Lab 7: Populating and Managing Match-action Tables at Runtime

Jorge Crichigno

College of Engineering and Computing, University of South Carolina

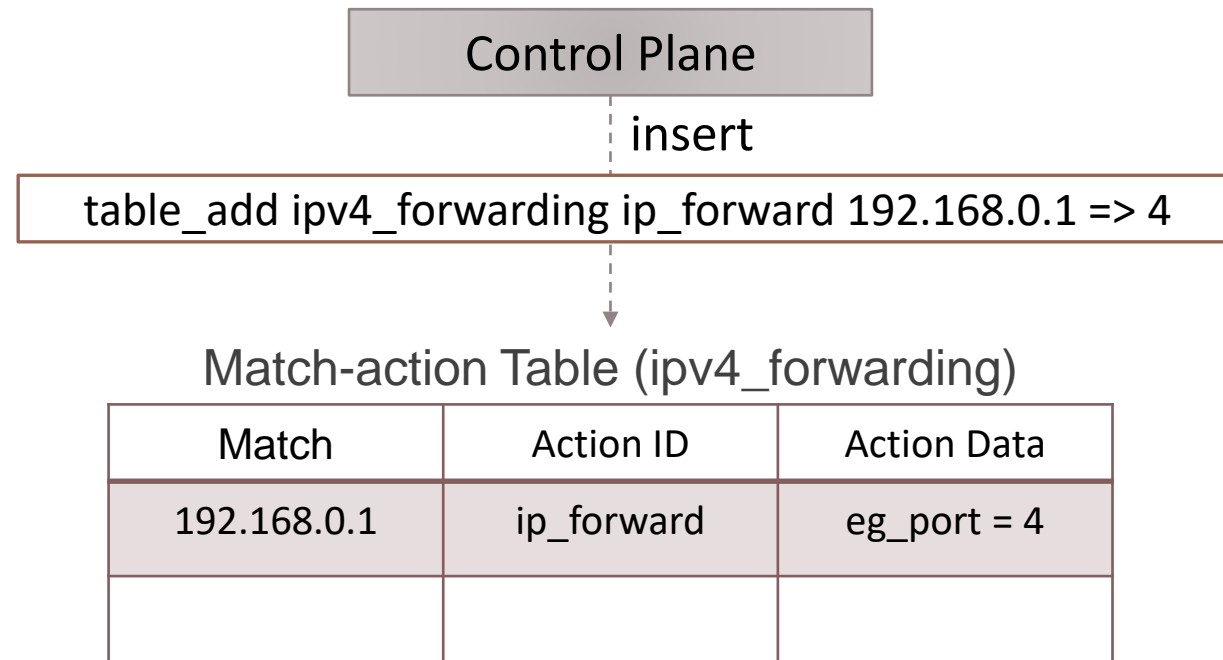A Hands-on Tutorial on P4 Programmable Data Planes

Tuesday March 7, 2023

Populating and Managing Match-action Tables at Runtime

Lab activities are described in Lab 7, P4 Programmable Data
Plane Switches (BMv2) lab series

South Carolina

Control Plane

- The match-action tables are empty by default
- The control plane populates the tables with entries
- The control plane can insert, remove, and update table entries

Control Plane

insert

table_add ipv4_forwarding ip_forward 192.168.0.1 => 4

Match-action Table (ipv4_forwarding)

Match	Action ID	Action Data
192.168.0.1	ip_forward	eg_port = 4

Runtime Environment

- The simple_switch_CLI tool is used to populate the tables in this lab series
- This tool includes a program-independent CLI and a Thrift client
- It connects to a control server residing on the switch
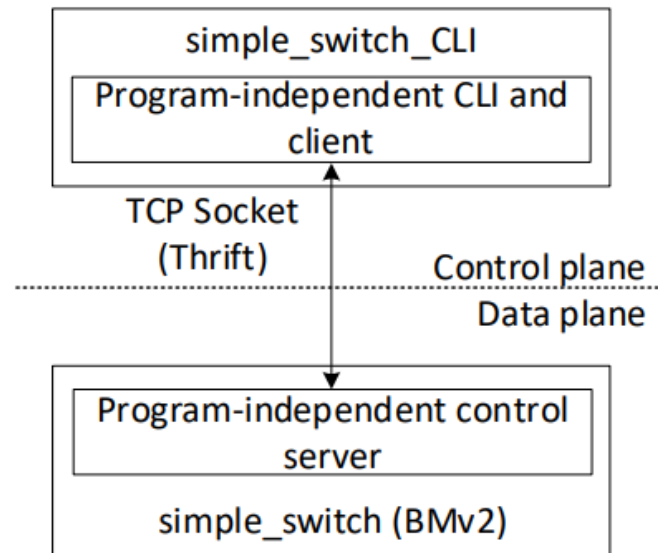
Lab Topology and Objectives

- The topology consists of three hosts: h1, h2, and h3; one P4 switch: s1
- The P4 program is already provided; no P4 programming is needed in this lab
- Navigate the simple_switch_CLI tool
- Displaying ports, tables, and actions
- Inserting, updating, and deleting table entries