P4 Labs

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Introduction to P4 Lab Series

Lab experiments

Lab 1: Introduction to Mininet

Lab 2: Introduction to P4 and BMv2

Lab 3: P4 Program Building Blocks

Lab 4: Parser Implementation

Lab 5: Introduction to Match-action Tables (Part 1)

Lab 6: Introduction to Match-action Tables (Part 2)

Lab 7: Populating and Managing Match-action Tables

Lab 8: Checksum Recalculation and Packet Deparsing

Exercises

Exercise 1: Building a Basic Topology

Exercise 2: Compiling and Testing a P4 Program

Exercise 3: Parsing UDP and RTP

Exercise 4: Building a Simplified NAT

Exercise 5: Configuring Tables at Runtime

Exercise 6: Building a Packet Reflector

P4 Applications and Custom Processing Lab Series

Lab experiments

Lab 1: Introduction to Mininet

Lab 2: Introduction to P4 and BMv2

Lab 3: P4 Program Building Blocks

Lab 4: Defining and processing custom headers

Lab 5: Monitoring the Switch's Queue using Standard Metadata

Lab 6: Collecting Queueing Statistics using a Header Stack

Lab 7: Measuring Flow Statistics using Direct and Indirect Counters

Lab 8: Rerouting Traffic using Meters

Lab 9: Storing Arbitrary Data using Registers

Lab 10: Calculating Packets Interarrival Times using Hashes and Registers

Lab 11: Generating Notification Messages from the Data Plane using Digests

Virtual Platform

- URL: https://netlab.cec.sc.edu/
- Username: email address used for registration. E.g., jcrichigno@cec.sc.edu
- Password: wastc2022

Workshop and Cybertraining Websites

- Workshop website: it contains slides and other resources related to the workshop
  - ➢ http://ce.sc.edu/cyberinfra/workshop_2022_wast.html
- Cybertrainining website: it contains information related to virtual lab libraries developed by USC, including lab manuals
  - ➢ http://ce.sc.edu/cyberinfra/cybertraining.html