



Welcome to the
“Workshop on P4 Programmable Switches”

Jorge Crichigno¹, Jason Zurawski²

¹College of Engineering and Computing, University of South Carolina
<http://ce.sc.edu/cyberinfra>

²ESnet /LBNL and The Engagement and Performance Operations Center (EPOC)

August 22, 2023 - Online

Training Workshop

- Help understand P4 devices
- Help integrate P4 material into associate, bachelor, and graduate degrees
- Disseminate training and teaching material in the form of virtual labs
- Update on FABRIC, the international research infrastructure
- Update on BBR congestion control
- Write applications running on the data plane of switches
- Workshop website:
http://ce.sc.edu/cyberinfra/p4_workshop_aug_2023.html

Agenda

Day 1: Tuesday August 22, 2023

Time (ET) (pm)	Topic	Presenter
01:00 – 01:10	Welcome, agenda	Jorge Crichigno (USC), Jason Zurawski (Esnet / LBNL and EPOC)
01:10 – 02:00	FABRIC, the programmable research infrastructure	Paul Ruth and Ilya Baldin (RENCI)
02:00 – 02:45	Hands-on labs over FABRIC	Elie Kfoury (USC)
02:45 – 03:00	Break	
03:00 – 03:50	Hands on Session 1: P4 Program Building Blocks	Jose Gomez (USC)
03:50 – 04:00	Break	
04:00 – 04:50	Hands on Session 2: Parser Implementation	Ali AlSabeH (USC)
04:50 – 05:00	Summary day 1	

Agenda

Day 2: Tuesday August 29, 2023

Time (ET) (pm)	Topic	Presenter
01:00 – 01:10	Welcome, agenda	Jorge Crichigno (USC), Jason Zurawski (Esnet / LBNL and EPOC)
01:10 – 01:45	Science DMZ, Congestion Control and Buffer Sizing	Doug Southworth (Indiana University)
01:45 – 02:30	BBR Congestion Control - Fundamentals and Updates	Neal Cardwell (Google)
02:30 – 02:45	Break	
02:45 – 03:30	Hands-on Session 3: Monitoring Buffer Occupancy in P4 Switches	Elie Kfoury (USC)
03:30 – 03:45	Break	
03:45 – 04:30	Hands-on Session 4: Calculating Packets Interarrival Times with P4 Switches	Ali AlSabeih (USC)
04:30 – 05:00	Summary workshop	

Lab Libraries

- Cybersecurity Applications on P4 Programmable Data Planes
- P4 Programmable Data Planes: Applications, Stateful Elements, and Custom Packet Processing
- P4 Programmable Data Plane Switches (BMv2)
- P4 Programmable Data Plane Switches (Tofino)
- Network Tools and Protocols (NTP)
- perfSONAR 5.0
- Network Management Tools
- Introduction to Software Defined Networking (SDN)
- Open Shortest Path First
- Introduction to BGP
- MPLS and Advanced BGP Topics
- Open Virtual Switch (OVS)
- Zeek/Bro

See <http://ce.sc.edu/cyberinfra/cybertraining.html> for details.

Contact information: gomezgaj@email.sc.edu.