



PROGRESS ASSESSMENT: SERVER ROLE
IT 412 – SYSTEM ADMINISTRATION & MAINTENANCE
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1. Describe the mechanisms employed by TCP for acknowledgment and retransmission of data packets. How does TCP ensure that lost or corrupted packets are retransmitted and received successfully? Discuss the role of acknowledgment in guaranteeing error-free data transmission and the impact of retransmission on network performance.
 - TCP, or Transmission Control Protocol, has a smart way of making sure that the data we send over the internet gets to where it needs to go without any hiccups. When you send a message or a file, the receiving device sends back a little thumbs-up, called an acknowledgment (or ACK), to let the sender know that everything arrived safely. If the sender doesn't get that thumbs-up in a reasonable amount of time, it assumes something went wrong, like the packet got lost in cyberspace. In that case, TCP steps in and resends the missing piece, ensuring that nothing important slips through the cracks. This system is especially vital for things like downloading files or browsing the web, where you want every bit of information to be just right.
 - Acknowledgments play a crucial role in keeping our digital communications smooth and reliable. They act like a safety net, confirming that each piece of data is accounted for. However, while this process helps ensure accuracy, it can sometimes slow things down, especially if packets are frequently lost or if the network is busy. That's where TCP's clever design comes into play; it has built-in features to manage how quickly data is sent and to ease up when the network seems congested. So, while TCP works hard to deliver our messages accurately, it also tries to keep things moving along efficiently, striking a balance between reliability and speed that is essential for our online experiences.