

An Educational Networking Framework for Full Layer Implementation and Testing

PROJECT GOAL

► PINTOS/NACHOS FOR TCP/IP

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KEY FEATURES

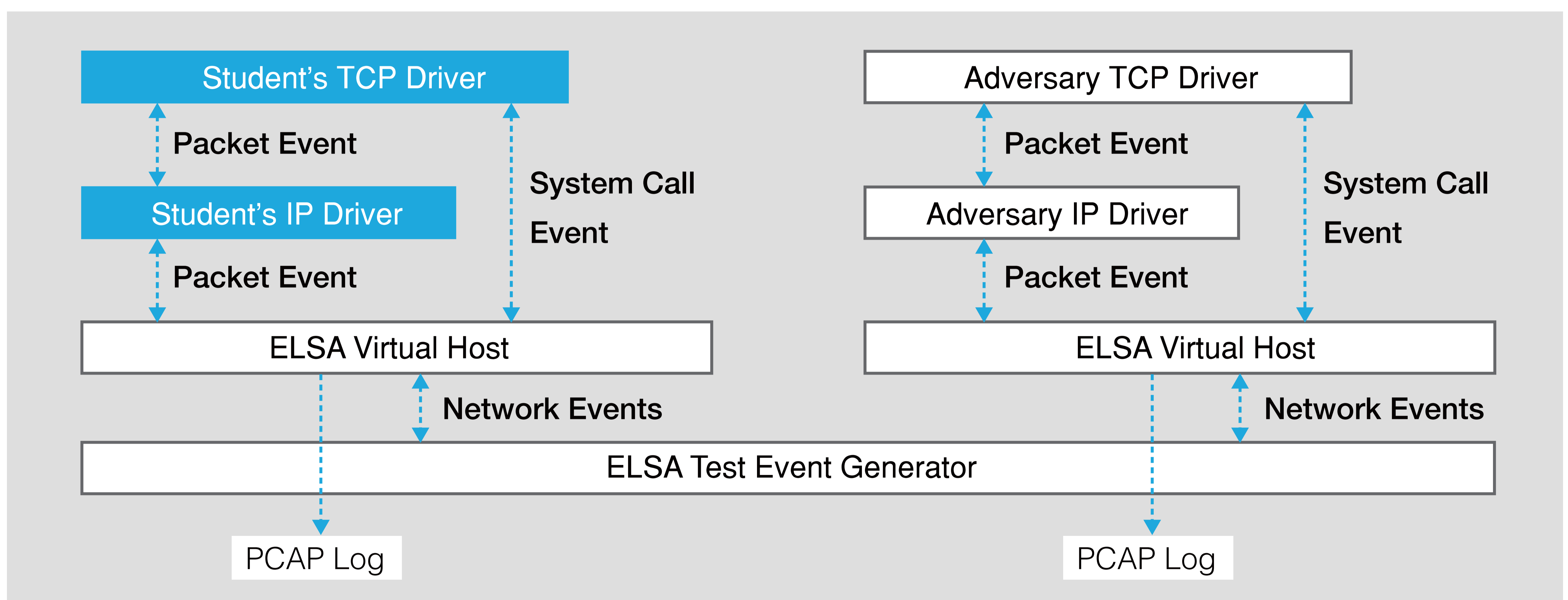
Students Will Do

- Demultiplexing calls from the lower layer
- Multiplexing calls from the upper layer
- Context management
- Implementing protocol specification

Framework Supports

- Automated test suite for grading
- Incremental development
- Deterministic and reproducible tests
- Link layer control (reliable/unreliable)
- Various topology configuration

