

# Distributed File Sharing System Analysis

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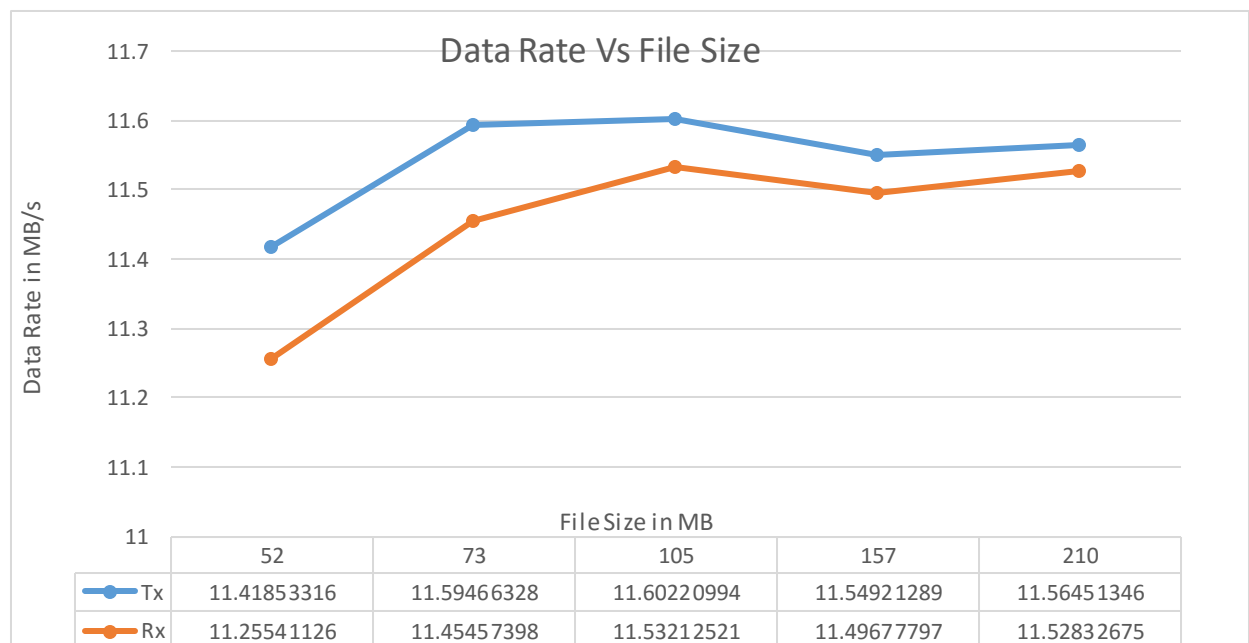
## Data Rates vs. File Size

Since we are using TCP for file transfer,

- The Data Rate should rapidly increase initially with increase in file size due to slow start. The TCP sending window keeps growing exponentially until there is congestion.
- Once there is congestion in the network, the Data Rate should fall due to multiplicative decrease.
- After that the data rate should increase slowly due to additive increase.

The following are the results observed after transferring files of various sizes keeping the packet size constant at 1000 bytes. Slow start, multiplicative decrease and additive increase are all evident from the chart below.

File chunk size = 1000 – header size(variable)



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## Data Rates vs. Packet Size

- At small packet size the overhead caused by the header is high and the total number of packets to be sent is also large due to the small size of the packet. Since there is lots of packets to process, this slows down the speed too.
- As the packet size increases, the header overhead and the number of packets to be sent decreases. So, the performance improves.
- Once the packet size becomes large enough, the overhead of the header becomes negligible. Now, the data rate is limited by the bandwidth of the network.

The following are the data observed for different packets sizes.

$$\text{File chunk size} = \text{packet size} - \text{header size(variable)}$$

