

CT -1

20 byte
header

1. A router has an MTU of 1500 bytes. A 5000-byte packet arrives and needs to be fragmented to pass through this router. Calculate the number of fragments created, the size of each fragment, and the total overhead added due to IP headers.
2. A video stream over UDP generates packets of 2000 bytes. The network MTU is 1400 bytes, causing each packet to be fragmented. Calculate the effective throughput if each fragment has a 20-byte IP header and only complete packets contribute to throughput.
3. What challenges might arise with packet fragmentation when transitioning from IPv4 to IPv6 networks, and how should the network administrator address these to ensure packet delivery without loss?
4. An organization is facing frequent network-based attacks, and the security team suspects that attackers are using IP fragmentation to evade firewall filters. Fragments of malicious packets are entering the network undetected.
How can fragmented packets be used to evade security filters, and what configurations or tools can the network security team implement on the firewall to detect and mitigate fragmentation-based evasion techniques?
5. A network has a 1% packet loss rate for each fragment. A 10,000-byte packet is fragmented into 1500-byte segments.
Question: What is the probability that the packet will fail to reassemble correctly due to at least one fragment loss?