

WIRELESS ACCESS TELEPHONE-TO-TELEPHONE NETWORK INTERFACE ARCHITECTURE

Abstract

A wireless-access communications system, such as a CDMA cellular radio-telephone system, comprises a packet-switched communications network (202, 207, 201) that interconnects cells (base stations; 202) with each other and with the public telephone network (100). Traffic of individual calls is packetized, and packet-bearing frames of a plurality of calls are then statistically multiplexed and frame-relayed through the network to yield the high capacity, efficiency, and speed of traffic transport and handoff required for a CDMA cellular system. At each call processing unit, individual calls are handled by individual service circuits which perform speech-processing functions such as coding and decoding, tone insertion, and echo cancellation, and packet-to-circuit-switched-PCM traffic conversion. Processors adapt call processing unit timing to compensate for asynchrony between cells and call processing units and variations in call path transmission delays. Cell-to-cell communications, fixed call path addressing, and packetized control message transfers ensure that the same service circuit handles a call through even multiple soft handoffs and efficiently communicates simultaneously with all cells involved in the handoff without involvement of system control entities and negative effect on system call-handling capacity. Both coded (packet-switched) and uncoded (circuit-switched) radio-telephone traffic are accommodated side-by-side. Wherever possible, existing and proven technology and component units are used to achieve low cost and high reliability.

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