IEEE 802.11
Wireless Access Method and Physical Layer Specifications

Title: **PCF Time-Bounded Services**

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Abstract: **This paper proposes a way to use the Point Coordination Function (PCF) for Time Bounded Services (TBS).**

1. Introduction

The PCF currently has a specified method for asynchronous data transfer, this paper will propose a method for connection based data transfer, which could be used as the basis for running applications that generate streams of time-bounded data. This paper will take the form of text that could be added to the draft standard to support this function.

2. Contention Free Management Frames

The contention free management frames are used in the following way.

STA Start Connection Request

A station initiates a request for a connection to be established within the contention free period. The Maximum Payload request element (or field) must be included in this frame.

AP Start Connection Request

An AP initiates a request for a connection to be established within the contention free period. The Maximum Payload and Connection ID elements (or fields) must be included in this frame. The connection ID is the proposed connection ID that of the connection that will be established if this request is granted.
N.B. AP and STA Start Connection Request frames can be the same type, using the "To AP" bit to distinguish them.

Grant Connection

The requested connection is granted. Only an access point may assign connection numbers; so if a station is to grant a connection it must return a connection ID that was proposed by the access point. The Connection ID element (or field) must be included in this frame.

When a connection is granted, a CF-Down (poll) will be issued in every contention-free period.

End Connection

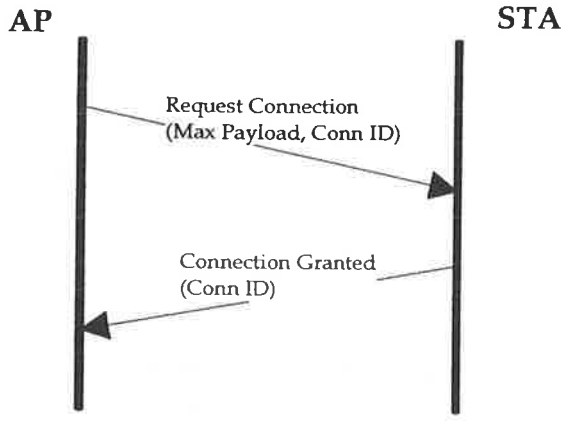
Either a station or an access point may initiate the end of a connection. When a node receives an End Connection frame it should stop using that connection, since the sending node will no longer maintain it. The Connection ID element (or field) must be included in this frame.

3. Contention Free Connections

Access Point Initiates Connection Set-up

The following exchange will be used when an AP wants to establish a connection.
1. AP Start Connection Request.
2. STA Grant Connection.

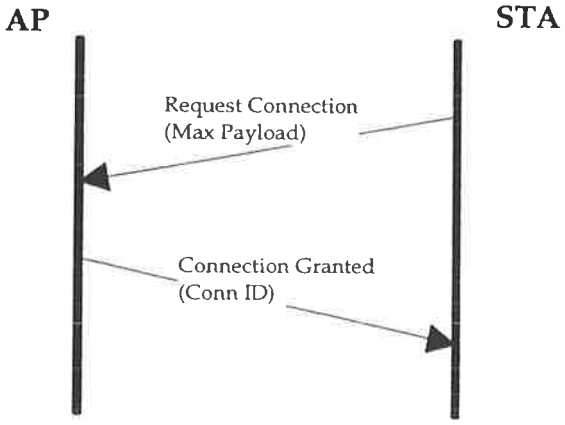
Only one connection request may be outstanding, with any one station, at any given time. The exchange fails if no response is received before a time-out (connection set up time-out).



Station Initiates Connection Set-up

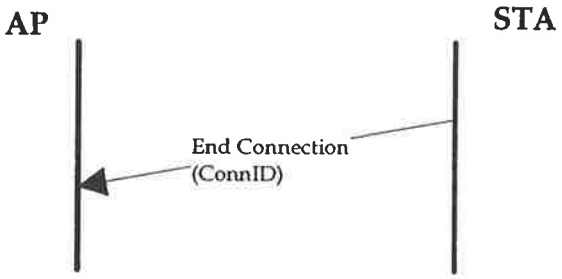
The following exchange will be used when a STA wants to establish a connection.
1. STA Start Connection Request.
2. AP Grant Connection.

Only one connection request may be outstanding at any given time. The exchange fails if no response is received before a time-out (connection set up time-out).



End Connection

Either an AP or a station may end a connection in the following way.
1. End Connection.
No MAC layer negotiation is needed to end a connection.



4. Management Information Base

The connection set up time-out is 500ms.

5. Frame Formats

During the contention free period the duration field may be replaced by a connection ID field. The top bit of this field (when set) is used to indicate that it is used as a connection ID. (Note: only contention free time-bounded data used a connection ID; contention based data and contention free asynchronous data do not use connection IDs).

6. Elements (or Fields)

Maximum Payload

Additional octets: 2
The maximum number of bytes that will be sent as the payload of a data packet.

Connection ID

Additional octets 2
A unique identifier for a connection to transfer data between an access point and a station. A connection ID is only unique per station.

7. References

[1] "Draft Standard IEEE 802.11 Wireless LAN", Doc IEEE P802.11-93/20b3.