

MEDIUM ACCESS TECHNIQUES

Introduction to Telecommunications

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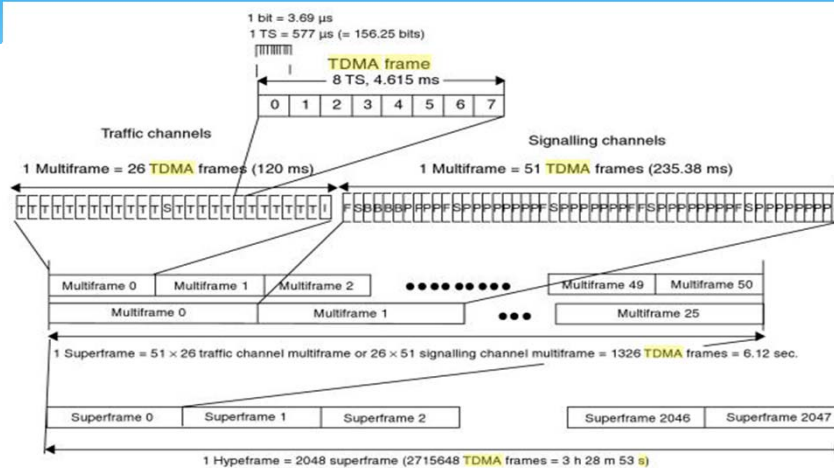
Access Techniques

- * As one of the major problems facing the development of telecommunications, bandwidth demand has driven the search for protocols that could be used to maximize bandwidth efficiency.
- * Multiple accesses ("multiplexing" for short) enable multiple signals to occupy a single communications channel.
- * There are three basic types of division-based protocols used to do this:
 - * Frequency division multiple access (FDMA)
 - * Time division multiple access (TDMA)
 - * Code division multiple access (CDMA).

TDMA-Time Division Multiple Access

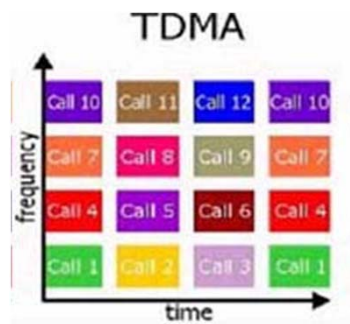
- * Time axis is divided into time slots of fix length
- * Users are allocated fix number of time slots in which the communicate
- * TDMA requires all nodes are synchronized to a common clock
- * Synchronization of time slot at the receiver
- * 1TDMA Frame-8 Time slots
- * 26 TDMA Frames – 1 Multiframe
- * 51 Multiframes – 1 super Frame
- * 2048 Super Frames – 1 hyper frame

TDMA Frame structure



Hierarchy of GSM TDMA frame

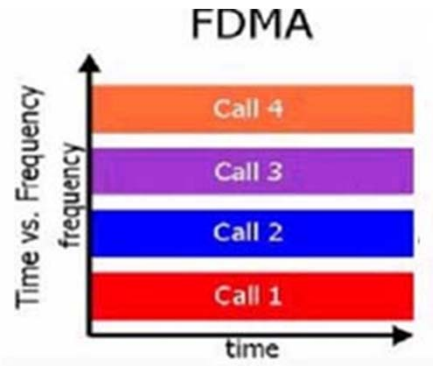
TDMA Cont'd



FDMA- Frequency division Multiple Access

- * The frequency spectrum is subdivided so that each user gets a dedicated channel i.e each channel can be assigned to only one user at a time
- * It is not efficient because a channel could be wasted if no one in that channel is talking
- * FDMA is a basic technology in the analog Advanced Mobile Phone Service (AMPS)
- * Analog signals are also especially susceptible to noise

FDMA cont'd



TDMA/FDMA

