

Module 2: Resources

- <http://www.cs.iastate.edu/~cs586/notes/ch2-2slides.pdf>

This source provides an excellent background to both the Stop-and-Wait Protocol and the extension of the Sliding Window Protocol (recall, you may ask advanced students to try and model Sliding Window once they finish modeling and identifying shortcomings of the Stop-and-Wait protocol).

For the Stop-and-Wait Protocol, this source highlights 4 scenarios on the first frame of the first page. Scenarios 1-3 which are labelled (a)-(c) on the source are most important for students to model:

1. The acknowledgement of receipt of message (ACK) is received before the timer expires
2. The original frame is lost, timeout period is reached without receiving ACK, so frame is resent
3. The ACK is lost and duplicate frame is delivered
4. The timeout fires too soon. Again, a duplicate frames are delivered

The Sliding Window protocol is also explained on the following pages for those advanced students who would like to these protocols further.

- http://www.tutorialspoint.com/data_communication_computer_network/data_link_control_and_protocols.htm

This source is nice for direct comparison of the Stop-and-Wait protocol and a particular instance of the Sliding Window Protocol. Particularly, this source describes the Go-Back-N protocol. The Go-Back-N protocol is a special instance of the general Sliding Window Protocol and would be a great start for those students choosing to model a Sliding Window Protocol (recall, you may ask advanced students to try and model Sliding Window once they finish modeling and identifying shortcomings of the Stop-and-Wait protocol).

For the Go-Back-N Protocol, the section of this source labeled “Go-Back-N ARQ” shows a simple model of how such a protocol might work through pictures. For those advanced students wanting to model a protocol beyond the Stop-and-Wait protocol it would be recommended that this source be utilized.

- http://www.isi.edu/nsnam/DIRECTED_RESEARCH/DR_HYUNAH/D-Research/stop-n-wait.html

This source provides a very clear and simple understanding of the Stop-and-Wait Protocol. It is not recommended for its explanation of the Sliding Window Protocol. It shows the three scenarios most worth investigating that should be illustrated by students:

1. Normal operation (all data is sent with no issues)
Shown in first frame labeled "Normal Operation" on website
2. Timeout occurring because ACK not sent back from receiver in time
Shown in left-most picture of second frame labeled "Timeout" on website
3. Timeout occurring because original message not sent from sender in time
Shown in right-most picture of second frame labeled "Timeout" on website

- **Textbook:** Larry L. Peterson and Bruce S. Davie, *Computer Networks: A Systems Approach*, Edition 4. p. 102-105

This source is by far the most comprehensive, but most likely the least available. It can be ordered, or checked out from a local library. For those educators or students who really would like to dive into Network Infrastructure concepts this text provides an excellent approach to learning the material. The pages highlighted above specifically discuss the Stop-and-wait protocol, but the book contains information about nearly all Network Infrastructure concepts one would teach students before the undergraduate level.