



Lab 3: Introduction to Match-action Tables (Part 1)

Amith GSPN, Samia Choueiri
University of South Carolina (USC)
<https://research.cec.sc.edu/cyberinfra>

Energy Sciences Network (ESnet)
Texas Advanced Computing Center (TACC)
University of North Carolina (UNC)

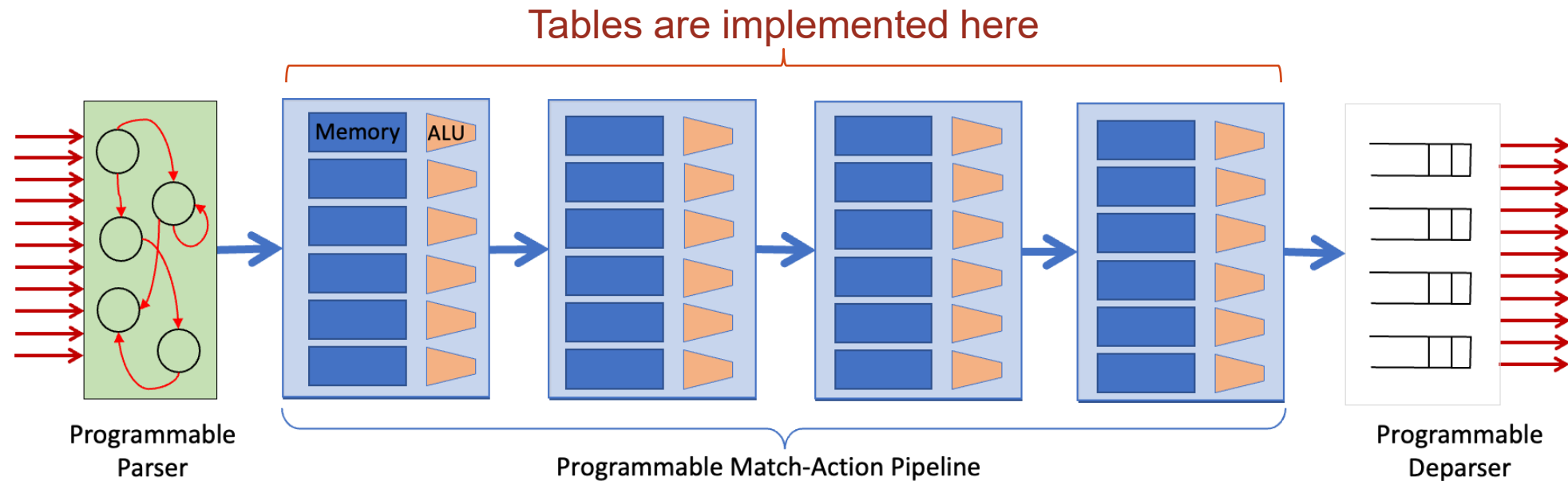
Hands-on Workshop on Science DMZ, Zeek IDS, and P4-DPDK
Tuesday, May 12, 2026.