FRAMEWORK OVERVIEW



EVALUATION OF STUDENTS' SUBMISSIONS

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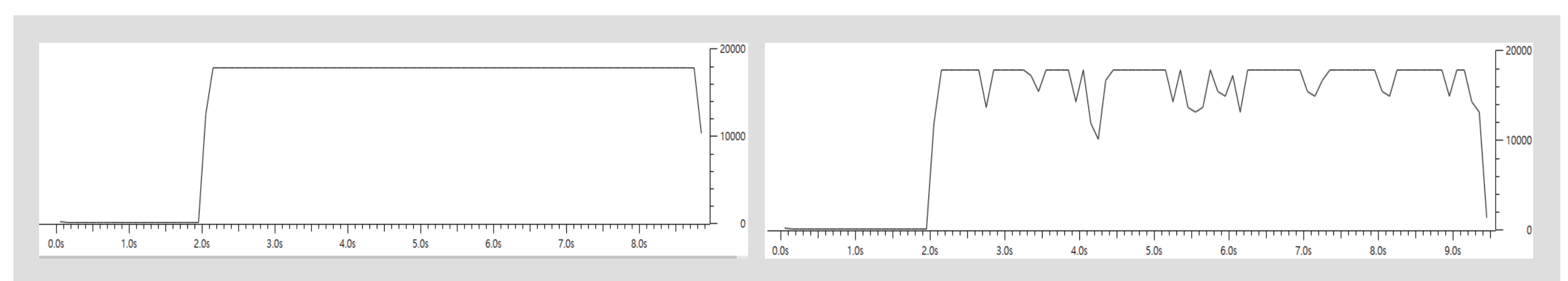
Starting testListen

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CUnit - A unit testing framework for C - Version 2.1-2
http://cunit.sourceforge.net/

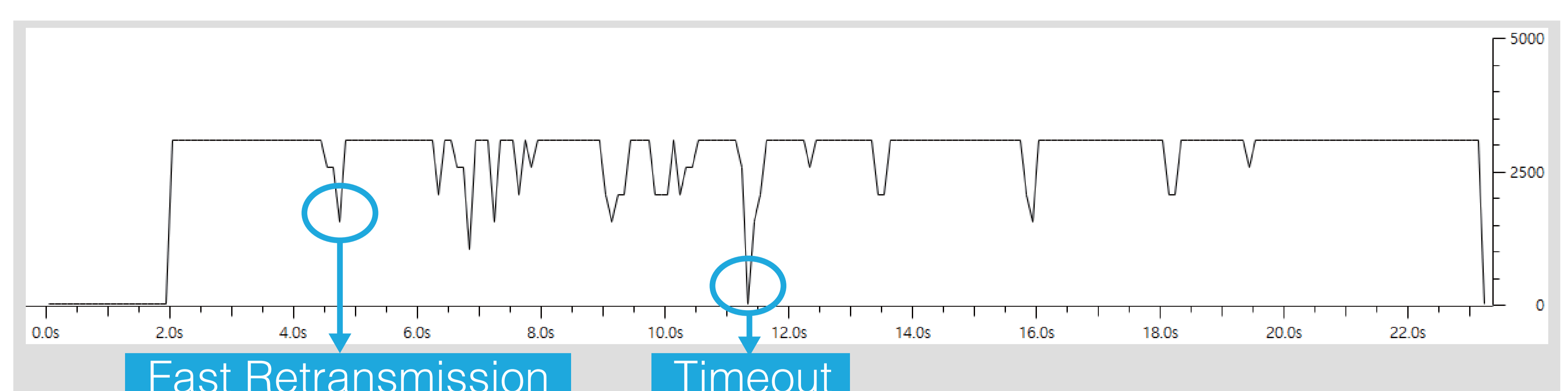
Suite: testListen
Test: __testListen_Accept_Before_Connect ...passed
Test: __testListen_Accept_After_Connect ...passed
Test: __testListen_Accept_Multiple ...passed
Test: __testListen_Multiple_Interfaces ...passed

Run Summary:
Type      Total  Ran  Passed  Failed  Inactive
suites    1      1    n/a     0       0
tests     4      4    4       0       0
asserts   145    145  145    0       n/a

Elapsed time = 0.000 seconds
testListen: progress = 4/4
    
```



► Visualization of bitrate from PCAP dump: 0% (left) vs 1% (right) drop rate



► Test suite execution result of Listen()

► Visualization of window size change: congestion control in action

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