Link Adaptation and Cross Layer Design for Multimedia Communications

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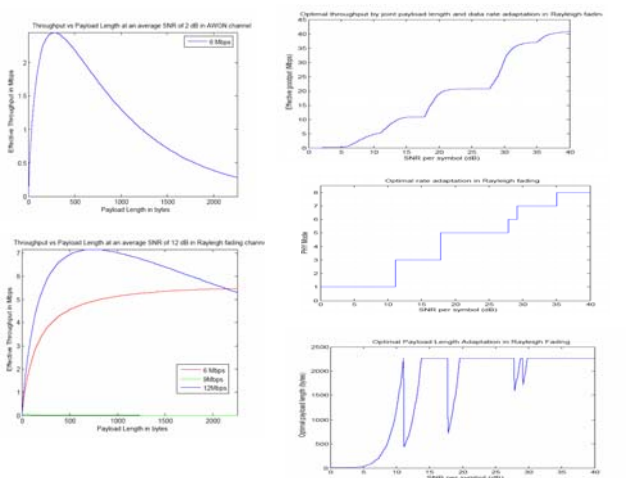
Voice and Video over Wi-Fi

- Voice and Video over Wi-Fi gaining momentum
- Challenges
  - Voice, video and data have different data rate, packet loss and delay requirements
  - IEEE 802.11 WLANs primarily designed for data applications
  - Significant header and protocol overheads
  - Multipath Fading Environment needs to be taken into account while designing link adaptation and cross-layer design schemes

Payload and Rate Adaptation for Throughput Optimization

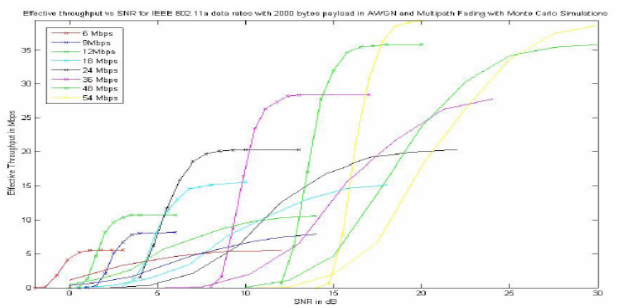
- Joint PHY/MAC based link adaptation scheme
- Dynamic adaptation of data rate and payload size with channel conditions

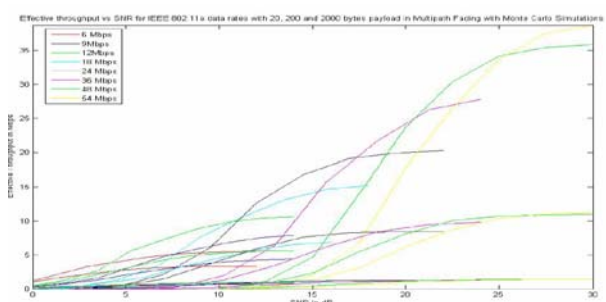


Link Adaptation and Cross Layer Design

- Link adaptation
  - Adapt system parameters based on current channel conditions
- Cross Layer Design
  - Information exchanges across various layers to guarantee QoS requirements
- Parameters of Interest
  - Data Rate
  - Payload Length
  - Throughput
  - Packet Error Rate

Link Adaptation in Multipath Fading





This work was supported by the California Micro Program, Applied Signal Technology, Dolby Labs, Inc. and Qualcomm, Inc., by NSF Grant Nos. CCF-0429884 and CNS-0435527, and by the UC Discovery Grant Program and Nokia, Inc..