

ITS323 – Traffic and Performance Examples

How much information?

| | | |
|---|----------|----|
| • Text file with 10,000 characters | 10 | KB |
| • 8 page Microsoft Word document (with images) | 300 | KB |
| • 33 page PDF document (with images) | 370 | KB |
| • Simple HTML web page (text, no images) | 12 | KB |
| • Complex HTML web page (text, images – MSN.com) | 740 | KB |
| • 300x300 pixel JPEG image with 24-bit colour | 16 | KB |
| • 300x300 pixel uncompressed image with 24-bit colour | 270 | KB |
| • 3000x2000 pixel JPEG photo | 1500 | KB |
| • 4 minute song (192Kb MP3) | 5760 | KB |
| • Full audio CD (75 minutes) | 700000 | KB |
| • 5 minute voice call (standard line) | 2400 | KB |
| • 1 hour of high quality Internet radio station (128Kb MP3) | 57600 | KB |
| • 1 hour VCD (MPEG-1) | 675000 | KB |
| • 1 hour standard definition digital TV (4Mb/s) | 1800000 | KB |
| • 2 hour movie on DVD (5Mb/s) | 4700000 | KB |
| • 1 hour high definition digital TV (15Mb/s) | 6750000 | KB |
| • 2 hour movie on Blu-Ray disc (MPEG4) | 12000000 | KB |

What are the performance requirements?

- Acceptable delay for voice (recommended by ITU):
 - 0 to 150ms: acceptable for most users
 - 150 to 400ms: acceptable if users/operators are aware of quality reduction
 - Above 400ms: unacceptable for most cases
- Specific companies (ISPs, telecommunication providers) specify a maximum delay across their network (e.g. across continental US): usually about 50ms
- Web browsing: response times over 100ms are noticeable to most users
 - Estimated that 100ms delay reduces Amazon's sales by 1% (New York Times, Data Centre Overload, June 8 2009)
- Web browsing: response time of over 10 seconds usually result in user abandoning attempt to access the page