

## Survey on multi code CDMA networks for multi media transmission

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**Abstract:** Code Division Multiple Access (CDMA) network the Bit Error Rate (BER) or Packet Error Rate (PER) at physical layer and Frame Drop Rate (FDR) or Packet Drop Rate (PDR) at data link layer separately consider. In order to measure the system performance in terms of Frame Loss Ratio (FLR) involving the BER and FDR.

**Keywords:** Bit error rate, packet loss rate, quality of services.

### I. INTRODUCTION

The demand for high data rates and quality of services in the communication networks increases rapidly day today life. The performance of the system may depends on the multipath fading, time-varying channel condition introduced by the wireless propagation. In packet switched network providing the quality of services are important to transmit the multi-media traffic and utilizing the system capacity effectively. Optimizing the multimedia traffic is important because the wireless spectrum is expansive so more the traffic is placed to enhance the bandwidth utilization in presence of heavy traffic condition.

Wireless initially follows the traditional layer concept. In this model the system follows seven layer concept (physical, data link, network, transport,

session, presentation and application layer). Each layer is responsible for subset of system operation. Information is interchanged between the entities of same layer in both transmitter and receiver. An important feature of wireless network is dynamic behavior. Conventional behavior of the protocol stack is inflexible to communicate between each layer. This effect leads to inefficient spectrum utilization.

**Packet drop rate (PDR):** Time varying traffic , a packet should be dropped if it misses its transmission deadline so fraction of packets are dropped.

**Packet Loss Rate(PLR):** The fraction of total packets are lost due to both packer errors and missed transmission deadline considered as PDR.

**Packet Access Delay (PAD):** the time from the arrival of the packet to the transmission of the packet over the channel.

**Packet Error Rate(PER):** fraction of packets are lost due to channel errors.

### II. Adaptive modulation and coding with truncated ARQ

In general processing unit at the data link layer is packets, it includes multiple information bits. Physical layer processing unit is frame , it includes collection of multiple transmitted symbols. In this model

joint effect of AMC at the physical layer ARQ at the data link layer is considered [4]. In this model at the physical layer multiple transmission modes are available. Each mode consist of a specific modulation and Forward Error Correcting(FEC) pair. Depending on channel state information at the receiver AMC selector select the modulation coding pair and sent back to the transmitter through a feedback channel. AMC controller then updates the transmission mode at the transmitter. At the receiver coherent demodulation and maximum-likelihood (ML) decoding are used. The decoded bit streams are formed into the packets forwarded to the date link layer.

At the data link layer selective repeat ARQ protocol is executed. If any error is detected in the packet, retransmission request is generated by the ARQ generator.

In this model only finite delays and buffer sizes can be considered in practical. Maximum number of retransmissions also bounded. This number can be specified by dividing the maximum allowable system delay over the round trip delay required for each retransmission.

In this cross layer model increases the system throughput under prescribed delay and performance constraints [3].

### III. Cross Layer Enhanced Uplink Packet Scheduling

Scheduling algorithm includes transmission ordering and radio resource management function. These two functions handle independently in earlier methods. Transmission ordering function serves the traffic flows while minimizing the packet drop rate [5].

Medium access control frame has a fixed number of time slots as (F). All the packets have same size and each packet can be transmitted in one time slot using one code. To get different bit rates multiple packets can be transmitted by a single user, using multiple time slots or multiple codes over one time slot or both. Orthogonal codes are preferred for multiple packets transmission from the same user over one time slot to minimize the mutual interference between the parallel transmissions of the same user is minimized at the Base Station (BS) receiver. Expiration time is associated with time sensitive packet, the packet dropped by the user if it is not sent before expiration. This time determined by the delay requirement. Packet switched network system is in discrete nature so the scheduling the packet one by one [6].

Three stages in this algorithm.

- 1) Which user should be served next is decided. That means selection of user to serve the next and one of its packet is selected for transmission.
- 2) Packets are selected and kept into the frame and corresponding system statistics are updated.
- 3) Determination of whether to stop of processing [1].

### IV. Traffic Adaptive Optimization

In this model considered with a multicell system operating the Time Division Multiple Access (TDMA) and multicode CDMA in each time slot of TDMA. Without effecting the generality the traffic channel is divided into TDMA frames of duration  $T_f$ , each frame

consist of fixed number of time slots ( $F$ ) with duration of  $T_s$ . This model is deal with uplink traffic channel.

Pseudo noise codes are randomly with same spreading gain  $G$  are considered in this system. To get different data rates a mobile station may transmit more than one data frames 1) In more than one time slots using one code. 2) By using multiple codes in one time slot. 3) By using multiple codes in more than one time slot.

In this dynamic traffic model is assumed and the traffic may belongs to any traffic model including voice, video and general data. For simplicity only one traffic model is consider each mobile station. The system may decides how many data frames transmission simultaneous at the beginning of each TDMA frame. Maximum number of simultaneous transmissions depends on upper bound of BER. Scheduling is done in such away that system can provide fairness to different user [2].

## V. CONCLUSION

In this paper we are performing the different technique for multimedia transmission over CDMA network. The performance of CDMA network measured in terms of quality of services and minimizing the FLR in terms of reducing the FDR and BER. Computational complexity of CEPS algorithm is  $O(f)$  'f' is total number of user.

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