Assignment1

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## 1.2

#### a. Data Sizes

|  |  |
| --- | --- |
| Data Item | Size per Item |
| 128 character message. | 128 Bytes |
| 1024x768 PNG image | 0.75 MB |
| 1024x768 RAW image | 2.25 MB |
| HD (1080p) HEVC Video (15 minutes) | 85995.52 MB |
| HD (1080p) Uncompressed Video (15 minutes) | 171991.04 MB |
| 4K UHD HEVC Video (15 minutes) | 343961.6 MB |
| 4k UHD Uncompressed Video (15 minutes) | 687923.2 MB |
| Human Genome (Uncompressed) | 0.7 GB |

#### b. Scaling

|  |  |  |
| --- | --- | --- |
|  | Size | # HD |
| Daily Twitter Tweets (Uncompressed) | 12TB | 1.2 |
| Daily Twitter Tweets (Snappy Compressed) | 6TB | 0.6 |
| Daily Instagram Photos | 10TB | 1 |
| Daily YouTube Videos | 1PB | 100 |
| Yearly Twitter Tweets (Uncompressed) | 4.38PB | 438 |
| Yearly Twitter Tweets (Snappy Compressed) | 2.19PB | 219 |
| Yearly Instagram Photos | 3.65PB | 365 |
| Yearly YouTube Videos | 365PB | 36500 |

#### c. Reliability

|  |  |  |
| --- | --- | --- |
|  | # HD | # Failures |
| Twitter Tweets (Uncompressed) | 438 | 4.07 |
| Twitter Tweets (Snappy Compressed) | 219 | 2.03 |
| Instagram Photos | 365 | 3.39 |
| YouTube Videos | 36500 | 340 |

#### d. Latency

|  |  |
| --- | --- |
|  | One Way Latency |
| Los Angeles to Amsterdam | 140.340 ms |
| Low Earth Orbit Satellite | 270 ms |
| Geostationary Satellite | 270 ms |
| Earth to the Moon | 1300 ms |
| Earth to Mars | about 20 minutes |