Introduction to Match-action Tables

Lab activities are described in Lab 4, P4-DPDK lab series

Match-action Tables

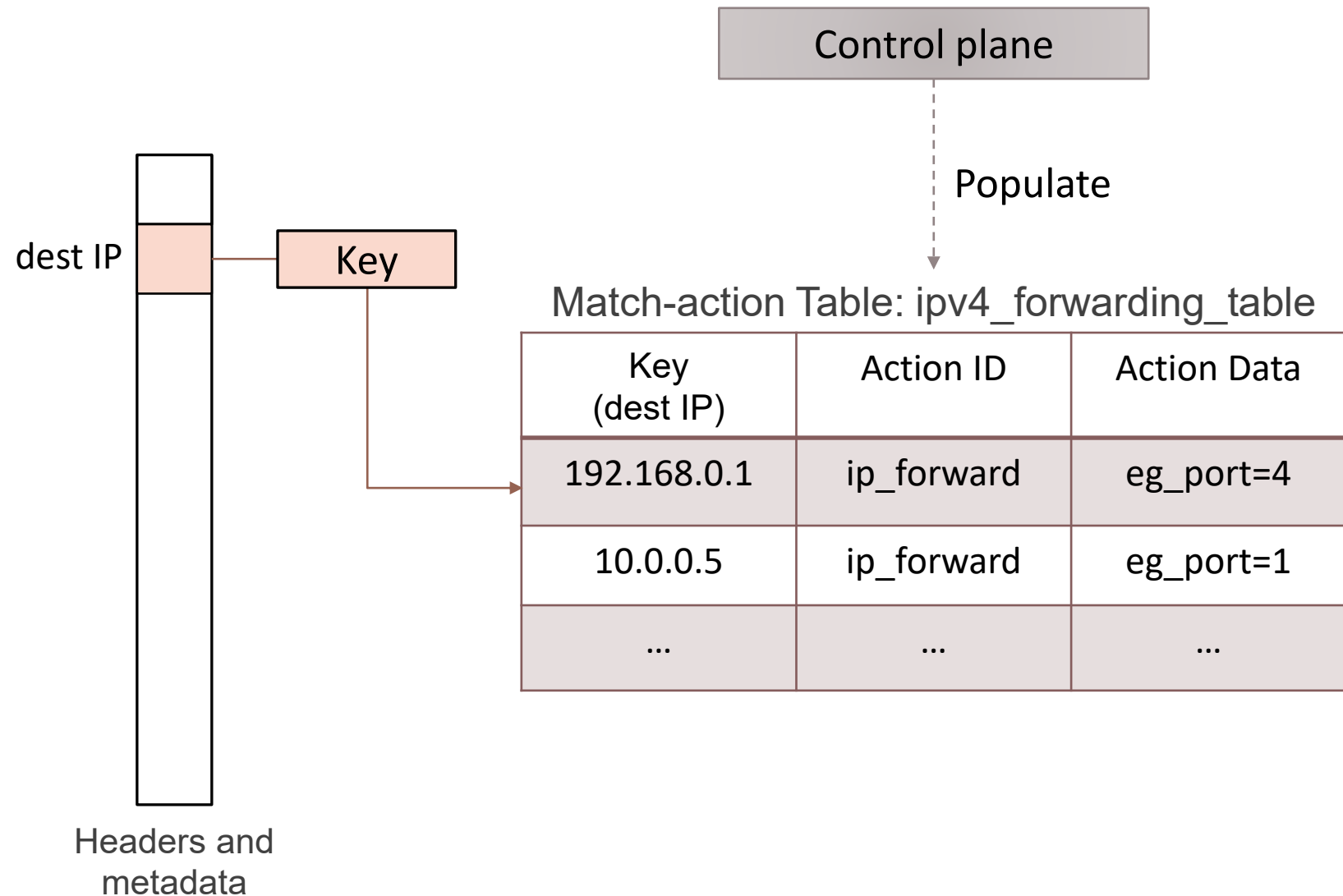
- Tables are the fundamental unit of a Match-Action Pipeline; they define the processing logic inside the match-action pipeline
- They can be used to implement traditional switch tables (e.g., routing, flow lookup, access-control lists)
- They can implement custom user-defined complex logic



