free service arbitrated by the point coordinator alternate with the standard DCF-based service.

When the PCF is used, time on the medium is divided into the contention-free period (CFP) and the contention period. Access to the medium in the former case is controlled by the PCF, while access to the medium in the latter case is controlled by the DCF

The CFP repetition interval (CFP_Rep) determines the frequency with which the PCF occurs. Within a repetition interval, a portion of the time is allotted to contention-free traffic, and the remainder is provided for contention-based traffic. The maximum size of the CFP is determined by the parameter of CFP maximum duration (CFP_Max)

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Q: 5. An arbitrary measure of "power" is used to characterized network performance. The usual definition of power, P, is given by: d load [5] average delay a. Why this definition of power is commonly used, and in what sense it is "arbitrary"? b. A commonly used approximation to the relationship between normalized load (which can vary between 0 and 1 only) and the average delay is d =...

A: [See answer](#) 100% (1 rating)

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