

# Outline

- Channel assignment strategies
- Difference between co-channel and adjacent channel interference

# Channel Assignment Strategies

- For efficient utilization of the radio spectrum, a frequency reuse scheme that is consistent with the objectives of increasing capacity and minimizing interference is required.
- Channel assignment strategies can be classified as
  - Fixed
  - Dynamic.

Fixed channel assignment strategy	Dynamic channel assignment strategy
Each cell is allocated a predetermined set of voice channels.	Each time a call request is made, the serving base station requests a channel from the MSC.
Any call attempt within the cell can only be served by the unused channels in that particular cell.	The switch allocates a channel to the requested cell following an algorithm that takes into account the likelihood of future blocking within the cell, the frequency of use of the candidate channel, the reuse distance of the channel, and other cost functions.
If all the channels in that cell are occupied, the call is blocked and the subscriber does not receive service.	Dynamic channel assignment reduce the likelihood of blocking, which increases the trunking capacity of the system, since all the available channels in a market are accessible to all of the cells.
Borrowing strategy, a cell is allowed to borrow channels from a neighboring cell if all of its own channels are already occupied (avoid CCI).	The MSC only allocates a given frequency if that frequency is not presently in use in the cell or any other cell (avoid co-channel interference).
Computational load on system is less.	Increases the storage and computational load on the system



Co-Channel Interference (CCI)	Adjacent Channel Interference (ACI)
The interference between signals from co-cells is called co-channel interference.	Interference resulting from signals which are adjacent in frequency to the desired signal is called adjacent channel interference.
An increase in carrier transmit power increases the interference to neighboring co-channel cells.	Adjacent channel interference results from imperfect receiver filters, which allow nearby frequencies to leak into the passband.
To reduce co-channel interference, co-channel cells must be physically separated by a minimum distance to provide sufficient isolation due to propagation. (large co-channel reuse ratio)	The near– far effect occurs when a mobile close to a base station transmits on a channel close to one being used by a weak mobile.
Cell sectoring, microcell zone concept	Adjacent channel interference can be minimized through careful filtering and channel assignments.