

Wireshark Lab – TCP

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1. Client IP and Port

- **Client IP Address:** 192.168.210.77
 - **Client TCP Port:** 61043
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2. Server IP and Port

- **Server IP Address (gaia.cs.umass.edu):** 128.119.245.12
 - **Server TCP Port:** 80
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3. Sequence Number (SYN segment)

- **Initial Sequence Number:** 3007661508
 - **SYN Flag Set?** Yes
 - **SACK Permitted Option Present?** Yes
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4. SYNACK Segment

- **Sequence Number of SYNACK:** 4006248772
 - **Flags Set:** SYN, ACK
 - **Acknowledgment Number:** 3007661509
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5. Sequence Number of HTTP POST

- **TCP Sequence Number with POST:** 3007814406
 - **Payload Bytes in This Segment:** 1460
 - **Does entire file fit in one segment?** No (spans ~106 segments)
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6. RTT Calculations

- **Time First Segment Sent:** Apr 25, 2025 22:41:31.888947000 Pakistan Standard Time
 - **Time ACK Received:** Apr 25, 2025 22:41:30.500015000 Pakistan Standard Time
 - **RTT (1st segment):**
 - **RTT (2nd segment):**
 - **Estimated RTT ($\alpha = 0.125$):**
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7. Segment Lengths

Segment # Total Length (Header + Payload)

1	20+621=641
2	20+1400=1420
3	20+1400=1420
4	20+1400=1420

8. Buffer Advertisement (Flow Control)

- **Minimum Window Size Value (in first 4 segments):** 30464
 - **Window Scaling Factor:** 128
 - **Actual Available Buffer:** 30,464
 - **Was sender throttled?** Yes
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9. Retransmissions

- **Were there retransmitted segments?** Yes
 - **How did you identify them?**
 - Look for "[TCP Retransmission]" in the "Info" column
 - Compare Sequence Numbers
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10. ACK Behavior

- **Typical ACK'd Bytes (first 10 data segments):** 113 Bytes
- **Any delayed ACKs (ack every other segment)?** Yes