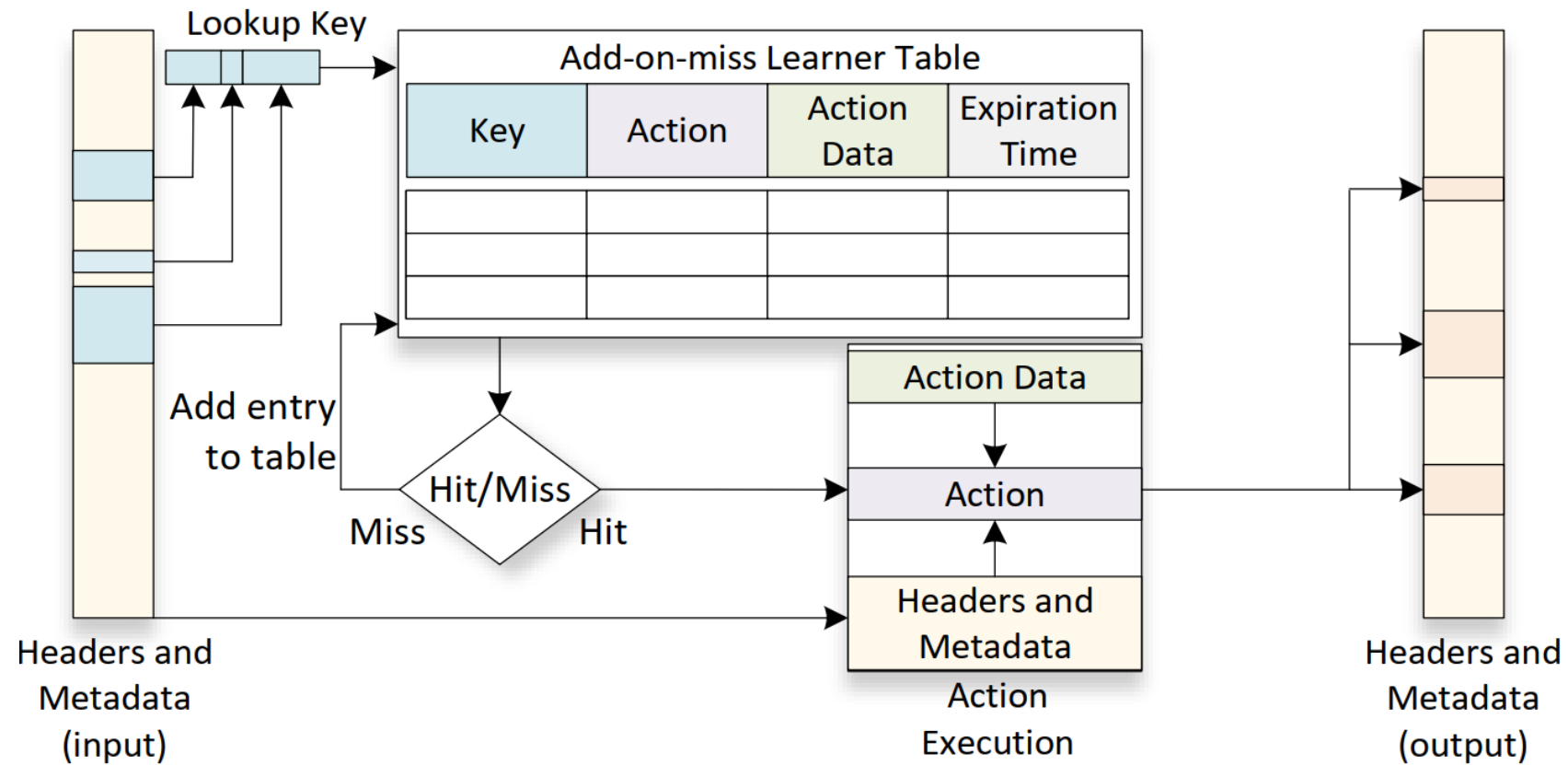
Match-action Tables

- Specifies what data to match on
- Specifies a list of possible actions
- Optionally specifies a number of table properties; e.g.,
 - Size
 - Default action
 - Static entries
- An entry contains
 - A specific key to match on
 - An action that is executed when a packet matches the entry
 - Action data (possibly empty)

