Ch 7 Multimedia Networks

8 Megapixel image

\[3984 \times 2240 = 8,924,160\]

> 24 MB

Stored: 2.2 MB (compressed)

Compression:
- remove redundancy
- lossy - .jpg - .gif
- lossless - .png - .gif
Video

HD 1920 x 1080 (2.1 Mpixel)

> 6 MB per frame (image)

≤ 144 MB/s

1.152 Gb/s

compression

intra-frame (image comp.)

inter-frame
Audio

- sample signal
- quantize - turn into binary

phone  8,000 samples/sec  8 bits/sample
CD    44,100    "    16 bits/sample

MPEG 1 audio layer 3
(MP3)
MPEG video

MPEG 1 1.5 Mbps
MPEG 2 (DVD) 3-6 Mbps
MPEG 4 < 1 Mbps

constant bit rate
variable bit rate
Streaming apps:
- start playing before download is complete
- stored on server
- transmitting faster than being displayed.
- no timing/bandwidth service on the net.
- interactive (pause, next scene)
Voice / Telephone / Conversation - Video
- timing
- loss
- full duplex

Live Streaming
- single source
- many users [h]opefully
- delay (small)
  - compression
  - transmission