Example: IPv4 Forwarding

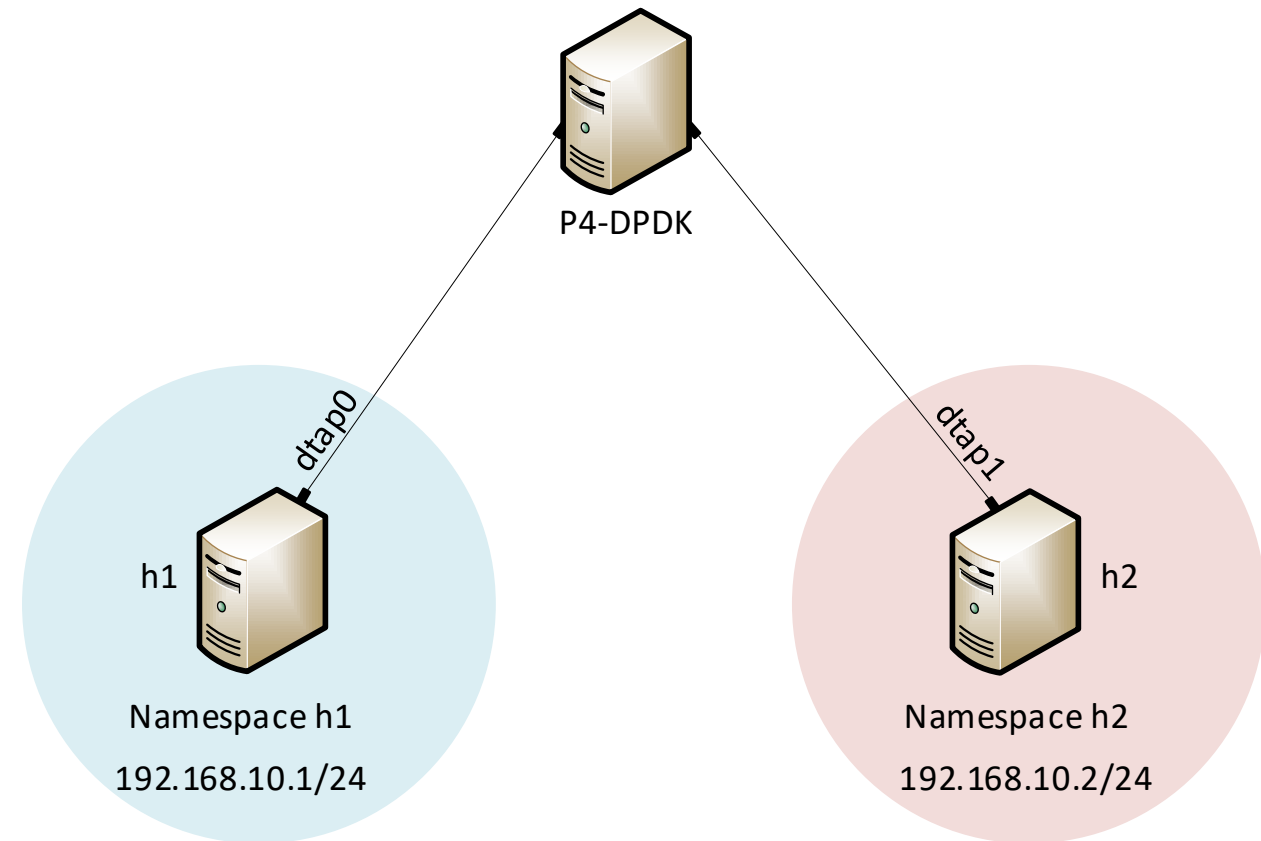


Add-on-miss



Lab Topology and Objectives

- Two network namespaces, h1 and h2, are linked to the host running the P4-DPDK pipeline.
- Lab Objectives:
 - Implement a table that matches the destination IP address in the packet headers using the exact match
 - Assign the output port based on the matched IP address
 - Enable the add-on-miss feature to add entries to the table at runtime without the contribution of the control plane
 - Configure self-expiry timers to delete expired entries from the table



Accessing the Platform

- Please use the following link to access the platform: <https://netlab.cec.sc.edu/>
- Login using the following credentials:
- **Username:** <Email used for registration>
- **Temporary Password:** nsf-2026